Analysis of Foreign Direct Investment on Agricultural Sector and Its Contribution to GDP in Nigeria

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Abstract
Evidence from literature has shown that the benefits of Foreign Direct Investment (FDI) as a vehicle of technology transfer, provision of superior skills and management technique and enhancement of local firm access to international markets vary greatly across sector. Understanding the linkage between the flow of FDI to agricultural sector and the level of productivity in the sector is necessary to identify policy measures that may be geared towards maximizing the flows and gains of FDI to agricultural sector. Using descriptive analysis and simple linear regression, this paper therefore examined the level of foreign direct investment on agricultural sector and the consequential effect on the contribution of the sector to the country’s Gross Domestic Product (GDP). The result obtained shows that the inflow of FDI to agricultural sector does not follow a regular pattern and the sector’s contribution to GDP is in direct relationship with the inflow of FDI. The study, based on these findings recommends that government should put in place the necessary infrastructure and find a permanent solution to the problem of insecurity as this will enhance the flow of FDI into the economy as a whole and agricultural sector in particular.

Keywords: foreign direct investment, gross domestic product, agricultural sector simple linear regression

INTRODUCTION
Despite the growing importance and reliance on oil, Nigeria still remained an agrarian economy accounting for significant shares of national Gross Domestic Product (GDP) and total exports as well as employing the bulk of the labour force. Available statistics showed that agriculture still accounts for about 40 percent of GDP and provides employment (both formal and informal) for about 60 percent of Nigeria’s 170 million people. With these performance, the expectation would be that the agricultural sector receives prime attention from government and private enterprises particularly in the area of funding. However, successive governments over the years neglected agriculture and failed to diversify the economy from over dependence on capital-intensive oil sector. Nigeria’s agriculture remains largely subsistence-based with about 80 percent of agricultural output coming from rural farmers living on less than a dollar per day, earned from farming less than one hectare (2.7 acres). Nigeria that was once a large net exporter of agricultural products and major foreign exchange earner before the advent of oil in 1970s is currently a huge net importer of agricultural products, with such imports exceeding $3 billion in 2010.

Nigeria has diverse agro-ecological conditions that can support a variety of farming models to create its own green revolution. However, public expenditure which serves as the bedrock of financing for the sector has consistently fallen short of recommendations (Food and Agricultural Organization (FAO) set 25 percent of total budget to agriculture). According to Ochigbo cited in Oyakilomen et al (2013), Nigeria has consistently failed to reach the 10 percent agriculture budget standard set by African leaders in the 2003 Maputo agreement, which has led to negative implication for food security. In the area of FDI which has been one of the major adoptions to bolster funds to various sectors of the economy. Ogbanje et. al (2010) using least squared difference (LSD) method to determine the mean difference between the flow of FDI to agricultural sector and each of the other economic sectors of Nigeria from 1970-2007 discovered that there exist heavy discrimination against the sector.

There is a widespread belief within policy circle that FDI enhances the productivity of host countries and promotes economic development through provision of direct capital financing and creation of positive externalities via the adoption of foreign technology and expertise. Evidence from literature however has shown that the benefits of FDI vary greatly across sector. For instance, Oji-Okoro cited in Idowu and Ying (2013) studied the correlation between FDI and telecommunication growth in Nigeria, he found that FDI influx boosted the growth of the country’s telecommunication sector tremendously. Kola and Olalekan (2011) studied FDI and development of small and medium scale enterprises in Nigeria, he found that FDI on its own contributed negatively to the development of small and medium scale...
enterprises in Nigeria through Multinational Companies (MNCs). This study therefore sought to investigate the impact of agricultural FDI on agricultural sector productivity in Nigeria. A good understanding of the linkage between agricultural FDI and agricultural GDP would serve as a guide to policy makers to facilitate the formulation and implementation of appropriate measures to attract the much needed FDI, particularly to agricultural sector. The study covered a period of thirty-three years (1977-2010) because of paucity of data on recent sectorial composition of FDI in Nigeria.

Foreign Direct Investment in Nigeria: An Overview

In Nigeria, like most developing economies, the disparity between capital requirements to accelerate growth and domestic savings has necessitated the demand for foreign direct investment (FDI). According to World Bank (1996), FDI is an investment made to acquire a lasting or long-term management interest (10% of voting stock) in an enterprise operating outside of the economy of the investor defined according to residency. Foreign Direct Investment, in a narrow sense takes the form of building new facilities, that is “Greenfield” investment (also called “mortal & brick” investment). Broadly, FDI comprises mergers and acquisitions, building of new facilities, reinvested profits and loans and similar capital transfer between parent companies and their affiliates. FDI has been argued to offer a wide range of opportunities to the host economy. Apart from filling the gap between domestically available supplies of savings, foreign exchange and government revenue, as a growth-enhancing factor, it enhances employment generation, transfer of technology and skill, competition and access to foreign markets.

Successive governments of Nigeria, from pre-independent era have instituted several strategies involving incentives, policies and regulatory measures to improve the nation’s investment climate to attract foreign direct investment. The reforms included the aids to pioneer industries ordinance and income tax (amendment) ordinance act of 1952; the industrial development (income tax relief) act of 1958; the deregulation of the economy; the new industrial policy of 1989. One reform that created the opportunity for economic renewal and associated broader base of FDI in the country was the establishment of Nigeria Investment Promotion Commission (NIPC) through decree 16 of1995 which opened all sectors of the economy to foreign participation except for a short negative list (including drugs and arms) and allowed 100 percent foreign ownership in all sectors with the exception of petroleum sector where FDI is limited to joint ventures or production sharing. Others include the signing of Bilateral Investment Treaties (BITs), the establishment of Economic and Financial Crime Commission (EFCC) and Independent Corrupt Practices Commission purposely to control corruption. According to Lall cited in Adeleke (2014), the privatization policy which involved the transfer of state-owned enterprises (manufacturing, agricultural production, public utilities services such as telecommunication, transportation, electricity and water supply), to be completely or partly owned by or managed by private individuals or companies was adopted to attract foreign direct investment. Shiro (2009), also noted that since the enthronement of democracy in 1999, governments have continuously repealing laws that are inimical to the growth of foreign direct investment and have made several trips overseas to launder the image of the country as an investment friendly destination. These changes in the policies of governments in attracting foreign direct investment have started bearing fruit. According to the United Nations Conference on Trade and Development (UNCTAD, 2013), the flow of FDI to Nigeria grew from $4978.26 million in 2005 to $6098.96 million in 2010. The flow though declined to $5609.00 million in 2013, Nigeria still ranked third in the African top five recipients of FDI inflow.

Nigeria’s greatest sources of FDI in the past have been United State of America and United Kingdom and in the mid 90 China has also become an important source of FDI. Nigeria is now China’s second largest trading partner in Africa. Others significant sources are Italy, Brazil, the Netherlands, France and South Africa. Sectorial decomposition of Foreign Direct Investment in Nigeria has traditionally been in favour of extractive industries, but in recent years there has been some diversification into manufacturing and telecommunication sectors.

Table 1 below shows the sectorial decomposition of FDI in Nigeria from 1980-2009. Average percentage of 22.6 and 40.7 went to Mining & Quarrying and manufacturing respectively from 2005-2009.

<table>
<thead>
<tr>
<th>Year</th>
<th>Mining &amp; Quarrying</th>
<th>Manufacturing</th>
<th>Agriculture</th>
<th>Transport &amp; Communication</th>
<th>Building &amp; Construction</th>
<th>Trading &amp; Business</th>
<th>Miscellaneous</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980-1984</td>
<td>14.1</td>
<td>38.3</td>
<td>2.6</td>
<td>1.4</td>
<td>7.9</td>
<td>5.1</td>
<td>8.5</td>
</tr>
<tr>
<td>1985-1989</td>
<td>19.3</td>
<td>35.3</td>
<td>1.4</td>
<td>1.2</td>
<td>5.1</td>
<td>32.6</td>
<td>5.3</td>
</tr>
<tr>
<td>1990-1994</td>
<td>22.9</td>
<td>43.7</td>
<td>2.3</td>
<td>1.7</td>
<td>5.7</td>
<td>8.4</td>
<td>15.4</td>
</tr>
<tr>
<td>1995-1999</td>
<td>43.5</td>
<td>23.6</td>
<td>0.9</td>
<td>0.4</td>
<td>1.8</td>
<td>4.5</td>
<td>23.3</td>
</tr>
<tr>
<td>2000-2004</td>
<td>34.7</td>
<td>27.4</td>
<td>0.7</td>
<td>1.1</td>
<td>2.5</td>
<td>7.6</td>
<td>26.0</td>
</tr>
<tr>
<td>2005-2009</td>
<td>22.6</td>
<td>40.7</td>
<td>0.4</td>
<td>2.1</td>
<td>2.2</td>
<td>8.2</td>
<td>23.9</td>
</tr>
</tbody>
</table>

Source: Central Bank of Nigeria Statistical bulletin 2009
Agricultural sector that employs about two-thirds of workforce and providing means of livelihood for about 90 percent of rural population has been one of the least attractive sectors for FDI. The percentage flow of FDI to agricultural sector average 0.4 percent between 2005 and 2009.

**LITERATURE REVIEW**

Economic theory predicts that foreign capital flows could stimulate growth in the host economy. Globally, many researchers therefore have carried out studies to ascertain the growth enhancing capability of foreign direct investment (FDI) and their divergent views on the link between FDI and growth rates of recipient country. Awe (2013) cited that Bornschier (1978) and Dutt (1997) in their separate study found growth rates to be negatively related to foreign capital stocks while the same relationship in Blomstorm (1992) and Balasubramanyam (1996) was found to be positively significant. Burcu et. al (2008), also in their study of endogenous relationship between FDI and growth using a panel dataset for 23 OECD countries for the period of 1975-2004 and analyzed with generalized methods of moments (GMM) found that there is endogenous relationship between FDI and growth. Obwona cited in Adeleke et. al (2014) noted in his study of the determinants of FDI and the impact on growth in Uganda that macroeconomic and political stability and policy consistence are important parameters determining the inflow of FDI into Uganda and that FDI affects growth positively but insignificantly. De Mello cited in Omoriyi and Omobitan (2011) posited that the ultimate impact of FDI on growth in recipient economy depends on the scope of efficiency spillovers to domestic firms.

In Nigeria concerted scholarly efforts have also gone into examining the impact of FDI on Nigerian economy. Ayanwale (2007) investigated the empirical relationship between non-extractive FDI and economic growth in Nigeria as well as the determinants of FDI to Nigeria for the period of 1970-2002, he reported that market size, infrastructure development and macroeconomic policy are important determinants of FDI in Nigeria and FDI contributes positively to economic growth, although the overall effect may not be statistically significant. Ugwuoge et. al (2013) conducted study that covered the period of 1981-2009 and also found FDI and growth in Nigeria to be positively and insignificantly related. Adeleke et.al (2014) used ordinary least square technique to estimate time series data for the period 1999-2013, but reported a positive significant relationship between FDI and growth of Nigerian economy. Some other studies that found positive and significant relationship between FDI and growth in Nigeria are Adofu (2010), Salihu and Keke (2014). A number of studies however, found a negative relationship between FDI and economic growth in Nigeria. Omoniyi and Omobitan (2011) in their study, using two stage-least squares method of simultaneous equations on time series data for the period of 1976-2006 revealed that there exist a negative relationship between economic growth proxied by real GDP and FDI and that size of exports, exchange rate and political stability are very relevant in the locational choice of foreign investment in Nigeria. Olokoyo (2012) also investigated the effect of FDI on the development of Nigerian economy using ordinary least regression (OLS) to estimate the time series data from 1970-2007 and the result obtained evidently do not provide much support for the view of a robust link between FDI and growth in Nigeria.

Many studies in recent time have also looked into economic impact of FDI and sectorial performance in Nigeria. Kola and Olalekan (2011) examined the effect of FDI on the development of Small and Medium Scale enterprises in Nigeria, using GLM multiple regression estimation technique on selected businesses like agricultural business, transportation business and Small and Medium businesses, they found that FDI has negative influence on the development of SMEs. Abdul and Barnabas (2012) investigated the impact of FDI on the performance of manufacturing sector in Nigeria, their findings revealed that there is a long-run relationship between FDI and performance of manufacturing firms in Nigeria and that causality runs from FDI to the performance of manufacturing firms. The study of Anwor et.al (2013) on FDI and manufacturing sector growth in Nigeria also revealed that FDI, domestic investment, exchange rate and degree of trade openness were statistically significant in explaining the variations in manufacturing output growth in Nigeria.

Embarking on economic impact of FDI on telecommunication sector Oji-Okoro (2010), using OLS estimation technique on time series data for the period 2001-2008 found that with the exception of GDP total value of telecommunication technology, other variables such as consumer subscribers, private investment and technology have a positive and significant relationship with FDI. A fair share of studies on impact of FDI on agricultural sector abound in literature. Akande and Biam (2011) conducted an inflation based scenario analysis of causal relationship between FDI in agriculture and agricultural output in Nigeria and reported absence of long-run relationship between FDI in agriculture and agricultural output both in the presence and absence of inflation shock. Idowu and Ying (2013) in their study also found that FDI has no significant impact on agricultural output. These studies though reported insignificant impact, fail to show the type of relationship that exist between FDI and agriculture. However, Ogbanje et.al (2010) used Pearson Product
Moment Correlation analysis to determine the relationship between agricultural FDI and agricultural GDP and found a positive and strong relationship. Binuyo (2014) employed multiple regression analysis with the whole volume of FDI as one of the regressors and also found a positive and significant relationship between FDI and agricultural output. The presence of diverging results lies in the type of FDI used in the analysis. Those studies that found positive significant relationship between FDI and agricultural sector employed FDI that is obtained in the entire economy rather than the FDI that flows specifically to agricultural sector while those studies that found insignificant relationship used agricultural FDI in multiple regression analysis. This study in contrast to earlier studies attempted to establish the link between agricultural output and agricultural FDI using a simple linear regression analysis.

RESEARCH METHODOLOGY
This study used econometric approach in estimating the relationship between foreign direct investment to agricultural sector and its effect on the sector contribution to gross domestic product of Nigeria. Trend analysis of the flow of foreign direct investment to agricultural sector was also carried out while ordinary least square (OLS) technique was employed to obtain the numerical estimates of the coefficients of the equation using vector auto regression (VAR). VAR was chosen because it is commonly used for forecasting system of interrelated time series and for analyzing the dynamic impact of random disturbances on the system variables.

Data and Data Source
The data used for this study were obtained from secondary source. Time series data on foreign direct investment to agricultural sector and its contribution to GDP for the period of 1977-2010 were obtained from the Central Bank of Nigeria (CBN) statistical bulletin for various years.

The Model
The model for the study is formulated thus:
\[ \text{AGRGDP} = f(\text{AGRFDI}) \]
Linearizing the equation gives
\[ \text{AGRGDP} = B_0 + B_1 \text{AGRFDI} + U \]
Where: AGRGDP = Agricultural Contribution to Gross Domestic Product  
\[ B_0 = \text{Intercept} \]
\[ B_1 = \text{Estimation Coefficient} \]
\[ \text{AGRFDI} = \text{Foreign Direct Investment to Agricultural Sector} \]
\[ U = \text{Error Term} \]

RESULTS AND DISCUSSION
Descriptive Statistics
Descriptive statistics involved the use of graphs to show the trends of all variables used in the study. This was employed to achieve the first objective, which is to describe the trend of agricultural FDI and agricultural GDP over the year under review 1977-2010.

Figure 1 above shows the agricultural FDI from 1977 to 2010. Analysis of the trend indicates that foreign direct investment contribution to the Agricultural sector was not significant between the periods of 1977 to 1990. The persistent low contribution was also shown by the straight line movement of the curve over these periods in the graph. Between the period of 1991 and 1995 there was a significant increase in Agricultural FDI from 382.8 up to 1209.5 as shown in the upward sloping movement in the graph. However, the period between 1996 and 2006 witness a steady FDI flow into the Agricultural sector of the economy. Between 2007 and 2010 agricultural FDI increased to from 1329.9 to 1831.9 with a decline from 1999.2 in 2008 to 1664.6 in 2009. This was illustrated in the graph by the movement in FDIAG trend with a sharp upward slope starting from 2007 to 2010 with a significant short time decline as at 2009 in the slope.
Agricultural GDP as shown in figure 2 indicates no significant contribution from the period of 1977 till 1995 with slow upward trended curve. It could be observed that there is gradual and consistent in increase in Agricultural GDP between the periods of 1995 to 2000 with a corresponding agricultural GDP of 619806.83 to 1192910 as at 2000. Significant increases were recorded between the periods of 2000 to 2010 though accompanied with some fluctuations as indicated in the non-smooth curve movement of in the AGRGDP trend within these periods. However, Agricultural GDP maintained the most significant and consistent increase contribution to GDP within the periods of 2007 and 2010 as supported by the continuous upwards trended curve in the AGRGDP graph above.

ECONOMETRIC ANALYSIS

Table 2 Unit root Result

<table>
<thead>
<tr>
<th>Source, Author’s Computation 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADF @ Levels (5% level of significance)</td>
</tr>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>LFDIAGR</td>
</tr>
</tbody>
</table>

N.B: Critical values are in brackets

The result of the stationary test using Augmented Dickey Fuller is as shown in table 2. It shows that Agricultural GDP and Agricultural FDI were all non-stationary at their levels given the 5 percent ADF critical value as shown in the table. We therefore proceeded to difference the two variables-AGRGDP and FDIAG at their first differences to achieve a stationary trend process. Hence both AGRGDP and FDIAG are regarded to be integrated into order 1 process. This study therefore rejects the unit root null hypothesis which means that the series are trend stationary.

Table 3 Co integration Result

<table>
<thead>
<tr>
<th>Source, Author’s Computation 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trace Test Result</td>
</tr>
</tbody>
</table>

Unrestricted Co integration Rank Test (Trace)

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Eigenvalue</th>
<th>Trace Statistic</th>
<th>0.05 Critical Value</th>
<th>Prob.**</th>
</tr>
</thead>
<tbody>
<tr>
<td>None *</td>
<td>0.325860</td>
<td>14.42367</td>
<td>12.32090</td>
<td>0.0219</td>
</tr>
<tr>
<td>At most 1</td>
<td>0.054800</td>
<td>1.805522</td>
<td>4.129906</td>
<td>0.2106</td>
</tr>
</tbody>
</table>

Unrestricted Co integration Rank Test (Maximum Eigenvalue)

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Eigenvalue</th>
<th>Max-Eigen Statistic</th>
<th>0.05 Critical Value</th>
<th>Prob.**</th>
</tr>
</thead>
<tbody>
<tr>
<td>None *</td>
<td>0.325860</td>
<td>12.641815</td>
<td>11.22480</td>
<td>0.0283</td>
</tr>
<tr>
<td>At most 1</td>
<td>0.054800</td>
<td>1.805522</td>
<td>4.129906</td>
<td>0.2106</td>
</tr>
</tbody>
</table>

With the stationary level of the series integrated at order, we proceeded to employ the Johansen and Juselius (1991) co integration procedure to examine whether there is any long-run relationship between foreign direct investment in Agriculture and Agricultural sector contribution to GDP. The test was carried out with the trace and Maximum Eigen value statistic shown in table 3. Further investigation of the result shows that the existence of a co integrated series at 5 percent significance level by the maximum Eigen value and trace statistic. This therefore implies there is an evidence of a long-run relationship among the two variables. The critical values were based on the MacKinnon p-values at 5 percent level.

Table 4 Estimated long-run Effect

<table>
<thead>
<tr>
<th>Source, Author’s Computation 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 4 Estimated long-run Effect</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Co integrating Equation(s): Log likelihood 14.25040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normalized co integrating coefficients (standard error in parentheses) LAGR GDP LFDIAG</td>
</tr>
<tr>
<td>1.000000 -2.385445</td>
</tr>
<tr>
<td>(0.10106)</td>
</tr>
<tr>
<td>T –Statistic [23.604245]</td>
</tr>
</tbody>
</table>

To examine the short-run mechanism of the system from the short run adjustment to the long run equilibrium. A comparative analysis of the error correction term indicates that agricultural contribution to GDP (LAGRGDP) model has a negatively signed co efficient though insignificant at 5 percent while foreign direct investment contribution to agriculture (LFDIAG) is positively signed but not significant. To achieve convergence in the system the estimated model co efficient should negatively
signed, significant and falls within the acceptable -1<region of error term>0 in absolute terms. Given the result of the Agricultural GDP model there is an evidence of convergence in the system. This further suggests the ability of the system to be restored back to equilibrium in the incidence of exogenous shocks to the system. The speed of divergence of the system is estimated at 3.8 percent per annum although not significant.

CONCLUSION AND RECOMMENDATION
This study has examined the flow of foreign direct investment to agriculture and its consequential effect on the contribution of agricultural sector to Gross Domestic Product in Nigeria. The result shows fluctuations in the flow of FDI to agriculture and the sector is heavily marginalized when compared with the flow received by other sectors of the economy. The result also shows that there is a significant long-run relationship between agricultural FDI and the sector contribution to GDP. This study therefore recommends that,

FDI that focuses on the improvement of existing technology and/or introduction of new technology that would enhance domestic production should be sought for agricultural sector.

Adequate infrastructure should be put in place to encourage inflow of FDI.

Some of the official bottleneck that are preventing foreign investors must be removed.

The problem of corruption and insecurity should be tackled with utmost urgency to change the image of the country.

REFERENCES


