

Determinants of Foreign Direct Investment inflow to Nigerian agricultural sector, 1970-2014

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ABSTRACT

This study investigated the determinants of Foreign Direct Investment (FDI) on the agricultural sector of Nigeria between 1970 and 2014. The specific objective was to ascertain the determinants of foreign direct investment inflow to agricultural sector. Data were collected from Central Bank of Nigeria - Statistical bulletin and online data base, Bureau of Statistics and World Bank Handbook of Statistics for the period, 1970-2014 and analyzed using ordinary least square as the estimation technique with the help of R-Software. Unit root test and Co-integration test were also carried out to ensure the data were stationary and do not co-integrate. These were done using Augmented Dickey Fuller (ADF) and Johansen tests. Jaque Bera test was carried out to ensure the goodness of fit of the data analyzed. All the data were found to be stationary, did not co-integrate, and also followed normal distribution. The result from estimation of the model revealed that market size, degree of openness and natural resource flow had significant and positive influence on FDI inflow to agricultural sector, while exchange rate had a significant and negative influence. The study recommends among others that the Central Bank of Nigeria should have a strong policy on exchange rate that would help the naira to gain value and stability.

Keywords: Agricultural sector, determinants, economy, foreign direct investment

INTRODUCTION

The quest for growth of the economy has been the desire of all economies of the world, especially the less developed countries (LDCs). The developed economies desire to maintain their developed economy status while the less developed economies desire to encourage growth intended policies, to attain the developed economy status. Different approaches have been created to actualize this desire. One of such

designs is the Foreign Direct Investment (FDI).

FDI is an investment made to acquire a lasting management interest (normally 10% of voting stocks) in business enterprises that operates in a country different from that of the investors, defined according to residency (World Bank, 1999). Such stock (investment) may assume the form of either "Greenfield" investment (also known as "mortar and brick" investment) or Merger and Acquisition (M and A), which entails

acquiring existing interest rather than new investment (Ayanwale, 2007). According to him, ownership of at least 10% of the ordinary shares or voting stock is the criterion for the existence of a direct investment relationship. He explained that FDI consists not only of merger and acquisition and new investment, but also earnings reinvested and loans and similar capital transfer between parent companies and their affiliates. As stated “countries could be both host to FDI projects in their own country and a participant in investment projects in other countries”.

Ayanwale argued that the inward FDI position of a country is made up of the hosted FDI projects, while outward FDI consists of those investment projects owned abroad. He asserts that one of the most salient features of today’s globalization drive is conscious encouragement of cross-border investments, especially by transnational corporations and firms (TNCs). He reported that several countries and continents (especially developing) now see attracting FDI as an important tool in their strategy for developing the economy, stating that FDI is seen as a combination of capital, technology, marketing and management (Ayanwale, 2007).

In the continent of Africa, the new partnership for Africa’s development (NEPAD) was launched with one of its pillars being to increase available capital to US\$64 billion through a combination of reforms, resource mobilization and conducive environment for FDI (Funke and Nsouli, 2003). The effort to improve the business climate by several African countries stems from the desire to attract FDI. Sub Saharan African region now depends very much on FDI for a good number of reasons, some of which include productivity gain and the introduction of

new process as amplified by Asiedu (2003). The choice for FDI stems from its advantages of technology transfer by absorption capability of the host country, augmenting domestic savings, and improving managerial skills as opined by Sjöholm (1999) and Otokpa (2004).

Nigeria, being a key player in African economy, intends to promote her economic growth by embarking on policies that will attract FDI. The Nigeria Enterprise Promotion Decree (NEPD) of 1971 was to regulate FDI but not to promote it due to the indigenization intention of the government. The unsuccessful implementation of the Fourth National Development Plan in the early 1980s galvanized the introduction of policies that will attract FDI. The development plans were 1962-1968, 1970-1974, 1975-1980 and 1981-1985 respectively for the first, second, third and fourth National development plans. Some of the policies introduced are; the Structural Adjustment Programme (SAP) of 1986, Industrial Development Coordinating Committee (IDCC) of 1988, Nigerian Investment Promotion Commission (NIPC) of 1995, the Export Processing Zone (EPZ) of 1999, the establishment of the Economic and Financial Crimes Commission (EFCC), and the Independent Corrupt Practices Commission (ICPC). All these policies are intended to create conducive environment to attract FDI. The Nigerian Investment Promotion Commission, (NIPC), was established by Decree number 16 of 1995, during late General Sani Abacha’s administration. It tagged itself as ‘the one-stop-shop’ for exploring and planning foreign investment and new business in Nigeria. The mandate of the agency is to facilitate foreign investments and advocate in the areas of favourable government policies on behalf of foreign investors. The agency helps to create a friendly investment climate so that

investors can see Nigeria as an investment haven. (Laws of the Federation of Nigeria, 1995) In the case of EFCC and ICPC, the two agencies were established to assist in fighting corruption in Nigeria. Corruption is the reason foreigners no longer have confidence in Nigeria, Nigerian citizens at home and abroad because of activities of fraudsters, corrupt public officials, poor enabling environment and mis-government. Tackling corruption by the two agencies would lead Nigeria into having valuable economic activities and forestalling foreign investment in the country.

The World Bank Report (1999) reports that the policy of Nigerian government on economic deregulation and liberalization has opened up new opportunity windows to all investors wishing to invest in the country's economy. In this connection, an interest rate regime that supports the real sector of the economy as well as a market determined exchange rate are the object of government policy. Being pursued also is the security of life and property of the citizens with the strengthening and reorganization of the Nigerian police force. In addition, the Nigerian Investment Promotion Council (NIPC) has been fortified to enable it serve as a one-stop office for clearing all the requirements for investment in the country. The tariff structure is being reorganised with a view to boosting local production. A new visa policy has also been introduced by the Government to enable genuine foreign investors to receive entry visa to Nigeria within 48 hours of submitting required documents. The "expatriate quota" requirement existing for foreign nationals working in Nigeria is in the process of being replaced with "work permit" that will be administered by the Nigerian Investment

Promotion Council (NIPC). Nigeria only cautiously and recently in the mid-1980s, embarked on a reform path-but this was faced by frequent interruption by political shocks and policy reversals.

The Nigerian economy performed well during the years following independence and into the initial oil boom years but Nigeria did not take advantage of this to lure FDI into the country and specifically to agricultural sector. It was after the oil boom, that Nigeria started coming up with some policies to stabilize and deregulate the economy to attract FDI. By deregulation, the Nigerian government tries to remove or simplify government rules and regulations that inhibit the operation of market forces, bringing about competition among key players in the market (Okezie and Amir, 2011). In like manner, the prices of the products involved would also be realistic. It may increase the cost of living, and make the cost of transportation high but it creates job opportunities in a country.

Nigeria has been a recipient of Foreign Direct Investment (FDI) overtime but the major determinants have not been fully ascertained. This is especially when viewed against the backdrop of Foreign Direct Investment in the country. At the same time even when regarded as a major recipient in Africa, Nigeria is still plagued by mass poverty, very weak manufacturing sector, real sector under development, still a mono culture country and over dependent on oil sector (Ayanwale and Bamire, 2004).

Foreign Direct Investment inflow to agricultural sector of Nigeria has not really translated to the growth of the economy and this raises questions as to the key determinants during different ethos notably the pre and post deregulated economy in

the Nigerian history. The issue becomes whether the appropriate measures to really attract Foreign Direct Investment to agricultural sector are being followed in the country. To answer these questions our objective for this study is to ascertain the determinants of Foreign Direct Investment inflow to agricultural sector.

METHODOLOGY

Study Area

Nigeria is a sub-Saharan African country with population of 173.6million people (NPC, 2013). It spans an area of 923,768 square kilometers, and is bordered by the Gulf of Guinea in the south, Cameroon and Chad in the east, Republic of Benin in the west and Niger in the north (FAO, 2012). Its topography ranges from mangrove swampland along the coast to tropical rain forest and savannah to the north (Lawal and Atte, 2006). Noted geographical features in Nigeria include the Adamawa highlands, Mambilla Plateau, Jos Plateau, Obudu Plateau, the River Niger and River Benue. On the world map, Nigeria lies between $9^{\circ} 08' N$ and $8^{\circ} 68' E$.

Agriculture remains the mainstay of its economy. Okuneye (2002) described agriculture as the main source of food for most of Nigeria's population while Ayinde *et al.* (2007) are of the view that it was until oil discovery Nigeria's highest foreign exchange earner.

Its capital is Abuja with Lagos being the country's largest city. Official language is English, major exports are oil, minerals, cocoa and rubber and major imports are manufactured goods, machinery/transport equipment, chemicals, food and live animals (FAO, 2012).

Data Collection

Secondary data were collected and they include inflows of Foreign Direct Investment, Export and import data, GDP,

exchange rate and inflation rate. All these data were collected from the Central Bank of Nigeria- Statistical bulletin (various issues) and Central Bank online data base, Bureau of Statistics, World Bank handbook of statistics and also Food and Agriculture Organization of the United Nation's website for the period 1970-2014.

Data Analysis

The data collected were analyzed using the ordinary least square (OLS) as the estimation technique with the aid of Microsoft Excel and R Software. The models were estimated using time series data from 1970 – 2014.

Estimation Procedure

The time series properties of data were examined in order to avoid spurious result emanating from the non-stationarity of the data and to analyze the dynamic structure of the relationships. The estimation began with a unit root test to confirm the stationary state of the variables that enter the model, using Augmented Dickey-Fuller (ADF). Ordinary Least Square was then used to estimate the model and lastly co-integration test was carried out using Johansen method of co-integration. Jarque Bera test was also used to test for goodness of fit of the data to see if they followed a normal distribution.

A trend analysis was carried out to estimate the trend of FDI inflow to the various sectors of Nigerian economy using tables, graphs and the following trend equation as adopted from Onyenweaku and Okoye (2005).

$$Q = b_0 + bt \dots \dots \dots (1)$$

In Log form,

$$\text{Log } Q = b_0 + b_1t + U \dots \dots \dots (2)$$

Where,

Q = Foreign direct investment (measured in millions of naira)

t = Time trend variable (measured in years)
 b₀ and b₁ are the regression parameters to be estimated.
 U = Error term

To ascertain the determinants of FDI inflow to agricultural sector the ordinary least square was employed. The equation is specified as follows:

$$FDI_{it} = B_0 + B_1GDP_t + B_2EXR_t + B_3INFR_t + B_4OPN + B_5NRX + U... \dots\dots\dots (3)$$

Where:

- FDI_{it}* = Foreign Direct Investment inflow into Agricultural sector in Millions of naira
- GDP_t* = The GDP per capita, which reflects the income level of the whole economy, used as proxy for market size (measured in Naira)
- EXR_t* = Exchange rate of Nigeria's currency (US Dollar to Naira)
- INFR_t* = Annual Inflation rate measured in Percentage
- OPN* = Trade openness which is the sum of exports and imports as a percentage of GDP.
- NRX* = Nigeria's natural resource flow. This is the ratio of natural

- resource export to total export of Nigeria.
- i* = refers to the agricultural sector
- t* = Years 1970-2014
- B₀ = Intercept
- B₁, B₂, B₃, B₄, B₅* = Coefficients of explanatory variables
- U = Stochastic error term

It is expected that foreign direct investment will be positively influenced by market size, exchange rate, degree of openness of the economy to international trade and negatively influenced by inflation rate and natural resource flow.

RESULTS

After carrying out the time series tests for stationarity, co-integration and normality, the data sets were found to be stationary, did not co-integrate and equally followed a normal distribution. The analysis then proceeded to ascertain the trend of FDI inflow to Nigerian economy.

The trend results for the inflow of FDI into Nigerian economy for the period 1970-2014 is shown in Table 1.

Table 1 shows that the inflow of Foreign Direct Investment to Nigerian economy during the period under study (1970-2014) had a significant growth.

Table 1. Trend results for FDI inflow for pre-deregulated, deregulated and all periods under study.

Period	Dependent Variable	B ₀	B ₁	r ²	F-ratio
All Periods	FDI.	0.4756 (0.237)	0.00742 (7.363) ***	0.5577	64.21***
Pre-deregulated	FDI	1.300e+01 (873.1) ***	1.101e-03 (146.2) ***	0.9993	2.138e+04***
Deregulated	FDI	-13.236904 (-3.498) **	0.014267 (7.541) ***	0.6781	56.87***

Source: R Software computer results
 (Significant codes: '***' 0.01 '**' 0.05 '*' 0.1)
 Figures in parenthesis are t-values.

It can be observed that the Nigerian FDI seems to exhibit an upward trend within the 1970 -2014 time period (Figure 1).

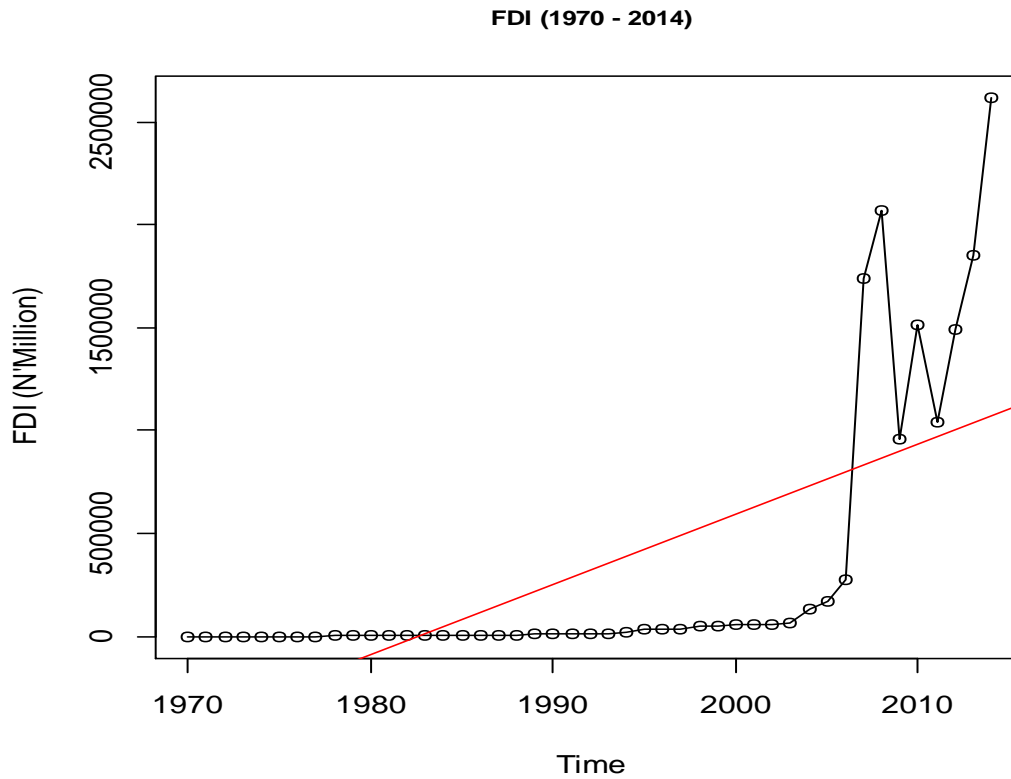


Figure 1. FDI into Nigerian economy from 1970 – 2014

Figure 2 shows the FDI for the various sectors. It is observable that the Agricultural sector received the least FDI inflow in the economy (₦9,119.96 million) while manufacturing and processing received the highest (₦130,537.4893million). This is because of the neglect of the agricultural

sector for a long period after the discovery of oil. Investors went for where they would gain which is in manufacturing and processing and related sectors leaving out agricultural sector. FDI inflow to agricultural sector has been trottling over the years.

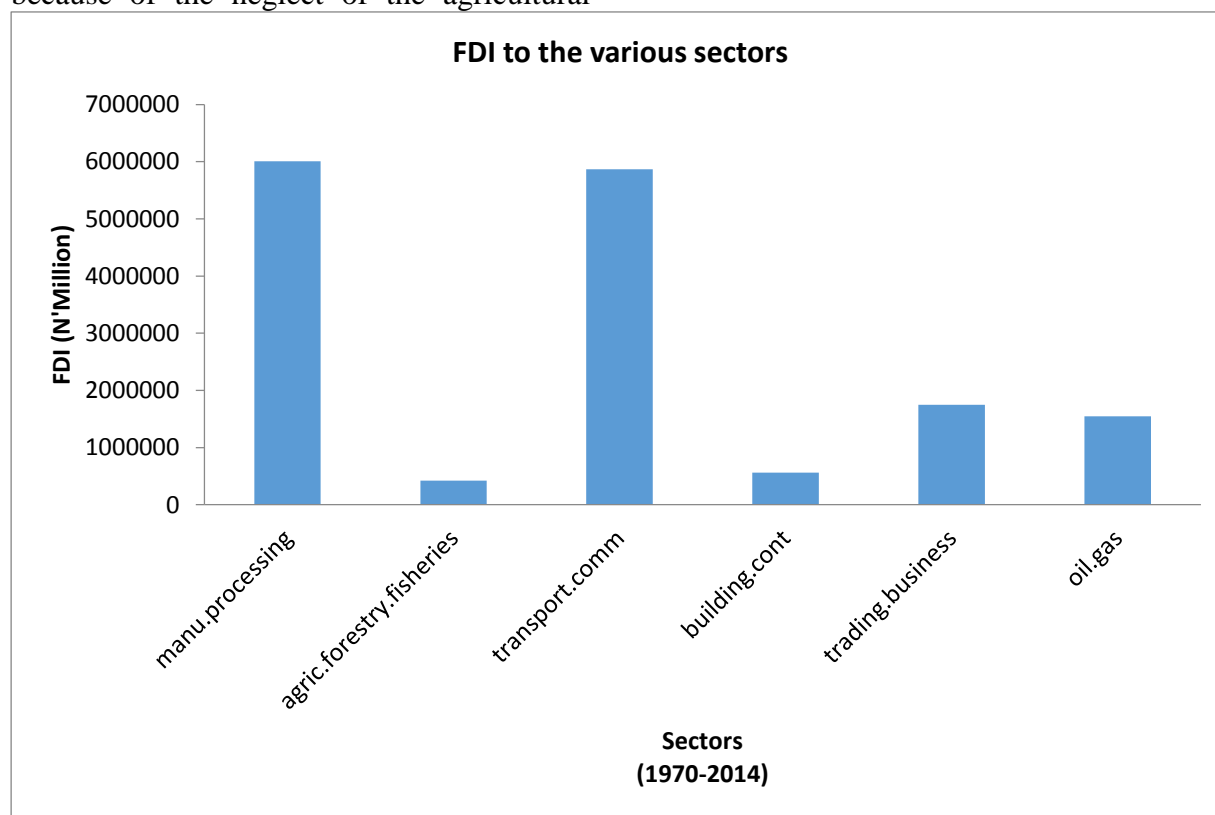


Figure 2. FDI into Nigerian economy from 1970 – 2014. (Note Oil and Gas was captured from 2007)

The key determinants of FDI were identified as Market size, Exchange rate, Inflation rate, Degree of openness and Natural resource flow. Table 2 shows the regression results of the factors affecting FDI inflow to Agriculture. The four functional forms were used to run the analysis and the function that

gave the best fit was selected as the lead equation (i.e exponential). The R-squared of 88.7% suggests that 88.7% of changes in FDI inflow is accounted for by the explanatory variables (market size, exchange rate, inflation rate, degree of openness and natural resource flow).

Table 2. Results of analysis of the determinants of FDI inflow to agriculture.

Variables	Linear	Exponential +	Semi-log	Double log
Intercept	-155.1712 (-0.006)	-1.748e+00 (-0.903)	68849.0 (1.691)	4.690e+00 (2.220) **
GDP	0.7672 (7.548) ***	8.410e-05 (11.425) ***	7490.6 (5.202) ***	9.524e-01 (12.750) ***
EXR	-22.8501 (-0.477)	-8.516e-03 (-2.457) **	1656.3 (0.2288)	1.556e-05 (0.000)
INFR	-1.1387 (-0.009)	-1.206e-03 (-0.132)	772.1 (0.221)	1.142e-01 (0.629)
OPN	-13.3524 (-1.013)	5.036e-03 (5.275) ***	-21407.4 (-2.688) **	-9.180e-01 (-2.222) **
NRX	4893.6713 (0.166)	6.358e+00 (2.975) ***	1073.6 (0.033)	2.927e+00 (1.757) *
R ²	0.6844	0.887	0.4854	0.9055
R ⁻²	0.644	0.8725	0.4194	0.8933
F Statistic	16.92	61.24	7.358	74.7

Source: R Software computer results
(Significant codes: ‘***’ 0.01 ‘**’ 0.05 ‘*.’ 0.1)

Figures in parenthesis are t-values.

+: Lead Equation

DISCUSSION

The time variable was significant in influencing FDI inflow. This is so because of the significant and positive coefficient of the time variable observable from the result. We can therefore infer that time trend variable determined the quantity of FDI inflow to the economy. The coefficient of multiple determination for the whole period was 0.5577 and depicted that 55.77% of the changes in FDI inflow was due to changes in time. The F statistic too was significant both at 1% and 5% levels of significant. During the pre-deregulated and deregulated period, time trend variable equally showed significant and positive values. In essence time influenced the quantity of FDI that came in during the period under study. This confirms the work of Ajayi, (2006) that depicted an upsurge in FDI inflow over time.

It was observed that there exists a relatively upward linear trend from 1970-2006. However, the increase became spontaneous from the time periods of 2007–2014. The sharp increase is explained by the oil boom which became more pronounced within these periods and as a result, an addition to FDI inflow. This increase lasted for a year before dwindling up and down 2009-2011. The reason for this could be attributed to the global recession of 2008–2011 that affected many donor countries. However, the 2011–2014 period experienced a steady increase as the donor economies bounced back from recession.

From Table 2, we see that for the exponential equation chosen as the lead equation, market size, exchange rate, degree of openness and natural resource flow are significant at 5% while inflation rate did not

show significance at all. It is obvious that the exponential model is adequate with its high R-squared value of 88.7% compared to linear and semi-log models that have less than this value. Although the R-Squared for double log is higher, yet its explanatory variables are not as significant as in the case of exponential. Thus we can say that the market size (gdp), exchange rate (exr), degree of openness (opn), and the natural resource flow (nrx) are significant determinants of Agricultural FDI. This implies that any policy that will bring about a change to the market size of the economy (gdp), exchange rate, degree of openness of the economy to international market and natural resource flow will definitely affect the inflow of FDI to agriculture either for the better or worse. Presently, the policy operational in Nigeria encourages FDI inflow as market size for agricultural products and ancillary services is large, exchange rate has been stable for a couple of months now with naira exchanging for dollars at 314 at the bank rate and also the degree of openness of Nigeria's economy to international trade is high therefore encourage foreign investors. The natural resource flow presently is encouraging as it determines if resource-seeking FDI can be attracted into the economy. Majority of this type of FDI goes to manufacturing and processing and related sectors.

Market size is significant at 1% and has a positive influence on FDI. GDP per capita is used to capture market size and GDP is an indication of the volume of business activity in an economy. The higher the volume of business in any economy, the greater the tendency to attract inflows of FDI. This will most likely trigger economic growth and consequently result in economic development of Nigeria. This result is in tandem with the work of Iyoha (2001)

which shows that market size influences FDI inflow.

Exchange rate is significant at 5% and has a negative influence on FDI. This implies that when exchange rate is high, there will be a decrease in foreign direct investment inflow. This confirms the results of earlier works done on FDI determinants like the work of Faruqee (1992). Faruqee identified exchange rate as a macro-economic variable that influences the inflow of FDI to an economy negatively.

Degree of openness is significant at 1% and has a positive influence on FDI. This is an indication of how an economy is open to business opportunities. This implies the absence of trade barriers such as tariffs, quotas and embargos. Trade thrives in the absence of these barriers. The result of the study shows that openness is a significant and positive determinant of FDI inflow. FDI inflow is expected to go higher if there is the absence of barriers to trade. This also coincides with the work of Offiong and Atsu (2014) that found degree of openness as being a strong determinant of Foreign Direct Investment inflow to Nigerian economy.

Natural resource flow is significant at 1% and also has a positive influence on FDI. This is the ratio of export of natural resources to total export. This result implies that the greater the export of natural resources from a country, the greater the possibility of attracting FDI. This is because certain foreign investors are attracted into a country because of the natural resource endowment of the country, example oil. This is in line with the work of Yuko and Nauro (2002). In their study, they investigated the determinants of Foreign Direct Investment inflows in the transition economies between 1990 and 1998 using market size and

resource abundance as variables and found both as being strong determining factors of FDI inflow. They argued that different types of FDI are motivated by different factors - the market-seeking FDI and the resource-seeking FDI. The market-seeking FDI goes to countries with large local market while resource-seeking FDI goes to countries with abundant natural resources.

For FDI to be attracted to agricultural sector there has to be investors who are interested in taking advantage of the large market size in Nigeria. Be it technology transfer or investment in agro-allied industries, Agricultural sector share of FDI will increase rapidly with more market-seeking FDI.

CONCLUSION

Market size, exchange rate, degree of openness and natural resource flow are all significant determinants of FDI inflow to agricultural sector with market size, degree of openness and natural resource flow having a positive influence on FDI while that of exchange rate is negative.

Based on the findings from this research, the following recommendations were made,

- (i) The government should promote fiscal policies that specially enhance the domestic capacity of its citizens by aiming at attracting

specific types of FDI that are able to generate spillover effects in the overall economy. Here, the Nigerian government policy on FDI should focus on employing promotional resources to attract a subset of FDI flows rather than FDI in general. An example of this is FDI targeted at processing of agricultural products.

- (ii) The result on exchange rate implies that a high exchange rate discourages foreign investors from engaging in investments in Nigeria. The Central Bank of Nigeria should have a strong policy on exchange rate that would help the naira to gain value and stability.
- (iii) Our production capacity should be equally improved upon so we can do more export and by so doing stabilize our currency against dollars in the international market. Example, if we begin to produce more agricultural finished goods for export it will help solve the problem of exchange rate fluctuations.

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