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FINANCIAL DEEPENING AND FOREIGN DIRECT INVESTMENT IN NIGERIA

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ABSTRACT : This study examined the impact of FDI on financial deepening in Nigeria from 1980 to 2022. The research questions address the trend of FDI and financial deepening in Nigeria and the relationship between the two variables. The study will used econometrics analysis basically cointegration and error correction model to estimate the relationship between FDI and financial deepening . The findings of this researchrevealed that foreign direct investment exert significant impact on financial deepening in Nigeria along the long run and short run horizon. The findings have implications for policymakers, the Nigerian government, investors, and businesses. Understanding the impact of FDI on financial deepening helpssuggests appropriate policy measures and strategies to enhance Nigeria's financial sector and spur economic growth. Additionally, the study contributes to the existing literature on FDI and financial deepening, providing valuable insights for future research in this area.

KEY WORDS: *Foreign Direct Investment; Financial Deepening; Relationship*

I. INTRODUCTION

Many African countries are improving their business climate to attract FDI (Ayanwale 2007). The role and importance of FDI in financial development and economic growth in developing countries cannot be overemphasized. This has motivated developing economies like Nigeria to attract FDI as an important source of capital through various economic policies over the years. For instance, the Nigeria Investment Promotion Commission (NIPC) Act enacted in 1995 is responsible for promoting and coordinating investments in Nigeria, providing investors with information and guidance on investment opportunities, and facilitating approvals; the Presidential Enabling Business Environment Council (PEBEC) in 2016 is aimed at reducing bottlenecks and bureaucracy that often hinder business operations in Nigeria. Additionally, and most recently, the Africa Continental Free Trade Agreement (AfCFTA) in 2019 aimed to create a single market for goods and services in Africa, enhance economic integration, and stimulate foreign investments. All these policies were put in place to attract FDI to Nigeria. Despite the significant inflow of foreign direct investment (FDI) into Nigeria in recent years, the country's financial sector remains underdeveloped, with limited access to financial services and low levels of financial inclusion, which have left the economy still dwindling.

According to recent data from CBN, financial markets have been fluctuating over time. For instance, financial deepening increased between 1981 and 1988 from 10.4% to 12.2% and later declined to 9.6% in 1990. Between 1991 and 1994, financial deepening increased to 13.0% and later declined to 8.5% in 1996. Additionally, financial deepening moves to 15.4% in 2001 before it declines to 11.4% in 2005. Though Nigeria’s financial deepening fluctuated substantially in recent years, according to CBN data, moving to 24.9% in 2017, it tended to decrease through the 2018–2021 period, ending at 22.1% in 2021. The problem of macroeconomic instability has continued to be a hindrance to the development of the financial sector in Nigeria. Frequent policy reversals have caused disinvestment in the financial and real sectors, which has negatively affected macroeconomic performance (Nnanna, Englama, and Odoko 2004; cited by Oriavwote&Eshenake 2014). The level of financial deepening necessary to attract the reservoir of savings and idle funds and the efficient allocation of funds to entrepreneurs, businesses, households, and the government for investment projects and other purposes has not been attained despite the FDI inflow to the economy. There are still challenges with a shortage of investment finance for investors, and the economy continues to borrow to bridge the finance-investment gap (Ihekuna, 2017). Although Nigeria's financial sector faces several challenges, including low levels of financial literacy, a large informal sector, and inadequate infrastructure (Keykanloo, 2020), which may limit the impact of FDI on financial deepening,

As the government continues to put forth policy efforts to attract FDI into the economy, it was expected that the financial sector should have been more deepened and developed, but this is not the case in Nigeria; the financial sector is still slow in development, and has affected the overall performance of the economy. This has

generated interest in examining the relationship between FDI and financial deepening in Nigeria and determining the extent to which FDI has contributed to the development of the country's financial sector.

However, the existing literature on FDI and financial deepening is mixed. A few papers have considered these two variables together, such as Ihekuna et al. (2017), Henri et al. (2019), and Farouq &Sulong (2020). Some studied the impact of foreign direct investment on economic growth (Awe, 2013; Giwa et al., 2020; Babarinde, 2020), while others considered financial deepening and economic growth (Omran and Bolbol, 2003; Oniore, 2014; Farouq et al., 2020). However, some have studied the impact of financial deepening on foreign direct investment, such as Keykanloo et al. (2019). This study, therefore, departs from the above studies because it focuses on foreign direct investment and financial deepening in Nigeria from 1980 to 2022.

II. LITERATURE REVIEW

Adam (2022) also examined the nexus between foreign direct investment (FDI), financial development, and sustainable economic growth in Sudan. The study used time series secondary data from 1990 to 2020. The study employed co-integration, Granger causality, and VAR error correction technique to estimate the models, to showcase the relationship between FDI and its effect on the financial sector and subsequently attaining a sustainable economic development in Sudan. The results showed that there's evidence of observed causality running from the country's trade openness and the financial sector's development. The study further indicated that there is a complementary relationship between sustainable economic growth and both financial development and trade openness in the short run. Interestingly, the findings of the study showed that the effect of financial development on economic growth is further enhanced by the inflows of FDI.

A study conducted by Nkoro and Uko (2023) examined the role of the domestic financial sector development in the relationship between foreign direct investment (FDI) inflows and inclusive growth in Nigeria using annual time series data over the period 1981-2020. Their result revealed that the FDI exerted a significant positive effect on inclusive growth when the domestic financial sector has reached a certain minimum level of development. The result further showed that the FDI alone presents a significant negative effect on inclusive growth. It therefore indicated that the domestic financial sector development is a pre-condition for FDI to effectively promote inclusive growth in Nigeria.

Farouq and Sulong (2021) investigated the dynamic effects of foreign direct investment uncertainty on financial development in Nigeria and the interacting role of financial inclusion and economic growth. The study used annual time series data of Nigeria covering the period 1970 to 2018. They applied Gregory and Hansen (1996) co-integration test, Non-linear ARDL as the elasticity estimator, and Diks and Panchenko (2006) causality test for the analysis. The study found a non-linear uni-directional causality running from economic growth to financial development, foreign direct investment uncertainty to financial development, and financial inclusion to financial development. The asymmetric estimation result revealed that the coefficients' values concerning both the positive and negative composition of financial globalization uncertainty about the response of financial development record 31% in terms of the positive dimension and 33% in terms of the negative composition. The study recommended that Nigerian policymakers to look outside the box and come up with reforms and policies that will help its local financial sector and protect the domestic investors from being able to compete extensively even when more foreign capital flows gain its way into the economy, thereby regulating the flows and making sure that the resources are not only concentrated in one primary sector, but rather, it should be diversified to other productive sectors to increase the real sector activities.

Giwa, George, Okodua and Adediran (2020) assessed the effects of FDI on Nigeria's real sector growth. The model constructed in the study was estimated using the robust GMM estimation technique. The result of the study showed that labour quality has a positive and significant effect on RGDP in line with theory. Also, it was noted that capital intensity displayed a significant negative effect on RGDP in Nigeria. This study recommended that policy makers in Nigeria should incorporate into her broad policy, improvement in capital intensity as a bedrock to growing the economy through FDI spillover effects.

In the study of Babarinde (2020), where he investigated the growth effects of foreign direct investment and financial deepening in Nigeria for the period 1981-2021 in which he employed pairwise granger causality test and autoregressive distributive lag (ARDL) model for his data analysis. The result of the study revealed that foreign direct investment (FDI) has positive significant effect on economic growth in Nigeria both in the short and long runs while financial deepening measured as ratio of broad money supply to GDP has positive significant effect on GDP in Nigeria in the long run but the position is reversed to negative and non-significant in the short run. However , in the long run financial deepening indicator-credit to private sector as a ratio of GDP, has a negative non-significant effect on GDP in Nigeria while its influence is absent in the short run. The further reveals a unidirectional causality from FDI to GDP likewise from GDP to the two financial deepening indicators. He concluded that foreign direct investment and financial deepening has a positive growth effects in Nigeria with causality flowing from FDI to economic growth and the latter granger causing financial deepening in Nigeria. The study, however recommended that Nigeria Government to develop the financial system and implement policies to stimulate FDI inflows to the country.

The study of Kpoghul, Okpe, and Anjande (2020) investigated the tripartite relationship between trade openness, foreign direct investment and the performance of the Nigerian economy within a framework of macro econometric model. They employed secondary data spanning from 1970 to 2018 for within sample forecast and a five-year out-of-sample forecast, spanning from 2019 to 2023 under four policy scenarios in line with the Economic Recovery and Growth Plan (ERGP). They found that trade openness attracts foreign direct investment and affect macroeconomic performance in Nigeria through direct and indirect channels. Furthermore, the simulation results established that increase trade openness, FDI, government expenditure and broad money supply would bring about increase in the endogenous variables such as private investment, real consumption, outputs of oil and non-oil, significant increase in non-oil exports, and government revenues among others. They recommended that in line with ERGP, government should build a globally competitive economy and improves on the business environment; there should be diversification from oil to non-oil and from narrow gauge primary exports to finished products; CBN should ensure macroeconomic stability as a strategy for trade openness and attraction of FDI.

The study of the impact of Foreign Direct Investment (FDI) on financial deepening in Nigeria from 1981 – 2013 using the Ordinary Least Squares (OLS) technique was conducted by Ihekuna (2017). In the study, financial deepening in the stock market was measured by the ratio of the value of stock traded to GDP, while the ratio of money supply to GDP was used to measure financial deepening in the money market. Whereas, the sum of the ratio of domestic credit to private sector to GDP and the ratio of stock market capitalization to GDP was used to measure the entire financial sector deepening. The result showcase that FDI had significant positive impact on financial deepening in the stock and money market. It was also found that FDI has a positive impact on the entire financial sector deepening. The result also showed that trade openness had positive significant impact on the stock market, money market and the entire financial sector deepening. But interest rate had negative impact on financial deepening in the stock and money markets except the entire financial sector deepening that was affected positively. The study recommended that the capital market should be highly capitalized such that foreign institutional investors can invest in Nigeria which would result to increasing investment and improvement in the volume and structure of savings and consequently further deepens the real sector and capital market finance.

In investigating the effect of FDI on domestic investment in Nigeria. Aigheyisi (2017) employed Granger causality test and DOLS estimation technique to the effects of interactions between FDI and financial system development. The empirical evidence indicated no short run causal relationship between FDI and domestic investment in the country. It also indicated that the long run effect of FDI on domestic investment is positive, but not statistically significant. It however reveals that when interacted with financial system development, FDI positively and significantly affects domestic investment. Further evidence from the study revealed that low rate of inflation is favourable to domestic investment whereas high rate of inflation adversely affects domestic investment. Trade openness is also observed to negatively affect domestic investment in the country. The study recommended that there should be proper regulation of the financial system to enhance its development in Nigeria.

Adigwe, Ezeagba, and Udeh (2015) determined the relationship between foreign direct investment, exchange rate and gross domestic product in Nigeria. Time series data were collected for the study from CBN Statistical Bulletin from 2008 to 2013. They employed Pearson Correlation to test the hypothesis. The findings revealed that there is a significant relationship between FDI, EXR and GDP. The result indicated that economic growth in Nigeria is directly related to foreign direct investment and exchange rate. The authors recommended that there is need for government to be formulating investment policies that will be favorable to local investors to compete with the inflow of investment from foreign countries.

Oniore (2014) also examined the impact of financial deepening; foreign direct investment on economic growth in Nigeria from 1981 to 2012. In the study, Augmented Dickey-Fuller (ADF) test was employed for unit root test and the variables were found to be stationary in their first difference, the Johansen co-integration technique indicated the presence of co-integration among the variables. He also employed the Vector Error Correction Model (ECM). The study concluded that private sector credit, liquidity ratio and foreign direct investment have a statistically significant influence on economic growth. But the ratio of broad Money (M2) to GDP which indicates the overall size of the financial intermediary of a country exerts a negative impact on economic growth. It was concluded in the study that it is important to sustain the influence of finance on growth in Nigeria which requires the sustenance of present reforms in the financial sector as well as guiding against excess money supply on part of the monetary authorities.

Using the two-stage least squares (2SLS) method of simultaneous equation model, Awe (2013) investigated the impact of foreign direct investment on economic growth in Nigeria for the period 1976 to 2006. The study found a negative relationship between economic growth proxied by Gross Domestic Product (GDP) and Foreign Direct Investment (FDI) as a result of insufficient FDI flow into the Nigerian economy. It was recommended that Nigeria should encourage domestic investment to accelerate growth rather than relying on

FDI as a primer mover of the economy and develop a code of conduct on FDI to curb the restrictive business practice of multinationals and limit their repatriation of profits from Nigeria.

III. METHODOLOGY

Model specification is the expression of a relationship into a precise theoretical, mathematical, and econometrical form. Economic theory does not indicate the functional form of any relationship, it means that economic theory does not state whether a relationship will be expressed in linear, quadratic, or cubic form (Goldberger, 1964). In the analysis of this study, the model modified for assessing the impact of foreign direct investment on financial deepening was captured from the study of Ihekuna (2017) "the impact of foreign direct investment on financial deepening in Nigeria". The model assumes an underlying relationship between some macroeconomic variables that can induce the depth of the financial sector. The model is thus given as:

$$CPSGPD = f(FDI, TOP, RIR) \quad (1)$$

$$CPSGPD = b_0 + b_1FDI + b_2TOP + b_3RIR + \mu_t \quad (2)$$

Where; CPSGDP = credit to private sector as a ratio of GDP, TOP = trade openness, RIR = the real interest rate and μ_t = stochastic error term.

By modifying equation (2) such that CPSGDP is replaced by FD as the dependent variable; and by introducing gross fixed capital formation (GCF), and gross domestic product (GDP) as control variables. Thus, the mathematical form of the model is given as:

$$FD = b_0 + b_1FDI + b_2TOP + b_3RIR + b_4GCF + b_5GDP \quad (3)$$

The econometric form of the model is specified as:

$$FD = b_0 + b_1FDI + b_2TOP + b_3RIR + b_4GCF + b_5GDP + \mu_t \quad (4)$$

Where FD = financial deepening, FDI = foreign direct investment, TOP = trade openness, RIR = real interest rate, GCF = gross fixed capital formation, GDP = gross domestic product, and μ_t = stochastic error term. Furthermore, b_1, b_2, b_3, b_4, and b_5 are the coefficients of FDI, TOP, RIR, GCF, and GDP respectively. Whereas, b_0 is the constant intercept of FD.

Sources and Methods of Data Collection

The objective of this study is to investigate the impact of foreign direct investment on financial deepening in Nigeria. As a result, secondary data from the period of 1981 to 2022 is the basis of data used in this study, and they were sourced mainly from the Central Bank of Nigeria and the World Bank database.

Measurement of variables

In measuring variables employed in this study, the financial deepening (FD) is measured by credit to private sector as a ratio of GDP which is the dependent variable. The explanatory variables on the other hand are measured as follow; foreign direct investment is measured by the volume of net FDI flows as a ratio of GDP (FDI/GDP), the trade openness (TOP) is measured by the sum of export and import growth rate all divided by the real GDP growth rate, the real interest rate (RIR) is measured by the percentage real interest rate, the gross fixed capital formation (GCF) is measured by the gross fixed capital formation as a percentage of GDP, and the gross domestic product (GDP) is measured by real gross domestic product (GDP) growth rate.

Preliminary Analysis

The preliminary analysis is performed to show the characteristics or inherent behaviors of the variables under consideration. The preliminary test is sub-divided into (a) Trend analysis which helps to capture the trend event of the time series variables, and this will help us in the assessment of variable movements over time. (b) Descriptive analysis helps to capture the inherent statistical behavior of the series. The parameters include; mean, median, mode, minimum, maximum, standard deviation, skewness, kurtosis, and Jacque-bera. (c) Correlation analysismeasures the degree of association among variables employed in the study. The degree of correlation can either be positive or negative. Other pre-estimation tests are:

Unit Root Test

The first step for an appropriate econometric analysis is to determine if the data in the series are stationary or not. The unit root test is a preliminary econometric criterion that measures the level of stationarity of the variables under consideration. Time series data can either be stationary or non-stationary. In stationary time series, shocks will be temporary and over time their effects will be eliminated as the series revert to their long-run mean value. On the other hand, non-stationary time series will necessarily contain permanent components (Asteriou& Hall, 2007). However, time series analysis must be stationary to make predictable and stable economic policies and recommendations and also forecast for the future.

Two important statistics are used to evaluate the unit root test for this study namely; the Phillip Perron (PP) test and the Augmented Dickey-Fuller (ADF) test. To determine the position of stationarity using ADF and PP test, if the absolute value of the ADF or PP test statistic is greater than the critical value at the 1%, 5%, or 10% alpha level of significance, then the variables are stationary either at the level I(0), at the first difference I(1) or second difference I(2). The unit root test was conducted with intercept specification case and Schwartz Information

Criterion (SIC) automatic lag selection for the ADF test, while the PP test was conducted with Bartlett Kernel spectral estimation method and Newey-West Bandwidth using Eviews.

Cointegration Test

The cointegration test is an econometric technique used in the testing correlation between non-stationary time variables. Two series are co-integrated if they both move together along a trend at the same rate. Cointegration talks about the convergence of an econometric system to the existence of a long-run equilibrium relationship over time. In a time series analysis, we often encounter situations where we wish to model one non-stationary time series (Y_t) as a linear combination of other non-stationary time series (X_{1t}, X_{2t}, ……. X_{kt}). In other words;

$Y_t = b_0 + b_1X_{1t} + b_2X_{2t} + \ldots\ldots\ldots + b_kX_{kt} + U_t$ 5

In general, a regression model for non-stationary time series variables gives spurious (nonsense) results. The only exception is if the linear combination of the dependent and independent variables eliminates the stochastic trend and produces stationary residuals, such that $Y_t + y_1X_{1t} + y_2X_{2t} + \ldots\ldots\ldots + y_kX_{kt} \sim I(0)$.

The study employed an F-bounds cointegration test, and the first step in the ARDL bounds testing approach is to estimate the model by Ordinary Least Squares (OLS) to test for the existence of a long-run relationship among the variables by conducting an F-test for the joint significance of the coefficients of the lagged levels of the variables, that is:

H_0: $\partial_1 = \partial_2 = \partial_3 = \partial_4 = \partial_5 = \partial_6 = \partial_7 = 0$against the alternative hypothesis

H_1: $\partial_1 \neq \partial_2 \neq \partial_3 \neq \partial_4 \neq \partial_5 \neq \partial_6 \neq \partial_7 \neq 0$

Two asymptotic critical value bounds provide a cointegration test when the independent variables are I(d) [where $0 \leq d \leq 1$]: a lower value assuming the regressors are I(0) and an upper value assuming purely I(1) regressors. If the F-statistic is above the upper critical value, the null hypothesis of no long-run relationship can be rejected irrespective of the orders of integration for the time series. Conversely, if the test statistic falls below the lower critical value, the null hypothesis cannot be rejected. Finally, if the statistic falls between the lower and upper critical values, the result is inconclusive.

Model Estimation Technique

This study adopts the ARDL-ECM bounds-test cointegration procedure to estimate the short-run and long-run relationship among the variables under consideration. Pesaran et al. (2001) proposed an Autoregressive Distributed Lag (ARDL) bounds testing approach to investigate the existence of a cointegration relationship among variables. The ARDL-ECM model is specified below.

$$\Delta FD_t = c_0 + \partial_1 FD_{t-1} + \partial_2 FDIt_1 + \partial_3 TOP_{t-1} + \partial_4 RIR_{t-1} + \partial_5 GCF_{t-1} + \partial_6 GDP_{t-1} + \sum_{i=1}^{p} \varphi i \Delta FD_{t-i} + \sum_{j=0}^{q} \phi j \Delta FDI_{t-j} + \sum_{l=0}^{q} \Omega l \Delta TOP_{t-l} + \sum_{n=0}^{q} \omega n \Delta RIR_{t-n} + \sum_{r=0}^{q} \beta r \Delta GCF_{t-r} + \sum_{s=0}^{q} \alpha s \Delta GDP_{t-s} + \eth ECM_{t-1} + \varepsilon_t \quad 6$$

Where; ∂_i = long run multiplier (i = 1, 2, 3, 4, 5, 6, 7)

C_0 = the intercept

ε_t = white noise.

In equation (14), φ, ϕ, Ω, ω, β, and α were the short-run dynamic coefficients of the model Convergence to equilibrium $\eth$ is the speed of adjustment, and ECM is the error correction model of lag one. Notably, the ARDL-ECM model for the static and the dynamic impact was estimated in the form of general to specific approach using the Ordinary Least Squares framework.

IV. RESULTS AND DISCUSSION

Unit Root Test of Stationarity

Economic variables are generally non stationary and random in nature as a result of linear combinations of variables closely associated with economic theory. In order to assess the time series properties of variables employed in this study, the unit root test was employed using augmented dickey fuller (ADF) and Philip Perron (PP) test statistic. To achieve the second objective of this study which focuses on the assessment of the impact of foreign direct investment on financial deepening in Nigeria, it is assumed that all variables must be stationary at level I(0) and at first difference I(1) to be able to employ autoregressive distributed lag (ARDL) model.

Table 1 Summary of ADF Test Summary of PP test

Variable	Level	First Diff.	Order of Integration	Level	First Diff.	Order of Integration
LNCPS	-0.810183 (0.8051)	-4.522632** (**0.0008**)	I(1)	-0.853222 (0.7926.)	-4.461476** (**0.0010**)	I(1)
LNFDI	-1.306740 (0.6168)	-10.13397** (**0.0000**)	I(1)	-1.644234 (0.4512)	-10.12497** (**0.0000**)	I(1)
LNGCF	-1.328343 (0.6067)	-3.662540** (**0.0087**)	I(1)	-1.474438 (0.5361)	-3.486106** (**0.0137**)	I(1)
LNGDP	-1.366183 (0.5887)	-3.459477** (**0.0147**)	I(1)	-1.045981 (0.7273)	-3.385016** (**0.0176**)	I(1)
INT	-7.455406** (**0.0000**)	_____	I(0)	-7.225296** (**0.0000**)	_____	I(0)
TOP	-2.350457 (0.1619)	-7.674976** (**0.0000**)	I(1)	-2.350457 (0.1619)	-7.674976** (**0.0000**)	I(1)
Test critical values:	1% level	**-3.724070**				
	5% level	**-2.986225**				
	10% level	**-2.632604**				

***MacKinnon (1996) one-sided p-values.**

Source: *Author's Computation using Eviews, 2023. P-values in brackets ()*

From table 4.3 above, it can be deduced that FD, FDI, GCF, GDP and TOP are non-stationary at level I(0) for both ADF and PP test using the case of constant intercept, as their respective critical values are less than 5% MacKinnon critical value. However, after the difference of the variables were taken, they were found to be stationary at first difference I(1) for both ADF and PP tests with p-values less than 5% significant level. Notably, INTis found to be stationary at level I(0). Consequently, Autoregressive distributed lag (ARDL) model can be employed for the analysis of the effect of foreign direct investment on financial deepening in Nigeria.

Lag Selection Test

Another important test to be employed before ARDL analysis is the lag selection criteria. The ARDL models are sensitive to the lag order, and in addition, optimal lag order would be helpful for reliable and consistent result. The table below present the lag length criteria, however, Akaike information Criterion (AIC) or Schwarz Information Criterion (SIC) will be considered for this study.

Table 2:Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-424.5574	NA	156.4401	22.07987	22.33580	22.17169
1	-178.5214	403.7515*	0.003363*	11.30879*	13.10032*	11.95157*
2	-149.9390	38.10982	0.005633	11.68918	15.01630	12.88292

*** indicates lag order selected by the criterion**
LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error;
AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion.

Source: *Author's Computation using Eviews, 2023.*

From table 2 above, following the lag selection criteria test, it can be seen that all the information criterion (LR, FPE, AIC, SC, and HQ) selected lag 1 as the maximum lag length. Consequently, the ARDL model for this analysis would be estimated using lag order one (1). As far as this study is concerned, the appropriate ARDL model selection best fit for lag one (1) using AIC Akaike information criteria is **1,0,1,0,0,0**, because of its significance and accuracy.

Cointegration Test

When a linear combination of variables are stationary at I(0) and I(1) series, then the variables may need to be cointegrated. This means that a long-run relationship may exist among them, which connotes that they may wander from one another in the short run, but in the long run they will move together. To establish whether long-run relationship exists among the variables or not, cointegration test is conducted by employing F-bounds cointegration test developed by Pesaran, Shin, and Smith (2010).

Table 3: F-Bounds Cointegration Test

ARDL Bounds Test
Null Hypothesis: No long-run relationships exist
Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68
Test Statistic	**Value**	**k**
F-statistic	3.907959	5

Source: *Author's Computation using Eviews, 2023.*

The result of the analysis in table 3 indicate that the calculated F-statistic (3.907959) is greater than the upper bound critical value of 3.35, 3.79, at significance level of 10%, and 5%, respectively. It can also be deduced that the F-statistic is greater than lower critical bound at 10%, 5%, 2.5%, and 1% accordingly. Based on this result, it can be concluded that there is evidence of a long-run relationship among the variables incorporated in the model. Having established co-integration relationship, it is pertinent to estimate the ARDL model to assess the short-run and long-run impact of foreign direct investment on financial deepening in Nigeria.

Data Analysis and Discussion of Results

Table 4: Summary of ARDL

Dependent Variable: LNCPS				
Method: ARDL				
Selected Model: ARDL(1, 0, 1, 0, 0, 0)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
LNCPS(-1)	0.613107	0.093549	6.553854	**0.0000**
LNFDI	0.070312	0.030656	2.293555	**0.0285**
LNGCF	-0.340181	0.129997	-2.616845	**0.0134**
LNGCF(-1)	0.336190	0.126385	2.660041	**0.0121**
LNGDP	0.433044	0.108858	3.978059	**0.0004**
INT	0.001510	0.002564	0.588827	0.5601
TOP	-0.001376	0.002906	-0.473444	0.6391
C	-2.503298	1.400837	-1.787001	0.0834
R-squared	**0.998143**	Mean dependent var		6.635387
Adjusted R-squared	**0.997737**	S.D. dependent var		2.753180
S.E. of regression	0.130976	Akaike info criterion		-1.050755
Sum squared resid	0.548947	Schwarz criterion		-0.712979
Log likelihood	29.01510	Hannan-Quinn criter.		-0.928626
F-statistic	2457.242	Durbin-Watson stat		**1.693013**
Prob(F-statistic)	0.000000			

Source: *Author's Computation using Eviews, 2023.*

In line with the Durbin-Watson stat of approximately 1.69 which tends to be greater than the value of R-squared of approximately 0.99, the model is said to be free from spurious regression and serial correlation problem. Furthermore, with the p-value of F-statistic (0.000000), the model is said to be jointly significance. With regards to the R-squared of approximately 0.99, it implies that the changes in explanatory variables in the model explained about 99% of the changes in dependent variable. Consequently, the estimated long-run and short-run result is presented below.

Table 5 Summary of Long-run impact of foreign direct investment on financial deepening

Long Run Coefficients				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LNFDI	0.181735	0.086705	2.096026	**0.0441**
LNGCF	-0.010316	0.132127	-0.078079	0.9383
LNGDP	1.119286	0.047210	23.708567	**0.0000**
INT	0.003903	0.006415	0.608344	0.5473
TOP	-0.003556	0.007196	-0.494190	0.6245
C	-6.470252	3.038625	-2.129336	**0.0410**

Source: *Author's Computation using Eviews, 2023*

From the table 5 above, it can be seen that the foreign direct investment (LNFDI) exertpositive and significant effect on financial deepening (FD) in Nigeria along the long run horizon. With a coefficient of approximately 0.18 unit and a p-value of 0.0441, the result implies that a unit increase in the total foreign direct investment would bring about 0.18 unit rise in financial deepening and vice versa. This result is conformed to the study Aigbyeyisi(2017)who also found a positive relationship between foriegn direct investment and financial deepening in Nigeria.

Furthermore, it can also be deduced from the table 4.7 that the gross domestic product (LNGDP) also exert a positive and significant effect on financial deepening (FD) in Nigeria along the long run horizon. With a coefficient of approximately 1.12 unit and a p-value of 0.0000, the result implies that a unit increase in gross domestic product would bring about 1.12 unitexpansion in financial deepening and vice versa in the long run. This result is in agreement with the economic theory that posited a positive relationship between GDP growth rate and financial development in Nigeria.

Conversely, it can also be seen from table 5 above that the gross capital formation (LNGCF) exhibit negativebutinsignificant effect on financial deepening (FD) in Nigeria along the long-run horizon. With a coefficient of approximately -0.01 unit and a p-value of 0.9383, the result indicates that a unit increase in the gross capital formation would bring about 0.01 unitcontraction in financial deepening and vice versa in the long run. This result is not in line with the economic theory of positive relationship.

Additionally, it can also be seen from the table 5 that the real interest rate (INT) exhibit positivebut insignificant effect on financial deepening (FD) in Nigeria along the long run horizon. With a coefficient of approximately 0.004 unit and a p-value of 0.5473, the result implies that a unit increase in the interest rate would bring about 0.004increase in financial deepening and vice versa. This result is in disagreement with the economic theory which posited an inverse relationship between interest rate and credit to private sector.

Finally, the table 4.7 also reveals that the trade openness (TOP) exert a negative but insignificant effect on financial deepening (FD) in Nigeria along the long run horizon. With a coefficient of approximately -0.004 unit and a p-value of 0.6245, the result indicates that a unit increase in trade openness would bring about 0.004decline in financial deepening and vice versa. This result is in disagreement with the study of Ihekuna (2017) that found a positive relationship between trade openness and Financial deepening in Nigeria.

Table 6: Summary of Short-run impact of foreign direct investment on financial deepening

Cointegrating Form				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(LNFDI)	**0.070312**	0.030656	2.293555	**0.0285**
D(LNGCF)	**-0.340181**	0.129997	-2.616845	**0.0134**
D(LNGDP)	**0.433044**	0.108858	3.978059	**0.0004**
D(INT)	0.001510	0.002564	0.588827	0.5601
D(TOP)	-0.001376	0.002906	-0.473444	0.6391
CointEq(-1)	**-0.386893**	0.093549	-4.135730	**0.0002**
Cointeq = LNCPS - (0.1817*LNFDI -0.0103*LNGCF + 1.1193*LNGDP +				
0.0039*INT -0.0036*TOP -6.4703)				

Source: *Author's Computation using Eviews, 2023.*

From table 6 above, it can be seen that foreign direct investment (LNFDI), and gross domestic product (LNGDP), exert positive and significant effect on financial deepening (FD) in Nigeria along the short run horizon. This implies that with their respective coefficients of approximately 0.07 unit, and 0.43 unit; and p-values of 0.0285 and 0.0004, a unit increase in either foreign direct investment, or gross domestic product would bring about 7% or 43% increase in financial deepening respectively in the short run. This result is in line with the work of Ihekuna(2017) who also found positive impact of foreign direct investment on financial deepening in Nigeria along the short run, while the gross domestic product aligned with economic theory which posited positive relationship between economic growth and financial sector development in the short run.

Conversely, table 6 above reveals that the gross capital formation (LNGCF) exert negative and significant effect on financial deepening (FD) in Nigeria along the short run horizon. With a coefficient of approximately -0.34 unit and a p-value of 0.0134, the result implies that a unit increase in the gross fixed capital formation would bring about 34% decline in financial deepening and vice versa. This result does not conform to the study of Idyu, Ajekwe, and Korna (2013) who found a positive relationship market capitalization and industrial sector growth in Nigeria along the short run.

Additionally, it can also be seen from the table 6 that like the long-run result, the trade openness (TOP) also exhibit negative but insignificant effect on financial deepening (FD) in Nigeria along the short run horizon. With a coefficient of approximately -0.001 unit and a p-value of 0.6391, the result implies that a unit increase in the trade openness would bring about less than 1% decline in financial deepening and vice versa. This result is in disagreement with the study of Ihekuna (2017) and also with the economic theory which posited a positive relationship between trade openness and credit to private sector (measure of financial deepening)

V. CONCLUSION

The cointegration test indicate that the calculated F-statistic (3.907959) is greater than the upper bound critical value of 3.35, 3.79, at significance level of 10%, and 5%, respectively. It can also be deduced that the F-statistic is greater than lower critical bound at 10%, 5%, 2.5%, and 1% accordingly, hence, there is evidence of a long-run relationship among the variables incorporated in the model. Having establishedco-integration relationship, it is pertinent to estimate the ARDL model to assess the short-run and long-run impact of foreign direct investment on financial deepening in Nigeria. In line with the short run analysis, foreign direct investment (LNFDI), and gross domestic product (LNGDP) exert positive and significant effect on financial deepening (FD) in Nigeria with regard to the coefficients of approximately 0.07 unit, and 0.43 unit; and p-values of 0.0285 and 0.0004. Conversely, the gross capital formation (LNGCF) exert negative and significant effect on financial deepening (FD) in Nigeria along the short run horizon with a coefficient of approximately -0.34 unit and a p-value of 0.0134. Additionally, the trade openness (TOP) also exhibit negative but insignificant effect on financial deepening (FD) in Nigeria along the short run horizon with a coefficient of approximately -0.001 unit and a p-value of 0.6391.

Finally, the coefficient of error correction mechanism is negatively approximate to -0.39 unit and with a p-value of 0.0002. This indicates that ECM is negative and statistically significant at 1% confirming the long-run relationship among variables. This also implies fast speed of adjustment, as it shows that approximately 39% of discrepancy in the previous year's shocks will converge back to the long-run equilibrium in the current year. In conclusion, the above analysis revealed that foriegn direct investment exert significant impact on financial deepening in Nigeria along the long run and short run horizon.

Policy Recommendations

From the above conclusion, it is recommended that the Nigerian government should prioritize the followings:

1. In line with positive and significant impact of foreign direct investment on financial deepening in Nigeria along both the short-run and long-run, the Nigerian government should implement policies that create an enabling environment to attract and facilitate foreign direct investment in the financial sector in order to strengthen financial development in the country.
2. Considering the negative and significant impact of Gross capital formation on financial deepening in Nigeria along the short-run horizon, the Nigerian government should formulate strategies that can improve the efficiency and effectiveness of capital and investment by strengthening financial institutions, promoting financial inclusion, encouraging competition and innovation, improving the investment climate, strengthening capital markets, and supporting infrastructure development in order to foster financial development in the country.
3. Given the positive and significant impact gross domestic product on financial deepening in Nigeria along both the short-run and the long run horizon, the Nigerian government should implement policies that focus on fostering sustainable economic growth, promote stability which would inevitably promote financial development in the country.

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