

# **THE IMPACT OF FOREIGN DIRECT INVESTMENT ON AGRICULTURAL OUTPUT IN NIGERIA**

**A thesis submitted to the Othman Yeop Abdullah Graduate School of Business, University  
Utara Malaysia, in Partial Fulfillment of the Requirement for the Master of Economics.**

**BY  
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## **ABSTRACT**

This study examines the impact of Foreign Direct Investment on Agricultural output in Nigeria from 1970-2012 using an autoregressive distributed lag (ARDL) model. Data were sourced from the National Bureau of statistic (NBS), Central Bank of Nigeria (CBN), and the World Development Indicators. Results from the analysis reveal that Foreign Direct Investment, Government expenditure and Exchange rates in the period under study have significant positive effects on Agricultural output, whereas Interest rates and Inflation variables have negative effect on Agricultural output, although the Inflation rate is not significant. Increase in volume of Foreign Direct Investment is recommended, Government and other stakeholders should seek Foreign Direct Investment. It is also recommended to improve macroeconomic policies that will encourage agricultural sector productivity in Nigeria.

## **ABSTRAK**

Kajian ini mengkaji kesan Pelaburan Asing Langsung terhadap output pertanian di Nigeria dari 1970-2012, menggunakan model autoregressive distributed lag (ARDL). Data adalah bersumberkan dari National Bureau of Statistic (NBS), Bank Negara Nigeria (CBN), dan World Development Indicators. Keputusan dari analisis menunjukkan bahawa Pelaburan Asing langsung, Perbelanjaan Kerajaan dan Pertukaran Asing dalam tempoh kajian mempunyai kesan signifikan terhadap output pertanian, manakala pembolehubah -pembolehubah kadar faedah dan inflasi mempunyai kesan negative terhadap output pertanian, walaupun kadar inflasi tidak signifikan. Pertambahan dalam pelaburan pertukaran asing akan menambah baik polisi makroekonomi dan akan meningkatkan daya pengeluaran dalam sektor di Nigeria.

## **DEDICATION**

I dedicate this work to my primary source, the Almighty God who has made it easy for me to carry out this study.

## **ACKNOWLEDGEMENT**

All glory is to almighty God, who has blessed me with this opportunity and given me the ability to get this work done. My sincere appreciation goes to the my supervisor in the person of Prof. Kuperan Viswanathan for showing so much interest in the smooth running of my studies and my overall wellbeing in Malaysia. I also wish to acknowledge all the staff of school Economics, University Utara for their coordination and timely assistance whenever needed.

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## **CHAPTER ONE: INTRODUCTION**

### **1.1 BACKGROUND OF THE STUDY**

The federal republic of Nigeria is in west Africa between latitude  $4^{\circ}$  to  $14^{\circ}$  North and between longitudes  $2^{\circ} 2'$  and  $14^{\circ}30'$  East, in the North the country is bounded by the Niger and Chad Republic, to the South by the Atlantic Ocean; in the East by the Cameroon Republic – the country takes its name from its popular river, the Niger. Nigeria has a land area of about 923 769  $\text{km}^2$  (FOS, 1989); the surface area of Nigeria is 91.07 million hectares, 57% of which is believed to be either crop or pastures, while the remaining 43% is divided amongst forest, water bodies and other uses. West breadth is about 800km and the North-South length is 1450km. the total land boundary is 4,047km whereas the coastline is 853km. The irrigated land is estimated at 9570  $\text{km}^2$  with an arable land area of 33%; pasture 44%, crops 3%, forest 12% in the west and others 8% (FMEN, 2001).



Figure: 1.1

*Map of Nigeria*

Source: (IFPRS, 2013)

Nigeria is a country of marked ecological and climatic diversity. The highest point is the chapel Waaddi at 2419m, whereas lowest is the Atlantic ocean at sea level.

Nigeria has different ethnic nationalities, socio-economic condition, and biophysical characteristics and agro-ecological zones. It has emerged over time and space with regards to administrative structures and governance. In 1914 it started as an amalgamated colony of Britain;

it become independent in 1960 and emerged as a federation in 1963. Nigeria was proclaimed a republic in 1963.

## **1.2 NIGERIAN-AGROECOLOGICAL-ZONES**

Nigerian vegetation is categorized into various type since 1950s, however this categorization indicates the combined effect of rainfall, temperature, humidity, in particular the changes that occur in the rainfall which govern the natural vegetation which exert significant influence on indigenous plants in the country- Oyenuga (1967) has found that tropical zones and humid of the south have long period of rain which can support plantation of crops such as, cassava, cocoa, melon, oil palm, maize, rice and cowpeas. However, in most of this region high rainfall leads to severe erosion in most of the places. The north has short period and low rainfall that has savannah land which covers 80% of the vegetation in the country. These savannah regions have an advantage for grazing livestock such as donkeys, cattle, horses, goat, camels and sheep.

Oyenuga (1967) categorizes Nigeria into nine agro-ecological-zones (i) the fresh water swamp (ii) guinea savannah (iii) sudan savannah (iv) mangrove forest (v) sahel savannah (vi) southern guinea zone (vii) jos plateau (viii) tropical rain forest zone (ix) guinea savannah zone. However, Iloeji (2001) classified the country into three ecological zones such as (A) savannah zone which comprises (i) sudan savannah (ii) sahel savannah (iii) guinea savannah. (B) Forest which consist (i), high forest (ii), salt-water (iii)., fresh water swamp.

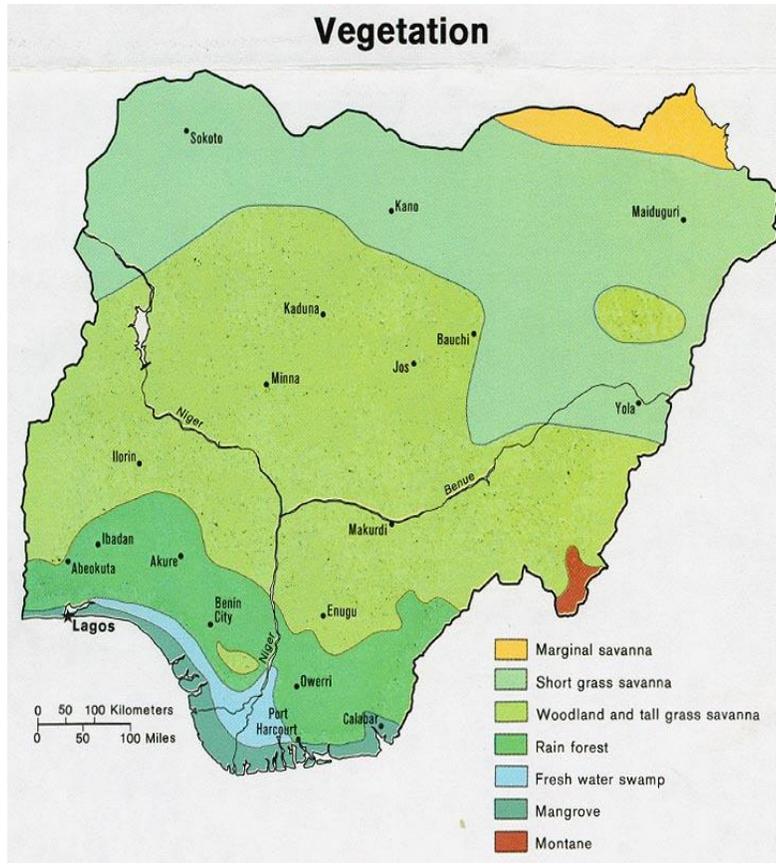


FIGURE 1.2

*NIGERIAN-AGROECOLOGICAL ZONES*

Source: (IFPRS, 2013)

**1.3 WHAT IS FOREIGN DIRECT INVESTMENT**

One of the important features of today’s globalization is conscious encouragement of cross-border investment especially transnational corporations and firms. Many countries and continent (especially developing) now consider attracting FDI as an important element for economic development (Adeolu, 2007). Therefore FDI can be defined as an instrument for integrating international economies (UNCTAD, 2008), it is also seen as an amalgamation of capital, management, technology and marketing. Foreign direct investment can also be defined as “a

category of cross-border investment. The investment is made by a resident in one economy with the objective of establishing a lasting interest in an enterprise in an economy other than that of the direct investor” with a minimum of 10% ownership or voting power by the investor for an investment to be foreign direct investment. (OECD, 2008; pp. 10).

Foreign direct investments is a hot topic of discussion especially in areas such as economics, international business and politics, therefore importance of FDI on the economy cannot be overemphasize as so many countries today around the globe consider it as key engine of development.

#### **1.4 FOREIGN DIRECT INVESTMENT IN AFRICA**

The controversy over the potential effect of FDI in Africa is polemic. The amount of FDI in the past 30 years is small, at least in relative terms. Since mid-1970s, FDI inflows to sub-saharan Africa stagnated for a long time at around US \$5 billion, while the amount received by Asia as well as Latin America, expanded impressively from the 1980s onward. (Asiedu, 2004).But in 1990s, Africa attracted almost 2% of global FDI flows.

Since late 1980s, Africa embarked on wide-range of reforms, which include political and macroeconomic stabilization, investment and trade liberalization and reduction of bureaucratic barriers in doing business. By 1988, more than 20 countries in Africa have introduced new foreign direct investment policy. (UNCTAD, 2013).

Foreign direct investment inflows to Africa grew to \$50 billion in 2012, a 5 percent increase above the previous year. The overall rise in FDI inflows could be related to increasing inflow of

FDI to Central Africa, North Africa and East Africa, whereas South Africa and West Africa inflows decline. (UNCTAD, 2013).

	Pre-crisis average 2003-07	2012	2013	% change 2013 vs. 2012
South Africa	63	155	142	-8.4%
Kenya	12	54	68	+25.9%
Nigeria	25	60	58	-3.3%
Ghana	12	39	58	+48.7%
Egypt	47	60	44	-26.7%
Morocco	48	63	41	-34.9%
Mozambique	4	25	33	+32.0%
Zambia	8	19	25	+31.6%
Tanzania	8	32	24	-25.0%
Uganda	8	17	21	+23.5%

Figure.1.3

*TOP 10 AFRICAN DESTINATION OF FDI*

Source: (UNCTAD, 2013)

There was a significant movement in the list of the top 10 countries by FDI projects in 2013. Only S/Africa and Nigeria maintained their respective first, third positions. However, FDI projects in both these countries witnessed a slight drop. Countries such as Ghana, Mozambique and Kenya moved up the ranks, with significant increase in FDI. Uganda and Zambia were the new entrants in top 10 FDI recipients in 2013; in contrast, North African countries such as Egypt and Morocco went down on the ranking in 2013.

Africa is one of the few regions to enjoy continuous growth in foreign direct investment inflow since 2010. Investment in exploration of natural resources and high flows from China

contributed to the current level of inward flows. Good economic performance of the continent (GDP) which increased by 5 percent in 2012 will also be among the reasons for the rise in investment in the region. In contrast, FDI flows to West Africa decline by 5 percent, to \$16.8 billion, to some extent this can be related to decrease in Nigeria's inflows. Foreign direct inflows to Nigeria dropped from \$8.9 billion in 2011 to \$7.0 billion in 2012, (UNCTAD, 2013).

### **1.5 ANALYSIS OF FDI IN DIFFERENT SECTORS IN NIGERIA**

A break-down of total FDI to Nigeria by recipient sector shows that the extractive sector received the largest share as at the end of 2012, with a sum of N6,794.72 billion (41.24) percent. About 69.05 percent of investments were in the oil and gas sub-sector in the form of Equity. The remaining 30.95 percent came in the form of debt instruments. The extractive sector followed by manufacturing which accounted N4, 504.35 billion.

The sectors that attracted higher FDI in 2012 compared with 2011 are manufacturing with the relative growth of 8.84 percent, extractive 5.03 percent, catering and accommodation 3.27 percent, transport and communication 4.61 percent, agriculture, fishery, forestry, hunting 0.002 percent. However, construction sector fell by 4.12 percent.

### **1.6 CONTRIBUTION OF NIGERIAN AGRICULTURAL SECTOR**

Agriculture is once the mainstay of the Nigeria economy (accounting for over 60 percent of GDP and 90 percent of exports at the time of independence) in 1963. Agriculture has been neglected and over 70 percent of the population continues to live below the national Poverty line. The benefit of agricultural sector include provision of employment, provision of raw material to

agro-allied industries, provision of food, generation of foreign exchange earnings and contributing to the GDP. (IFPRS, 2011)



Figure: 1.4

*CONTRIBUTIONS OF SELECTED SECTORS TO GDP*

Source: (CBN, 2012)

Even though agriculture was neglected in terms of budgetary allocation, however this sector remains the leading contributor to GDP as depicted from the Figure above.

The contribution of the Agricultural sector has grown at the rate of 4.2 percent in 2002, 7.2 percent in 2006. Agriculture is still the major driver of overall growth in Nigeria, the recent contribution of the sector are 30.3, 31.0 and 33.1 percent in 2010, 2011 and 2012 respectively, (CBN, 2013).

The development of oil in the beginning of 1970s made Nigeria more dependent on the oil sector, at the same time the performance of the agricultural sector is affected negatively over the years. Even though the agricultural sector growth rate keep increasing from an average of about 3 percent in the 1990s to 7 percent in 2000, the food sufficiency in Nigeria continued to decline. (Adeoti, 2000). Poverty in Nigeria is becoming an issue because almost 7 out of every ten citizen live below poverty line of \$1 per day (National Bureau of Statistics 2012). However, the FDI attracted to agricultural sector is small especially when compared with the potential need. Nigeria's share of FDI in Africa is around 20.68 percent but the portion of FDI inflow to Nigerian agricultural sector during the same period is less than 1 percent. During 1980-1984, it was 2.46 percent which is the highest and in 2012 it stood at 0.04 percent in Ajuwon,O.S, (2012).

## **1.7 PUBLIC EXPENDITURE ON NIGERIAN AGRICULTURAL SECTOR**

In comparison with other African countries, Public expenditure into Nigerian Agriculture as a percentage of total expenditure made by public sector and in proportion to agricultural GDP is low. As can be seen in the Figure 1.5 below, the total public spending into agricultural sector is 3.8 percent on the average during the period 2000-2011. This amount is less than the regional average of 5.4 percent, or 10 percent minimum set by CAADP and 7.4 percent of West Africa. Therefore the country is ranked 18<sup>th</sup> out of the 32 African countries for investment in Agriculture. It is important to note that agricultural sector was the main stay of the Nigerian economy in the 1960's, the agricultural sector employed about two-thirds of the workforce, provided livelihood for about 90 percent of the rural population and was the leading contributor to GDP (up to 60 percent of the total), (UN, 2009). The agricultural sector has been declining for a long period of time. The contribution of the sector to GDP dropped to 32.2 percent in the 1975-

1979 (Adewumi, 2002), its average stood at 35 percent during the period 1981-2006. Crop sub-sector contributed up to 58.4 percent of the of the total foreign exchange earnings on average. This figures have fallen to 5.2 percent between the period 1971-1985 and then down again to 3 percent from 1995-1999 (Adewumi, 2002). Also the total output growth rate of the sector dropped from 3.8 percent during the period 1987-1990 to 2.2 percent during the period 1992-1995 (Adewumi, 2002). During the period 1981-2003, total agricultural production grew by 5.4 percent (Muhammad-lawan and Atte, 2006). The slow growth in agricultural output of the country gradually moved the nation from food sufficient during the period 1960s to a major importer of food in 1980s (Fasoranti, 2006).

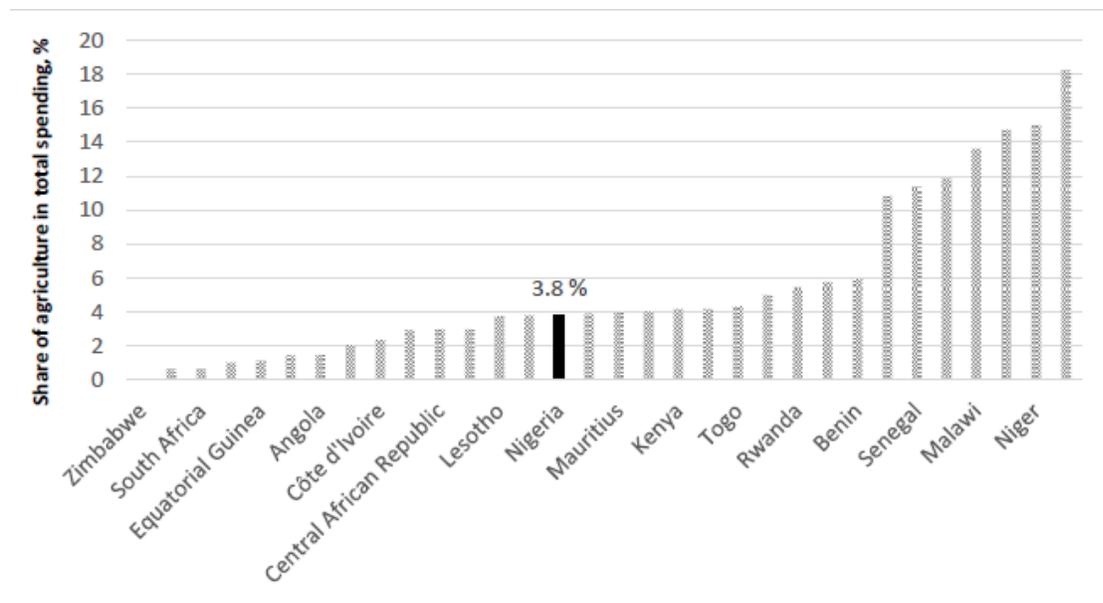


Figure: 1.5

*COMPARISON OF PUBLIC EXPENDITURE OF AGRICULTURAL SECTOR AMONG AFRICAN COUNTRIES*

Source: (IFPRS, 2014)

## 1.8 FOOD SECURITIES IN NIGERIA

The acknowledgement of the relevancy of food security has led to the development of literature devoted to food security. However food security and agricultural productivity are inter connected concepts especially in the country like Nigeria which has a significant rural and agrarian population. Nigeria does not produce enough food for its large and growing population. .

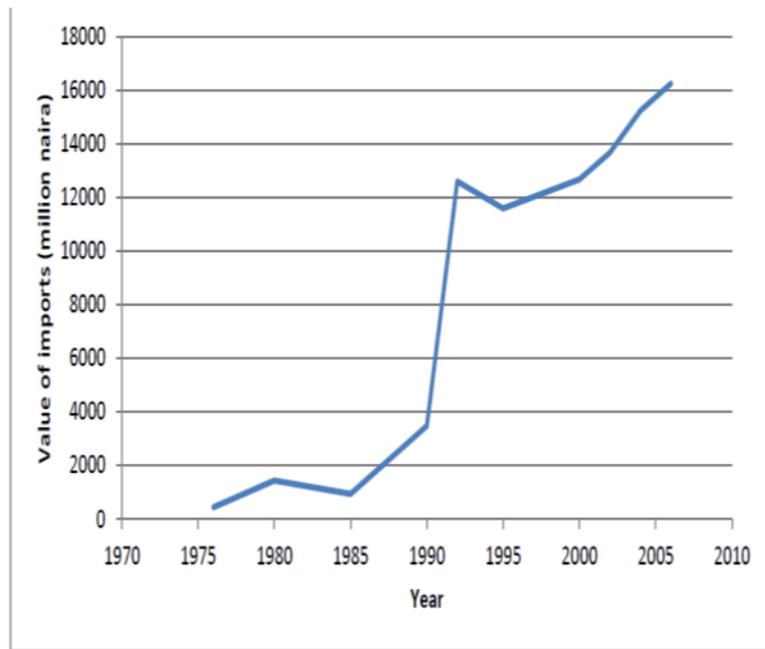


Figure: 1.6

### *VALUE OF FOOD IMPORT IN NIGERIA*

Source: (IFPRS, 2011)

The rise of the oil sector in the early 1970s resulted in the neglect of the agricultural sector. Consequently, Nigeria began to experience a shortfall in domestic production that transformed the country from a food sufficient net exporter of food products to a net importer of many different agricultural products including palm oil, rice, wheat and maize (Oyegun, 2007).

Specifically from a low value of N47.8 million in the 1960s, Nigeria's food import increased to N88.2 million in 1970s and N1027 million in 1988. The value of food imports has continued to grow very rapidly reaching a value of N16 billion by 2006. Maintaining this level of imports has taken a toll on the country's finance. The percentage of food imports in Nigeria was up to 30.56 of total import as of 2012 (CBN, 20013). Figure 1.6 depicts the food import trend in Nigeria, and the Figure indicates a continuous upward trend for food importation in Nigeria.

## **1.9 OVER-VIEW OF NIGERIAN AGRICULTURAL SUB-SECTOR**

Agricultural production in Nigeria comprises of fishery, crop, forestry and livestock production. In terms of contributing to GDP, crop sub-sector gives the largest share. During 2012, estimates for the crop sub-sector account for almost 88 percent of total agricultural share of GDP, followed by livestock production (CBN, 2013).

Table 1.1

*QUANTITIES AND GROWTH OF AGRICULTURAL PRODUCTION IN NIGERIA 2002-2012*

<b>Subsector</b>	<b>2002</b>	<b>2012</b>	<b>% change</b>
<b>Crops (metric tons)</b>			
Roots and tubers	69,459,000	100,000,000	44.0
Cereals	21,373,000	26,333,000	23.2
Vegetables	8,673,803	11,940,600	37.7
Fruits and nuts	10,372,179	11,898,500	14.7
Oil crops	2,631,105	2,880,568	9.5
Pulses	2,404,789	2,560,000	6.5
Fiber crops	151,116	112,888	-25.3
<b>Livestock (metric tons)</b>			
Indigenous meat	1,168,366	1,491,163	27.6
Eggs	450,000	640,000	42.2
Milk	408,200	566,000	38.7
Sheep and goat meat	372,207	469,075	26.0
Beef and buffalo meat	357,425	390,000	9.1
Poultry meat	190,000	290,000	52.6
<b>Fisheries (metric tons)</b>			
Diadrom fish	187,242	312,009	66.6
Demersal fish	114,823	146,918	28.0
Pelagic fish	112,283	142,837	27.2
Crustaceans	35,711	31,976	-10.5
Marine fish, other	28,152	29,677	5.4
Mollusks	2,426	4,842	99.6
Cephalopods	419	495	18.1
<b>Forestry (m<sup>3</sup>)</b>			
Wood fuel	60,064,328	63,999,115	6.6
Industrial roundwood	9,418,000	9,418,000	0.0
Sawn wood	2,000,000	2,002,000	0.1
Wood-based panels	95,000	97,000	2.1
Wood pulp	23,000	23,000	0.0
Paper and paperboard	19,000	19,000	0.0

Source: (IFPRI, 2014)

**1.9.1 CROPS**

Crops sub-sector account for a greater portion of total agricultural share and its contribution to GDP has been steadily growing; the recent value for crop was 69.3 as of 2011. Between the period 2000 to 2006 the value fluctuated from 79.44 to 105 respectively, but in 2010 the figure

drop slightly to 98.67 (FAO, 2013), this sector has been ranked the highest contributor amongst all other agricultural sub-sectors.

### **1.9.2 FISHERIES**

Fishery sub-sector in Nigeria is divided into industrial fishery and artisanal fishery. Artisanal fishery takes place in the brackish and coastal water, inland in rivers and lakes, whereas industrial fishery is taken in deep seas and deep coastal waters (Ayatoye, 1982). Although the fishery sub-sector have recorded the lowest contribution to agricultural share in GDP, however the sector remains ever relevant to the economy.

### **1.9.3 LIVESTOCK**

Nigeria is the leading producer of livestock in sub-Saharan countries (Iamorde, 1998). The population of ruminant population in Nigeria is estimated to be 13.9 million cattle, which is about 60 percent of total population of livestock, 34.5 million goats, sheep are estimated to be 22 million. Therefore altogether account for 35.2 percent of the ruminants, camels and equine are estimated to be 3.6 percent, (RIMS, 1992). The sector contributed 6 to 7 percent of the total agricultural share to GDP (CBN, 2010).

### **1.9.4 FORESTRY**

Forestry sub-sector is a little bit better compared to fishery in terms of its contribution to overall economy and contribution to agricultural GDP in particular. But the sector faces some challenges in its growth (1) rigorous exploitation of round logs for export until its ban in 1976 (Ogunwusi,

2012), (2) A low proportion of rainforest suitable for trees to grow relative to the total land mass of the country, only about 11 percent of the total land mass is earmarked as public forest out of which 26 percent is in the high forest area ( Aribisala, 1993). However, the exploitation of forest resources have negatively impacted on the development of the forest sub-sector, because going by history, the sector is one of the fast growing during the 1960s and down to early 1970s. During those days, export of wood and other agricultural commodities provide up to 70Percent of the country GDP, moreover, thus challenges and several others such as aging equipment have resulted in dwindling of the forestry sub-sector (Ogunwusi, 2012).

#### **1.10 STATEMENT OF THE PROBLEM**

Agriculture has been an important sector in the Nigerian economy in the past decades, and is still a major sector despite the oil boom; basically it provides employment opportunities for the teeming population, eradicates poverty and contributes to the growth of the economy. Economic history provides us with ample evidence that agricultural revolution is a fundamental precondition for economic growth, especially in developing countries. Ukeji (2003) submits that in the 1960's, agriculture contributed up to 66% to the total GDP of Nigeria but gradually declined in the 70's to 48% and it continues in 1980 to 20% and 19% in 1985, this was as a result of oil glut of the 1980's. Historically, the root of the crises in the Nigerian economy lies in the neglect of the agricultural sector by the Federal Government towards developing dependence on a monocultural economy based on oil.

Notwithstanding Nigeria's rich endowment in black oil and other mineral resources, however the wellbeing of her economy still largely depends on agricultural sector. The Nigerian economy is essentially agriculture in terms of national output and employment generation. It is the largest

contributor to Gross Domestic Production (GDP) (average 38% in the last 8 years) with crops accounting for 80%, forestry 3% and fishery 4%. It provides employment for about 65% of the adult labor force and the food and fiber needs of a large and increasing population. The agro-industrial enterprises depend on the sector for raw materials with 88% of the non-oil exports earning come from the sector. The sector contributes a great deal to the development of the economy in various ways:

Agriculture contributes significantly to national food self –sufficiency by accounting for over 90% of total food consumption requirements in the 1960's, its helps to maintain a healthy and peaceful population and also a source of food and nutrition for households. Furthermore the ultimate objective of interest of economists in productivity should be to find ways of increasing output per unit of input and attaining desirable inter-firm, intra-firm and inter sector transfers of population resources thereby providing the means of raising the standard of living.

In Nigeria, agriculture export has played an important role in economic development by providing the needed foreign exchange earnings for other capital development project. Ekpo and Egwaikhide (1994) observed that Nigeria agricultural export has enlarged to include cocoa beans and palm kernel. Statistics indicate that in 1960 agricultural export commodities contributed well over 75% of total annual merchandise exports. In 1940's and 50's Nigeria was ranked very high in the production and exportation of major crops in the world. For instance, Nigeria was the largest exporter of palm oil and palm kernel, second to Ghana in cocoa and third position in the exportation of groundnut. Olayide and Essang (1976) report that Nigeria export earnings from major agricultural crops contributed significantly to the Gross Domestic Product (GDP).

In terms of employment, the sector is still leading in economic activities, while accounting for one-third of the Gross Domestic Product (GDP). It remains the leading employment sector of the vast majority of the Nigerian population as it employs two- third of the labor force.

Agriculture indeed has remained the major sources of income to the economy. About 90% of the rural population is involved in activities related to the crop sub-sector which provides the bulk of agricultural income.

Nigerian agricultural output is small and in some cases stagnant, farming method ordinarily small scale. The country's vast irrigation potential remains largely unexploited. Most farmers producing food crops use outdated extensive farming methods while commercial agriculture based on contemporary technologies remains underdeveloped; and the most regulating factor is access to investible stock. Financing in agriculture can be transformative, particularly as agriculture is still the only major employer of labor in Nigeria today, and holds the potential of sustainable decrease in poverty. However, the World Bank approximate that development in the agriculture sector is twofold as effective in decreasing poverty as compared to development in other sectors.

The challenge of reducing the level of poverty has become a major phenomenon in the Nigerian economy, reduction of poverty is the most difficult challenge facing any country in the developing world where on the average, majority of the population is considered poor and evidences in Nigeria show that the number of those in poverty has continued to increase. The rising profile of poverty in Nigeria is assuming a worrisome dimension as empirical studies have

shown. In consonant with this, Ojo, (2008) opined that, Nigeria, a sub-Saharan African country, has at least more than seventy percent of its population living in abject poverty.

Investors are always willing to put their money in attractive enterprises. In Nigeria, the new policy on agricultural has indeed identified seven areas of investment. These are agricultural production (crops, livestock, fisheries, and agroforestry), provision of enterprise specific infrastructure, agricultural produce storage, processing and marketing, agricultural input supply and distribution, support for agricultural research, provision of agricultural implements hiring service and collaboration with state and local government as well as farmers in implementation of the research-extension-farmer-input/marketing-linkage system (REFILS) in the states. Manyong et al 2003 also identified thirteen investment options including input production and supply enterprises, staple food crops production enterprise, industrial crops production enterprises, livestock production enterprises, fisheries, forestry, commodity processing and storage enterprises. Others are agricultural commodity marketing, agro-industry/manufacturing, agricultural commodity export and agricultural support services. Perceptions of different stakeholders revealed that foreign investors would be attracted to activities/enterprises that are capital intensive and that add value to primary products. Across the six geopolitical zones in the country and enterprises, three main reasons stand out for the attractiveness of the enterprises to foreign investors. These are high level of demand, availability of raw materials/inputs and high rate of returns. All of these indicate economic viability of the different enterprises. There are, however, specific reasons for the attractiveness of the enterprises across the zones. For instance, lack of competing local investors is identified in the northeast as one of the reasons for the attractiveness of commodity processing to foreign investors. Similarly, poor infrastructure and high perishability of agricultural commodities are considered to be incentives for foreign

investment in agricultural commodity storage. However, huge capital requirement is a disincentive for domestic investors' involvement in input production/supply enterprises and agricultural commodity processing enterprises. Similarly, land fragmentation is a major disincentive for domestic investors' participation in forestry enterprises in both the southeast and the south- south.

The importance of FDI on the host country agricultural sector and production in general is well acknowledged by development economist, therefore in view of the aforementioned problem that adversely affect the performance of agricultural sector in Nigeria, which characterize with low funding from both public and private sector. Therefore foreign direct investment are expected to increase the total output of the Agricultural sector, as it has been found in the Keynesian terminology as addition to capital (factor of production).

However, macroeconomic factors such as interest rate, exchange rate has significant effect on agricultural output, for example Nigerian agricultural sector faces a serious challenge which include rising of food prices, high cost of borrowing among others remain as impediments to the productivity of Agricultural sector.

Although there are so many studies that investigate the impact of foreign direct investment in Nigeria. Most of these studies focused on the effect of FDI on the entire economy. Studies that look at the disaggregated effect of FDI have also focused more on those sectors that attracted the high percentage of the FDI such as oil, telecommunication, manufacturing etc. Therefore, the

low level of FDI in the agricultural sector might be one of the reasons that impact of FDI in to the agricultural sector has not been studied in Nigeria. This intends to fill this major gap.

### **1.11 RESEARCH QUESTION**

- i. Does the foreign direct investment in agriculture have any impact on agricultural output of Nigeria?
- ii. Do the interest rate, exchange rate and inflation variable have any significant effect on agricultural output of Nigeria?
- iii. Is there any causal relationship between agricultural output and the explanatory variables in the model?

### **1.12 OBJECTIVE OF THE STUDY**

The main objective of this study is to examine the impact of FDI on Nigerian agricultural output during the period 1970-2012. The following are the specific objectives;

- i. To examine the effect of interest rate, exchange rate and inflation variables on agricultural output in Nigeria.
- ii. To examine the causality between foreign direct investment, interest rate, exchange rate, inflation and agricultural output in Nigeria.

### **1.13 SIGNIFICANCE OF THE STUDY**

The contribution of agricultural sector cannot be overemphasized, especially when considering its building roles for sustainable development, such as employment potentials, financial impacts and exports on the economy. Agriculture is an important sector to the Nigerian economy. In the world today, agriculture acts as the catalyst that accelerates the pace of structural sector

transformation and diversification of the economy, enabling the country to utilize its factor endowment.

Apart from laying solid foundation for the economy, it also serves as import substituting sector, providing ready market for raw materials and intermediate goods. The agricultural sector contributes significantly to the nation's economic development through: increasing revenue by means of tax; improving the standard of living; infrastructural growth; contribution to gross national products; employment generation; enhance manpower development; it is a key source of food and provide raw materials for industrial sector, provision of employment and foreign exchange earning to the government, among others.

This study contributes to the debate of the direction and extent of productivity effect of agricultural sector. The study will also create a perspective for investors looking at the foreign direct investment environment in Nigeria and agricultural sector in particular; it will also help policy makers to know the most suitable sector for directing FDI.

#### **1.14 SCOPE AND LIMITATION OF THE STUDY**

This study is carried out in Nigeria with main objective of finding the impact of foreign direct investment on the agricultural sector of Nigeria, it covers the period 1970-2012. Unlike other studies that look at the impact of FDI on the overall economy or even in Africa at large, this study is limited to the agricultural sector of Nigeria.

### **1.15 ORGANIZATION OF THE STUDY**

Chapter one provides the overview of the work, research question, objective of the study and the description of FDI trend in Africa and Nigeria. In chapter two agricultural policies at different economic regimes are reviewed. In Chapter three, relevant literature on agriculture output, foreign direct investment, Government expenditure Interest rate, Exchange rate and inflation are reviewed, whereas chapter four starts with the theoretical framework description of the place of study, the period of the study, data used for the investigation, and description of the econometric model. Analysis and discussion of the result is in chapter five whereas chapter six gives the summary, conclusion and recommendations of the study.

## **CHAPTER TWO: AGRICULTURAL POLICIES IN NIGERIA**

### **2.1 PRE-OIL BOOM ERA (1961-1969)**

During this period government played a very minimal role in agriculture. The central government during that period played only a complementary role while the regional and states were the ones taken major activities of agricultural sector (Damamola, 2007). According to (Oayemi, 1995), government effort took the form of setting policies and creating institutions for agricultural research, extension and export crops, marketing and pricing. But in the early period of Nigerian history, different region produces different agricultural products. Crude oil was discovered in Nigeria in large quantity and the shell petroleum company constructed the first well in 1958. But during that period the oil sector was not generating as much as what is been fetch by agricultural sector for the government.

Nigerian agriculture is been considered as the most vibrant sector among the sectors of the economy. The sector is producing enough food for the nation. Nigeria can be seen as having a very robust agricultural sector in that period. The country is producing sufficient food with meager imports of processed food for diets. Farmer produces enough crops for the nation and exports the excess to finance public expenditure. In a nutshell, revenue generated from agriculture is been used to develop the rest of the sectors of the economy, such as construction, education, health and finance imports from the proceeds of agriculture.

The northern region is largely exporting groundnuts, cotton and hides whereas the south east region they are the major exporters of palm oil and rubber, south west region produce cocoa. The peasant farmers produce the majority of agricultural output for both local and international markets. Government of that periods focuses on marketing and pricing of exports crops, research and extension services. Nigeria imports a very small amount of food crops.

## **2.2 OIL-BOOM ERA (1970-1985)**

Nigerian agriculture started to experience problems somewhere around 1970. The proceeds of the oil sector were not injected in agriculture but rather in to manufacturing, commerce and construction which result to a total neglect of the agricultural sector. The main reason for the downturn for agriculture in favor of the urban sector (i.e. service and manufacturing) factors of production such as labor and capital migrated from the rural agriculture to the urban industries, because of the rapid growth in the service, construction and manufacturing sectors that were paying higher returns on those sectors. The period 1970-1985 experienced more government intervention in agriculture because of the poor performance of the sector. The period experience many new agricultural programs and institutions, example are the agricultural credit.

Guarantee scheme fund (ACGSF) in 1978, Nigerian agricultural and co-operative bank (NACB) where established to provide agricultural finance, (CBN, 2005). In 2000, World Bank assisted ADPs were introduce in many states. The schemes were designed to provide an integrated approach to agriculture and rural development. Also river basin development authority is established to provide all year round water through irrigation to farmers, with expectation of the increased in agricultural output from these projects.

### **2.3 STRUCTURAL ADJUSTMENT PROGRAM (SAP) (1986-1994)**

This period started with era of liberalizing the economy. Around the period of 1986-1999 which combines the SAP and post SAP era, market and non-market agricultural policies and programs were introduced. Development policies and programs were established such as the national agricultural Insurance Corporation and peoples Bank are established (Abiodun, Falawewo and Olokojo, 2010).

Trade liberalization was an important part of the SAP. The annulment of import and export licensing and exchange control measures took place. During these improvements, export earners became entitled to 100% of their foreign exchange earnings provided these were kept in a temporary account. Thus agricultural producers had motivation to lift their exports. The export incentive and miscellaneous decree of 1986 was enacted, through the CBN could provide refinancing and discounting facilities to commercial and merchant banks to encourage them to provide credit and risk bearing facilities in support of exports. This is followed by the establishment of the Nigerian export credit guarantee and insurance corporation in 1988 which was renamed the Nigerian export-import Banks (NEXIM).

The institution actually started operations in 1991. Perhaps the most visible and pervasive policy under SAP is naira exchange rate devaluation, the rate which was 0.639 to the US dollar in 1981 and 0.9996 naira in 1985, average 3.32 naira in 1986. By 1992, it had fallen to 19.66 naira and to 91.83 naira in 1999. There is no doubt that the tremendous boost in producer income was due to naira devaluation as the lower prices boosted exports. (Abiodun, Falawewo & Olakojo, 2010).

## **2.4 POST SAP ERA (1995-1999)**

With regard to policies and agricultural exports, the period was not significant as the successive government were just trying to overcome the political crises in the country. The period coincides with the various economic sanctions from western nations that happened to be the importing nation such as Canada, UK and the USA (Abiodun, Falawewo & Olakojo, 2010)

## **2.5 CURRENT DEMOCRATIC REGIMES (1999 TO DATE)**

Three documents that have spelt out Nigeria's vision for agricultural development are the national economic empowerment development strategy (NEED), rural sector strategy (RSS) and national agricultural policy (NAP) in 2005, the main objective of the NEEDs and NAPs is to diversify the productive base from oil and promote market oriented and private sector economic development with strong local participation. Daramola (2007), opines that NEEDs provides the overall framework for nationally coordinated sectors strategies whereas the NAP focus at laying a solid foundation for sustainable growth in agricultural productivity, the latter is a well thought-out document that provides a road map for the transformation of both agricultural productivity and exports.

## **CHAPTER THREE: LITERATURE REVIEW**

### **3.1 INTRODUCTION**

Nigeria is blessed with rich agricultural resources but the agricultural sector agonizes with underdeveloped growth, more than fifty per cent of the country's agricultural land lie unplanted, and the left over per cent of cultivated agricultural land is held by smallholders and outmoded farmers who use undeveloped production methods, having poor access to up-to-date inputs with resultant low harvests, insufficient credit services leads to poor infrastructural facilities, poor access to markets leading to low income, land and environmental degradation bringing about low production, and inadequate research and extension services discouraging expansion and innovation.

The study on how foreign direct investment as a source of Capital which is a factor of production, and macroeconomic variables such as interest rate, exchange rate and inflation affect agricultural output is necessary for accelerated growth in the agricultural sector.

This section has started with theoretical review in order to give the ground for which the study is based on, and then followed by empirical review on those variables in the model.

### **3.2 THEORY OF FOREIGN DIRECT INVESTMENT**

The Heckscher-Ohlin framework led to the classification of FDI into four different types, namely: natural resource seeking FDI, market seeking FDI, efficiency seeking FDI, and strategic

asset seeking FDI (Dunning, 1998). Identification of these types of FDI underpins most empirical literature on the determinants of FDI. We now explain these types of FDI in turn.

### **3.2.1 THE NATURAL RESOURCES SEEKING FDI**

Some countries or regions are known to possess certain resources in abundance. Thus it is not surprising for MNCs which uses such resources to choose to locate subsidiaries in such locations. But what are these resources and what type of MNCs seek them? The answers to these questions lie in the further categorization of natural resource seekers. According to Dunning (2008), there are three groups of natural resource seekers.

The first groups are the seekers of physical natural resource. This comprises mainly MNCs engaged in primary production and manufacturing, seeking for resources in mostly two broad categories: Fossil fuels lead by crude oil, coal, gas, metals, diamonds, etc. Agricultural products such as palm oil, cocoa, rubber, sugar, etc. Africa is known to be the hob of natural resources. This could explain the recent surge in FDI flows to Africa, particularly from China and India (UNCTAD, 2006), where the main attraction of MNCs to Africa is its abundance in natural resources. The second groups are the seekers of cheap and efficient labor. Of recent, this motive for FDI is increasing due to the emergence of industrializing developing countries such as Mexico, Taiwan and Malaysia which seek cheap and resourceful labour in China, Morocco, Vietnam, and Turkey (Dunning, 2008). The manufacturing and services sector are the main undertakers of cheap labour seeking FDI. Due to the desirable impact on host nations' economy,

especially on employment, host countries have implemented free trade and export processing zones (EPZs) in order to attract such FDI.

Third group are the seekers of technological know-how, managerial and organizational skills. This motive usually leads to collaborative alliances between countries and regions.

### **3.2.2 MARKET SEEKING FDI**

The motive for FDI could be to invest in a country due to the size/growth potential of its market, or the countries within the same region. This motive that entails seeking for market for goods and services is known as market seeking FDI. It has been noted that most MNCs that engage in this form of investment were previously exporters to the host country, who decided to carry out direct investment due to unfavourable tariffs and other barriers levied on their exports (Nicholas, 1986; Dunning, 2008). Thus host governments play an active role in encouraging this form of investment through imposing controls and barriers on imports. In addition to size of market, there are other reasons for market seeking FDI. These other reasons why firms may choose to carry out market-seeking FDI was outlined in Dunning (2008). The first reason is that some firms react to the decision to invest abroad by their suppliers and customers. Thus it becomes economically reasonable for them to follow them to invest overseas. Another reason for engaging in this type of investment arises due to the need for products to adapt to the culture and tastes of the host country. As a result firms decide to engage in direct investment in order to ensure that their products remain competitive in the midst of local products. The third reason is to reduce production and transportation cost by supplying in the market or in the regions around it. Lastly, a reason for market-seeking FDI may be to respond to competitors' investments in major markets across the globe. This situation is also known as the "follow your leader" or "bandwagon" strategy (Knickerbocker, 1973; Dunning, 2008).

### **3.3 EMPIRICAL REVIEW**

#### **3.3.1 INTRODUCTION**

Until recently, empirical literature had perceived foreign direct investment as dependent, and retarding for the development of domestic industries for export promotion. Hence, research interest in foreign direct investment stem from the change of perspective among policy makers from hostility to conscious encouragements especially among developing countries.

Carves (1996) observe that the rationale for increase effort to attract foreign direct investment by host countries emerges from the belief that foreign direct investment are productivity gains, technology transfer, international production networks and access to market among others.

#### **3.3.2 PUBLIC EXPENDITURE**

Public spending in Nigerian agriculture is not impressive. The Nigerian agriculture public expenditure review (NAGPER) have assessed the quality and quantity of public expenditure in agriculture and explored the following outcomes (1) low level of public expenditure (2) difficulty in analyzing public spending in agriculture due to the preponderance of off-budget fund (3) poor data quality and availability hinder policy analysis, program planning and impact assessment (4) discrepancies in the manner agricultural funds are been spend ( 5) poor budget execution (6) pattern of public spending in agriculture raises doubts about the quality of spending (Mogues et al, 2008).

So many studies noted the impact of public spending in the agricultural sector of Nigeria; (Udoh, 2012) in his study of impact of public expenditure, private investment and agricultural sector growth in Nigeria by using bound test (ARDL) approach reveals that public expenditure has a positive effect on the growth of the agricultural output. Nevertheless FDI in the short run is statistically insignificant. Similarly Lawal (2011) examine the level of government spending to the agricultural sector by using trend analysis and simple linear regression and his finding reveals that public spending does not follow a regular pattern and the contribution of agricultural sector to GDP is directly related to the government funding to the sector. Also Lawal (2011) concluded that government cannot expect high productivity from agricultural sector when their investments in the sector are of low quality and quantity. Rao and Fun (2003) show that government spending on agriculture has a strong contribution to economic growth in Africa and Asia, and agricultural production is critical for addressing poverty and rural areas.

The failure of government to finance agricultural sector adequately was the genesis of the alternative sources of finance i.e. local private investment and foreign source of investment. But the foreign sources are of many forms, such as foreign portfolio investment, foreign direct investment, credits, aids and grants. However foreign direct investment is a type of investment where a foreign investor or firm has an active and lasting control in an enterprise of the host economy whereas foreign portfolio investment (FPI) is an investment in which the investor has passive holdings in securities such as stocks and bonds of the foreign nation.

However out of these foreign sources FDI is seems to be the most relevant especially for developing countries (Albuquerque, 2003) In the same line of though FDI contribution to domestic investment and growth of output exceed the contribution of PFI. Furthermore studies reveals that there are two main reason for the preference of FDI; its leads to transfer of technology and managerial expertise, job creation (Strazicich et al, 2001) and the second is that it is more stable than the other forms of foreign investment (Bekaert and Harvey, 1998). (Romer, 1993) opines that foreign direct investment can leads to reduction of “idea gaps” and object gaps” from developed to developing countries because they brings new knowledge and investment in physical infrastructure like roads and factories.

### **3.3.3 FOREIGN DIRECT INVESTMENT**

The inflow of FDI in to Nigerian agricultural sector is low; Ogbanje et al,(2010) submit that agricultural sector suffers the heaviest marginalization in terms of FDI inflow despite the significance of the sector with regard to employment, foreign exchange earnings and sustenance. This poor record could be related to political and economic instability that distort the nation over the years. Akande, et al (2013) have forecast the causal relationship between FDI in agriculture and agricultural output in Nigeria, it was found that there is no causal relationship between either FDI to neither agricultural output nor agricultural output to FDI. Ajawon and Ogwumike (2013) in their study of uncertainty and FDI in agricultural sector of Nigeria reveal that political instability have negative impact on FDI whereas FDI have positive impact on agricultural sector of Nigeria.

On the other hand, Lawal and Atte (2006) attempted to highlight factor affecting domestic agricultural production in Nigeria, and findings reveals that GDP growth rate, population growth rate and consumer price index where the main factors that affect domestic agricultural production.

Aiyedogbon and Olu-coris (2012) in their study of agricultural productivity and employment generation in Nigeria, found a positive impact on unemployment even though the coefficient of FDI is statistically insignificant. Srabon et al (2004) have examined the role of women empowerment in agriculture and they indicate a positive relationship with women empowerment and calorie availability and dietary diversity at the household level. Above all, household wealth, education is more important than women empowerment. While Izuchukwu (2007) investigated the impact of the agricultural sector on the Nigerian economy and noted a positive relationship between gross domestic product (GDP) and domestic saving, government expenditure on agriculture and FDI.

Chaudhari and Banerjee (2010) in their analysis of FDI in agricultural land, welfare and unemployment in a developing economy, reveal that FDI into agriculture have a significant impact on the country's welfare as well as the unemployment rate of any type. Similarly (Idowu and Ying, 2013) find that the relationship between FDI and agricultural output is statistically insignificant, however FDI have a positive and significant relationship with labor (employment). Akpaeti (2002) in his investigation of the impact of financial sector reforms on agricultural

investment in Nigeria by using co-integration and VAR approach he found significant effect of financial reforms on agricultural investment in Nigeria both in the short and long-run.

Parker, Jacobsen and Komwa (2009) in their study of impact of HIV/AIDS on agricultural households in south eastern Uganda, indicates an increase in widow-and orphan-headed household's leads to labor shortages due to illness and caretaking; moreover degradation of household resources from health related expenses brings changes in agricultural practices and productivity.

The debate over the impact of foreign direct investment on economic growth in developing economies is still unclear, for example, Henzer, Klasen and Fecilitas (2008) in their investigation of foreign direct investment led growth in developing countries, reveals that there is no significant relationship between FDI and level of per-capital income, level of education, financial market and degree of openness in developing countries. Furthermore, Alfaro, (2003) in his study of FDI and growth at sectoral level opines that FDI exerts an ambiguous effect on growth whereas it shows a negative impact on the primary sector, however the result indicates a positive effect on manufacturing, whereas that of the service sector is unclear. In the same line of thought Laura, Sebnem and Selin (2000) reveals that FDI alone play an ambiguous role in contributing to economic growth but they suggest that countries with well-developed financial market gain significantly from FDI in their study of FDI and economic growth.

Zaman, Ahmad and Sion (2010) in their study of foreign direct investment, economic growth and economic freedom have found that FDI in itself has no direct (positive) effect on output growth; instead the effect of FDI is contingent on the level of economic freedom in the host country. Also Benso (2004) in his study of absorptive capacity and the effect of FDI and equity foreign portfolio investment on economic growth suggest that FDI and EFPI do not have direct positive effects on growth. But Amitava (1997) opines that different patterns of FDI can be expected to affect growth in host countries differently, furthermore the empirical analysis using cross country growth equations, however, is unable to detect the pattern of FDI on growth.

In contrast to this opinion Tambangru and Ilan (2008) formal out that FDI has positive effect on economic growth directly and through its interaction with labor, moreover the effects seem to be very different across countries and economic sectors. Furthermore Hernan and Juan (2013) state a strong positive relationship between institutional quality and business generation among high-income, low-income and emerging countries, while the influence of international trade appears more important as a spur to the genesis of business in low-income countries. Finally there is a direct and significant relationship between FDI and business development in emerging countries.

Tang and Gyasi (2012) in their study of China-Africa foreign trade policies submit that about 91% of the total employment project generations between 2006 and 2010 come from Chinese investment. From 2006-2010 about 80% or more of the investment from China have been in the manufacturing, building and construction and general trade sectors of Ghana. Examining other

variables that could explain the interaction between FDI and growth Zaman, Khan and Ahmad, (2012) in their study of relationship between FDI and pro-poor growth policies in Pakistan reflect that a 1% increase in FDI is likely to reduce poverty by 0.47% at urban, 0.44% at rural and 0.46% at national level respectively.

Diao et al (2009) examine the effect of other channels of growth on the decrease in poverty and the overall growth rate in six low-income countries of Africa. The result of the research is applicable to Nigeria as well. According to the study, industrial growth is less effective in reducing poverty than agricultural growth because a major percentage of the population about 70% in the rural areas, agricultural sector is favorable as it allows greater employment opportunities for the poor. It is noted by Diao et al that even though the industrial sector is important for boosting the economy, it fails to create sufficient employment opportunities for the poor and unskilled labors. Furthermore, the finding reveals that there was little evidence to prove that African countries could launch a successful economic transformation without going through an agricultural revolution on a country-wide basis.

Xiadyingli and Xiamin (2006) in their study of FDI and economic growth explore that FDI not only directly promote economic growth by itself but also indirectly does via its interaction terms. The interactions of FDI with human capital exert a strong positive effect on economic growth in developing countries. While that of FDI has been positively associated with economic growth, and the increase of total fixed asset investment in China FDI has also forced an increase number

of domestic manufacturer's to compete globally in their study of the role of FDI in China's post 1987 economic development. Also Xinpen Xu and Yusheng (2012) suggest that positive spillover from FDI arise from forward linkages, but domestic firms differ significantly in the extent to which they benefit FDI. While Terresa and Vicenteorts (2002) their findings support the effectiveness of outward looking orientation policy to Mexico in there study of FDI, export and domestic performance in Mexico. On the other hand Jarvocik and Spatareanu( 2008) suggest that vertical spillover are associated with projects with shared domestic and foreign ownership but not with fully owned foreign subsidiaries in their study of local participation matter for spillovers from FDI?, Similarly, Coric and Pugh (2012) have studied FDI and output growth volatility and their analysis shows that FDI has a stabilizing effect on output during the era of the "Great moderation".

Federke and Romm (2005) have investigated the growth impact and the determinant of FDI in the south Africa and their finding shows a complementarity of foreign and domestic capital in the long run, implying a positive technological spillover from foreign to domestic capital, while there is crowd-out of domestic investment from FDI, this impact is restricted to the short-run. On the other hand Sadik and Bolbol (2001) studied capital flows, FDI and Technology spillover in to the Arab countries and the result reveals that FDI inflows to the Arab world were concentrated in six Arab countries and deployed in the oil sector and manufacturing especially textile, beside FDI also has the added advantage of generating technological spillovers.

FDI is seen to compliment scarce domestic financial resources. It is also expected to help modernize production by transferring know-how and technology while increasing domestic productivity and competition and improving international competitiveness (Ernst, 2005) several other literatures provide insight about how FDI can impact on the economy of developing countries. For example Adamu (2009) used the theory of development and world system to convey his point on angles which FDI can impact on the economy of the country.

Domestic saving in Nigeria is abysmally low; this due to the low production coupled with over-dependence on primary commodities with the accumulation of foreign capital inflows, the domestic resources of any economy are augmented thereby enhancing economic development. Multinationals enterprises (MNEs) by the virtue of their large size and financial resources not available to many host countries domestic firms, the funds may be gotten from the capital market or sourced internally from the company because of their size and reputation (Edu, 2005).

For capital-scarce developing countries like Nigeria, such offshore capital inflows are desirables as key help to stimulate investment, employment and growth. A high inflow is desirable as they help to stimulate investment, employment and growth. A high inflow of foreign private investment would lead to a world rise in gross domestic investment, which will in turn lead growth (Anthony, 2011). According to a world Bank report released in 2011, foreign capital flow, which comprises FDI (investment real asset) and foreign portfolio investment (investment in financial assets) in Nigeria for 2010 stands at N7.7 billion (Afego, 2012).

Job creation is one of the reasons why policy makers of countries strive to attract foreign direct investment (FDI) is to create new jobs in their economies. The impact of FDI on employment can be direct when, for example foreign company employs a number of the host country's citizens while it could be indirect when jobs are created for local suppliers and people who are not directly connected to the company as a result of increase spending by either company or its employee specific to Nigeria, more investment in manufacturing and the extractive sectors would lead to increase in the number of jobs.

Borensztein et al (1997) in their study suggest that FDI is an important vehicle for the transfer of technology when multinational enterprises invest in a foreign country, they often transfer significant technology. Adams (2009) corroborated this submission in his study, he assert that in the context of developing countries, FDI contributes to the economic development of the host country by enhancing its efficiency through the transfer of new technology, marketing and managerial skills, innovation and best practices.

### **3.3.4 INFLATION**

Inflation is undeniably one of the most leading and dynamic issue that is facing most economies across the globe. Global food price have experience a new high in 2011, in which the price rise by almost 30 percent. ADB, (2011).

Akpan & Udoh (2009). Investigate relative grains price variability and inflation rate movement on different agricultural policy regimes in Nigeria, the result show that inflation has a significant positive effect on relative price variability of grains. Ukoha (2007). Opines that inflation on relative price variable is non-neutral on agricultural output but Murtala (2010) found inflation to have significant negative effect on the performance of Nigerian economy. Canuto (2011). Reveals that one of the channels in which inflation affects fiscal balances is that the overall cost of living increases as food prices increase.

Also Mesike et al (2010). Found that inflation has significant positive effect on relative price variability in both long and short run. David et al (2011). In their study of inflation and real sector output share using dynamic panel and model in seven OECD countries, the finding reveals inflation change the real share of some sectors even when inflation is regarded as endogenous. Naraya et al (2008). Reveals that increase in inflation, uncertainty lowers average inflation, also other result indicates no support for the hypothesis that higher output volatility increases the average inflation rate.

### **3.3.5 EXCHANGE RATES**

Empirical evidence of the effect of the exchange rates on output is widespread and divergent. Differences in conclusions may be due to differences in approach, methodology, time of study, sample size among other things. However four major approaches are used to examine the impact of exchange rate on output. Cooper (1971) and Diaz (1963) focused on nominal devaluation and found that it has negative effect on output. In the same line of thought Agenor (1991) study real exchange rate in twenty four developing economies by using OLS techniques and the finding reveals contractionary effects on output.

However, on the other hand Yaqub(2013) investigated the impact of exchange rates changes on disaggregated Agricultural output in Nigeria, the finding shows that there are differences in the way the output is affect, moreover exchange rate have negative effect on fishery and crop output, whereas positive effects on livestock and forestry output where found. Domac (1997). Investigate the effect of devaluation contractionary in Turkey and finding reveals that unaffected devaluation has positive impact on real economic activity.

### **3.3.6 INTEREST RATES**

Ahmad, H. (1998). Investigated the responses in output to monetary shocks and the interest rate, the result shows that interest rate affects the output produce by firms. Also Amasson et at (2011). Study the nexus of interest rate deregulation, lending rate and agricultural productivity in Nigeria, the finding shows that interest deregulation had a positive effect on agricultural sector productivity. They also recommend that a market determined interest rate as a stimulus in enhancing agricultural production.

Ifebuolili, (2004). In his assessment of the impact of interest deregulation in enhancing agricultural productivity in Nigeria reveals that interest rates deregulation has significant and positive impact on agricultural productivity. Oyakhilomen, (2014). Study the causality of interest rate policy and agricultural production in an atmosphere of Economic deregulation in

Nigeria, the analysis indicates that market driven interest was not significant in influencing agricultural production through the period of deregulation and this can be related to volatility and high market driven interest rate which leads to limited access to credit facility by small scale farmers.

Smith et al. (1997). Reveals that high interest rate have a negative effect on agricultural output in their study of interest rates effect on united states agricultural sector output.

### **3.4 SUMMARY**

In conclusion, based on the literature review, it was found that empirical finding confirm the theoretical hypothesis of relationship between foreign direct investment and agricultural sector but these studies are not unanimous in their conclusion. It was also found that most of the previous studies have focus on the impact of foreign direct investment on the overall economy with only few that focus on the disaggregated effect of FDI, therefore in view of the present Nigerian problems of Unemployment, Food insecurity and general Economic imbalances, foreign direct investment will be a good catalyst of boosting agricultural sector which is the major provider of Employment, source of Food to majority of the population and source of foreign exchange earning to Government. The next chapter will present the method that will be used to achieve the objective of this study.

## CHAPTER FOUR: METHODOLOGY

### 4.1 INRODUCTION

This study is carried out in Nigeria from the period of 1970-2012, with the objective of finding the impact of foreign direct investment on agricultural output of Nigeria. This study will use co-integration technique to find the long run equilibrium in the series; it also employs vector error correction techniques to find the short run relationship among those variables that were included in the model. Then finally Granger causality test will be conducted in order to know the direction of causation among these variables.

### 4.2 THEORETICAL FRAMEWORK

The methodology involves an econometric model in which the impact of FDI on agricultural sector of Nigeria is investigated. This section develops the estimation equation and draws from the literature by using the augmented production function approach. Following the analytical framework provided by Imoudu (2005), let a country production be represented by the following aggregate production function.

$$Y=f(L, K, A)\dots\dots\dots (1)$$

Where

Y= output (Agricultural outputs)

K= capital stock

L= labor

A= total factor productivity (TFP), not accounting for increase in factor outputs (K&L)

The study will employ the endogenous growth model. The reason for choosing this model is that neoclassical approach fails to provide explanation of steady growth, it also cannot plausibly explain actual observed cross-country growth rate differences by reference to transition (i.e, non-steady state) episodes, whereas the endogenous growth model provide explanation for steady state growth in per capita output values and therefore of growth rate differences across countries. Different techniques and approach can be used in the framework of autoregressive models to find dynamic interaction and relationship between FDI-Economic growths. For instance Dritski et al (2004) uses causality and co-integration approach. Also other studies on FDI and Economic growth in developing countries uses causality and co-integration approach.

Onwumere and Egbo (2011) indicate a positive long-run relationship between GDP and FDI whereas Osinubu (2010) find positive relationship between FDI and economic growth. However, Akinlo (2011) apply error correction technique (ECM) and the finding shows that there is no significant relationship between FDI and Economic growth. According to this growth theory, A is endogenously determined by economic factors. The following model will be used to achieve the objective of this study:

$$Y_t = \beta_0 + \beta_1 FDI_{agric,t} + \beta_2 EXR_t + \beta_3 INT_t + \beta_4 INF_t + \beta_5 GOV_t + \mu_t \dots \dots \dots (2)$$

The log-linear form of the equation can be written as:

$$\ln y_t = \beta_0 + \beta_1 \ln FDI_{agric,t} + \beta_2 \ln EXR_t + \beta_3 \ln INT_t + \beta_4 \ln INF_t + \beta_5 \ln GOV_t + \mu_t \dots \dots \dots (3)$$

Where

Y= agricultural output

FDI<sub>agric</sub>= net foreign direct investment into agriculture, fishery and forestry

EXR= nominal exchange rate

INF= inflation rate

INT= interest rate

GOV= government expenditure in agriculture

t= time subscript

$\mu$  = error term

### **4.3 ECONOMETRIC TECHNIQUES**

This study employed econometric approach to find the long run relationship among these variable under study, it also use granger causality to find the direction of causation among those variables.

#### **4.3.1 UNIT ROOT TEST**

In statistics, unit root test is usually conducted in order to know whether a time series variable is non-stationary using an autoregressive model. A well-known test that is valid in large samples is the augmented dickey-fuller test. Dickey and Fuller (1979) developed a procedure for testing weather a variable has a unit root or equivalently, that the variable follows a random walk. Hamilton (1994) describes four different cases to which the augmented dickey –fuller test can be applied. The null-hypothesis is always that the variable has a unit root.

Backetti (2013) provide examples showing how to conduct these tests. The true model is assumed to be  $y_t = \alpha + y_{t-1} + \mu_t$ ..... (4)

$$\Delta y_t = \Delta y_t + \rho y_{t-1} + \sum_{i=1}^k \lambda_i \Delta y_{t-1} + \mu_t$$

$$\Delta y_t = \alpha + \rho y_{t-1} + \sum_{i=1}^k \lambda_i \Delta y_{t-1} + \mu_t$$

$$\Delta y_t = \alpha + y_t + \rho y_{t-1} + \sum_{i=1}^k \lambda_i \Delta y_{t-1} + \mu_t$$

Where  $\Delta y_t = y_t - y_{t-1}$  is the first difference of the series;  $\rho, \alpha$  and  $\lambda$  are parameters to be estimated while  $\mu$  is a stochastic disturbance term. The null hypothesis is that there exist a unit root in the time series (non-stationary time series), which is  $H_0: a=0$ , against the alternative hypothesis that the time series is stationary (no unit root) which is  $H_1: a>0$ . In both, if the calculated value is less than critical, the null-hypothesis is accepted and it means that there is unit root.

### 4.3.2 CO-INTEGRATION TEST

According to Pesaran and Pesaran (1997), the ARDL approach requires the following steps. In the first stage, the existence of any long term relationship among the variable of interest is determined using an F-test. The second stage of the analysis is to estimate the coefficients of the long run elasticity among the variables with the error correction representation of the ARDL, by employing the ECM version of ARDL, the speed of adjustment, the ARDL model represented by the following equations:

$$\phi (l, p) Y_t = \sum_{i=1}^k \beta_i (l, q_i) X_{it} + \delta' w_t + \mu_t \dots \dots \dots (5)$$

Where

$$\phi(1,p)=1-\phi_1L-\phi_2L^2-\dots-\phi_pL^p$$

$$\phi(1,q_i)=1-\beta_{i1}L-\beta_{i2}L^2-\dots-\beta_{iq_i}L^{q_i}, \quad i=1,2,\dots, k$$

From the equation above,  $Y_t$  is the dependent variable,  $X_{it}$  denotes the  $I$  dependent variables.  $L$  is the lag operator, and  $w_t$  is the  $S \times 1$  vector of deterministic variables, including intercept terms, dummy variables, time trends and other exogenous variables. The optimum lags are selected in this methodology according to Schwarz Bayesian criterion. The long run coefficients and their asymptotic standard error are computed for the selected ARDL model.

The long run elasticity can be estimated by:

$$\Phi := \beta_{i0} + \beta_{i1} \dots \beta_{iq_i} / 1 - \Phi_0 - \Phi_1 - \Phi_2 \dots \Phi_p \quad \square \quad i=1,2,\dots,k \dots (6)$$

The long run co-integrating relationship is written as:

$$Y_t - \Phi_0 - \Phi_1 X_{it} - \Phi_2 X_{2t} - \dots - \Phi_k X_{kt} = \varepsilon_t \quad \square \quad t=1,2,\dots,n \dots (7)$$

In this equation, constant term is equal to:

$$\Phi_0 = \beta_0 / 1 - \Phi_1 - \Phi_2 - \dots - \Phi_p \dots (8)$$

The ECM version of the selected ARDL model can be obtained by rewriting equation (5) in term of lagged levels and first difference of  $Y_t$ ,  $X_{it}$ ,  $X_{2t}$ , ...,  $X_{kt}$  and  $w_t$  as follows:

$$\begin{aligned} \text{OUT}_t = & \sum_{j=1}^{n1} V_j \text{OUT}_{t-j} + \sum_{j=0}^{n2} \phi_j \Delta \text{INF}_{t-j} + \sum_{j=0}^{n3} \varphi_j \Delta \text{INT}_{t-j} + \sum_{j=0}^{n4} \lambda_j \Delta \text{GO} + \sum_{j=0}^{n5} \theta_j \Delta \text{FDI}_{t-j} \\ & + \sum_{j=0}^{n6} \pi_j \Delta \text{EXR}_{t-j} + \omega_1 \text{OUT}_{t-1} + \omega_2 \text{INF}_{t-1} + \omega_3 \text{INT}_{t-1} + \omega_4 \text{EXR}_{t-1} + \omega_5 \text{GOV}_{t-1} + \omega_6 \text{FDI}_{t-1} + \varepsilon_t \dots (9) \end{aligned}$$

Where  $\varepsilon_t$  is independently identically distributed (i.i.d) of white noise and  $t$  is the time trend. For the long-run relationship, the null hypothesis of ARDL is  $H_0: \omega_i=0, \quad \square_i(i=1,2,\dots,6)$ , the

alternative test is  $H_1$ : at least one  $\omega_i \neq 0$ ,  $\alpha_i (i=1,2\dots 6)$ , if the calculate F-statistic of ARDL bound test higher than the upper value, the null hypotheses will be rejected and co-integration exist among the variables. Therefore long run equilibrium relation among the variable.in other words if F-statistic falls below the lower bound, then we may accept the null hypothesis that there is no co-integration among the variables. However, if the F-statistic falls between upper and lower values, then the result is inconclusive.

A dynamics error correction model is estimated to find the long run and short run relationship among the integrated variables. While long run dynamics is explained by error term (ECT) which further confirm the existence of long run relationship by its significant negative value, the short run behavior is explain by the lagged terms individual of the coefficients.

#### **4.4 GRANGER CAUSALITY TEST**

Causality can be described as the relationship between cause and effect. Basically, the term ‘causality’ suggests a cause and effect relationship between two sets of variables, say Y and X (Pearl, 2012). However, in recent times, granger causality modeling has received considerable attention and use in many areas of research. Since the concept of granger (1969), it has become a popular concept in econometrics and many other fields of human endeavor.

In line with most of the literature in econometrics, one variable is said to granger cause the other if it helps to make a more accurate prediction of the other variable than we can only use the past of the latter as predictor. Granger causality between two variables cannot be interpreted as a real causal relationship but merely shows that one variable can help to predict the other one better.

Given two time series variables  $X_t$  and  $Y_t$ ,  $X_t$  is said to granger cause  $Y_t$  if  $Y_t$  can be better predicted using the histories of both  $X_t$  and  $Y_t$  than it can by using the history of  $Y_t$  alone.

## **4.5 MEASUREMENT OF VARIABLES**

### **4.5.1 GOVERNMENT EXPENDITURE**

One of the most active and used instruments of financing the agricultural sector in Nigeria is the Budget. Budget for agricultural sector at all levels of government is channeled through two main frameworks which are “recurrent expenditure and capital expenditure”. Mogues, et al. (2008) indicates that public spending in the agriculture sector of Nigeria is “astronomically” low. Less than 2 percent of total federal expenditure was allotted to agriculture during 2001 to 2005; far lower than spending in other key sectors such as education, health, and water contrasting dramatically with the sector’s importance in Nigeria’s economy and the policy emphasis on diversifying away from oil, an allotment well below the 10 percent goal set by African leaders in the 2003 Maputo agreement. Therefore government expenditure is measured as budget allocation of government into Agricultural sector. However, (Adofu, et al. 2012) discovered that this minimal budgetary allocation to agricultural sector still has a significant effect on agricultural production.

### **4.5.2 EXCHANGE RATES**

Devaluations are usually an important component of conventional stabilization programs prompted by international institutions and are believed to be a primary policy option in balance of payments stabilization. Traditional views such as the elasticity’s, absorption, and the Keynesian argue that devaluations have a positive effect on output. Therefore exchange rate is measured as nominal exchange rates.

### **4.5.3 INTEREST RATES**

Interest rates has a direct relationship with production in general and Agricultural output in particular, a high interest rates will have negative effect on Agricultural productivity because when interest rates is high farmers will find it un-attractive to borrow from banks because its increase their cost of production and in effect it will erode their profit margin, therefore, interest rates is measured as nominal lending rates.

### **4.5.4 INFLATION**

Inflation is undeniably one of the most leading and dynamic macroeconomic issues confronting most economies of the world and has become a leading topic of discussion, in Nigerian families and press as its effects penetrate more deeply into nation's life due to prevailing increase in prices. The consumer price index for food over the years in Nigeria constituted a larger proportion of the composite consumer price index and as noted that households in developing countries spend more on food relative to overall spending and therefore, food price inflation had played a bigger role in overall inflation. Murtala (2010). Found inflation to have significant negative effect on the performance of Nigerian economy. Therefore, this variable is measure as inflation rate.

### **4.5.5 FOREIGN DIRECT INVESTMENT**

The importance of FDI on the host country Agricultural sector and production in general is well acknowledged by development economist. Therefore Foreign direct investment are expected to increase the total output of the Agricultural sector, as it has been found in the Keynesian terminology as addition to capital (factor of production), and it is measured as foreign direct investment in to Agriculture, Fishery, Forestry and Crops.

#### **4.6 SOURCES OF DATA**

The data used were obtained from World Bank development indicators, Central Bank of Nigeria and National Bureau of Statistic (NBS) various issues, between the periods 1970-2012. In conclusion, this chapter presented a detailed procedure employed in order to answer the questions that were posed in chapter one. The next chapter will present the results of the analysis which will answer the questions that were asked in chapter one.

## CHAPTER FIVE: ANALYSIS AND DISCUSSION OF THE RESULT

### 5.1 INTRODUCTION

This chapter presents the result of the analysis, in order to ascertain the order of integration, augmented dickey fuller test was conducted then followed by co-integration test to ascertain the existence of a long-run relationship among the variables by using F-test. The third step is to estimate coefficient of long-run relationship and determine their values, short-run elasticity of the variables with error correction of the ARDL techniques and finally Granger causality test were presented.

A large number of studies in the past used the Johansen co-integration method to determine the long-run association between variables of interest. In a nutshell, this method remains popular for many investigators who argue that this is the most accurate technique to use for I(1) variables. However these days, a number of studies by Pessaran and Shin (1996), Pessaran et al,(2001) have introduce an option for co-integration method which is known as Autoregressive Distributed lag (ARDL) bound test. However this method has a number of advantages above Johansen techniques, in the first place Johansen techniques need large sample for validity.

A second advantage of the ARDL approach is that other co-integration techniques require all of the variables to be of the same order, but in the case of ARDL techniques can be applied whether the variables are I(1) or I(0). This means that ARDL avoids the pre-testing problems associated with standard co-integration which needs the variables to be classified in to I(1) or I(0). (Pessaaran et al, 2001).

Another difficulty of the Johansen co-integration method which the ARDL approach bypass concerns the large number of choices which must be made: including decisions such as the number of endogenous and exogenous variables to be included, the conduct of deterministic elements, as well as the order of VAR and optimal number of lags to be used. The estimation procedure is very sensitive to the method used to make these choices and decisions (Pessaran and Smith 1998). Whereas in ARDL approach it is possible that different variables have different optimal number of lags, but in Johansen approach this not the case.

**5.2 UNIT ROOT TEST:** one of the advantages of using Autoregressive Distributed lags (ARDL) is that, co-integration test can be achieved on variables without concern about the level of integration. However, the repercussion is that the result will be useless and void when the variables order of integration is beyond  $I(1)$  and difficult to decide when the F-statistic value falls between the lower and upper bound critical value. Conclusion drawn from such data can be very delicate to description problem particularly when variables are neither  $I(1)$  nor  $I(0)$  or mutually co-integrated.

We first conduct test for the presence of unit roots in the series under consideration by using Augmented Dickey Fuller (ADF) tests. Table 5.1 below reports the results of the unit root test. As evident, we fail to reject the null hypothesis of non-stationary for the variable FDI, OUT and INT at all level of significance. Moreover, we do reject the null hypothesis of non-stationarity for the first difference of these variables, by analogy these variables are becoming stationary at first difference, that is  $I(1)$  procedures. Nevertheless, the test reject the null hypothesis of the unit root

for the variable GOV and EXR at all level of significance, whereas the variable INF is stationary at 5% and 10%, but non-stationary at 1%.

**Table 5.1**

*Augmented Dickey Fuller (ADF) Unit root tests*

Variable	Trend	Intercept	I(0) P-value	I(1) P-value
FDI	-	-	0.9991	0.0300
INF	0	-	0.0243	0.0001
INT	-	-	0.1485	0.0060
GOV	-	-	0.0070	0.0000
EXR	0	-	0.0000	0.0000
OUT	0	0	1.0000	0.0400

Table 5.2 below represents the estimated result of ARDL-UECM based on the equation (9). In Table 5.2 when the variable OUT is the dependent variable, the computed F-statistic are greater than the critical value provided by Narayan (2005) and Pesaran (2001), which indicates the variables are co-integrated, that is for the variable output 5.793 is greater than upper bound at the 5% level of significance, also the calculated INF value is 3.983 which is greater than upper bound at 10% significance level. Therefore we can conclude that there is long-run relationship among those variables.

**Table 5.2*****ARDL Bound Test for co-integration***

T	10%		5%		1%	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	2.483	3.708	2.962	4.337	4.045	5.898
calculated F-statistics						
LOUT	5.793**					
LFDI	1.612					
LINF	3.983*					
LINT	1.171					
LEXR	0.611					
GOV	1.79					

Notes:

\*\*\*, \*\* &amp; \* represent 1%, 5% &amp; 10 level of significance respectively. K=5, n=43

However, following the long-run equilibrium between agricultural output and foreign direct investment we can see from estimated model, the FDI coefficient shows a significant positive sign which indicates significant positive effect of foreign direct investment on Nigerian agricultural output, the result shows that a one unit change in FDI will lead to 0.36% change in agricultural output. In Nigeria today about seven area of investment has been identified. These are agricultural production (crops, livestock, fisheries, and agroforestry), provision of enterprise specific infrastructure, agricultural produce storage, processing and marketing, agricultural input supply and distribution, support for agricultural research, provision of agricultural implements hiring service and collaboration with state and local government as well as farmers in implementation of the research-extension-farmer-input/marketing-linkage system (REFILS) in the states. Three main reasons stand out for the attractiveness of the enterprises to foreign investors. These are high level of demand, availability of raw materials/inputs and high rate of returns. All of these indicate economic viability of the different enterprises, therefore as a result of this opportunity There is need for government to be formulating investment policies that will

be favorable to both local and foreign investors also Government should provide adequate infrastructure and policy framework that will be conducive for doing business in Nigeria, so as to attract the inflow of

Furthermore, interest rates and inflation indicates negative effect but the inflation variable is found to be statistically insignificant to explain agricultural output whereas interest rates is found to be statistically significant even at 1% level and the coefficient is indicating that a 1% change in interest rates will results to change in agricultural output by 0.46% which is conformity with theory that is, if interest rates goes up people tends not to borrow which by implication will have negative effect on production and hence the output.

**Table 5.4**  
*Long-run and Short-run Estimates*

Dependent variable LOUTPUT				
	<b>coefficient</b>	<b>standard error</b>	<b>t-statistic</b>	<b>p-value</b>
constant	8.260***	0.257	32.169	0.000
LFDI	0.369***	0.082	4.523	0.000
LINF	- 0.007	0.08	- 0.090	0.929
LINT	- 0.460***	0.075	- 6.140	0.000
LEXR	1.091***	0.065	16.685	0.000
GOV	0.063***	0.018	3.494	0.002

\*\*\*, \*\* & \* represent 10%, 5% & 1% respectively

In the same line the variable GOV is also found to be statistically significant in explaining agricultural output, and the coefficient, p-value of the variable appears to be positive and significant, the coefficient indicates that a one million(N1000,000) increase in government expenditure will raise agricultural output by 0.063% which is also according to the priori. furthermore the exchange rates variable shows a significant and positive effect on agricultural

output, the coefficient indicates that a 1% change in exchange rates will leads to 1.091% change in agricultural output, however, that will not be surprise if we consider the nature and characteristic of Nigerian agricultural sector which popularly characterize with the peasant farmers whose affected less by foreign exchange from their demand sides and by analogy it will have positive effect on their supply side by making their product competitive in the market.

**Table 5.5**

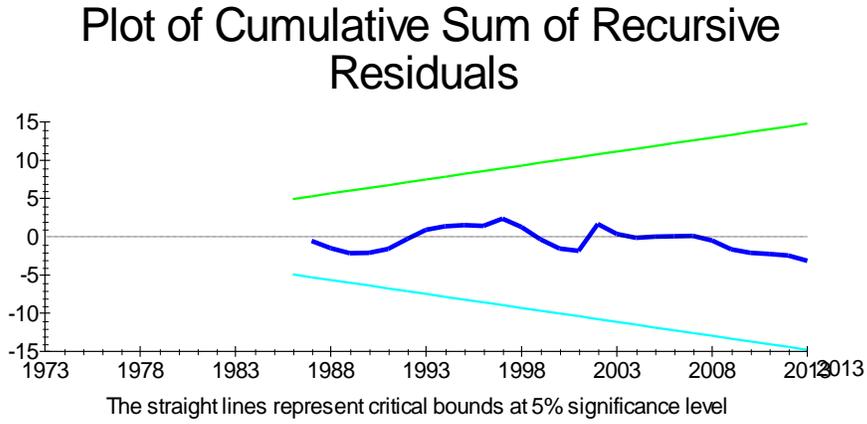
***Diagnostic Test of the long-run equilibrium model***

Test	Null hypothesis	T-statistic
Serial correlation	No autocorrelation	0.310 [0.577]
Functional form	Correctly specify	1.076 [0.300]
Normality	Normally distributed	0.245 [0.885]
Hetroscedaticity	Homoscedastic	0.116 [0.733]

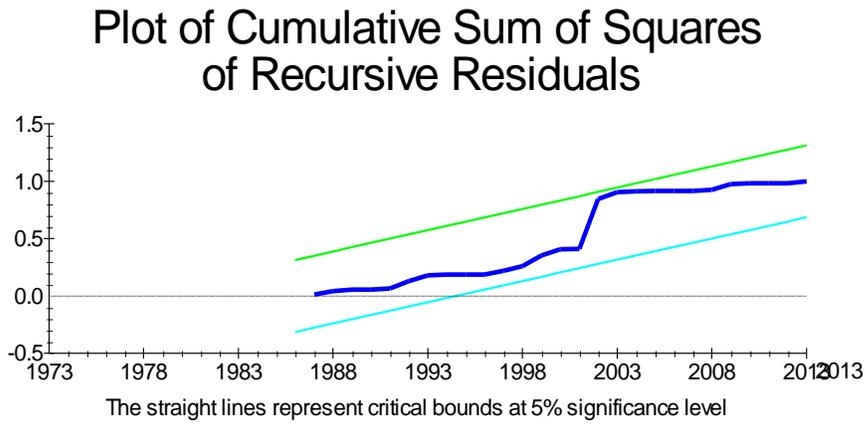
From Table 5.5 above, in order to be free from spurious regression and achieve a reliable and valid inference, the competence of the model is re-examined by diagnostic test of no autocorrelation, functional form misspecification, normality of the distribution of the residual and homoscedasticity will not be rejected as reflected in the Table 5.4 above. Therefore, these results have the adequacy of the estimated long-run model.

Furthermore, the stability of the model have also support the cumulative sum (COSUM) and the cumulative sum of squares (CUSUMSQ) of the recursive test for structural stability. The graphs of both of them are within the 5% critical bound, and that confirm the stability of the model over the study period. Below is the graphical presentation of CUSUMSQ and CUSUM statistics are depicted in Figure 5.1 and Figure 5.2.

**Figure: 5.1**



**Figure: 5.2**



### 5. 3 VECTOR ERROR CORRECTION MODEL (VECM)

Short-run Equation: The association between Agricultural output and foreign direct investment, Interest rate, exchange rate and inflation can be further examined. In estimating the VECM we can examine the short-run impact of independent variables on dependent variable, by construction, the error correction term (ECT) represents the extent to which variability is away from long-run association. The coefficient of the error correction term (-0.481) in the equation shows that 48% adjustment toward the long-run equilibrium takes place in a year, the short-run relationship of vector error correction model is given below: (Short-run equation)

$$\begin{aligned} \Delta LOUT = & 3.972^{***} - 0.481 ECM_{t-1}^{***} + 0.059 \Delta FDI_t + 0.041 \Delta INF_t^* + 0.121 \Delta INT_t^{**} - \\ & (0.574) \quad (0.065) \quad (0.050) \quad (0.032) \quad (0.045) \\ & 0.350 \Delta EXR_t^{***} + 0.006 \Delta GOV_t \\ & (0.078) \quad (0.008) \end{aligned}$$

From the Table 5.6 below, the t-value of the coefficient of the ECT in Loutput is statistically significant at 1% level. The results confirm that the entire variables move together with a long-run relationship and error disequilibrium can be used to predict the next period variability in Agricultural output in Nigeria. The statistical significance of either the Wald-test of joint explanatory variables or the t- test of the ECT shows the existence of Granger-causality.

The dependent variable in the equation where influenced by the changes of the explanatory variables and the error correction terms. The negative significant value at 1% level of the error correction terms further confirm the bound test of co-integration result reported earlier. The significant negative value of ECT indicates the speed of adjustment to the disequilibrium of the

last period which takes a short time to return to equilibrium. However, there could be deviation in the short-run but it adjusts rapidly and tied together again in the long-run.

**Table 5.6**

*Granger Causality on UVECM*

	DLOUTPUT	DLFDI	DLINF	DLINT	DLEXR	DGOV	ECT(-)
DLOUTPUT	1	2.835*	11.114***	3.900**	22.351***	0.599	-7.401***
DLFDI	0.475	1	0.244	0.797	0.002	0.002	-1.935*
DLINF	19.562***	0.614	1	2.408	0.067	0.043	-
DLINT	1.161	0.026	3.361*	1	2.613	0.006	-3.481**
DLEXR	1.054	4.185**	0.332	0.299	1	10.796**	-1.904
DGOV	6.458**	0.225	0.006	0.079	33.388***	1	-

Table 5.6 above shows the existence of bidirectional relationship between inflation and agricultural output in the long-run, and one way causation from FDI, INT and exchange rates to Agricultural output, with no feedback effect from agricultural output, on the other hand Agricultural output causes government expenditure but there is no feedback effect from government expenditure to agricultural output.

From the analysis of this result, it was found that foreign direct investment, government expenditure, exchange rate are all significant and has positive effect on agricultural output in Nigeria which is in conformity with theory and literature. On the other hand, inflation and interest rates has negative relationship with agricultural out in Nigeria, but inflation is found to be statistically insignificant to explain agricultural output. The next chapter will proceed with the summary and conclusions of this study.

## **CHAPTER SIX: CONCLUSION AND RECOMMENDATION**

### **6.1 INTRODUCTION**

This chapter has begun by given a summary of Nigerian Agricultural environment, policy recommendation and suggestion for further study.

### **6.2 SUMMARY**

Before the oil boom, Nigeria depended mainly on agriculture for foreign earning, raw material, employment, government revenue and many other, however the advent of oil distorted the attention paid to the agricultural sector, as a result, there was a downturn in Agricultural output in the country, by implication turn the country from food sufficient export of food to net importer. The occurrence of recession leads to a fall in oil prices, putting the economy at a danger as outdoor debt double up to rescue the condition, SAP existed in place but up to this moment the agricultural output of the country is still far below the required quantity.

Agrarians and agribusiness owners in Nigeria, agonize from in-adequate capital for start-up, loans and credit for extension and investment to secure advanced equipment and sophisticated technology for automated construction. But FDI inflow in to Agricultural sector still remains low compared with other sectors due to the lower emphasis given by the government to the sector, however there is need for new policy instrument that is advantageous to agricultural sector due to the importance of this sector for sustainable development.

This study has empirically examined the impact of foreign direct investment on agricultural output in Nigeria. The estimated model took in to account other factors that affect Agricultural

output in accordance with theory and literature. The finding shows that LFDI, GOV and LEXR has significant positive effect on Nigerian Agricultural output, however, the variable LINT and LINF have negative effect on agricultural output, but LINF is statistically insignificant to explain Agricultural output in Nigeria.

The result of the long-run relationship between foreign direct investments, macroeconomic variables in the model and Agricultural output from co-integration test permit it's to continue with error correction using error correction term to correct errors in succeeding periods generated in the current period. The outcomes shows that about 48% of errors generated in this period will be corrected in the following period, this indicates that there is a long-run stability between foreign direct investment, interest rate, exchange rate, inflation and Agricultural output in Nigeria which hint that there is convergence of variables to the same long-run equilibrium in path, following every period of disequilibrium.

### **6.3 POLICY RECOMMENDATIONS**

Centered on the literature review and empirical analysis, the following policies are recommended to reduce the barrier for FDI in to the economy and agricultural sector of Nigeria in particular

- Government should seek for more FDI in the agricultural sector since the success of the sector is essential for the attainment of a truly diversified economy in Nigeria. Factors such as foreign ownership restrictions and multiple corporate taxes that scare the investor from investigating should be addressed and reviewed.

- Government must further target specific type of FDI that are able to generate spillover effects in the entire value chain of the Agricultural sector and by extension the overall economy.
- Government should create market access for the farmers through provision of the necessary infrastructure like farm road, storage facilities, processing equipment like milling machine, etc. Foreign investment in this area could be in the form of processing equipment and storage facilities.
- There is need for government to be formulating investment policies that will be favorable to both local and foreign investors
- Farm equipment's and improved varieties should be made available to the farmers through the various government agencies like Agricultural Development Projects (ADPs).
- The growth and competitiveness of a sector thrives on its innovations. Where innovation is constantly occurring, therefore FDI will be attracted. Overall, good corporate governance and the rule of law must be allowed to prevail so as to not only attract FDI but ensure that the agenda, aims and objectives of all stakeholders are met.

#### **6.4 RECOMMENDATION FOR FURTHER STUDY**

Diversification of the economy is the burning issue in Nigeria. However, a detailed research into the various sub-sectors such as Crops, Livestock, Fishery and Forestry should be conducted to ascertain the sub-sector to which FDI can best be channeled in order to maximize output.

#### **6.5 CONCLUSION**

This thesis has contributed to FDI literature by providing evidence in support of the notion that FDI generate positive externalities on domestic economy (production). The study was based on

the impact of FDI on agricultural output in Nigeria, a country which stands as a top FDI recipient in Africa. The study provides a detailed examination of FDI by pointing its trend in Africa and Nigeria. It points out that despite the fact that developed countries are the major drivers of FDI flows; African countries have been experiencing a substantial rise in flows for the last decades.

In order to understand the nature of the environment in which this study is carried out, this study has extensively examined the nature and dynamics of agricultural sector in Nigeria.

Review of theories of FDI in this study provide the underpinning of spillover mechanisms, pointing out its origins in the neo-classical trade theories and the subsequent incorporation of industrial organization theories, identifying particular contributions by Mundell (1957). The mechanism of FDI spillover is examined pointing out the difference channels in which spillovers are known to occur. The methodology for the presence of FDI effects on Agricultural output is examined by the impact of FDI on agricultural output.

In conclusion, the investigation of Foreign Direct Investment effects on Nigerian Agricultural output in this study has provided evidence of positive productivity effects on agricultural output. In an attempt to provide explanation for the result from this investigation, the analysis found strong positive effect of Foreign Direct Investment, Government expenditure and Exchange rates on Agricultural output, but negative impact for Inflation and Interest rate, with Inflation variable found to be statistically insignificant in explaining Agricultural output in Nigeria.

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