RESEARCH PAPER

Effect of Agricultural Foreign Direct Investment on Economic Growth in Nigeria 1981 – 2022

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ABSTRACT

This study investigates the effect of agricultural foreign direct investment (FDI) on economic growth proxy by agricultural GDP in Nigeria between 1981 and 2022. Through a review of the literature, the impacts of agricultural FDI on economic growth in Nigeria are identified. Economic data including agricultural gross domestic product (GDP), agricultural foreign direct investment, exchange rate and inflation rate are collected to determine the extent to which agricultural FDI has influenced economic growth in the country. Descriptive and econometric analyses are conducted to draw conclusions regarding the effects of agricultural FDI on economic growth in Nigeria. The results suggest that agricultural FDI in the have driven economic growth, with a positive and significant influence on GDP growth. Specifically, the results indicate that 1% increase in agricultural FDI is associated with a 0.051% increase in GDP growth. In conclusion, FDI in the agricultural sector has a substantial impact on economic growth in Nigeria and should be encouraged by policy makers in order to achieve higher GDP growth rates.

KEYWORDS Agriculture, Economic Growth, Foreign Direct Investment Introduction

The need to fast track economic growth has motivated the Nigerian policy makers to make deliberate efforts to attract foreign direct investment (FDI). This is because the Nigerian economy is characterized by low savings and fiscal deficit (Saibu & Keke, 2014). The policy makers believe that external capital is required to finance current account deficits and to accelerate the pace of economic growth through larger production of goods and services. In this regard, foreign direct investment can be used to augment domestic savings in bridging the savings investment gap. Foreign direct investment (FDI) is a measure of foreign ownership of productive assets, factories, mines and land. It is direct investment into production or business in a country by a company in another country, either by buying a company in the target country or by expanding operations of an existing business in that country. Foreign direct investment is different from portfolio investment which is a passive investment in the securities of another country such as stocks and bonds (Solomon, 2018). It can take on many forms and sometimes the term is used to refer to different kinds of investment activity. Commonly, foreign direct investment includes, "mergers and acquisitions", building new facilities, reinvesting profits earned from overseas 'operations and intra-company loans. FDI refers to the net inflows of investment (inflow minus outflow) to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, other long term capital, and short term capital and shown in the balance of payments of a country.

With its orientation to developing enterprises directly, foreign direct investment helps to strengthen economic potential. Sometimes, this is accomplished through Greenfield investment, adding new and different economic activity and consequently diversifying the economy. Competition is one of the ways a foreign investment can have a broader effect on the economy. It spurs local enterprises to increase their own efficiency and productivity. Competition plays a major role in improving the allocation of resources, boosting the economic prospects of the domestic economy and worldwide sustainable economic development. Technology transfers and the development of human capital are often seen as two of the primary benefits of foreign direct investment. Competition has a role to play in both, as it encourages domestic competitors of the foreign investment to build up their own technological capabilities and the productivity of their labour force. The development of human capital can be one of the chief contributions of foreign contributions of foreign direct investment. The foreign owners will bring their management skills and technology to their enterprises. In training the local workforce, they will pass on those management skills and technology. As their workers move on to other jobs in domestic firms, or start their own business, they will bring with the management, working skills, and the technology that they have learned (Todaro, 2005).

Since the end of the World War II, foreign investment has been recognized as a very viable economic growth path, especially for the developing countries (Oyeranti, 2003). The contributions of foreign investment to Japan after the World War II and in South Korea after the Korean War are of great importance. The emerging economics 'Tigers' of Asia namely Thailand, Singapore, Malaysia, Taiwan, Hong Kong and Indonesia owe their successes to heavy inflows of FDI over the years. The economic growth of these countries has been enhanced by providing the local economy with a source of foreign skill, technology, management expertise and human resource development through international training and collaboration. FDI has also substantially increased the capacity of these economies to sustain further developments from their own resources ((Solomon, 2018).

Despite the growing importance and reliance on oil, Nigeria still remained an agrarian economy accounting for significant shares of national Gross Domestic Product (GDP) and total exports as well as employing the bulk of the labour force. Available statistics showed that agriculture still accounts for about 40 percent of GDP and provides employment (both formal and informal) for about 60 percent of Nigeria's 190 million people. With these performances, the expectation would be that the agricultural sector receives prime attention from government and private enterprises particularly in the area of funding. However, successive governments over the years neglected agriculture and failed to diversify the economy from over dependence on capital intensive oil sector. Nigeria's agriculture remains largely subsistence based with about 80 percent of agricultural output coming from rural farmers living on less than a dollar per day earned from farming less than one hectare (2.7 acres). Nigeria that was once a large net exporter of agricultural products and major foreign exchange earner before the advent of oil in 1970s is currently a huge net importer of agricultural products, with exceeding \$3 billion in 2010 (Yusuf, et al. 2015).

Nigeria has diverse agro-ecological conditions that can support a variety of farming models to create its own green revolution. However, public expenditure which serves as the bedrock of financing for the sector has consistently fallen short of recommendations (Food and Agricultural Organization (FAO) set 25 percent of total budget to agriculture). According to Ochigbo cited in Oyakilomen et al (2013), Nigeria has consistently failed to reach the 10 percent agriculture budget standard set by African

leaders in the 2003 Maputo agreement, which has led to negative implication for food security. In the area of FDI which has been one of the major adoptions to bolster funds to various sectors of the economy; Ogbanje et.al (2010) using least squared difference (LSD) method to determine the mean difference between the flow of FDI to agricultural sector and each of the other economic sectors of Nigeria from 1970-2007 discovered that there exist heavy discrimination against the sector. This study therefore sought to investigate the effect of agricultural FDI on agricultural sector productivity in Nigeria.

Literature Review

Conceptual Literature

Foreign Direct Investment (FDI): According to Hossain (2019), foreign direct investment (FDI) is a powerful tool for growing the Bangladeshi economy and can help the nation achieve its socioeconomic goals, including poverty reduction.

Economic Growth: According to Turrets (1987) "the economic growth of a country can be defined in various ways as an increase in gross domestic product, in real GDP or in per capital GDP". It is clear therefore, that the rate of growth of the real GDP country. If we want to determine the growth in Nigeria for example, the rate of growth of its real GDP stands as the most appropriate measure.

Theoretical Framework

In Nigeria the agricultural sector still remains the most important sector of the economy despite it neglect, it is however no news before oil, the sector was the pillar of the Nigeria's economy providing employment and source of livelihood for the increasing population and accounting for over half of the GDP of the country. Fasminrin and Braga (2009) ascertained that the main reason for the slow of agricultural development in Nigeria despite the volumes of scientific information to engender improvement is due to poor policy formulation and implementation by the federal government, which implies that there should be a strategy to guide the formulation of polices and the implementation of activities that will lead to a set goal.

Development economists have focused on how agriculture can best contribute to overall economic growth and modernization. Todaro and Smith (2003) looked at Lewis theory of development, reporting that the underdeveloped economy consists of two sectors. These sectors are the traditional agricultural sector characterized by zero marginal labour productivity and the modern industrial sector. Rostow's (1960) leading sector growth stage approach, identifies five stages in the transition from primitive to a modern economy they are; (a) the traditional society, (b) the preconditions for takeoff, (c) the take off, (d) the drive to maturity and (e) the age of high mass consumption. Rostow's objective in identifying the five stages of growth and the dynamic theory of production was primarily concerned with the process by which a society moves from one stage to another and providing policy guidance to the leaders of developing countries. Rostow's system is however the only one which clearly specifies a dynamic role of the agricultural sector in the transition process, stating that in an open economy, primary sector industries may act as leading sector and at a particular time carry the burden of accelerating growth, in addition agriculture must (a) provide food for a rapidly increasing population, (b) provide a mass market for the products of the emerging industrial sectors and (c) generate the capital investment for new leading sector outside of agriculture.

Empirical Literature

Omankhanlen (2011) on the impact of FDI on Nigeria's economy found no empirical strong evidence to support the notion that FDI has been pivotal to economic growth in Nigeria, which could have justified the effort of successive governments in the country at using FDI as a tool for economic growth even though he recognized its importance. According to Alfaro et al (2009) there is a widespread belief within policy circles that FDI enhances the productivity of host countries and promotes economic development. This implies that FDI may not only provide direct capital financing but also creates positive externality via the adoption of foreign technology and know-how.

Recent analysis of the impacts of FDI and trade on economic growth (Makki & Somwaru, 2004; Mlachila & Takebe, 2011) has shown several major beneficial impacts of FDI, particularly in developing countries. First, FDI is a key channel through which improved technology is transferred to developing economies. Second, the benefits of FDI are likely to be greatly enhanced if the recipient country has a better stock of human capital.

Umechukwu and Okezie, 2018 FDI tends to stimulate or crowd-in domestic investment in recipient developing economies. Fourth, FDI has the potential of supplementing low domestic savings and adding to the capital stock, and hence raising productive capacity (especially if accompanied by improvements in infrastructures, as is often the case of FDI from China for example). FDI can lead to productivity gains via skill acquisition, technology transfer, increased competition and expansion of exports. In regard to the latter issue, it is noteworthy to mention that, for example, FDI in fruit and vegetable production in East Africa has been aimed at diversifying export revenues (Rakotoarisoa, 2011) sound macroeconomic policy regimes and domestic institutional stability in the recipient developing countries are necessary preconditions for FDI triggered growth to eventuate (Makki & Somwaru, 2004; Mlachila & Takebe, 2011)

In general, FDI in agriculture could lead to better use of currently cultivated areas and/or bring in new land areas for cultivation. According to Deininger et.al. (2011), around 6 million hectare per year of additional land is likely to be brought into production by 2030 in developing countries with two-thirds of the expansion expected in land abundant regions in Sub-Saharan Africa and Latin America. In contrast to Latin American region, it is important to recognize that none of the African countries of most interest to investors (for example, Mozambique, Zambia, Sudan and Madagascar) is achieving more than 25 to 30 per cent of the potential crop yields on currently cultivated areas. These yield gaps are due to several factors including deficiencies in technology, infrastructure, capital markets, property rights and public institutions. This situation in some of the African countries is quite contrast to those countries in Asia, Western Europe and Middle East where there is little available land for expansion and the yield gaps are relatively low. Hence FDI driven increase in crop productivity on existing farmlands in some African countries will have considerable potential benefits (Deininger et. al., 2011)

One of the major constraints to investment projects in Africa has been the lack of appropriate infrastructure. Many countries in Africa lag behind other developing regions on most key indicators of infrastructure including paved roads, railways, electricity supply and communications. In Sub-Saharan Africa, annual infrastructure expenditure requirements amount to US\$ 90 billion, of which only two-thirds are met (Mlachila & Takebe, 2011). Given the infrastructure deficiencies in many parts of Africa, it is interesting to note that recent Chinese FDI in Africa in general has involved 'packaged investment projects' involving, for example, both mining/resources (equity

financed by Chinese entities) and in related infrastructure (debt financed by Chinese EXIM Bank) (Mlachila & Takebe, 2011).

Mlachila and Takebe (2011) from a political economy point of view, highlights several advantages of such 'packaged investment projects' arrangements. First, such arrangements are more appealing to recipient African countries given that inadequate infrastructure has been a key impediment for attracting FDI and also for fostering domestic economic growth. Second, such arrangements give China a competitive edge against other potential investors, and this is also helped by the very competitive Chinese infrastructure/construction sector. Third, the 'packaged investment projects' arrangements enable China to demonstrate to the recipient countries that it is in it 'for the long haul'. Fourth, for strategic commodities such as minerals and energy resources and food, it is in China's interest to make sure that it can rely upon secure supply routes in the long term. Given this background, the application of the concept of 'packaged investment projects' arrangements by the Chinese investors in African agriculture could potentially contribute towards addressing the major infrastructure constraint in recipient countries with beneficial flow-on effects (Oji-Okoro, et al, 2014).

Material and Methods

Data and Sources

The data used for this study were obtained from secondary sources. Time series data on foreign direct investment to agricultural sector and its contribution to GDP for the period of 1981-2022 will be obtained from the Central Bank of Nigeria (CBN) statistical bulletin for various years.

Model Specification

The model for the study is formulated thus:

 $\begin{array}{ll} AGRGDP = f \left(AGRFDI + EXCR + INFL \right) & (1) \\ \mbox{Linearizing the equation gives:} \\ AGRGDP = Bo + B_1 AGRFDI + EXCR + INFL + U & (2) \\ \mbox{Where; } AGRGDP = Agricultural Contribution to Gross Domestic Product \\ AGRFDI = Agricultural Foreign Direct Investment inflow \\ EXCR = Exchange Rate \\ INFL = Inflation Rate \\ Bo = Intercept, \\ B_1 = Estimation Coefficient \\ U = Error Term \end{array}$

Statistical Analysis

The study used the ordinary Least squares (OLS) method of estimation. Therefore the stochastic equation of the model will be estimated using Ordinary Least Squares (OLS) method. The E-Views software was used for estimating the equation.

It is expected that the results from the study will show that FDI has significant and positive impact on the agricultural sector of the economy in Nigeria. This will be evident in the estimated results for all equations considered in the study. The coefficient of agriculture GDP (AGRGDP) is expected to have positive sign suggesting that agriculture foreign direct investment (AGRFDI) impacts positively on the agricultural sector of the Nigerian economy. In other words one per cent increase in FDI in the agricultural sector increases the elasticity of output of agriculture in the whole economy and the estimate will be statistically significant at 5 per cent.

Results and Discussion

Descriptive Statistics

		Та	ble 1		
Results of Descriptive Analysis					
Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
AGRGDP	600	3.601	1.105	1.3	5
AGRFDI	600	3.412	0.818	1	4.5
EXCR	600	3.585	0.889	1	5
INFL	600	4.427	0.812	1	5

Source: E-views 10, 2023

The descriptive statistics shown in Table 1 reveals that variables AGRGDP and EXCR, and have a mean of about 3.5, with minimum of 1 and maximum of 5, except for AGRGDP with a minimum of 1.3. INFL variable has a mean of about 4.4 with minimum of 1 and maximum of 5, while the AGRFDI variable with a mean of about 3.4 and maximum of 4.5. The standard deviation of all the variables, except for the AGRGDP is less than one, indicating that the individual responses are concentrated around the mean. In other word, they are less than one point away from the mean

Unit Root Test

The study employed the use of Augmented Dickey Fuller and Phillip Peron tests in order to test for the presence of unit root or otherwise in both the dependent and explanatory variables in the study. The results are presented in the following table:

		Table 2	
		Unit Root Test	
		ADF @ 5%	
Variable	Level	1st Diff.	Order of integration
AGRGDP	-0.69721	-4.282781	I(1)
AGRFDI	-3.547907	-4.805511	I(1)
EXCR	-1.47868	-5.621940	I(1)
INFL	-2.602774	-9.929785	I(1)
		PP @5%	
AGRGDP	-0.067038	-4.051346	I(1)
AGRFDI	-2.183166	-3.800492	I(1)
EXCR	-1.051582	-9.252183	I(1)
INFL	-2.602774	-11.86200	I(1)

Source: E-views 10, (2023)

To determine the order of integration of the variables, the Augmented Dickey-Fuller (ADF) and Phillip Perron tests were conducted. The null hypothesis is $H_0 = \beta = 0$ (i.e., β has a unit root), and the alternative hypothesis is $H_1 = \beta < 0$ were implemented. The results for the level and differenced variables are presented in table 2. The stationary tests were performed first in levels and then in first difference to establish the presence of unit roots and the order of integration in all the variables. The results of both the ADF and Phillip Perron stationarity tests for each variable shows that the tests fail to reject the

presence of unit root in for the data series in levels, indicating that these variables are non-stationary in levels. The first difference results show that the variables are stationary at 5% significance level (integrated of order one I(1)). Therefore, the existence of the unit root in all the variables necessitates the conduct of Cointegration test, as it signifies the existence of Cointegration among the variables. Cointegration is aimed at testing the long-run relationship of the variables. The recognized ARDL model of Pesaran and Shin (1999), which assumes to capture both short-run and long-run asymmetries in the variables of interest, was used.

Table 3Bounds Test for Cointegration					
F- statistic	Lower bound	Upper bound	K(n-1)	Sign.lev.	Remarks
5.564600	2.2 2.79	3.09 3.67	3	10% 5%	Cointegration
	3.29	4.37		1%	

Source: E-views 10, (2020).

From the table 3, it can be seen that the value of F-statistic is 5.564600. The value is greater than the lower and upper bounds t-statistic at 5% level of significance using Pesaran, *etal.* (2001). This justifies the rejection of the null hypothesis against the alternative hypothesis that a cointegration relation exists among the variables in the model. This implies that the null hypothesis of "no Cointegration" among the variables of interest was rejected. Hence, we concluded that there exists a long-run or cointegrating relationship among all the variables in the study

Regression Result and Analysis

A regression analysis was conducted on interest rate against investment. The summary of the regression is displayed in table 4 below.

		Table 4		
	R	legression Result		
Variable	Coefficient	T-Statistics	Std.Error	P-Values
Constant	11.49135	25.14505	0.457003	0.0000
AGRFDI	0.051053	-2.069417	0.024670	0.0464
EXCR	0.002142	3.239358	0.089496	0.0312
INFL	-0.017821	0.276603	0.064429	0.7838
R-Squared	0.551292		F-statistics	= 1.960880
Durbin-Watson = 0.751843				

Source: E-views 10, (2020).

It can be clearly seen from table 4 above that the coefficient of inflation rate (INFL) yielded a negative value. The negative value implies that on the average, inflation rate (INFL) contributes negatively to agricultural contribution to GDP (AGRGDP) in Nigeria. It entails that a 1% increase in inflation rate (INFL) will lead to a -0.178 decrease in agricultural contribution to GDP (AGRGDP) and vice versa. This entails that there exists a negative relationship between inflation rate (INFL) and agricultural contribution to GDP (AGRGDP). The result also shows that agricultural foreign direct investment inflow (AGRFDI) yielded a positive coefficient valued at 0.051053. This implies that there exists a positive relationship between agricultural foreign direct investment inflow (AGRFDI) and agricultural contribution to GDP (AGRGDP) in Nigeria. Hence, a 1% increase in agricultural foreign direct investment inflow (AGRFDI) will increase agricultural foreign direct investment inflow (AGRFDI) and agricultural contribution to GDP (AGRGDP) in Nigeria.

contribution to GDP (AGRGDP) by 0.051053. This conforms to economic a priori expectation because inflow of foreign direct investment will be propelled to more GDP.

Finally, exchange rate (EXCR) coefficient yielded a positive value at the magnitude of 0.002142. This implies that exchange rate (EXCR) increased by 1% will lead to an increase in agricultural contribution to GDP (AGRGDP) in Nigeria by 0.0002142. Based on the regression analysis in table 4, the R² which measures the goodness of fit vielded 0.551292, this implies that the explanatory power of the independent variables is approximately 55%. It further shows that the variation in the dependent variable is explained by the independent at 55%. This is reasonably above average and it shows that variables outside the model influence the dependent variable at 45%.

The autocorrelation test with the instrumentality of Durbin-Watson is used to ascertain if the error terms are serially correlated. The Durbin-Watson statistic yielded a value of 0.751843. This value which is absolutely less than two implies that there exists a positive serial correlation in the model. The table below is a summary display of the computed and tabulated values of t and f statistics.

	Table of	Significance	
Variable	Computed t*	Tabulated t0.025	Decision
AGRFDI	-2.069417	1.68	Significant
EXCR	3.239358	1.68	Significant
INFL	0.276603	1.68	Not Significant
Computed F*	Tabula	Tabulated F0.05 Decision	
1.960880	0.7	0.751843 Not Significant	

Table 5
Table of Significance

Source: Eviews 10, (2020).

Test of Hypotheses

Hypothesis One

Ho: Agricultural FDI has no significant impact on Economic growth in Nigeria.

Decision: Based on the results in table 5, it can be seen that the computed tstatistics for AGRFDI is greater than its tabulated value. Hence, we reject the guiding null hypothesis and accept its alternative. Hence, Agricultural FDI has significant impact on economic growth in Nigeria.

Hypothesis Two

Ho: Exchange rate (EXCR) has no significant impact on economic growth in Nigeria

Decision: Based on the results in table 5, it can be seen that the computed tstatistics for Exchange rate (EXCR) is greater than its tabulated value. Hence, we reject the guiding null hypothesis and accept the alternative. Hence; Exchange rate (EXCR) has significant impact on economic growth in Nigeria.

Hypothesis Three

Ho: Inflation rate (INFL) has no significant impact on economic growth in Nigeria

Decision: Based on the results in table 5, it can be seen that the computed tstatistics for inflation rate (INFL) is less than its tabulated value. Hence, we accept the guiding null hypothesis. Hence; inflation rate (INFL) has no significant impact on economic growth in Nigeria.

Conclusion

This study investigates the impact of the agricultural foreign direct investment on economic growth in Nigeria. The study findings revealed that there is a positive and significant relationship between economic growth and two of the three independent variables employed (agricultural FDI and exchange rate) while a negative relationship existed between economic growth and inflation rate. This study therefore concludes that agricultural FDI and exchange rate have positive impacts on the economic growth of Nigeria. Inflation rate on the other hand have impacted negatively on economic growth of Nigeria as revealed by the study.

Recommendations

The study therefore recommended that the Nigerian government should review its policies and programs on agricultural FDI and exchange rate by making more stringent regulations against agriculture and exchange rate regulations by the central bank, and also by spending more subsidies on agricultural inputs since the result of the study revealed that they do have a positive impact on Nigerian economic growth.

The Nigerian government should encourage investors to increase their investment on agricultural foreign direct investment to increase productivity by granting them loan and favourable business opportunities with the objectives of increasing Nigerian economic growth, since the study revealed that they have positive impact on the economic growth FDI in agriculture that is focused on either improving existing technologies or management practices or introducing new ones in the agricultural sector should be sought for, to increase productivity and thus, output in the sector.

Furthermore, the government should position agriculture in a more commercial sense as a business venture, rather than a leisure activity and as such improve both foreign and domestic partnerships and investments, as well as output in the sector

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