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FOREIGN DIRECT INVESTMENT, EXTERNAL DEBT AND ECONOMIC GROWTH IN NIGERIA: VECM ANALYSIS

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ABSTRACT

The inadequacy of financial resources and recurring external debt in Nigeria has brought about the attraction of FDI as a strategy to transform the economy but all the efforts the governments of Nigeria have made through FDI have yet to yield the desired outcome. This study therefore attempted to explore the impact of foreign direct investment, and external debt on economic growth in Nigeria. The econometric tool of the Vector Error Correction Model was applied to estimate the model of the study. The results of the study showed that there is a presence of cointegration among the variables. The findings from the study also revealed GCE, FDI, and EDT have a significant positive impact on economic growth in the long run. This implies that the productive use of GCE, FDI, and EDT can promote economic growth in Nigeria. The study also exhibited a negative relationship between inflation, gross domestic saving, gross capital formation, and economic development. In line with these findings, the study recommends that the government should effectively channel its resources including the external debt into productive sectors and while spending on capital projects, it should be properly monitored. Besides, the government should adopt policy measures such as fiscal and monetary policies that can enhance savings and boost capital formation in Nigeria.

1.0 INTRODUCTION

Foreign direct investment is often seen as an important catalyst for the economic transformation of the economies. Foreign direct investment (FDI) in this recent time became ever more important in developing countries of the world and growing number of developing countries like Nigeria, South Africa and the others ensuing in attracting considerable amounts of FDI. The purpose of foreign investment is to serve as a means of augmenting the less-developed countries' domestic resources to effectively carry out her developmental programmes, promote rapid industrialization and eventually raise the output of the business sector such as manufacturing sector (UNCTAD, 2011). Therefore, the importance of foreign direct investment is to improve the output of manufacturing sector in the less developed countries of the world. Foreign direct investment (FDI), as a form of international capital mobility, represents an important contributor to more efficient activities in the economy (Mahembe and Odhiambo 2014). They provide faster exit to the international market and as the aftermath are ensuring improved the living standard of the society. Evaluation of investment efficiency is the basis for making investment decisions from one country to another, which will consequently lead to improvement of the economy. Foreign investments are a key development factor in the

modern economy, and jointly with the trade, represent the most important leverage of an enterprise, organization of production, supplying goods and services on a global scale. FDI are supporting the companies in organizing production on a global scale, providing an efficient supply of raw materials, energy, labor as the input, and are facilitating the placement of products and services as the output in the most important markets in a profitable way. On the basis of such activities, the companies can on optimal way use its advantages in technology, expertise, and economies of scale (Oyegoke & Aras, 2022).

In the face of inadequate resources to finance long-term development and recurring external debt in Nigeria, the objectives of poverty reduction and other Millennium Development Goals (MDGs) looks increasingly difficult to be achieved, therefore, the issue of attracting FDI has assumed a prominent place in the strategies of economic renewal being advocated by policy makers at the national, regional and international levels (UNCTAD, 2006). There are factors influencing FDI in an economy which can translate into economic growth such as infrastructure, financial development and human capital development which has necessitated the government of Nigeria to continue in borrowing fund to put productive and capital projects in place. However, these efforts of the government and the policy measures set on motion by the government of Nigeria have not achieved the desired results. The persistent borrowing of funds by the government has led to dwindling growth of FDI in Nigeria as a result of political instability, lack of transparency, widespread corruption, weak institutions and poor quality of infrastructure. Based on this background, this, study intends to examine the relationship between foreign direct investment, external debt and economic growth in Nigeria

The objective of this study is to investigate the causal relationship between foreign direct investment, external debt and economic growth in Nigeria. The rest of the paper is organized as follows: The Section two presents the relevant empirical literature. Section three describes the theoretical framework and methodology. The section 4 discusses the results while the final section concludes.

2.0 LITERATURE REVIEW

Asogwe and Manasseh (2014) investigated the impact of foreign direct investment on economic growth in Nigeria. The study utilized granger causality test to capture the objective. Of the study. The findings from the study showed that FDI has unidirectional relationship with economic growth in Nigeria.

Jilenga, Xu and Gondje-Dacka (2016) this study investigated the impact of external debt and foreign direct investment (FDI) on economic growth in Tanzania using time series data from 1971-2011. The empirical analysis was based on ARDL model and the Bounds test approach of co-integration as advocated by Pesaran et al (2001) to test for long-run equilibrium relationship. The results show that, in the long-run debt promote economic growth in Tanzania. However, foreign direct investment exhibits a negative impact on economic growth. While in the short-run, the results indicate that there is no directional causality either between external

debts (PD) and economic growth (RGDP) or between FDI_INFL and economic growth (RGDP).

Imran, Shumalia. and Fatima (2017) analyzed the relationship between foreign direct investment, external debt and economic growth. The study is based on a sample of 25 region wise selected developing countries. The study employed Panel unit root and FMOLS as the econometric tools used to measure the relationship between foreign direct investment and economic growth. The results of FMOLS method revealed that the core variables, foreign direct investment and external debt have significant positive relationship with economic growth. Labour, Gross Domestic Saving and Government expenditures have positive while Gross capital formation exerts negative impacts on economic growth

Sailesh, Chengchun and Glauco (2018) investigated the role of external debt in the fdi-growth relationship in 39 developing countries over the period 1984-2010. The study employed regression analysis as the econometric technique to capture the objective of the study. The result supported the hypothesis that FDI-induced growth is dependent on the external debt constraint. The finding from the study also revealed that increasing financial development can mitigate the negative influence of high external debt on the FDI-growth nexus

Akhanolu, Babajide, Akinjare, Oladeji & Osuma (2018) used two-stage least square regression to investigate the impact of Nigerian government's debt on economic growth using data from 1982 to 2017. The result showed that external debt negatively impacts the economy while internal debt positively does the same.

Kolade (2019) examined the impact of foreign direct investment on economic growth in Nigeria using annual data from 1986 to 2017. The study employed both descriptive and regression analysis to capture the stated objectives. The finding of the study revealed that FDI has a significant impact on economic growth.

Hakimi, Boussaada and Karmani (2019) examined the relationship among external debt, investment and economic growth in low-income countries using data over the period of 2000 and 2017. The study applied regression analysis to explore the nexus among external debt, investment and economic growth. Empirical results of the seemingly unrelated regressions model indicate that external debt significantly decreases investment and economic growth for both the total sample and the sub-samples. In addition, the study showed that trade openness is positively and significantly related to the level of growth per capita. Findings also indicate that the level of growth exhibited a positive and significant effect on investment for the total sample and for less indebted countries.

Daniel and Kojo (2020) employed dynamic panel using generalized method of moment estimation approach to examine the role of external debt and foreign direct investment play in influencing financial development in Africa. The study made use of annual data sourced from World Bank Development Indicator spanning from 2002 to 2015.The result of the study

revealed that external debt and foreign direct investment have a significant positive relationship with financial development in African economies.

Ayenew (2022) investigated the effect of foreign direct investment on the economic growth in sub-Saharan African countries. The study employed PMG/ARDL model to estimate the model of the study. The result revealed that foreign direct investment has favourable and significant effect on the growth of SSA,

Abdillahi and Mohd (2021) explored the impact of foreign direct investment inflows on Ethiopia's economic growth using 36 years' time series data. The study utilised vector auto regression (VAR) model to estimate the connection between foreign direct investment and the economic growth. The results of the VAR model found FDI to have a positive and significant effect on GDP.

Ajuh and Edith (2021) explored impact of external debt on economic growth in Nigeria using annual data spanning from 1985 to 2018. The study made use of using vector autoregressive (VAR) approach as the econometric tool to capture the stated objective. The result of this study revealed that both external debt stock and external debt service exerted a negative and significant impact on economic growth.

Gigamon and Zhejiang (2022) examined the relationship external debt and foreign investment in Ghana. The study utilised ARDL model as econometric technique to the relationship between external debt and foreign direct investment in Ghana. The study revealed that the external debt indicators have a substantial negative long-run influence on foreign direct investment inflows. On the other hand, economic growth, measured by the gross domestic product, has a substantial positive effect on foreign direct investment inflows. External debt has a detrimental impact on foreign direct investment, while improvement in the country's economic performance promotes foreign direct investment inflows.

Azolibe (2022) analysed the relationship between external debt accumulation and foreign direct investment inflows in Sub-Saharan Africa. Panel fixed effects and the Generalized Method of Moments estimation technique were employed in this study in order to address the potential issue of endogeniety. The results of the fixed effects and GMM analysis exhibited a significant negative relationship between external debt accumulation and FDI inflows in SSA countries. The result of the interaction of external debt with macroeconomic variables such as corporate tax, infrastructure development, economic growth and military expenditure revealed a positive interaction effect between external debt and infrastructure development on FDI.

3.0 RESEARCH METHODS AND MATERIALS

3.1 Theoretical Framework

Dual Gap Model

Dual gap model is also known as Two-gap model. Dual gap model is an extension of Harrod-Domar growth model. The model introduces the flow of foreign capital to the analysis of Harrod-Domar so as to explain the role of foreign exchange required to import capital and intermediate goods and raw materials needed for industrial growth. The model added the term for foreign trade balance (namely imports minus exports) as percentage of national income. The extended Harrod-Domar model is given as

$$g = \frac{s}{k} + \frac{b}{k} \quad \text{Where b=} \frac{Imports - Exports}{National\ Income}$$

Stated below is the national income account identity of an open economy.

Y = C + I + (X - M) where: Y =GNP

Where Y= GNP; C= Consumption; I= Investment (or Domestic Capital formation)

X = Exports; M = Imports

Now,

(Sources of resources used in the economy) =uses of resources in the Economy;

Expenditure Targets Y + M=C+I+X

Subtracting C from both sides we get:

Y – C + M = I + X

Since Y – C = S Where: S = Savings (domestic)

Then,

S + M = I + X

(Withdrawals) = (Injections)

This relationship can be restated as follows

M – X = I – S

(Foreign Exchange Gap) = (Savings Gap)

These two constitute two separate constraints. Eliminating one does not get rid of the other.

Note: The analysis rests on the premise that domestic investment can be financed by domestic saving as well as through inflows of capital.

3.2 Model Specification

RGDP=f(LF,GCF,EDT,GCE,GDS and INF)

Where RGDP=Real Gross Domestic Product, LF=Labour Force, GCF= Gross Capital Formation, EDT=External Debt, GCE=Government Capital Expenditure, GDS= Gross Domestic Saving and INF=Inflation.

3.3 Estimation Techniques

This study employed Johansen Co-integration analysis and Vector Error Correction Model to capture the stated objectives of this study. In line with Gujariti (2009), the Phillip-Perror test is employed to test for the unit root and to determine the stationarity. Johansen Co-integration Analysis and Vector Error Correction Model were employed to assess the short and long run relationship between the variables concerns in the study

3.4 Sources of Data

Secondary data was used for this study. The data like foreign direct investment, external debt, trade openness and real exchange rate total were sourced from Central Bank of Nigeria while interest rate and inflation were sourced from the Federal Bureau of Statistics.

4.0 RESULTS AND DISCUSSION

Table 1: Descriptive Analysis

	RGDP (₦' Billion)	LF (Million)	GCF (₦' Billion)	FDI ($' Billion)	EDT (₦' Billion)	GCE (₦' Billion)	GDS (₦' Billion)	INF (%)
Mean	79,807	54,188,336	9,850,000	4,190	37,500	5,337	17,400,000	11.5
Std. Dev.	53,981	6,341,422	1,370,000	2,530	20,800	1,792	9,510,000	3.3
Maximum	185,632	64,496,161	11,900,000	8,840	83,800	9,177	35,300,000	17.9
Minimum	11,501	43,663,607	7,540,000	775	13,000	2,451	3,350,000	5.4
Skewness	0.4727	0.0672	-0.2276	0.4859	0.8363	0.3311	0.3615	0.0321
Kurtosis	2.0555	2.0080	1.7885	1.9625	2.6213	2.3032	2.1624	2.2491
Observations	31	31	31	31	31	31	31	31

Source: Author's Compilation (2023)

The study made use of eight (8) variables ranging from 1992 to 2022 indicating 31 years' time lag as the mean values ranges from Inflation rate (INF) 11.5 percent being the lowest to real gross Domestic Product (RGDP) ₦79.80bn with the highest average value. Furthermore, the standard deviation which is a measure of variability of a variable away from its mean revealed that all the variables used in the study are clustered around their respective mean values. Notwithstanding, Real gross Domestic Product (RGDP) has the highest maximum value of ₦185.63bn while Inflation rate (INF) has the lowest minimum value of 3.3 percent. The skewness from the table above were positive except gross capital formation (GCF). Real Gross Domestic Product (RDGP), Foreign Direct Investment (FDI), External Debt (EDT), Government Consumption Expenditure (GCE) and Gross Domestic Savings (GDS) were positively skewed implying that their respective skewness values were considerably greater

than zero. It is also important to note that Gross Capital Formation (GCF) has a negative skewness value of 0.2276 indication of the distribution being asymmetry. Furthermore, the study revealed all the variables used have positive kurtosis values which indicate the distribution is more peaked than normal.

4.1 Correlation Matrix

Table 4. 2: Correlation Matrix

Probability	RGDP	LF	GCF	FDI	EDT	GCE	GDS	INF
RGDP	1.0000							
LF	0.975959	1.0000						
	0.0000							
GCF	0.822711	0.802051	1.0000					
	0.0000	***0.0000***						
FDI	-0.446079	-0.2946	-0.410772	1.0000				
	0.0427	***0.1949***	***0.0644***					
EDT	0.784078	0.679677	0.537525	-0.777668	1.0000			
	0.0000	***0.0007***	***0.012***	***0.0000***				
GCE	0.140928	0.177521	0.21154	0.09534	0.100943	1.0000		
	0.5423	***0.4414***	***0.3573***	***0.681***	***0.6633***			
GDS	0.932842	0.931365	0.805208	-0.292047	0.668712	0.232732	1.0000	
	0.0000	***0.0000***	***0.0000***	***0.1989***	***0.0009***	***0.31***		
INF	-0.286932	-0.270792	-0.405808	-0.077765	-0.050916	-0.240969	-0.353152	1.0000
	0.2073	***0.2351***	***0.068***	***0.7376***	***0.8265***	***0.2927***	***0.1163***	

Source: Author's Compilation (2023)

N.B: Numbers in bold are probability values

In the table 4.2 above, the correlation matrix indicates the existence of a strong and positive relationship between Real Gross Domestic Product (RGDP) and Labour Force (LF) with a correlation coefficient of 0.975959. This is also applicable to Gross Capital Formation (GCF), External Debt (EDT) and Gross Domestic Savings (GDS). It is vital to note that these relationships as stated above are highly significant. On the other hand, Foreign Direct Investment (FD) and Inflation Rate (INF) negatively correlate with real Gross Domestic Product (RGDP) in an insignificant magnitude. Table 4.2 also reveals that there is a positive but insignificant relationship between Real Gross Domestic Product (RGDP) and Government Consumption Expenditure (GCE). This implication of this result is that there is absence of multicollinearity amongst the variables used.

4.2 Augmented Dickey Fuller (ADF) Unit Root Test

Augmented Dickey-Fuller Test

Variable	Levels I(0)	Prob. Value	First Difference I(1)	Prob. Value	Decision
RGDP	0.006711	0.9931	-4.464878**	0.0114	Stationary at first difference
LF	-0.403068	0.8909	-3.516962**	0.0191	Stationary at first difference
GCF	-0.939819	0.7493	-4.114060**	0.0064	Stationary at first difference
FDI	-2.290676	0.1861	-4.812205*	0.0013	Stationary at first difference
EDT	1.227937	0.9971	-2.064722**	0.0404	Stationary at first difference
GCE	-2.621016	0.1054	-5.055990*	0.0008	Stationary at first difference
GDS	-1.066821	0.7076	-4.449300*	0.0041	Stationary at first difference
Lnf	-0.795525	0.3587	-4.224033*	0.0004	Stationary at first difference

N.B: ** p<0.05, * p<0.1

Source: Author's Computation (2023)

The stationarity test (i.e., Augmented Dickey-Fuller) results as indicated in the Table 4.3 revealed that all variables used in the study were stationary at first difference with RGDP, LF, GCF and EDT being significant at 5 percent level while FDI, GCE, GDS, and INF are significant at 1 percent level. This result therefore validates the choice for the use of Vector Error Correction Model (VECM) for further analysis of this study.

4.3 Johansen Cointegration Test

Table 4.4: Johansen Cointegration Test (Trace Statistics)

maximum rank	Parms	LL	Eigenvalue	trace statistic	5% critical value
0	8	-240.669		223.1822	156
1	23	-209.609	0.8739	161.0617	124.24

2	36	-184.199	0.81621	110.2423	94.15
3	47	-163.306	0.75163	68.4567*	68.52
4	56	-148.735	0.62145	39.3144	47.21
5	63	-138.033	0.51007	17.9094	29.68
6	68	-131.656	0.3463	5.1562	15.41
7	71	-129.318	0.14436	0.4791	3.76
8	72	-129.078	0.01584		

Source: Author's Computation (2023)

Trace Statistics is used in the Johansen test for this cointegration framework. The result in the Table 4.4 showed that there is presence of cointegration in the model used. This affirms the fact that there are at least three cointegrating equations in the model due the first three maximum rank (i.e., null hypothesis) trace values are greater than their respective critical values. This is a clear indication that the method of estimation (i.e., Vector Error correction Model) is an appropriate estimation technique for study.

4.4 Vector Error Correction Model (VECM)

Table 4.5: Long Run estimates

Variables	Coef.	Std. Err.	Z	Prob. Value
RGDP	1			
LF	-2.76677	7.939649	-0.35	0.727
INF	-6.32961	0.496332	-12.75	0.000
GDS	-6.37683	1.306122	-4.88	0.000
GCF	-0.52841	0.029247	-18.07	0.000
GCE	0.039832	0.002997	13.29	0.000
FDI	5.712822	0.517102	11.05	0.000
EDT	8.769971	0.934353	9.39	0.000

Constant	-89.03			

Source: Author's Computation (2023)

In the table 4.5, the long run results revealed that all the variables except labour force (LF)are significant at 5% level of the significance. Table 4.5 showed that there is negative relationship between labour force (LF), inflation (INF), GDS, GCF and economic growth while GCE, FDI and EDT exert positive impact on economic growth.

Table 4.6: Short Run Estimate

Variable	Coefficient	Std. Error	Z	Prob. Value
ECT(-1)	-0.00341	0.00399	-0.85	0.393
RGDP (-1)	0.579018	0.160772	3.6	0.000
LF(-1)	-0.19985	1.570358	-0.13	0.899
INF(-1)	0.140837	0.044756	3.15	0.002
GDS(-1)	0.021897	0.087858	0.25	0.803
GCF(-1)	-0.00243	0.001838	-1.32	0.186
GCE(-1)	0.000229	0.000163	1.4	0.161
FDI(-1)	0.084711	0.041548	2.04	0.041
EDT(-1)	-0.11434	0.108275	-1.06	0.291
Constant	0.085265	0.044677	1.91	0.056

Source: Author's Computation (2023)

In the table 4.6, the short run results are completely divergent. None of the variables is significant though, LF and GCF still maintain negative relationship with economic growth while FDI and GCE also exert positive relationship with economic growth in Nigeria.

4.5 Diagnostic Tests

Table 4.7a: Autocorrelation LM test

lag	chi2	Df	Prob > chi2

1	82.1939	64	0.06244
2	77.9094	64	0.11349

Source: Author's Computatio(2023)

Table 4.7b: Jarque-Bera test (Normality Test)

Equation	**chi2**	**Df**	**Prob > chi2**
D_lnRGDP	13.283	2	0.00131
D_lnLF	19.133	2	0.00007
D_lnINF	2.636	2	0.26772
D_lnGDS	2.058	2	0.3574
D_lnGCF	10.556	2	0.0051
D_lnGCE	7.87	2	0.01955
D_lnFDI	3.134	2	0.20862
D_lnEDT	0.22	2	0.89589
ALL	58.888	16	0.178800

Source: Author's Computation (2023)

With respect to the post estimation in the Table 4.7a and 4.7b, the autocorrelation LM test which checks for the presence of serial correlation in the residual in the model suggest the existence of no significant presence of serial correlation in the residuals based on the probability value greater than 5 percent significance level while Jarque-Bera test helps to determine if the residuals in the model have normal distribution and it showed that overall the residuals of the model are normally distributed respectively.

5.0 CONCLUSION AND RECOMMENDATIONS

This study examined the relationship among foreign direct investment, external debt and economic growth in Nigeria. The results of this study showed that in the short run, the major variables involved in the study were not significant but in the long run all these variables were significant except labour force. In the long run, the VECM results revealed that there is significant positive relationship between GCE, FDI, EDT and economic growth while there is

negative relationship between labour force (LF), inflation (INF), GDS, GCF and economic growth. In line with these findings, the study concludes that FDI, EDT and GCE are strong factors capable of contributing substantially to the growth of Nigeria. Based on the findings and conclusion of this study, the study recommends that the government should effectively channel her resources including the external debt on productive sectors and while spending on capital projects, it should be properly monitored. Moreover, the government should encourage FDI inflow into the country for it serves as a conduit for the transfer of technology, machines, knowledge and skills from industrialized to developing countries' manufacturing sector which will lead to the growth of the economy most especially manufacturing sector. Besides, government should adopt policy measures such as fiscal and monetary policies that can enhance savings and also boost capital formation in Nigeria.

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