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## Article

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# THE INFLUENCE OF FOREIGN DIRECT INVESTMENT INFLOWS ON ECONOMIC GROWTH IN NIGERIA

Olorunsola E. Olowofeso, Isaiah O. Ajibola, Offioig D. Orenowo<sup>1</sup>

## **Abstract**

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*This paper investigates the connection between foreign direct investment and economic growth in Nigeria during the period 2000Q1–2020Q2 using an Autoregressive Distributed lag model. We control for the influence of several macroeconomic variables, including treasury bill rate, government expenditure and trade openness. The bounds cointegration test confirms a long run relationship between economic growth and the included variables. Our results show that foreign direct investment impacts positively on economic growth in the long run, albeit insignificantly. These results are robust to alternative sample size and the inclusion of additional variables that represent alternative investment outlets for non-residents, such as portfolio investment (PFI) and OMO bills. Our results highlight the need for the promotion of an investment-friendly environment as a way of boosting foreign direct investment and sustaining economic growth in Nigeria.*

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## 1.0 INTRODUCTION

Foreign Direct Investment (FDI) represents capital flows that allow non-residents to obtain substantial and longstanding interest in direct investment enterprises in the domestic economy. FDI is deemed to have taken place when a foreign investor owns 10% or more of the stocks of investment in a domestic enterprise. Recently, there has been a growing concern on the impact of FDI and economic growth. Theoretically, it is believed inflow of direct investment has the ability to grow the domestic economy. Thus, in a bid to boost aggregate investment, most developing countries seek to attract capital flows to augment domestic savings.

FDI inflows and outflows have considerable influence on the world economy and are important for both advanced and emerging countries. The aforementioned is supposed to profit a developing nation such as Nigeria, not only by complementing national assets but also in relation to engagement formation, advancing expertise, and improving balance of payment. The significance of expertise for commercial development offers a convivial connection amongst FDI movements and host nation's financial evolution. The Nigerian budget has profited from the inflow of FDI into the state during the period that empower Nigeria to attain pecuniary evolution (Akanni, 2004).

Though there is substantial indication on the connection amongst direct investment and financial evolution, the interconnection amongst the variables relics a topic of investigation. In sub-Saharan African countries, Nigeria remained the second largest economy for FDI, behind Egypt. Few of the nations that attracted direct investment to Nigeria include United States of America, United Kingdom, China, the Netherlands and France. However, FDI to Nigeria dipped by 21% to US\$ 3.49 billion in 2017, this was attributed to politically induced uncertainties, absence of accountability, extensive fraud, and meagre value of social amenities. However, by the following year, Sub-Sahara Africa's direct investment increased to US\$ 45.78 billion, showing an upsurge of 11.7% when compared to the preceding year. Of this amount, Nigeria's portion was enlarged by US\$ 0.8954 billion in 2020Q2.

The question of what degree FDI impacts growth has been evasive. However, it has been argued that FDI may affect economic growth since it contributes to investment accretion, and the allocation of novel know-hows to the beneficiary nation; thus, contributing to economic growth. There is no consensus yet on the extent to which this argument holds for Nigeria. Whereas some studies have investigated the relationship between FDI and economic growth in Nigeria, quite a number of them ignored relevant control variables such as government expenditure and trade openness (see for instance, Adeleke et al, 2014. Also, Adeleke et al (2014) estimated a simple also estimated a simple ordinary least squares regression, without testing for stationarity of the model variables. Thus, in this study, we observed incorporate some important control variables such as government expenditure, trade openness and treasury bill rate into the growth model. As has been argued by Anyanwu (2011), government expenditure is an important variable that intervenes in the FDI-economic growth nexus. It is also important to note that most studies used annual time series data on a simple regression (OLS) or vector Error Correction Model (VECM) in examining the impact of FDI and economic growth. In this study, we employ the Bounds testing approach to cointegration on a quarterly time series data in assessing the impact of FDI on economic growth, in the short- and long- run. Thus, this study differs from some of the existing studies in terms of data frequency, sample period, estimation procedure and the included control variables. The study seeks to re-examine the impact of foreign direct investment on economic growth in Nigeria while accounting for relevant macroeconomic fundamentals. In particular, we investigate the relationship between (FDI) and economic growth (GDP) for the period 2000Q1 to 2020 Q2.

This paper is segmented into five sections. Section one focuses on introduction. Section two reviews related literature on FDI and economic growth. Section three presents research methodology. Section four describes the findings and discussions of the empirical estimations along with robustness check while section five concludes major findings and the policy implications.

## **2.0 REVIEW OF RELATED LITERATURE**

No doubt, the relationship between FDI and economic growth has remained a subject of discussion in recent times. While some studies show that FDI impacts growth, others have argued in the contrary, probably due to some barriers, including political instability and low levels of human capital, trade openness, or financial sector development. In general, it is believed that economic growth is directly related to inflow of foreign direct investment (Adeleke et al, 2014)

In their separate works, Anna (2007), Hussain and Haque (2016), Samanta and Haiyun (2007), Sothan (2017) and Kalai and Zghidi (2019) believe that FDI has had positive influence on economic growth in their countries of studies within their respective study periods. Anna (2007) found a positive impact of FDI on economic growth in China in an examination carried out in the period between 1994 and 2003. The result revealed that the positive impact of FDI on economic growth in China is because FDI serves as a means through which new technology is transferred from one country to another thereby increasing output and development of the recipient republic. Hussain and Haque using Vector Error Correction Model (VECM) on their part, agreed that there exist a long-lasting affiliation between FDI and economic growth rate per capita GDP in a study on FDI, trade and financial development in Bangladesh between 1973 and 2014. Also, Samanta and Haiyun in their study on direct investment and financial development in Sri Lanka between 1978 and 2015, in which they employed the ARDL approach submitted that FDI has positive correlation with economic development both in the short and long term. In a study of connecting relationship between FDI and GDP from 1980 to 2014 in Cambodia, Sothan used the Granger Causality test grounded on VECM to establish that FDI impacts economic growth. It is the same with Kalai and Zghidi who in their study on the dynamic causal relationship among FDI, global trade and economic growth for 15 selected Middle Eastern and North African countries over the period 1999 to 2012 using ARDL technique and the VECM to investigate the cointegration and found that there exists a long run unidirectional relationship from direct investment to economic growth in MENA countries.

There are others who are of the opinion that the impact of FDI on economic growth can only be felt in the long run. The studies of Belloumi (2014), Tan and Tang (2016), Minh and Shujin (2017), Khobal and Mavekela (2017), and Trang et al (2019) belong to this group. For Belloumi, his study on the connection between FDI, trade openness and economic growth in Tunisia using the bounds cointegration test for the period between 1970 and 2008, reveals that the variables of interest are interrelated in the long run when FDI is the independent variable. Tan and Tang examined the relationship between domestic investment, foreign direct investment (FDI), trade, interest rate, and economic growth in the ASEAN -5 region in the period 1970 to 2012 using the Johansen-Juselius cointegration and the Granger Causality approaches to ascertain the long run relationship and evaluate the causal linkages among the variables. The results confirm the existence of long-term causal relationship between domestic investment and FDI, indicating that FDI is growth-enhancing in the long run. Minh and Shujin (2017) on their part, carried out an analysis on the role of FDI and other elements of economic development on Vietnamese economy between 2000 and 2015 using the granger causality test. Their study confirmed that there was a substantial influence of FDI on Vietnamese economic development in the long run. In a similar development, Khobai and Mavikela examined the causal link between economic growth and trade openness in Argentina for the period 1970 to 2016 and found that there exists a relationship among economic growth, trade openness, FDI

and capital in the long run. And Trang et al examined FDI and economic growth in short and long run in some countries between 2000 and 2014 using various econometric approaches such as Johansen cointegration test, VECM and Fully Modified OLS (FMOLS). They came up with the conclusion that FDI inspires economic growth in the long run albeit with negative impact in the short run for the countries under review.

Frimpong and Oteng-Abayie (2006), Yaya (2017) and Obiamaka (2011) agree that FDI enhances economic growth in Sub-saharan Africa. Frimpong and Oteng-Abayie (2006) examined the causal relationship between FDI and economic growth in pre and post Structural Adjustment Programme (SAP) periods in Ghana. The findings of their study show that FDI really stirred economic growth in the post SAP era. Yaya(2017), in his work, examines the impact of trade openness on economic growth for Cote d'ivoire over the period 1965 to 2014 in multivariate framework including capital stock and labor as regressors using ARDL bounds test to cointegration. The result of his findings reveals a positive effect of trade openness on economic growth in both short and long run. For Nigeria, Obiamaka (2011) used the Johansen cointegration and granger causality test to determine the presence of lasting connection between FDI and GDP between 1970 to 2009 and established the path of connecting relationship among the variables. From the examination, it was found that the variables were co-joined and had unvarying connection in the long run. Also, Granger Causality assessment showed that a causative association ran from FDI to GDP showing a unidirectional connection. The result of the work showed optimistic connection between FDI and GDP throughout the duration of the study albeit the work failed to use other control variables that are necessary to determine the impact of FDI on economic growth. It is also worthwhile to say that more than a decade has passed since the period under review hence a need for more recent research in the area.

The impact of FDI on economic growth is influenced by several factors including levels of educational advancement, openness in global trade and stock market development (Batten and Vo; 2010). It is also influenced by population (Asongu; 2013), government assets, spending and investment (Kolawole and Odunbunmi;2015), foreign aid (Nadia et al, 2017), remittances (Mustapha & Anwa, 2018) as well as human capital (Borensztein et al., 1998; Koojaroenprasit; 2012).

Some studies have however come up with contrary findings. The result of their findings has failed to confirm that FDI arouses economic growth. Jorge and Werner (2018) and Najia et al. (2013) in their separate studies on FDI and economic growth in Spain and Pakistan between the years 1984 to 2010 and 1981 to 2010 respectively, established that FDI does not have positive impact on the economies of Spain and Pakistan.

The impact of FDI on developing nations seems to be uncertain on a wider view. While Mustapha and Anwa (2018) posits that developing countries benefits from FDI, Laingshu (2007) and Najaf and Mingque (2018) in their studies present a vague interrelationship between FDI and economic growth.

### 3.0 METHODOLOGY AND DATA

This study adopts the endogenous growth theory also known as the new growth theory. The theory provides a framework for analyzing endogenous growth, persistent GNI growth that is determined by the system of governing the production process rather than by forces outside that system (Todaro & Smith, 2012). Endogenous growth contributes in explaining the international capital flows between developing and developed countries (Todaro & Smith, 2006).

In estimating and analyzing the model, the study employed relevant methodologies such as ARDL econometric approach, unit root test, bounds cointegration test to check for the stationarity and the

presence of a long-run relationship between the variables and the Granger causality to determine direction of causation amongst the variables. A set of variables are said to be co-integrated if a linear combination of them is stationary. The ARDL cointegration procedure by Pesaran and Shin (1999) and Pesaran *et al.* (2001) is built on the presumption that the variables are I (0) or I (1). Thus, the study deemed it necessary to check for the order of integration of all the variables employing unit root test.

### 3.1 Source of Data

The study considers the Nigerian economy using quarterly time series data spanning 2000Q1 to 2020Q2, obtained from the Central Bank of Nigeria Statistical Bulletin. The intervening roles of the included control variables are discussed next.

### 3.2 Interacting variables and the FDI-economic growth nexus

#### *The role of government expenditure in FDI- economic growth nexus*

An important variable that intervenes in the FDI-economic growth nexus, which has been neglected in literature is Government expenditure. Government expenditure by its nature is often economically destructive, regardless of how it is financed. One of the consequences is that it dampens growth as it displaces private sector activity. Tax finances government expenditure, hence, an upsurge in government expenditure intensifies the tax burdens on residents, moreover in the present or in the future which tends to a lessening in private expenditure and investments. Government expenditure decreases funds in the economy hence growing interest rates. In a situation where there is budget deficit, government goes into borrowing from foreign governments or issues bonds. The work of Mamingi and Borda (2015) gives a strong support for the government expenditure as a determinant of growth when the impact of FDI was assessed in OECD countries.

In line with the Keynesian view, public expenditure may increase aggregate demand, and this could stimulate financial development and increase economic activity. For an economy to grow with the assistance of government expenditure, the government must increase its spending though for a short term to overcome recession or depression as it may give rise to inflation. Fiscal multiplier effect is often seen as a measure that increases in government spending can boost economic growth. On the other hand, government expenditure could cause a reduction in economic growth due to inept use of money.

Government expenditure is expected to bear a direct relationship to economic growth and FDI because a higher level of government expenditure should translate into provision of social infrastructure that should encourage production, FDI inflows and growth. Anyanwu (2011) in his study on the factors responsible for the inflow of FDI into Africa found that high government expenditure attracts FDI inflow.

#### *The role of Trade Openness in FDI- economic growth nexus*

The extent of trade openness is calculated as a ratio of a country's trade measured as the ratio of the sum of export and import to the country's GDP. Overall, trade openness in the sense of 'neutrality' or neutral trade orientation of an economy may have a positive impact on economic growth in the short run by an enlarged trade sector, for example, trading-related investments in the economy, boosted imports via increases in income and aggregate demand. It has been shown that in the long-run, trade openness can potentially enhance economic growth by providing access to goods and services, achieving efficiency in the allocation of resources and improving total factor productivity through technology diffusion and knowledge dissemination (Barro & Sala-i-Martin, 1997). Trade openness can have a strong positive relationship with capital formation and this relationship helps in promotion of economic growth (Yaya, 2017).

### ***The role of treasury bill rate in FDI- economic growth nexus***

Treasury bills are short-term sovereign debt securities maturing in one year or less. They are sold at discount and redeemed at par. These bills are by nature, the most liquid money market securities and are backed by the guarantee of the Federal Government of a nation. In Nigeria, the Federal Government through the Central Bank, issues Nigerian Treasury Bills to provide short-term funding for government budget deficit.

Interest rate on consumer and business advances with parallel span rises as treasury yields rise, and savers (investors) relishes the security and firm yields of bonds. Treasury bills compared to other bonds are the safest, other bonds demands higher yields to attract investors as the increase in its interest rate leads to sustained competition. To attract purchasers in future auctions, the government pays a higher rate when yield rises on the secondary market and over time these higher yields increase the demand for treasury bill thereby causing increase in the value of dollar.

There is a tendency for a sturdy dollar to increase the prices of commodities for countries apart from the United States since most of the internationally traded commodities are led in U.S. dollars. By this, emerging economies that tend to be big consumers of commodities they used in the construction of infrastructure and manufactured goods are faced with a problem. Demand declines when emerging countries can no longer afford to buy essential commodities and most likely, a strong dollar will cause a failure in commodities as a mechanism for investment.

Treasury bill rate can influence the interest rates that individuals and businesses pay to borrow money to buy or invest in real estate, vehicles, and equipment positively or negatively. If it is high, then the investors would have to pay a higher interest rate which may influence the cost of goods and services thereby discouraging investors from investing. However, decrease in lending rate encourages investors, thus promoting increase in economic growth (Akinwale, 2018).

### **3.3 Model Specification and Estimation Method**

Having considered the advantages of the ARDL modeling method and the relevance of the endogenous growth theory to analyze the relationship between FDI and economic growth, this study adopts the ARDL bounds cointegration testing approach as proposed by Pesaran *et al.* (2001). Based on the endogenous growth theory, FDI impacts economic growth with involvement of production function which shows a quantitative connection between inputs and outputs with factors such as physical and human capital. According to the new growth theory expressed as  $Y=AK$ , where Y is output, A represents factors that affect technology and K represents physical and human capital; linking GDP, a proxy for economic growth to some other control variables, the model is specified as follows:

$$RGDP = f(FDI, GE, TBR, TOP) \dots\dots\dots (1)$$

This can be econometrically expressed as:

$$RGDP_t = \beta_0 + \beta_1 FDI_t + \beta_2 GE_t + \beta_3 LTBR_t + \beta_4 LTOP_t + \epsilon_t \dots\dots\dots (2)$$

where, RGDP, FDI, GE, LTBR and TOP denotes the Real Gross Domestic Product growth rate, Foreign Direct Investment measured as a share of GDP, Government expenditure measured as a share of GDP, Log of treasury bill rate and Log of trade openness which is the sum of import and export measured as a percentage of GDP while  $\epsilon_t$  denotes the error term;  $\beta_0$  and  $\beta_{1-4}$  defines the slope and coefficients of regression. Regression coefficients ( $\beta_{1-4}$ ) determines the effect of all independent variables on the dependent at the elongated term. The error term,  $\epsilon_t$ , is absorbed in the model to provide for other features which could impact RGDP.  $\beta_0$  is intercept and  $\beta_1 - \beta_4$  are constants of RGDP, FDI, GE, LTBR and LTOP. The variables (TBR and TOP) were reported in log format for ease of comparability.

From an economic point of view, FDI, GE, TBR and TOP might not influence growth of an economy instantly, rather, lagging consequence on economic growth may as well be equitable considering that economic growth transforms its conduct after a period.

All coefficients are expected to show positive signs. Positive estimation of  $\beta_1$  means an increase inflow of FDI will be considered to boost the Nigerian economy.

The hypothesis for the test for the level relationship is as shown below:

H<sub>0</sub>:  $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$  (Co-integration does not exist)

H<sub>1</sub>:  $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$  (Co-integration exist)

The ARDL bounds test model applied to identify the long run relationship among the variables is as specified below:

$$\Delta RGDP_t = \beta_0 + \beta_1 RGDP_{t-1} + \beta_2 FDI_{t-1} + \beta_3 GE_{t-1} + \beta_4 LTBR_{t-1} + \beta_5 LTOP_{t-1} + \sum_{i=1}^p \beta_{1i} \Delta RGDP_{t-i} + \sum_{i=1}^{q1} \beta_{2i} \Delta FDI_{t-i} + \sum_{i=1}^{q2} \beta_{3i} \Delta GE_{t-i} + \sum_{i=1}^{q3} \beta_{4i} \Delta LTBR_{t-i} + \sum_{i=1}^{q4} \beta_{5i} \Delta LTOP_{t-i} + \epsilon_t \dots \dots \dots (3)$$

In line with the postulation of Pesaran and Pesaran (1997), the short-term dynamics are vital in experimenting for steadiness of long - run as stated in equation (3) and involves estimating the following ECM.

$$\Delta RGDP_t = \beta_0 + \sum_{i=1}^p \beta_{1i} \Delta RGDP_{t-i} + \sum_{i=0}^{q1} \beta_{2i} \Delta FDI_{t-i} + \sum_{i=0}^{q2} \beta_{3i} \Delta GE_{t-i} + \sum_{i=0}^{q3} \beta_{4i} \Delta LTBR_{t-i} + \sum_{i=0}^{q4} \beta_{5i} \Delta LTOP_{t-i} + \lambda ECT_{t-1} + \epsilon_t \dots \dots \dots (4)$$

Where,  $\Delta$  is the first difference operator,  $\lambda$  is error correction coefficient, ECT is error correction term and remaining variables are as defined above. A negative and significant value of ECT also indicates presence of a long-lasting connection in model.

**3.4 Unit Root tests**

As a pre-requisite of checking for stationarity of series under consideration in econometric research, the study applied the augmented Dickey-Fuller (ADF) and Philip-perron (PP) tests to ascertain the order of integration of the variables under review.

The null hypothesis here is that all variables of the model exhibit non-stationarity while the alternative proposition gave evidence of stationarity. If variables examined turns out to comprise unit roots it implies, they are non-stationary. Stationarity could however be achieved by first differencing the level series.

**3.5 Cointegration Test**

This determines the long run relationship between variables. These series can be viewed as elucidating a long-lasting term balance connection as the difference amongst them are static (Hall and Henry, 1989). Absence of cointegration implies absence of long-term relationship among variables. The study employed bounds test technique of Pesaran, Shin and Smith (2001).

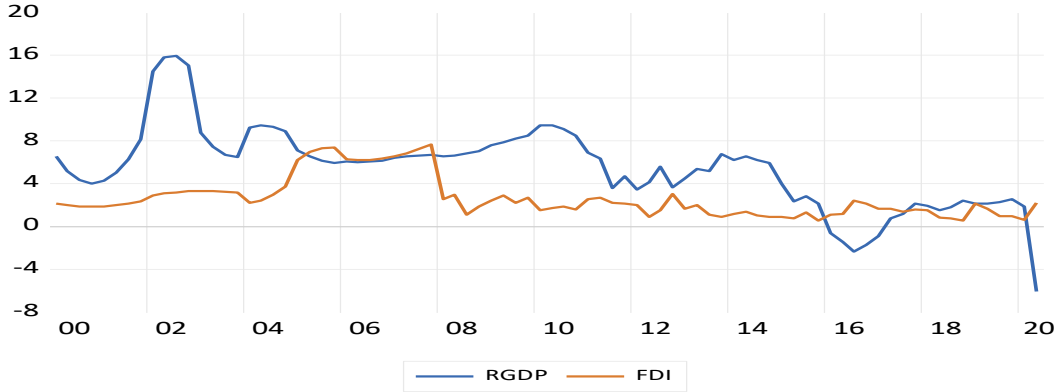
**3.6 Error Correction Model (ECM)**

ECM examines the short-term relationship between the variables in the model. It's a way of reconciling the short run behavior of an economic variable with its long run behavior. The long-run relationship is indicated by the sign of the ECT, and a negative sign indicates convergence while the positive shows divergence. Consequently, to conclude that there exists a stable long run relationship, the ECT must show a negative and significant value.

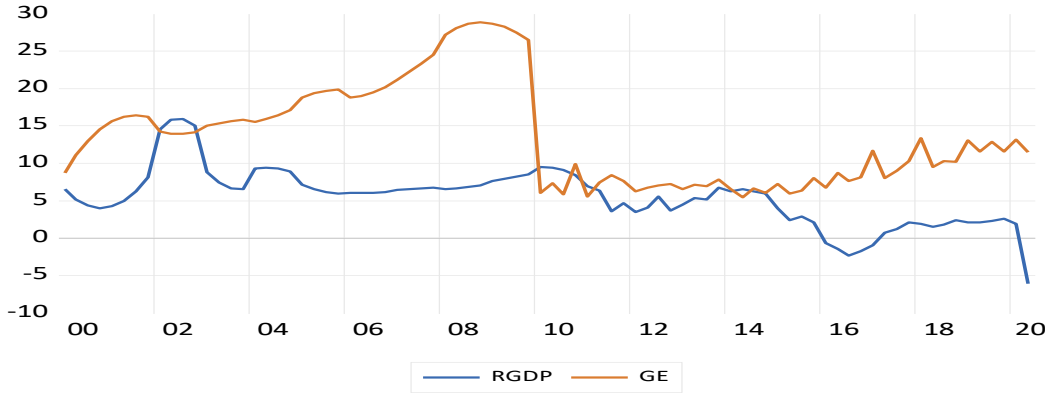


**Graphical Representation of RGDP and other included model variables**

**Fig (1)**



**Fig (2)**



**Fig (3)**

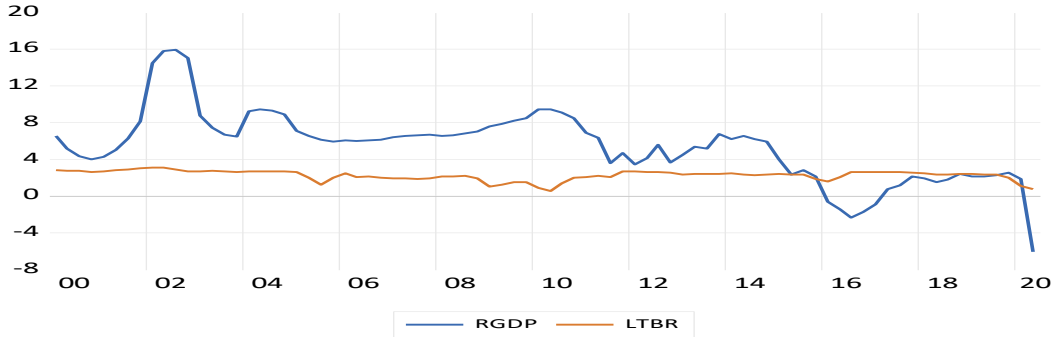
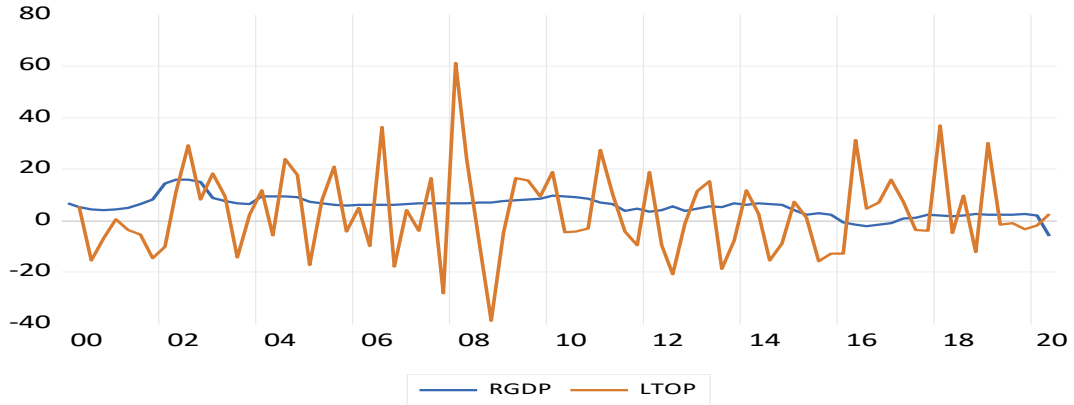


Fig (4)



From the graphical representations of the link between economic growth, proxied by RGDP and the variables of interest, there exist a close relationship amongst the variables. Fig (1) shows that growth and FDI move together in the same direction until in 2016 which was the period of recession. The graph shows that as FDI increases, economic growth tends to increase, when it decreases, growth also decreases. All the graphs show a decline in RGDP in 2016 being the period of recession. The graph of TBR shows volatility in TOP while RGDP tends to be dwindling.

#### 4.0 ANALYSIS OF EMPIRICAL RESULTS

Table (1): Correlation Matrix

<i>Variables</i>	<i>RGDP</i>	<i>FDI</i>	<i>GE</i>	<i>LTBR</i>	<i>LTOP</i>	<i>PFI</i>	<i>OMO</i>
<i>RGDP</i>	1.0000						
<i>FDI</i>	0.3033	1.0000					
<i>GE</i>	0.3340	0.5456	1.0000				
<i>LTBR</i>	0.0170	-0.1173	-0.2229	1.0000			
<i>LTOP</i>	0.0649	0.0706	0.0957	-0.0321	1.0000		
<i>PFI</i>	-0.3856	-0.2695	-0.2699	0.0209	0.1418	1.0000	
<i>OMO</i>	-0.4715	-0.4740	-0.6528	0.0458	-0.1163	0.3260	1.0000

To check for the problem of multicollinearity and find out if and how the variables are related, we carried out the correlation matrix test. From the result, all the explanatory variables except PFI and OMO show positive though feeble correlation with the RGDP but optimistic connection with economic growth. The result further reveals that LTBR is negatively correlated with FDI, GE and LTOP. However, there is no occurrence of multi-collinearity amongst the variables.

Table (2a) Descriptive Statistics in recession era

	<i>RGDP</i>	<i>FDI</i>	<i>GE</i>	<i>TBR</i>	<i>TOP</i>	<i>OMO</i>	<i>PFI</i>
<i>Mean</i>	5.6081	2.6328	13.7255	10.7759	2.8445	5.0558	1.8701
<i>Median</i>	6.0862	2.0659	13.0319	10.7288	-0.2043	0.0000	0.8484
<i>Maximum</i>	15.9624	7.6807	28.8208	22.7100	61.2340	18.6000	20.0725
<i>Minimum</i>	-2.3408	0.5056	5.4077	1.7067	-39.0519	0.0000	0.0268
<i>Std. Dev.</i>	3.6013	1.9141	6.8368	4.4660	16.3185	6.4746	2.9605
<i>Skewness</i>	0.4492	1.3957	0.7406	0.1577	0.5962	0.6340	3.5271
<i>Kurtosis</i>	4.1137	3.8536	2.5668	2.8665	4.1571	1.6615	19.6486
<i>Jarque-Bera</i>	6.8246	28.4026	7.9392	0.3911	9.2027	11.3318	1089.7880
<i>Probability</i>	0.0330	0.0000	0.0189	0.8224	0.0100	0.0035	0.0000
<i>Sum</i>	448.6475	210.6249	1098.0360	862.0684	227.5619	404.4670	149.6056
<i>Sum Sq.</i>							
<i>Dev.</i>	1024.5680	289.4286	3692.6580	1575.7020	21037.2900	3311.7330	692.4166
<i>Observations</i>	80	80	80	80	80	80	80

Table (2b) Descriptive statistics in the pre-recession period

	<i>RGDP</i>	<i>FDI</i>	<i>GE</i>	<i>TBR</i>	<i>TOP</i>	<i>OMO</i>	<i>PFI</i>
<i>Mean</i>	6.8775	2.9795	14.6381	10.8313	2.0713	4.2222	1.0834
<i>Median</i>	6.5260	2.3602	15.0277	10.4569	0.5911	0.0000	0.4933
<i>Maximum</i>	15.9624	7.6807	28.8208	22.7100	61.2340	17.0500	6.4012
<i>Minimum</i>	2.1123	0.5320	5.4077	1.7067	-39.0519	0.0000	0.0268
<i>Std. Dev.</i>	2.8499	2.0030	7.3775	4.7641	16.7059	6.0098	1.4060
<i>Skewness</i>	1.4319	1.1367	0.4323	0.2249	0.5814	0.8349	2.1796
<i>Kurtosis</i>	5.7657	3.0340	2.0687	2.6390	4.3613	1.8991	7.3228
<i>Jarque-Bera</i>	41.6070	13.5699	4.2390	0.8729	8.4137	10.5007	98.9309
<i>Probability</i>	0.0000	0.0011	0.1201	0.6463	0.0149	0.0052	0.0000
<i>Sum</i>	433.2797	187.7099	922.2028	682.3716	130.4930	265.9970	68.2534
<i>Sum Sq.</i>							
<i>Dev.</i>	503.5717	248.7455	3374.5160	1407.1940	17303.4000	2239.3080	122.5661
<i>Observations</i>	63	63	63	63	63	63	63

Table (2a and b) presents the summary statistics of the model variables in the recession and pre-recession era. The standard deviation shows that the data are spread out of the mean in both the recession and pre-recession period. The minimum values of the variables such as RGDP and TOP shows fall in the growth rate (RGDP) and drop in trade as a result of economic instability during the period of epidemic which happens to be part of the period of this study. The skewness result shows that all the variables skewed positively to the right. The Jarque-Bera statistics, from its probability values revealed that the variables are normally distributed, except TBR which is not.

**Unit Root Test**

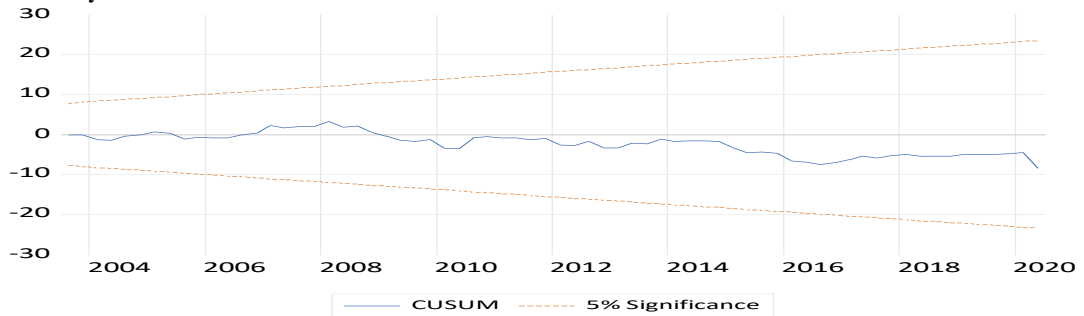
**Table (3): Augmented Dickey-Fuller (ADF) and Phillips-Perron Unit Root Tests**

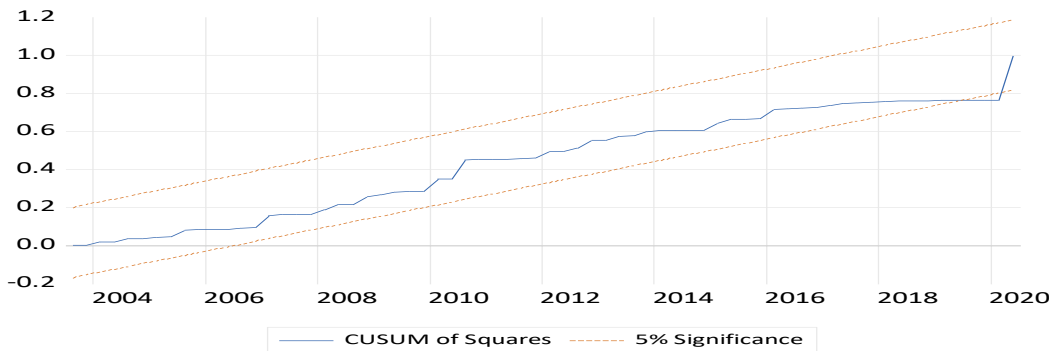
Variables	AUGMENTED DICKEY FULLER (ADF)		PHILLIP PERRON	
	ADF test statistics	Order of Integration	PP test Statistics	Order of Integration
RGDP	-5.4611(-2.8996)	I (1)	-5.3603(-2.8981)	I (1)
FDI	-5.7361(-2.8996)	I (1)	-9.7240(-2.8981)	I (1)
GE	-9.7841(-2.8996)	I (1)	-9.7821(-2.8981)	I (1)
LTBR	-8.4836(-2.8996)	I (1)	-6.8354(-2.8981)	I (1)
LTOP	-5.0014(-2.9001)	I (0)	-10.468(-2.8981)	I (0)

Note: I (1) and I (0) signify stationary at first difference and level respectively. Figures in parenthesis are the critical values.

The study investigates the stationarity property of the series using ADF and Phillip-perron (PP). The result of the assessment reveals that all variables are stationary at first difference and at intercept except LTOP which is stationary at level, making the series I (1) and I (0). The inference is drawn within the unit root test decision criteria that value of ADF test statistics in absolute form must be larger than the tabulated ADF critical value for the null hypothesis of existence of unit root to be rejected. The outcome of the test therefore informs our decision on conducting cointegration test.

**Stability Test**





The study carried out the CUSUM and CUSUMSQ to test for the stability of the model. The model is said to be stable if the plots of CUSUM and CUSUMQ falls within the critical bounds value at 5% significance level. The CUSUM chart shows that at 5% significance level, the statistics absolutely falls within critical region indicating stability of RGDP for the period under study. The same was observed in the CUSUM square except a period where it shuts out of the boundary briefly and returned. The break was because of the retarded growth in the economy during the period of the breakout of the Covid -19 pandemic.

**Table 4: Estimated Long -run coefficients**

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
<i>FDI</i>	0.1952	0.7536	0.2590	0.7964
<i>GE</i>	0.8763	0.3350	2.6162	0.0109
<i>LTBR</i>	14.8838	5.3863	2.7633	0.0074
<i>LTOP</i>	-0.4834	0.2306	-2.0963	0.0398
$EC = RGDP - (0.1952*FDI + 0.8763*GE + 14.8838*LTBR - 0.4834*LTOP)$				

From the summary of the estimated long run model, the coefficient of FDI confirms a positive relationship with economic growth (RGDP), though relatively insignificant. A percentage increase in FDI causes 19.52% increase in economic growth in Nigeria. GE and LTBR reveal positive and significant correlation with economic growth. However, LTOP shows a negative but significant relationship with RGDP in the long run.

**Table 5: Bounds Cointegration Test result**

<i>F-Bounds Test</i>		<i>Null Hypothesis: No levels relationship</i>		
<i>Test Statistic</i>	<i>Value</i>	<i>Signif</i>	<i>I(0)</i>	<i>I(1)</i>
			Asymptotic: n=1000	
F-statistic	8.86	10%	2.45	3.52
k	4	5%	2.86	4.01
		2.50%	3.25	4.49
		1%	3.74	5.06

The bounds cointegration test established the presence of a long-term connection amongst the variables and economic growth (RGDP) having met the decision criteria for existence of relationship in the bounds test.

**Table 6: Error Correction Model (ECM)**

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
<i>C</i>	-5.3197	0.7720	-6.8909	0.0000
<i>D(FDI)</i>	-0.3373	0.1699	-1.9854	0.0511
<i>D(GE)</i>	-0.1424	0.0564	-2.5245	0.0139
<i>D(GE(-1))</i>	-0.2820	0.0638	-4.4227	0.0000
<i>D(LTOP)</i>	-0.0210	0.0075	-2.8116	0.0064
<i>D(LTOP(-1))</i>	0.0247	0.0079	3.1408	0.0025
<i>CointEq(-1)*</i>	-0.1337	0.0195	-6.8483	0.0000
R-squared	0.4274	Mean dependent var		-0.1321
Adjusted R-squared	0.3797	S.D. dependent var		1.6551
S.E. of regression	1.3035	Akaike info criterion		3.4524
Sum squared resid	122.3381	Schwarz criterion		3.6624
Log likelihood	-129.3711	Hannan-Quinn criter.		3.5365
F-statistic	8.9577	Durbin-Watson stat		1.8097
Prob(F-statistic)	0.0000			

From the ECM estimation result in table 6 above, the coefficient of ECM (-1) is negative and statistically significant. This coefficient indicates the dynamic adjustment of all variables of the model. The negativity and the significance of the error term confirms convergence towards the equilibrium. Consequently, the model converges to equilibrium by 13.37 per cent adjustment. This, however, indicates a very slow pace of adjustment amongst the variables.

## 4.1 Sensitivity Analysis

Table 7: Model Comparison

Variables	Model 1		Model 2		Model 3		Model 4	
	LONG RUN RESULT							
	Coefficient	Prob	Coefficient	Prob	Coefficient	Prob	Coefficient	Prob
FDI	0.1952	0.7964	0.0272	0.9359	0.2011	0.7162	0.1590	0.6379
GE	0.8763	0.0109	0.6087	0.0005	0.8356	0.0041	0.7380	0.0000
LTBR	14.8838	0.0074	7.5044	0.0003	13.0871	0.0006	9.6608	0.0000
LTOP	-0.4834	0.0398	-0.3518	0.0315	-0.3661	0.0156	-0.3753	0.0023
OMO					0.0237	0.9046		
PFI							0.0644	0.7683
Variables	ERROR CORRECTION MODEL RESULT							
	Coefficient	Prob	Coefficient	Prob	Coefficient	Prob	Coefficient	Prob
C	-5.3197	0.0000	-4.8611	0.0000	-6.4025	0.0000	-6.4068	0.0000
D(FDI)	-0.3373	0.0511			-0.3180	0.0567	-0.2244	0.1199
D(GE)	-0.1424	0.0139	-0.1677	0.0023	-0.1349	0.0155	-0.1437	0.0030
D(GE(-1))	-0.2820	0.0000	-0.3050	0.0000	-0.3472	0.0000	-0.3227	0.0000
D(GE(-2))			-0.1765	0.0048	-0.1585	0.0093	-0.2468	0.0001
D(GE(-3))			-0.1346	0.0181			-0.1816	0.0017
D(LTBR)							1.8636	0.0005
D(LTBR(-1))							-0.6508	0.1778
D(LTBR(-2))							0.9045	0.0642
D(LTOP)	-0.0210	0.0064	-0.0190	0.0137	-0.0190	0.0092	-0.0239	0.0005
D(LTOP(-1))	0.0247	0.0025	0.0520	0.0000	0.0276	0.0007	0.0487	0.0000
D(LTOP(-2))			0.0225	0.0065			0.0193	0.0097
CoIntEq(-1)*	-0.1337	0.0000	-0.2645	0.0000	-0.1809	0.0000	-0.2484	0.0000

**Note:** Model 1=Benchmark model, Model 2=model with adjusted sample size to exclude the period of recession and Covid-19, Model 3= model with OMO bill, Model 4= model with Portfolio investment.

To assess the contribution of this study to existing studies, we reduced the sample size to 2015 to exclude the period of recession and Covid-19, included portfolio investment (PFI) and OMO bill to check for the sensitivity. The model results as shown in table 7 above reveal that FDI though insignificant, impacts growth positively in the long run. This is in support of the works by Najaf & Mingque (2018) and Ugochukwu et al (2013).. Comparing model 2 result with model 1 being the benchmark model, it is seen that the impact of FDI on economic growth in Nigeria during the period of study is hindered by effect of the recession and Covid-19 Pandemic. Inclusion of OMO rate amplifies the impact of FDI on growth though at a very slow pace. Model 4 reveals that portfolio investment is not a good enhancer of FDI to impact growth in Nigeria.

## 5.0 SUMMARY OF FINDINGS AND CONCLUDING REMARKS

This study was inspired by the dearth of works on recent impact of FDI on economic growth in Nigeria. We employed the ARDL estimation technique to examine the impact of FDI on economic growth in Nigeria. The cointegration test carried out confirms a long run relationship amongst the variables. Furthermore, we found a positive but insignificant impact of FDI on economic growth in the long run. Because economic variables might not influence economic growth instantly, results from the estimated ARDL model (Appendix) reveals that previous periods' FDI impacts positively on current economic growth. However, government expenditure and treasury bill rate impact economic growth contemporaneously.

The study confirms the work of Mousumi *et al.* (2008) that the mechanism through which FDI causes growth differs across countries. Government expenditure revealed a positive and significant impact on the Nigeria economic growth. Increasing capital investment spurs private sector investment in the wider non-oil sectors. The treasury bill rate also exhibits a positive impact on economic growth. Based on the findings of the study, we recommend that government should encourage financial institutions to make capital available to investors. That way, investors can borrow to increase investment and aggregate demand. Apart from that, government should promote policies that attract investors and boost FDI.

There is room for further research on exploring possible non-linearity in the relationship between FDI and economic growth in Nigeria.



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APPENDIX

ARDL (1,1,2,0,2) Result

Variables	Coefficient	Std. Error	Prob
Constant	-5.3197	0.9378	-5.6723
RGDP (-1)	0.8663	0.0485	0.0000
FDI	-0.3373	0.1878	0.0769
FDI (-1)	0.3634	0.1930	0.0640
GE	0.1424	0.0616	0.0237
GE(-1)	-0.0224	0.0752	0.7667
GE(-2)	0.2820	0.0666	0.0001
LTBR	1.9905	0.3441	0.0000
LTOP	-0.0210	0.0101	0.0407
LTOP(-1)	-0.0189	0.0096	0.0520
LTOP(-2)	-0.0247	0.0099	0.0147
R-squared	0.8944		
Adjusted R-squared	0.8789		
S.E. of regression	1.3413		
Sum squared resid	122.3381		
Durbin-Watson stat	1.8097		
Prob(F-statistic)	0.0000		