

Financial Sector Development, Foreign Direct Investment and Economic Growth in Nigeria

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Abstract

This paper explored the link between financial development, foreign direct investment, and economic growth in Nigeria. Annual time series data spanning 1981 through 2020 were obtained from the Central Bank of Nigeria 2021 statistical bulletin, and utilized in this research. The error correction methodology was adopted in the analysis while the ordinary least squares technique was employed in the estimation. The findings showed that financial development, foreign direct investment, as well as their interaction had no impact on economic growth of Nigeria in the short-run. In the long-run, however, the findings indicated that both financial development and foreign direct investment significantly promoted Nigeria's economic growth. In addition, the effect of the interaction between financial development and foreign direct investment significantly hindered economic growth of Nigeria in the long-run. The study concluded that financial development and foreign direct investments are relevant determinants of economic growth of Nigeria. Policy focus on financial deepening to expand the absorptive capacities of the domestic economy was some recommendations made.

Keywords: *Financial Development, Foreign Direct Investment, Economic Growth.*

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Introduction

The discussion on the role of the financial sector in economic growth and development has been going on for a very long time. Financial system perform a crucial role in economic growth by supporting innovation leading argument, the effect runs from financial development to economic growth. (AL-Nalf, 2012)

Financial system helps the flow of saving and investments in the economy. Here, financial institution like banks performs a major role. They give room for depositor to invest mostly in different deposits like fixed deposit (FD) and recurring deposits (RD) by contributing attractive rates of interest. These savings are then channeled by the banks to provide credit to different business entities, which are involved in production and distribution. Banks helps in allocation of resources across different sector of the economy.

In Nigeria, there has been under development of the real sector and it has been conceived that the reason for this is lack of funds from the financial sector to this sector. This is not supposed to be so because over long periods, there has been in most countries a rough unmistakable parallel between economic growth and financial development. Prior to 1986 in Nigeria, a general practice has been the support of certain economic projects considered to be the vital part of development strategy. Government adopted policies, aims at accomplishing specific objectives, such as: interest rate ceiling and selective sectorial policies. These policies were introduced with the intention of directing credit to priority sectors and securing "inexpensive" finding for their own activities (Fry, 1988). The ceiling on interest rate and quantity restriction on loanable funds for certain sectors endures that a larger share of funds is made available for favoured sector. Such a practice prevents financial intermediation since the financial market will only be housing the credit demand of the government plan and ignoring risk. The financial policy, that promotes the role of financial sector raises the rate of growth by increasing the quality and restructure that structure of real savings; restructuring the structure and average productivity of investment; and by providing entrepreneurial skills and financial guidance to the economy as a whole. This argument rest on the fact that investment opportunities in developing countries abound and that capital accumulation is limited by the availability of investable fund.

Business entities demand capital for funding business activities and production. Business demand two kinds of capital: working and fixed capital. Therefore different business entities use the financial system to generate funds for both short term and long term money requirement. The foreign exchange market enables exporters and importers generate and receive funds for settling transactions. It also helps banks borrow money and provides funds to various types of customers in different foreign currencies like dollars and euro. The market also provides opportunities for banks to invest short term idle funds and earn profit. Even governments have gained as they can meet their foreign exchange demands through this market.

1.2 Statement of the Problem

There must exist safe and profitable investments to attract savings and guarantee returns so as to preserve the value of savers. The national saving ratio (NSR) is the ratio of gross national saving (GNS) to the gross domestic product. This ratio portrays the saving culture. The higher this NSR, the easier it is to access low cost fund for developing long term development project. Negative NSR, on its own indicate that a country is drawing from its national wealth as is spending more than it earns.

Nigeria gross national saving as percentage of GDP has fluctuated over the years. In recent years however, it has declined through the period of 1999 to 2018. It achieved a peak in 2012 at about 33

percent after which it declined with some levels of fluctuation and declined steadily.

Due to this low gross saving, government have made regulatory authorities in the financial market have strengthened their regulatory and supervisory role so as to protect savers as the introduction of federal government of Nigeria saving body (by the debt management office (DMO) on behalf of the federal government of Nigeria). The creation of mutual funds and some wealth management Product was pursued to stimulate saving. Other financial sector reforms have been pursued over the years in response to low savings rate, financial crises, systematic crises, trade liberalization, technological innovation and computerization (Akinwale 2018). The main aim of this reform is` to ensure the attainment of sustainable economic growth and development (Onodje 2009). Some of the reforms enacted in Nigeria financial sector include but not limited to the banking ordinance of 1952, 1969, banking account CBN act no 24 of 1991 (Amended in 1998 and 1999) and the banking others financial institutions act (BOFIA) no 25 of 1991 (Amended in 1997,1998,1999). Nigeria deposit insurance (NDIC) was created in 1998 through the security and exchange commission (SEC) act of 1979, act of 1979, structural adjustment programme (SAP) of 1994 was established among others.

The main issue is despite the reforms embarked upon in Nigeria over the years, to develop the financial sector and promote investment to attain high savings rate, economic growth still showed dismal performance in Nigeria. It was against this backdrop that this study was motivated. Therefore, the broad objective of the study is to explore the relationship among financial development, foreign direct investment, and economic growth in Nigeria.

2.0 Literature Review

Kar (2020) attempt to examine the causal relationship between financial development and economic growth in Turkey for a period of 32 years using Granger causality, co-integration and vector error correction methodology (VECM) for data analyses and the variables used were banking deposit liabilities, broad money and private sector claims. The empirical result showed that the direction of causality between financial development and economic growth is changing varying according to the selection of proxies used for financial development. In the case of Turkey, Therefore is no accepted view that finance development leads to economic growth.

Sinha (2020) study eight Asian countries by evaluating the relationship between financial development and economic growth. The variables used in this study were growth rate of real per capita income, growth rate of money supply as ratio of GDP, growth rate of quasi money as a ratio of GDP, growth rate of domestic credit as a ratio of GDP, growth rate of real GDP, growth rate of real investment as a ratio of GDP, growth rate of population, growth rate of real money supply, growth rate of real domestic credit, growth rate of real broad money the study used longer time series data set and performed multivariate causality test, the result shows that there is a significant relationship between the income and financial variables for India and Malaysia, Pakistan and Sri Lanka. From the multivariate causality test for India and Malaysia it is noticed that a two way relationship between the income and financial variables.

In another research work carried out by Agu and Chukwu (2018) using augmented granger causality test approach developed by Toda and Yamamoto (1995) to show the direction of causality between bank based financial deepening variables and economic growth in Nigeria using life span of 35 years and the results showed that financial deepening variables influences the causality outcome while variables like private sector credit, broad money supported the demand hypothesis and variables like loan deposit ratio and bank deposit liabilities were in favour of the supply leading hypothesis.

The research carried out in India by Rathinam (2017) investigate the impact of financial

development and economic growth using multivariate VAR frame work, Granger causality test and Vector Error Correction Model as techniques for analyses and the results showed that legal and institutional developments and financial regulation cause financial sector growth. It also showed that legal, institutional developments positively affect financial sector growth in the long run and financial regulation has a negative impact. The researcher used the following variables such as M2 over nominal GDP, private credit to make an overall index of financial development by applying principal component analysis, legal and institutional developments and financial regulation.

The study carried out in Romania by Mihalca (2017) to examine the relationship between financial development and economic growth using 15 years of life span data and the variable used for the study include the ratio of domestic credit of banking institutions to nominal GDP and per capita real GDP using different stages of analysis. Stage one showed the correlation between financial development and economic have a negative relationship between financial development and economic growth while stage two using Cobb-Douglas equations, the correlation co-efficient result showed that there is no relationship between financial development and economic growth.

The research carried out by Khaled (2016) to investigate financial development and economic growth from 12 MENA economies for a life span of 14 years. The variables used for the research work are; credit to private enterprises divided by GDP, liquid liabilities, credit allocated to private sector to total domestic credit bank credit, and growth rate of real per capita GDP and he used regression model to analyse the data and the outcome results showed that there is no significant relationship between financial development indicators and growth rate GDP in Arab countries.

Gregorio (2015) used 95 countries in his research to examine the relationship between long run growth and financial development and the study classified countries base on the following high income, middle income and low income countries. The study used the following variables: ratio of domestic credit to the private sector to GDP, primary and secondary enrolment ratio, GDP per capita, Government spending, investment rate. The researcher used cross section regression analysis for the study and the result showed that financial development leads to economic growth.

The research conducted by Huang (2015) showed that institutions, policy, geography are vital tools for financial development to impact on economic growth and it showed significant implications for developing financial markets and how it stimulate financial development in the long run through the existence and the direction of causality between private investment and financial development on a panel dataset which has life span of 30 years of 44 developing economies using Bayesian Model Averaging (BMA) and General approach. He used a wider judgment of economic, political and geographic variables and he also went further to construct a composite index for financial development.

The study of linkages between financial development and economic growth was carried out in the Middle East by Awad (2015) using panel co-integration, FMOLs regression, Multivariate Johansen co-integration test and Granger Causality test. The outcome of the results showed that there is short run linkages between financial development and economic growth and the causality effects run from economic growth to financial development while in the long run, financial development and impact on economic growth that is they are related. The variables used by the researcher include; real M1 and ratio of private credit to monetary base, real GDP and real Government spending.

An attempt was made by Rahman (2014) to find how financial higher investment and increase in output growth in the long run encourage financial development on investment and per capita income. Study possess life span data of 41 years and the variables used for the study are; gross fixed

capital formation as a percent of GDP and GDP per capita, weighted average annual interest rate on lending by banks, total deposits as a percent of GDP, domestic credit to the private sector as a percent of GDP, broad money as a percent of GDP. The researcher used VAR model to run his analysis and the outcome of the results showed that co-movement between financial development on investment and per capita income in the long run.

Adekunle, Salami and Adedipe (2013) investigate the impact of financial development and economic growth in Nigeria and their results showed that there is no significant relationship between financial development and economic growth in Nigeria using the ordinary least square (OLS) method and concludes that the link between financial and real sector remains weak in Nigeria and it will not result to the needed growth towards vision 2020

The study of the role of foreign direct investment, financial development and economic growth was carried out by Omran (2013) in 17 Arab economies using a life span data of 32 years for the analyses and a cross country regression and pair wise granger causality test was employed for the study. The results showed that foreign direct investment and financial development significantly impact on economic growth of Arab economies. The variables used by the researcher include: foreign direct investment, domestic credit from commercial banks to the private sector as a ratio of GDP, total value of shares traded to GDP, commercial banks assets as a ratio of commercial banks and central bank assets, turnover ratio.

An analysis carried out by Bhattacharya (2013) taken a life span of 42 year for the study by taken M3 as proxy for financial development and GDP for economic growth and went further to examined the causality flow between GDP and M3, long run relationship between M3 and GDP and finally analyzing the structural breaks in time series data during pre and post liberalization period. The results of the analyses showed that the test for co-integration indicate that M3 and GDP all co-integrated. It also showed that there were structural breaks in time series data. Causality is running from M3 to GDP not vice versa.

The research carried by Turkey (2012) which proxy for financial development with firms and industries credit and related the proxy with GNP; the result shows that there is no long run relationship between economic growth and financial development. He further considered other proxies for financial development and relates them to economic growth and the result now shows that relationship exists between financial development and economic growth. This shows different results for different proxies which is difficult to finalize whether there is any relation between financial development and economic growth.

Xu (2012) carried out on the effects of permanent financial development on domestic investment and output in 41 countries and the variables were real GDP, index of financial development and real domestic investment and VAR model was used to analyse the data. The Impulse response analysis was applied to find out how financial development affects domestic investment and real GDP. The results showed that there is a significance relationship between financial development and domestic investment and real GDP.

Liu (2012) used Geweke Decomposition test in his analyses of data that showed the direction of causality between financial development and economic growth in 108 developing and industrial countries which cover life span of 35 years using the following variables: real GDP per capita growth rate, ratio of broad money to GDP, Initial human capital, ratio of credits provided by financial intermediaries to the private sector to GDP, initial income level, a measure of Government size and black market exchange rate premium. The result showed a significance relationship for all

the economies and found the evidence of bi-directional causality between financial development and economic growth.

The study carried out in Malaysia by Choong (2012) considering data for period of 34 years using ARDL as techniques to the analyses, the result showed that stock market development has a significant positive long run impact on economic growth and Granger Causality test revealed that the stock market development causes economic growth and the evidence of bi-directional causality between financial development and economic growth. The researchers using two variables for the study of financial development and economic growth relationship through stock market development, the two variables included ratio of total market value to nominal GDP and stock market turnover ratio

In the other hand Sulaiman (2010) carried out a research in Pakistan by considering money supply as a proxy for financial development in relation to economic growth and his results show that there exist relationship between financial development and economic growth, in the research work, he proxy for financial development with domestic credit by banks. These studies confirm the need for a common proxy or index as a measure of financial development.

Odeniran and Udejaja (2010) investigate the relationship between financial sector development and economic growth in Nigeria for a life span period of 49 years using granger causality test within a framework of VAR by using four different proxies for financial development which include; growth in private sector credit to GDP, ratios of broad money stock to GDP, growth in banks deposit liability to GDP and growth in net domestic credit to GDP and their results showed bidirectional causality between the proxies of financial development and economic growth.

Suleiman and Aamer (2006) research work showed weak support for long-run relationship between financial development and growth and for the hypothesis that finance leads to growth. Using 4 different proxies for financial development in examining the causal link between financial development in five Middle Eastern and North African economies for a life span of 44 data and they used VAR framework, the outcome of the results showed that co-integration was detected and granger causality was either bidirectional or it ran from output to financial development. economic growth in Malaysia using a quarterly data with life span of 10 years and ARDL model results showed a long run relationship between financial development and economic growth and the granger causality test based on the vector error correction model (VECM) showed that there is a unidirectional causality running from finance to growth thus supporting the finance led growth hypothesis.

3.0 Methodology

3.1 Research Design

The research design is the overall method researcher adopt to combine the various components of the study in a logical and cohesive manner to ensure that the researcher effectively address the research problem. The objective of research design is to establish a study plan that allows for proper assessment of cause and effect linkages between independent and dependent variables. The study is an ex-post facto research kind of research. It employs historical data on selective variables to examine empirical relationship that exist between financial sector development, foreign direct investment and economic growth in Nigeria.

3.2 The Model Specification

An important objective of this research is to examine the linkage between the development of the

domestic financial sector, FDI and economic growth in Nigeria. As shown under the supply-leading hypothesis theory which this study is based, a well-developed domestic financial market of a country is one of the pre-conditions for attracting FDI inflows into an economy. According to Choong, et al. (2004), speed of technological innovation and patterns of a nation's economic growth are highly dependent on the evolution of the financial sector, which acts as a mechanism to channel financial resources between surplus and deficit units, as well as transferring technology embodied in FDI inflows.

This study's empirical analysis is based on the augmented neoclassical model of economic growth as have been demonstrated in the analytical framework. The model specification for this study follows the contributions of Romer (1990) and extends the hypothesis of Borensztein, et al (1998), which were among the early researchers to examine the issue of host country's absorptive capacity. To investigate the hypothesis of this study, the growth rate of real Gross Domestic Product per capita (RGDP) of the host country, in this case Nigeria, will be used as the dependent variable. Following our theoretical and empirical underpinning, and for successful achievement of our stated objectives, the study includes the growth equation of financial sector development which is used to proxy an economy's absorptive capacity. Also, the study considers some explanatory variables/control in the economic growth equation that have been used in previous studies, such as FDI inflows, government expenditure, labour force, trade openness, money supply, among others.

By considering all the explanatory variables in the economic growth equation, the model for this study can be specified as:

$$RGDP_{g(t)} = f(FDI_t, FINDEV_t, Z_t) \quad 3.1$$

The augmented econometric model as shown in Equation 3.1, specified economic growth rate as a function of foreign direct investment (FDI), financial sector development (FINDEV) and other determinants (Z) of economic growth. The model can be expressed in an explicitly econometric model as:

$$RGDP_{g(t)} = \phi_0 + \phi_1 FDI_t + \phi_2 FINDEV_t + \phi_3 Z_t + U_t \quad 3.2$$

Where:

$RGDP_{g(t)}$ = Growth rate of GDP per capita

FDI_t = Net inflow of Foreign Direct Investment (expressed as a % of GDP)

$FINDEV_t$ = Financial Sector Development, proxy for the economy's absorptive capacity

Z_t = Matrix of some control and policy variables that are frequently included as determinants of economic growth (see Barro and Sala-i-Martin, 1995-chapter 12).

U_t = The stochastic error term

One of the main objective of the proposed study is to test whether the effect of FDI on growth ϕ_i , is statistically significant. The study also seek to test whether the level of financial development in the country affects the impact of FDI and economic growth of the country. To achieve this objective, an interactive term, $FDI*FINDEV$ is introduced into the model to capture the dynamic interrelationship. . The inclusion of the interaction term is to enable us to investigate the impact of FDI on economic growth through the channel of financial sector development in the country.

The model that would be employed to empirically assess the link between financial sector development, FDI and economic growth in this study, will take the following form:

$$RGDP_{g(t)} = \phi_0 + \phi_1 FDI_t + \phi_2 FINDEV_t + \phi_4 (FINDEV_t * FDI_t) + U_t + \xi_t \quad 3.3$$

Where : $(FINDEV_t * FDI_t)$ is the interaction between FDI and the development of the domestic financial sector.

As earlier noted, the term $(FINDEV_t * FDI_t)$, which is the multiplication of FDI by the domestic country's absorptive capacity variable, is included to examine the validity of the hypothesis that financial sector development and FDI are complementary in promoting economic growth through the process of spillover efficiency. That is, the variable allows for testing the hypothesis that the impact of FDI on economic growth is determined by a country's absorptive capacity.

3.3 Source of Data

This is a study based on time series data which data are secondary in nature. Therefore, the study intends to exploit annual time series data covering the periods 1981 to 2020. These data were obtained from the Statistical Bulletin of the Central Bank of Nigeria (CBN) 2021

3.4 Model Estimation Techniques

3.4.1 Unit Root Test

A stochastic process is said to be stationary if its mean and variance are constant over time and the value of the covariance between the two time periods depends only on the distance or gap or lag between the two time periods and not the actual time at which the covariance is computed. If a time series is not stationary in the sense just defined, it is called a non-stationary time series. In other words, a non-stationary time series will have a time varying mean or a t Stationarity test will be done on all-time series properties of data employing the unit root test by Augmented Dickey- Fuller (ADF) test to avoid possible spurious regression. If it is assumed that the error terms, is uncorrelated, the DF test may be used. But in case the error terms are correlated, Dickey and Fuller have developed a test known as the Augmented Dickey Fuller (ADF) test. The ADF test is used in this study as most tests of the DF type have low power. That is, they tend to accept the null of unit root more frequently than is warranted. The stationarity of the time series is important because correlation could persist in non-stationary time series even if the sample is very large and may result in what is called spurious or nonsense regression (Gujarati, 2012).

3.4.2 Engle and Granger Cointegration Test

Co-integration implies identifying the co-integrating or long-run equilibrium relationships. The methodology developed by Engle and Granger (1987) is used in explaining the co-integration test. This technique of cointegration testing is a two-step approach. The first step involves estimating a residual series from an ordinary least squares technique applied on a specified model. The second step is to test the generated residual series for unit root at levels. A cointegrating or long run relationship is said to exist among the variables of the model if the unit root test of the residual series is stationary at levels. Otherwise, no cointegration exists among the variable of the model. The central concept of cointegration is the specification of models that include the long-run movements of one variable relative to others. Co-integration implies the idea that linear combination of non-stationary series can be stationary, implying a long-run relationship, that it shows that the relationship between the stationary linear combination of non-stationary variable exist

3.4.3 Error Correction Model

The error correction model attempts to integrate economic theory useful in characterizing long run equilibrium with observed disequilibrium by building a model that explicitly incorporates behavior that would restore equilibrium. It a one-period lagged value of the residual from a static model. The error correction model is very important in the sense that it ensures the reliability of the statistics,

making the model suitable, reliable and appropriate for both control and prediction purposes (Hill et al 2008).

4.0 Data Presentation and Analysis

An important objective of this research is to examine the linkage between the development of the domestic financial sector, Foreign Direction Index (FDI) and the interaction between foreign direct investment and financial development on the economic growth of Nigeria. As shown under the literature review, a well-developed domestic financial market of a country is one of the pre-conditions for attracting FDI inflows into an economy. Foreign direct investment boost real output through the investment multiplier.

To achieve the objective of the study, data on financial sector development, foreign direct investment being gross direct investment into the country, and the interaction between financial development and FDI in Nigeria are collected for the period 1981 to 2020. These variables are regressed against real gross domestic product (RGDP) using the error correction model and ordinary lease squares estimation technique. The study further carried some out post-diagnostic analysis to enable us establish the robustness of estimates obtained and the policy relevance of empirical findings. The results of the estimation are presented in the sections below.

4.1 Descriptive Statistics

Table 4.1 Descriptive Statistics of the Variables of the Model

| Statistics | RGDP | FDI | FINDEV | FDI*FINDEV |
|----------------|---------|---------|---------|------------|
| Mean | 36843.4 | 399230 | 11.2933 | 6592264 |
| Median | 25914.1 | 124193 | 8.09 | 1050504 |
| Maximum | 71387.8 | 1360308 | 22.75 | 2.9E+07 |
| Minimum | 16048.3 | 264.3 | 5.81 | 1942.59 |
| Std. Deviation | 19785.1 | 444874 | 5.47708 | 8610517 |
| Skewness | 0.63182 | 1.96837 | 0.76692 | 0.99612 |
| Jarque-Bera | 5.08367 | 4.918 | 6.12833 | 6.09572 |
| Probability | 0.07872 | 0.08552 | 0.46693 | 0.03166 |

Source: Author's computation using CBN data (2022).

From Table 4.1 above, real output (RGDP) had a maximum value of 71, 387 billion in naira value and a minimum of 16, 048.31 billion naira value. The RGDP averaged 36,843.40 billion naira period in the period under review. Similarly, foreign direct investment into the country reached 1,360,308 billion naira value high relative to 264.30 billion naira minimum. Foreign direct investment averaged 399, 229.8 billion naira in value for the period under review. The financial development index ranged between the threshold of 22.75 to 5.81 points. All the variables of the model are normally distributed indicated by the Jarque-Bera statistics and their respective probability values.

Table 4.2: Correlation Matrix of the Variables

| VARIABLES | RGDP | FDI | FINDEV | FDI*FINDEV |
|------------|---------|---------|---------|------------|
| RGDP | 1 | 0.88423 | 0.89988 | 0.86603 |
| FDI | 0.88423 | 1 | 0.87708 | 0.96562 |
| FINDEV | 0.89988 | 0.87708 | 1 | 0.94544 |
| FDI*FINDEV | 0.86603 | 0.96562 | 0.94544 | 1 |

Source: Author's computation using CBN data (2022).

Table 4.2 above shows the degree and direction of influence of the variables of the model. For example, the table indicates that foreign direct investment and financial development positively influences real output about 88 and 89 per cents, respectively. The combination of both variables (FDI*FINDEV) affects real output positively by about 87 per cent. Similarly, financial development impacts foreign direct investment by about 87.7 percent while the interactive variable of foreign direct investment and financial development impacts FDI positively by about 96 per cent. In summary the model suggests strong positive influence of the variable on real output in line with the a priori expectation.

Results of the Unit Root Test- Augmented Dickey Fuller Approach

This section is employed to carry out diagnostic investigation of the stationarity properties of the error term of the model. The check seeks to determine the stationarity of the estimated error term. If the error term is stationary at level (i.e., $I[0]$), then there is co-integration between RGDP and the particular explanatory variables of the model. The stationarity or unit root test uses the p^{th} order augmented Dickey Fuller regression method (see Baltagi, 2013) in order to determine useful estimation model suitable for the dataset.

| Variables | At Level | | | At First Difference | | Order of Intergration | Remark |
|------------|-----------|---------------|----------------|---------------------|---------------|-----------------------|------------|
| | ADF @ 5% | ADF-Statistic | Remark | ADF @ 5% | ADF-Statistic | | |
| RGDP | -2.948404 | -1.987512 | Non-stationary | -2.941145 | -3.72821 | I(1) | Stationary |
| FDI | -3.529758 | -2.735117 | Non-stationary | -3.533083 | -7.899415 | I(1) | Stationary |
| FINDEV | -3.533083 | -3.007226 | Non-stationary | -3.536601 | -5.709669 | I(1) | Stationary |
| FDI*FINDEV | -3.529758 | -2.64619 | Non-stationary | -3.536601 | -6.190059 | I(1) | Stationary |

Source: Author's computation using CBN data (2022).

The result of the Augmented-Dickey-Fuller unit root is presented in table 4.3 above and shows that all the variables of the model were non-stationary at their level values. However, each of the individual variables became stationary upon taking the first difference. This implies that there is a long run relationship between the variables and therefore suggest the employment of the error correction model to investigate their long run impacts.

Co-Integration Test- Engle-Granger Method

Engle and Granger (1987) is a two-step co-integration approach. The first step involves regressing the dependent variable on the explanatory variables to generate a residual series. In the second step, the generated residual series is tested for unit root. If the residual series is found to be stationary, then there

is cointegration among the dependent and independent variables, otherwise, there is no co-integration or long-run relationship among the variables.

Table 4.4 Engle and Granger Co-integration Test

| | | t-Statistic | Prob.* |
|--|-----------|--------------------|---------------|
| Augmented Dickey-Fuller test statistic | | -3.11099 | 0.0339 |
| Test critical values: | 1% level | -3.61045 | |
| | 5% level | -2.93899 | |
| | 10% level | -2.60793 | |

Source: Author's computation using CBN data (2022).

Table 4.4 displayed the result of the Engle and Granger cointegration test. The result showed that the unit root test of the residual series at levels where the critical value at 5% level of the test is -2.938987 with an ADF-statistic of -3.110987 with a probability value of 0.03. This implies a long-run relationship exist between real output and financial development, FDI and the interaction of FDI and financial development.

4.2: Data Analyses

4.2.1 Short-Run Model Estimation

Table 4.5: Results of the Short-Run Model Estimation

| Dependent Variable: RGDP | | | | |
|---------------------------------|-------------|------------|-------------|--------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | 1193.988 | 250.459 | 4.7672 | 0 |
| D(FDI) | 0.005632 | 0.004062 | 1.386515 | 0.1746 |
| D(FINDEV) | 364.16 | 218.2792 | 1.668322 | 0.1044 |
| D(FDI_FINDEV) | -0.00041 | 0.000224 | -1.80586 | 0.0798 |
| ECM(-1) | -0.14051 | 0.046484 | -3.02275 | 0.0047 |
| R-squared | | | 0.22904 | |
| Durbin-Watson stat | | | 0.767391 | |
| F-statistic | | | 2.525211 | |
| Prob(F-statistic) | | | 0.058773 | |

Source: Author's computation using CBN data (2022).

Table 4.5 above presents the estimation result of the short run error correction model. In the model, the explanatory variables include Foreign Direct Investment (FDI), Financial Sector Development (FINDEV) and the interaction between financial development and foreign direct investment (FDI*FINDEV). The result reveals that the independent variables are jointly significant in determining real output in Nigeria. However, singly, none of the independent variables is individually significant at 5% level of the test, except the interactive term (FDI*FINDEV) which becomes significant at 10%.

The error correction is significant at 1% level of the test and correctly signed. The ECM coefficient (-0.140509) implies about 14 per cent speed of adjustment of the short-run model to the long-run equilibrium value. More so, the Durbin-Watson statistic value (0.767391) suggests that there is a threat of autocorrelation among terms of the residual series. Thus, it was pertinent to correct for autocorrelation in the estimated model as it violated one of the assumptions of the ordinary least squares estimation technique. The autoregressive scheme was therefore employed in the correction.

Table 4.6: Result of Short Run Model after correcting for Autocorrelation

| Dependent Variable: RGDP | | | | |
|--------------------------|-------------|------------|-------------|--------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | 1103.091 | 501.6418 | 2.198962 | 0.0352 |
| D(FINDEV) | 127.7334 | 168.6073 | 0.757579 | 0.4542 |
| D(FDI) | 0.002635 | 0.004068 | 0.647676 | 0.5218 |
| D(FDI_FINDEV) | -0.00023 | 0.000211 | -1.06426 | 0.2952 |
| ECM(-1) | -0.10055 | 0.054006 | -1.86177 | 0.0718 |
| AR(1) | 0.663048 | 0.145984 | 4.54192 | 0.0001 |
| SIGMASQ | 1183296 | 336043.2 | 3.521263 | 0.0013 |
| R-squared | 0.535832 | | | |
| Durbin-Watson stat | 2.022477 | | | |
| F-statistic | 6.1518 | | | |
| Prob(F-statistic) | 0.000227 | | | |

Source: Author's computation using CBN data (2022).

Table 4.6 showed the result of estimated short run model after correcting for autocorrelation using the autoregressive process. The coefficient of determination (R-squared) value of the estimated model improved to 0.535632 from 0.229260 in the previous model. This indicated that about 53.56 percent of the systematic variations in economic growth were explained by the model. The F-statistic value of 6.151800 was significant at 1 percent level implying that the explanatory variables had a significant joint relationship with the dependent variable.

The newly estimated model was quite good as there was no threat of autocorrelation among terms of the residual series. The Durbin-Watson statistic value of 2.0222477 indicated that the estimated model was free from the problem of autocorrelation since the Durbin-Watson value lies in the acceptable region between 1.5 and 2.5. The error correction term [ECM(-1)] coefficient was negatively signed (-0.100546) and significant at the 10 percent level. This implies that on average, the speed of adjustment of the short run model to the long run inter-temporal value was about 10.05 percent

The estimated coefficients of financial development and foreign direct investment had positive signs while the interaction term had a negative sign. These results suggest that financial development and foreign direct investment positively influenced economic growth. Whereas, their interaction negatively influenced economic growth. These coefficients however, were not statistically significant judging from their corresponding probability values. Thus, the variables do not have a significant effect on economic growth in the short run.

4.2.2: Regression Results of the Long-Run Model

Table 4.7: Result of long-Run Model

| Dependent Variable: RGDP | | | | |
|--------------------------|-------------|------------|-------------|--------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | -12897 | 4838.8 | -2.665 | 0.0114 |
| FDI | 0.0604 | 0.0092 | 6.5591 | 0 |
| FINDEV | 4417.2 | 596.96 | 7.3994 | 0 |
| FDI_FINDEV | -0.004 | 0.0007 | -5.246 | 0 |
| R-squared | 0.914338 | | | |
| Durbin-Watson stat | 0.841144 | | | |

| | |
|-------------------|----------|
| F-statistic | 128.0857 |
| Prob(F-statistic) | 0 |

Source: Author's computation using CBN data (2022).

Table 4.7 presents the results of the long-run estimation of the model. Each of the independent variables are highly significant at 1 per cent level of the test. The result revealed that a one unit increase in FDI leads to only 6 per cent increase in real output (RGDP), while a unit improvement in financial sector development results to about 44 per cent in real out. The interaction of foreign direct investment and financial development in the long, however, leads to about 1 per cent retardation in real output growth. All the independent variables are jointly significant in explaining the variations in the real output of the country. FDI, FINDEV and FDI*FINDEV, respectively, are statistically significant at the 1 per cent level of the test. They jointly explain 91.43 per cent of the variations in Nigeria's real output.

However, the Durbin-Watson statistic value of 0.841144 necessitated the need to correct for autocorrelation among terms of the residual series of the model which violated an assumption of the ordinary least squares estimation.

Table 4.8: Result of Long Run Model after correcting for Autocorrelation

| Dependent Variable: RGDP | | | | |
|--------------------------|-------------|------------|-------------|--------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | -14155.1 | 4651.725 | -3.04297 | 0.0045 |
| FINDEV | 4510.4 | 578.9591 | 7.790533 | 0 |
| FDI | 0.064669 | 0.00814 | 7.944747 | 0 |
| FDI_FINDEV | -0.00394 | 0.000571 | -6.88909 | 0 |
| AR(12) | -0.36211 | 0.185847 | -1.94843 | 0.0597 |
| SIGMASQ | 28423606 | 7514297 | 3.782603 | 0.0006 |
| R-squared | | 0.925527 | | |
| Durbin-Watson stat | | 1.683518 | | |
| F-statistic | | 84.50853 | | |
| Prob(F-statistic) | | 0 | | |

Source: Author's computation using CBN data (2022).

Table 4.8 provide the result of the long run model after correcting for autocorrelation. The result has a good fit after correcting for autocorrelation using the autoregressive process. The coefficient of determination (R-squared) value was 0.925527 indicating that about 92.55 percent of the systematic variations in the dependent variable were explained by the model. The F-statistic value of 84.50853 was significant at the 1 percent level. Hence, the variables in the model jointly explained the dependent variable significantly. A Durbin-Watson value of 1.683518 suggested that there was no threat of auto correlation among terms of the residual series. Thus, the assumption of no autocorrelation in the error terms was not violated.

The estimated coefficients of financial development and foreign direct investment were positive and significant. This means that financial development and foreign direct investment both have a positive significant impact on economic growth. In addition, the interaction term has a negative and significant coefficient suggesting that interaction between foreign direct investment and financial development had a negative significant impact on economic growth.

4.4 Discussion of Findings

The long-run estimation results implies that with improvement in financial sector development, FDI and FINDEV become very significant in driving economic growth in Nigeria. The coefficient of the long-run interactive term of FDI and FINDEV showed negative 0.003. This implies that FDI*FINDEV has a threshold of effect on growth. As the financial sector develops, the interactive effect with respect to attraction of FDI declines. It suggests that financial sector development positively impacts foreign direct investment up to a certain threshold.

The results of the short-run regression revealed that FDI, FINDEV and FDI*FINDEV do have a positive but insignificant impact on economic growth. The error correction coefficient was correctly negatively signed and significant. The implication of these results is that in the short run, financial development is not strong enough to attract foreign investments into the domestic economy and therefore disequilibrium to the long-run equilibrium state can be corrected through improvement in the financial sector development.

5.0 Summary, Conclusions and Recommendations

Economic growth is consistent increase in real output of a country over a long period of time. It is the overriding objective of developing countries, which includes Nigeria, to pursue growth in their effort to reduce (if not to eliminate) poverty and achieve sustainable development. Due to shortage of domestic saving, policies have focused on attracting foreign saving from the international economic system through direct investment to serve as a catalyst to economic growth and development. To harness foreign direct investment from external sources the level of development of the domestic financial sector plays a critical role.

This study examined the relationship between financial sector development, FDI and economic growth in Nigeria, using the error correction model methodology and OLS estimation technique. From the empirical results, FDI, FINDEV have highly significant positive effect on real output growth in the long-run. In the short-run, no discernable impact is found, due perhaps to the fact that financial development is at the early stage of development and yet to accumulate critical mass of capital necessary to drive growth. The study also found that as the domestic financial sector develops, a threshold exist beyond which further development acts to retard growth.

It was recommended that policy markets give specific attention to enhancing the development of the domestic financial sector as well other financial deepening metrics. There is need for improvement in the investment environment through massive investment in key infrastructure because this will further boost the efficiency of FDI. There cannot be sustainable growth or development in a politically unstable or policy inconsistent environment. Political leaders should issues of policy somersault and maintain stability in the investment climate of the country. A major limitation of this study is the non-investigation of growth-thresholds of financial sector development. Since the study have revealed strongly that after a certain threshold, financial development retard growth. Further research is recommended to investigate the financial sector development threshold for Nigeria and its constituent elements. If known and addressed, financial development holds enormous potential to galvanize foreign saving for growth.

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