Foreign Direct Investment and Stock Market Development in Nigeria: Evidence from Ardl Bound Test Approach to Cointegration

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Abstract: This study examines the impact of foreign direct investment (FDI) on stock market development in Nigeria using annual data from 1981 to 2016. The variables such as stock market development proxied by market capitalization, foreign direct investment, exchange rate, inflation rate and gross domestic savings were used in the study. The study found that foreign direct investment has positive and statistically insignificant effect on stock market development. Exchange rate and gross domestic savings exert positive and statistically significant impact on stock market development, while inflation rate has insignificant negative influence on stock market development in Nigeria throughout the study period. From the foregoing, this study recommends the followings: first, there is need for the government to device several means that will motivate the foreign investors to diversify their investment from oil sector to other sectors of the economy with special reference to stock exchange market. Second, there is also the need for the government to redesign the existing exchange rate policy and ensure full implantation of the policy with the view to revive the value of our local currency and to stabilize unfavorable fluctuations of exchange rate. Finally, governments in collaboration with the private individual and companies should diversify their investment to other sector such as agriculture, manning, manufacturing among other in order to create more employment opportunities and improve on income generations. That will also increase productive capacity of the economy there by reduce the rate of prices of commodities and increases the domestic savings.

Keywords: Foreign Direct Investment, Stock Market Development, ARDL

I. Introduction

Foreign direct investment (FDI) as a component of international capital flows is widely regarded as a major source of external finance for developing countries like Nigeria in the recent times. The reason for this is that, in most economies particularly in developing countries, domestic investment has proven to be insufficient in giving the economy the required momentum to enable it meet its growth target due to the gap between their capital requirements and saving capacity. Foreign direct investment thus augments domestic resources to enable the country carryout effective economic development programmes so as to transform the nation into an industrialized economy with well-structured financial system as well as raising standard of living of the people. To this extent, most countries strive to attract foreign direct investment as echoed in the Millennium Development Goals (MDGs), New Partnership for Africa’s Development (NEPAD) and Nigeria’s own long-term development plan – Vision 20:2020 (Ayanwale, 2007; Soludo, 2007).

The last decade of the twentieth century as well as the 21st century have witnessed tremendous and divergent policy changes by many developing countries particularly countries of Africa in order to promote FDI into their respective countries. The reasons for this trend are simply due to the high level of optimism about the benefits brought by FDI through multinational corporations (MNCs). Among these benefits include overcoming the saving-investment gap through the means of bringing foreign capital. It also serves as a source of new technology and managerial skills, and provides access for new markets.

A number of empirical studies such as Dhiman and Sharma (2013), Raza, Iqbal, Ahmed, Ahmed and Ahmed. (2012) and Arcabic, Globan, and Raguz (2012) have shown that foreign direct investment was critical to the development of stock market in recipient countries, especially developing ones. Other empirical studies such as Shahbaz, Lean and Kalim (2013), Raza et al. (2012), Dhiman and Sharma (2013), Musa and Ibrahim, (2014) on the role of FDI in host countries suggest that FDI is an important source of capital, complements domestic private investment, create new job opportunities and enhancement of technology transfer, and boosts overall economic growth in host countries.
In Nigeria, the overall economic performance since independence has been rather unimpressive. Despite the availability of huge oil resources, its growth rate has been quite feeble. Between 1961 and 1999, the average annual growth rate of GDP at current basic price was only 3.7% and average per capita income growth was less than 1% per year (Iyoha, 2001). GDP growth was negative for many years, especially in the first half of the 1980s when the collapse of crude oil prices triggered an acute economic crisis in Nigeria. The average growth rate of Nigeria’s GDP between 1981 and 1985 was -7.2%. The apparent increase in industrial and manufacturing activities during 1978 and 1988 was due to enhanced economic activities in the mining sub-sector, especially petroleum. Capital formation in the economy has not been satisfactory. This weak economic performance especially in the past three decades is associated with the factors such as poor macroeconomic management, unreliable stock market and weak investment performance, particularly foreign investment. Iyoha (1996) and CBN (2003) have argued that the collapse in investment was one of the contributory factors that lead to weak economic performance in the 1980s and beyond.

With the advent of Structural Adjustment Programme (SAP) and economic liberalization in Nigeria, FDI inflows have been growing tremendously over the last decade from USD1.14 billion in 2001 to USD2.1 billion in 2004. Nigeria’s FDI reached USD11 billion in 2009, making the country the nineteenth greatest recipients of FDI in the world and the largest in Africa (UNCTAD, 2010). Most of the foreign direct investments into the country are directed to the oil and gas (extractive) sector, thus the economic structure remains undiversified with oil exports accounting for 95% of total export earnings. The United State America through Chevron, Texaco and Exxon Mobil had investment stock of USD3.4 billion in the Nigeria’s oil sector in 2008. The United Kingdom through Shell Company accounted for about 20 percent of Nigeria’s total foreign investment in 2009 while China’s investment in Nigeria moved from USD3 billion in 2003 to USD6 billion in 2009. The adverse effect of the global financial crises led to the decline in the volume of foreign direct investment inflow in 2010 even though it was more noticeable in the portfolio investment module and GDP. Despite the increased flows of FDI to Nigeria in the recent time, the economy is still dwindling. It is characterized by high rate of poverty, low per-capita income, high rate of unemployment, unfavorable balance of payment as well as low and unstable growth rate of GDP (Iyoha, 1996, 1999; Osinubi and Amaghionyeodiwe, 2010). In line with the foregoing, this study seeks to examine the impact of FDI on stock market development for the period 1981 to 2016 in Nigeria. To achieve the foregoing objective, this study is divided into five sections including this introduction. Section two contains reviews of related literature, section three discusses the methodology, while sections four and five comprises discussion of findings and conclusion and recommendations respectively.

II. Literature Review

A lot of studies showed that most developing countries like Nigeria attracts FDI which in turn have a significant impact on Stock market development. For instance, Kalim and Shahbaz (2009), applied ARDL to study the impact of FDI on stock market development in Pakistan. They indicated a positive and statistically significant relationship between FDI and market development in the country. This reflecting the complementary role of FDI in the stock market development of Pakistan. Savings also show a positive influence on stock market development.

Anfofum, Gambo and Suleiman (2013) applied ordinary least square (OLS) to analyze the impact of FDI on economic growth. The variables captured in the model were FDI, exchange rate, infrastructures, export, gross fixed capital formation (investment) and gross domestic product. The cointegration result indicates the evidence of long run relationship between FDI and economic growth. The findings shown that FDI, investment, exchange rate, and exports have positive effect on gross domestic product while a negative effect was found between FDI and infrastructures. The result of Granger causality indicated a unidirectional causality running from foreign direct investment to economic growth. They recommended the need for the government to invest in infrastructural development especially in roads and power so as to attract more FDI inflows.

Oseni and Enilolobo (2011) examined the impact of FDI and stock market development on economic growth in Nigeria. The study used annual data from 1980 to 2009. The Co-integration analysis revealed the existence of long-run relationship among the variables. Furthermore, the result indicated that FDI and stock market development exert positive and statistically significant influence on economic growth throughout the study period.

Adam and Tweneboah (2008) examined the impact of FDI on stock market development in Ghana using quarterly data from first quarter of 1991 to the last quarter of 2006. Their results revealed the existence of long run relationship between FDI and stock market development in Ghana. This contradicted the finding from the previous studies who found that FDI was negatively related to stock market growth in Ghana.

Arcabic et al. (2012), investigated the existence of long run relationships between FDI and stock market in Croatia. Engle-Granger and Johansen co integration approaches were used in testing the presence of cointegration. The results indicated that there is no evidence of cointegration between FDI and stock market in...
Croatia. Claessens, Klingebiel, and Schmukler (2001) investigated the relationship between foreign direct investment and stock market development in less developed countries. Their main objective is to find out whether FDI serve as one of the components that brings about development in the stock market. They found that FDI is positively related to stock market development.

Soumaré and Tchana (2011) conducted a study on the causal relationship between FDI and stock market development in developing countries. The study covered 29 emerging markets which comprises 4 African countries, 15 Asian countries, 4 Eastern Europe countries and 6 countries Latin America. They applied panel data from 1994 to 2006. Their results shown the evidence of bi-directional causality between FDI and stock market development.

Baker, Foley, and Wurgler (2004) explore ways in which FDI flows depend on the stock market movements in host and source countries. They found that FDI positively related to stock market movements on the source-country’s but negatively connected to the movements of stock market in the host-country.

Raza et al. (2012) analyzed the role of FDI on stock market development in Pakistan using annual data from 1988 to 2008 and OLS technique in the analysis. Their aim was also to determine whether these two important variables are related or not in Pakistan. Other control variables captured were domestic savings, exchange rate and inflation. They found that there is positive relationship between FDI and stock market development. That is to say a 1% change in FDI inflows will brings about 70% changes in stock market development in the country. Furthermore, domestic savings has positive effect on stock market development while exchange rate has negative influence on stock market development.

Zafar et al. (2013) examined the relationship between foreign direct investment and development of stock market development in Pakistan. The study used quarterly data from 1998Q3 to 2009Q4. The variables used in the system equation were market capitalization, exchange rate and net FDI inflows. They revealed that there is no evidence of long run relationships among the variables. Granger causality test shows that there is bidirectional causality between stock market development and FDI inflows in Pakistan over sample period.

Musa and Ibrahim (2014) applied Johansen Co-integration and Error Correction Mechanism (ECM) in investigating the relations among stock market development, FDI and macroeconomic stability in Nigeria. The study covered the period from 1981 to 2010. They revealed that there is a long run association among the variables. The study further shows that FDI has positive and statistically insignificant impact on stock market development.

III. Data And Methodology

This study employed secondary data from 1981 to 2016. The data were sourced from Central Bank Statistical Bulletin and World Development Indicators (WDI) a publication of World Bank. The choice of the study period is based on the availability of data of all variables controlled in the model. The variables in the model are stock market development proxied by market capitalization (MCP), foreign direct investment (FDI), exchange rate (EXR), inflation (INF) and gross domestic savings (GDS). The functional model is given as:

\[
MCP = f (FDI, EXR, INF, GDS)
\]

(3.1)

However, the econometric model of the equation (1) is specifying as:

\[
MCP_t = \beta_0 + \beta_1 FDI_t + \beta_2 EXR_t + \beta_3 INF_t + \beta_4 GDS_t + \mu_t
\]

(3.2)

Where

- \( \beta_0 - \beta_4 \) = Coefficients
- \( \mu \) = stochastic disturbance
- \( t \) = time trend over the period of the analysis

Model Specification

This study makes used of ARDL approach developed by Pesaran et al (2001) to estimate the link among the variables. The logics behind the use of this approach are: first ARDL can be applied regardless of whether the series are stationary at level value I(0) or after first difference I(1) or combination of two mutually. Second, it can generate robust and reliable results even if the sample size is small or large. Finally, it generates long run and short run result at a time (Pesaran et al; 2001). Thus, the ARDL model is specified as:

\[
\Delta MCP_t = \beta_0 + \sum_{i=1}^{m} \beta_1 \Delta MCP_{t-i} + \sum_{i=1}^{m} \beta_2 \Delta FDI_{t-i} + \sum_{i=1}^{m} \beta_3 \Delta EXR_{t-i} + \sum_{i=1}^{m} \beta_4 \Delta INF_{t-i} + \sum_{i=1}^{m} \beta_5 \Delta GDS_{t-i} + \mu_t
\]

(3.3)

\[
\alpha_1 LMCP_{t-1} + \alpha_2 LFDI_{t-1} + \alpha_3 LEXR_{t-1} + \alpha_4 LINF_{t-1} + \alpha_5 LGDS_{t-1} + \mu_t
\]
Note that $\beta_0$ to $\beta_i$ and $\alpha_i$ to $\alpha_5$ are the coefficients of the explanatory variables. Furthermore, the Error Correction Model of the ARDL approach is specified as:

$$
\Delta MCP_t = \beta_0 + \sum_{i=1}^{m} \beta_i \Delta LMC\bar{P}_{t-\delta} + \sum_{i=1}^{m} \beta_2 \Delta LF\bar{D}_I_{t-\delta} + \sum_{i=1}^{m} \beta_3 \Delta LEXR_{t-\delta} + \sum_{i=1}^{m} \beta_4 \Delta LINF_{t-\delta} + \sum_{i=1}^{m} \beta_5 \Delta LGDS_{t-\delta} + \beta_6 ECM_{t-\delta} + \mu_t
$$

(3.4)

The ARDL model is divided into two parts; the first part of the equation with $\beta_0$ to $\beta_i$ denotes the short-run dynamics of the model, while the coefficients $\alpha_i$ to $\alpha_5$ signifies the long-run part of the model. The null hypothesis of the foregoing model is defined as $H_0$: $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$, which expresses that there is no long-run association among the variables. Moreover, this study started the analysis by conducting bound test of the ARDL in order to identify the evidence of long-run relationship. The calculated F-statistics is compared with the Critical Value as tabulated by Pesaran et al (2001). If F-statistics is greater than the upper critical value, then the decision will be to reject the null hypothesis of no long-run relationship, while if it falls below a lower critical value, then the null hypothesis cannot be rejected and if it falls within these two critical bounds, then the result is inconclusive (Pesaran et al, 2001). Also, prior to model estimation, the properties of the variables under study were tested in order to know the stationarity levels. The econometrics techniques used in the process were Augmented Dickey-Fuller (ADF) and Phillips-Perron (P-P).

IV. Results And Discussion Of Findings

In any study that deals with time series data, it is very important to test the nature of the series behavior so as to know the order of integrations. This has been conducted using ADF and P-P testing approaches and the results are presented in Table 4.1. the result of the test from the two approaches indicates that foreign direct investment, inflation and domestic savings were stationary at level values (i.e. I(0)), while market capitalization and exchange rate were stationary after first difference (i.e. I(1)).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Augmented Dickey-Fuller</th>
<th>Phillips-Perron</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMCP</td>
<td>-1.5297</td>
<td>-4.3228***</td>
</tr>
<tr>
<td>LFIDI</td>
<td>-3.9662**</td>
<td>-10.7103</td>
</tr>
<tr>
<td>LEXR</td>
<td>-1.2176</td>
<td>-5.3622***</td>
</tr>
<tr>
<td>LINF</td>
<td>-4.2130**</td>
<td>-5.6834</td>
</tr>
<tr>
<td>LGDS</td>
<td>-5.4564***</td>
<td>-5.5943</td>
</tr>
</tbody>
</table>

Note: ***, ** and * indicate significant at 1%, 5% and 10% respectively.

From the stationary test results, we established that series were integrated of different order, some are I(0) and others are I(1). Thus, ARDL model is the appropriate technique to handle the result of this nature. We therefore, move forward to conduct the cointegration (bounds) test of the ARDL. The result verifies that there is an evidence of cointegration among the variables. This is due to the fact that the F-Statistics value (6.67) is greater than the lower and upper critical bounds for all the significant levels. This lead to the rejection of null hypothesis of no cointegration. The result is summarized and presented in Table 4.2.

<table>
<thead>
<tr>
<th>F-Statistics = 6.67</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Value Bounds</td>
</tr>
<tr>
<td>Significance levels</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>10%</td>
</tr>
<tr>
<td>5%</td>
</tr>
<tr>
<td>1%</td>
</tr>
</tbody>
</table>

Since the bounds test indicated the presence of long run relations among the variables, we then go further to estimate the long run coefficients of the ARDL and the result is tabulated in Table 4.3. The results show that, foreign direct investment has positive and statistically insignificant impact on stock market development in Nigeria. It means that increase (decrease) in FDI inflow to Nigeria might lead to increase (decrease) in stock market development. A 1% change in FDI inflow to Nigeria will lead to about 0.08 changes
in stock market development. This finding is proving to us that majority of the foreign investors are not investing their funds in stock market, rather they are investing greater percentages of their money to oil and gas sector of the Nigerian economy. Similarly, exchange rate has positive and statistically significant effect on stock market development in Nigeria. An increase or decrease in exchange rate will lead to increase or decrease in stock market development in Nigeria over the sample period. A 10% change in will lead to about 8.09% change in stock market development.

Inflation has negative and statistically insignificant influence on stock market development. This implies that a rise in inflation rate will lead to a decline in stock market development. A 10% rise in inflation rate would lead to about 0.78% reduction in stock market development. Finally, domestic savings exert positive influence on stock market development in Nigeria and that the result is statistically significant at 10% level. This however means that an upward movement in domestic savings will brings about the same movement to stock market development in Nigeria. According to the result, 10% changes in domestic savings will lead to about 5.31% changes in stock market development in Nigeria.

<table>
<thead>
<tr>
<th>Table 4.3: Result of the Estimated Long-Run Coefficients of the ARDL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable: LMCP</td>
</tr>
<tr>
<td>LFDI</td>
</tr>
<tr>
<td>LEXR</td>
</tr>
<tr>
<td>LINF</td>
</tr>
<tr>
<td>LGDS</td>
</tr>
<tr>
<td>C</td>
</tr>
</tbody>
</table>

R² = 0.99, Adj. R² = 0.99, AIC = 2.0419, SIC = 0.5561, HQC = 0.3490, DW = 2.00, F-Stat. = 758 (0.0000)

The estimated short-run result is presented in Table 4.4. the result reveals that foreign direct investment, exchange rate and inflation rate have negative and statistically insignificant influence on stock market development in Nigeria in the short run, while domestic savings exert positive and statistically significant effect on stock market development in Nigeria in the short run. The Error Correction Model (ECM) has the correct sign, that is less than one, negative and significant at 1% level. This confirms the foregoing long-run relationship among the variables and it implies that in the case of any disequilibrium in the economy the system will correct itself from the short-run towards reaching long-run equilibrium at the speed rate of 20.92% every year.

<table>
<thead>
<tr>
<th>Table 4.4: Estimated Short-Run Coefficients of the ARDL Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable: ∆MCP</td>
</tr>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>∆(LFDI)</td>
</tr>
<tr>
<td>∆(LEXR)</td>
</tr>
<tr>
<td>∆(LINF)</td>
</tr>
<tr>
<td>∆(LGDS)</td>
</tr>
<tr>
<td>ECM (-1)</td>
</tr>
</tbody>
</table>

To check whether the model is reliable, diagnostic test such as serial correlation, and heteroscedasticity test were conducted and the result is shown in Table 4.5 and the results indicated that the model passes all the tests. This is due to the fact that the null hypotheses of all the tests cannot be rejected due to insignificant p-values.

<table>
<thead>
<tr>
<th>Table 4. 5: Results of the Diagnostic Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
</tr>
<tr>
<td>Serial correlation</td>
</tr>
<tr>
<td>Heteroscedasticity</td>
</tr>
</tbody>
</table>

Similarly, this study carried out the stability tests in order to know the stability or otherwise of the model and parameters in the system equation. the techniques used in the process were cumulative sum of recursive residual (CUSUM) and cumulative sum of squares of recursive residual (CUSUMQ) and the results are presented in figure 1 and 2 respectively. The CUSUM test show that the estimated model and parameters were stable because the recursive error fall between the two critical lines. On the other hand, the CUSUMQ test shows that the model is not stable because the recursive error line cut the critical line. The instability in the
model is associated with political instability such as intertribal crises, insecurity in the Niger delta region and sign of global economic crisis between 20003-2007.

![Figure 1](image1.png)

![Figure 2](image2.png)

V. Conclusion AND RECOMMENDATION

This study examines the impact of foreign direct investment on stock market development in Nigeria for the period 1981 to 2016. The aim of the study was also to determine whether these two important variables are related or not and also to determine long-run and the short-run dynamic between the variables in a developing country like Nigeria. Some other important variables Exchange rate, Inflation rate and Gross domestic savings were also incorporated in this study along with the main independent variable FDI. This study employed ARDL approach in the analysis. The study found that foreign direct investment has positive but statistically insignificant impact on stock market development. Also exchange rate and gross domestic savings have significant positive impact on stock market development in Nigeria. However, the study found that, inflation has insignificant negative influence on the development of stock market in Nigeria over the sample period. In consistent with findings, this study recommends the following: first, there is need for the government to device several means that will motivate the foreign investors to diversify their investment from oil sector to other sectors of the economy. Second, there is also the need for the government to redesign the existing exchange rate policy and ensure full implantation of the policy with the view to revive the value of our local currency and to maintain unfavorable fluctuations of exchange rate. Finally, governments in collaboration with the private individual and companies should diversify their investment to other sector such as agriculture, manning, manufacturing among other in order to create more employment opportunities and improve on income generations. That will also increase productive capacity of the economy there by reduce the rate of prices of commodities and increases the domestic savings.

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