Impact of FDI to Manufacturing Industry on Agricultural Production in Nigeria

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Abstract

This study examines the impact of foreign direct investment (FDI) in Nigeria's manufacturing sector on agricultural production, using data from 1981 to 2023. Agricultural production, measured by value-added activities like forestry, fishing, crop cultivation, and livestock, was the dependent variable, while independent variables included manufacturing sector FDI, legal institutions, exchange rates, and inflation. Unit root tests (ADF and Phillips-Perron) and the ARDL model were used for analysis. Results showed that manufacturing sector FDI had a positive but insignificant short-run effect on agricultural production, becoming significant in the long run. Legal institutions positively influenced agriculture in both the short and long term, while exchange rates and inflation negatively impacted agriculture in the short run. Key recommendations included reducing the cost of imported agricultural inputs, creating a favorable environment for manufacturing sector FDI through incentives and infrastructure improvements, securing land tenure, protecting investor rights, and increasing investments in agricultural development through improved access to credit, modern techniques, and infrastructure.

Keywords: *Manufacturing industry, Legal institution, Agricultural production and Exchange rate*
JEL CODE: L6, K4, Q1, F31

1. Introduction

Nigeria's primary policy framework for attracting foreign direct investment was the Nigerian Investment Promotion Council (NIPC) and the liberalization of the foreign exchange market (Akande & Biam, 2013). The rationale behind this was based on the belief that foreign direct investment (FDI) helped domestic investors finance deficits in important economic sectors by funding projects that resulted in externalities like technology transfer between sectors and other spillover effects (Msuya, 2007). Nigeria's agricultural production increased by 12% as a result of both the contribution of agricultural land and domestic investment, as indicated by domestic capital formation (DKF) (Sajo & Suleiman, 2023). Nonetheless, it was observed that less than half of the nation's arable land is now being farmed (Seriki, 2022). Even Nevertheless, the majority of this land is farmed by smallholder and traditional farmers who employ primary production methods, which lead to low yields.

According to Sajo and Suleiman (2023), Nigeria's agricultural output increased by 85% for every 1% rise in the rural population. This has shown that Nigeria possess adequate capacity in friend financial flows. In addition to increasing agricultural output by providing labor, these rural residents are also connected with the manufacturing sector by supplying raw materials that were required as inputs; they contributed significantly to the sustainability of agricultural production. Sunday (2021), also found that agricultural land had significant positive relationship with the rural population expansion, he noted that the demand to feed the teaming population requires increase in agricultural land. However, it is necessary to evaluate the impact of other economic sectors, such as the manufacturing sector, on agricultural productivity in order to guarantee efficiency in Nigerian agriculture. Understanding how capital investments in one sector can affect another is essential to understanding how foreign direct investment (FDI) flows into Nigeria's manufacturing and agricultural production sectors. FDI in the manufacturing sector frequently introduces cutting-edge technologies and practices that can have a knock-on effect on the agricultural sector. To increase agricultural production, manufacturing companies might, for instance, bring better agricultural equipment, better processing methods, and improved supply chain logistics. Building infrastructure including roads, power supplies, and water systems is frequently required when investing in industry.

By lowering transportation costs, expanding market accessibility, and boosting the dependability of critical services, improved infrastructure can boost agricultural output. Food processing, packaging, and distribution are examples of value-added sectors that can be created as a result of foreign direct investment in manufacturing. This can open up new markets for agricultural goods and motivate farmers to boost output in order to satisfy these sectors' demands. Nigeria is fortunate to have a large amount of agricultural land and a workforce produced by its rural population, which is anticipated to draw more international investors into the country's agricultural sector (Sajo & Suleiman, 2023).

A significant portion of Nigeria's manufacturing sector has died as a result of financial difficulties. Due to the lack of readily available finances for Nigeria's manufacturing industry, the requirement for funds to support better expansion plans is met with limited and poor financial availability. Thus, this demonstrates the necessity of more foreign private investment as a key avenue for raising total investment in the manufacturing sector. Multinational firms play a crucial role in connecting national economies and defining the characteristics of the emerging global economy by actively supporting FDI influx. In order to chase profit and strengthen their competitive position, they provide assistance and resources (both real and intangible) that are deployed across national borders and in the industrial sector. Expansion of local production, savings, and supply of foreign exchange needed for significant infrastructure investment. For the most part, from 1984 to 2018, foreign direct investment in Nigeria increased with time (Victoria, et al, 2017). For these reasons, in order to address Nigeria's food production insecurity, we must look at how FDI affects the country's manufacturing sector and agricultural output.

2. **Literature Review**

Agriculture and the Nigerian economy

Nigeria's economy has undergone significant changes over the past 50 years, with crude oil replacing agriculture as the primary industry and government revenue source (Osabohien et al., 2020). This shift led political leaders to prioritize mining and quarrying over manufacturing and agriculture (Edeh et al., 2020). Despite this, agriculture remains a key sector, contributing 21.1% of GDP in 2016, 21.20% in 2018, 24.14% in 2020, and slightly declining to 23.69% in 2022 (World Bank, 2022). The sector is vital for employment and supports the economy through linkages with other industries (Udoh, 2011). Foreign Direct Investment (FDI) plays a critical role in agricultural and manufacturing growth. FDI encompasses equity capital, reinvested earnings, and other capital types, either through direct investments in physical assets or portfolio investments in financial assets (WDI, 2021; OECD, 2017). Investments in manufacturing often enhance agricultural value chains by increasing demand for raw materials like cocoa, cassava, and palm oil. FDI also facilitates technology transfer, improving food processing, packaging, and reducing post-harvest losses, thus supporting high-end agricultural markets. Additionally, FDI-backed agro-industries create stable markets, promote mechanization, and boost agricultural productivity, particularly in subsectors like cassava and palm oil processing.

➢ ***Investment opportunities in Nigeria***

The Nigeria Investment Promotion Council (NIPC) prioritizes investment across key economic sectors, including agriculture, manufacturing, and mining, finance, and electricity production. To attract investors, NIPC highlights 10 key advantages: abundant natural and agricultural resources, a large market with access to West African markets, political stability, a free market economy, a strong private sector, liberalized investment policies, untapped resources, attractive incentives, a growing financial sector, affordable labor, and expanding infrastructure. However, despite its vast agricultural potential, Nigeria struggles to meet its population's growing demand for agricultural products due to an unpredictable population growth rate (NIPC, 2018). Investment is needed to boost output, focusing on the following priority areas as identified by the NIPC:

i. All aspects of agricultural production, particularly the rehabilitation of groundnut, cotton, cocoa, and oil-palm production, as well as fish farming and forestry.
ii. Processing and storage of agricultural produce.
iii. Processing, supply, and distribution of agricultural inputs.
iv. Adoption of agricultural mechanization, including the use of equipment like bulldozers and tractors, and the provision of land clearing and preparation services.
v. Support for agriculture through research and funding of research activities.
vi. Development of water resources, particularly for irrigation and flood control within river basins.
vii. Construction of earth dams washes bores, and tube wells.
viii. Development and fabrication of small-scale and mechanized technologies for on-farm and secondary processing of agricultural produce, such as threshing, for consumption or storage.

2.2 Theoretical Literature

This study adopts the Accelerator Theory as its theoretical foundation, as it effectively explains the relationship between investments and production output. The theory posits that when excess demand exists, firms face two options: reduce demand by raising prices or increase investments to meet demand. Firms typically choose to boost production, enhancing profitability and attracting further investment, which drives productivity. In Nigeria, diverse agro-ecological conditions incentivize expanding output beyond domestic demand. Manufacturing industries respond by increasing investments, creating a positive link between exports and investment. However, heightened demand for domestic goods can also lead to increased imports of unavailable resources, funded by investment. Conversely, competition from imports with locally produced goods may lead industries to reduce production and investment...

2.3 Empirical Literature

Most researchers were so concerned about the importance of FDI and economics growth in Nigeria while little attentions were given to sector specific allocations. Considering the priority sectors in economics growth; Obi-Nwosu, Ogbonna, and Ibenta (2017) examined the impact of foreign direct investment (FDI) on Nigeria's manufacturing capacity from 1984 to 2017 using data from the Central Bank of Nigeria. Their analysis, which employed unit root tests, co-integration, and multiple regression, found that FDI and exchange rates significantly influenced manufacturing capacity, while inflation had no notable impact. They concluded that FDI is vital for manufacturing growth and recommended improving the investment climate through infrastructure development, regulatory reforms, enhanced security, and prioritizing national investment goals over political interests.

Marius, (2019) focused on investigating the impact of FDI on the manufacturing sector, being the sector with potential for harnessing the benefits of foreign investment and link it to Agricultural output. He employed time series data on Capital (CAP), labour force (LABF), foreign direct investment (FDI) and exchange rate (EXC). Solow augmented growth model served as base for analysis while Autoregressive Distributed lag (ARDL) model was utilized in estimation. Findings show no support for any significant relationship between FDI and manufacturing sector performance, but a strong positive correlation exists between manufacturing output and agricultural production.

Ifeanyi (2022) analyzed the impact of Foreign Direct Investment (FDI) on food production in Nigeria from 1981 to 2019 using ARDL techniques. The study found a positive relationship between FDI inflows and improved food production, driven by investments in skills, technology, capital, and infrastructure. However, FDI's potential remains underutilized due to political crises and insecurity, which hinder sustainable agricultural growth. The study recommended harnessing FDI as a catalyst for advanced food production and processing to achieve food security in Nigeria.

Adeagbo, Khadijat, and Jimoh (2023) investigated the effect of foreign direct investment (FDI) on agricultural and manufacturing outputs in Nigeria between 2017 and 2022. The study adopted an ex-post facto research design and judgmental sampling to select the analyzed years. Data were sourced from the Federal Inland Revenue Service and the CBN Statistical Bulletin. Using descriptive and inferential statistics, the analysis included the Augmented Dickey-Fuller (ADF) test for stationarity and the Engle-Granger Co-integration method. The findings revealed that FDI negatively impacted both manufacturing and agricultural outputs, with its influence being insignificant due to a bias toward the extractive industry.

3. METHODOLOGY

3.1 Source of Data and Research Design

Time series data were extracted from World Development Indicator (WDI) and International Financial Statistics (IFS) within the period f 1981-2023. We also adopted causal research design because it is founded on the principle that if a statistically significant relationship exists between two variables, then it is possible to predict the dependent variable using the information available on the independent variables. It is further stated by Kothari (2004), that causal research is used to explore the effect of one variable on another, and this is consistent with this study, which seeks to examine the effect of domestic and foreign direct investments on agricultural production in Nigeria.

3.2 Model Specification and Method of data analysis

The model for the ADF unit root framework is expresses as follows:

$$\Delta Y_t = \alpha_0 + \alpha_2 t + \beta_1 Y_{t-1} + \sum_{i=1}^{m} \beta_{2i} \Delta Yt_{-1} + \varepsilon_t \quad (1)$$

The general form of PP test is estimated by the following regression

$$\Delta Y_t = \beta_1 + \beta_2 \Delta Y_{t-1} + e_t \quad (2)$$

Where:

Y_t = current value of agricultural production, and foreign direct investment in manufacturing industries at time t, Y_{t-1} = Immediate past value of agricultural production, and foreign direct investment in manufacturing industries at time t, β_1 = the coefficient of the variable to be investigated; Δ = the deferential factor; α_o = constant, m = optimum number of lag of the dependent variable; εt = pure white noise error term. The study used the Augmented Dickey-Fuller (ADF) test to determine stationarity, where the null hypothesis of non-stationarity is rejected if the absolute test statistic exceeds the critical value at the 5% significance level. The Phillips-Perron (PP) test complemented the ADF results to assess the order of integration, ensuring alignment with the ARDL methodology.

Autoregressive Distributed Lag (ARDL) model, inspired by Pesaran et al. (2002) and Edeh, Chukwudi, and Emmanuel (2020), was used to assess cointegration between variables. The ARDL approach is suitable for small datasets and allows for testing relationships between variables with different integration orders, provided none are integrated at order I(2). Post-test analyses included the cumulative sum (CUSUM) and cumulative sum of squares tests, as well as tests for serial correlation and heteroskedasticity were conducted The study's theoretical framework established a functional relationship between agricultural production, measured as agricultural value-added (including forestry, hunting, fishing, crop cultivation, and livestock production), and explanatory variables: foreign direct investment (FDI) in the manufacturing sector, legal institutions (measured by charges for the use of intellectual property), exchange rate (USD/Naira), and consumer price inflation. Data spanned 1981 to 2023, with agricultural value-added calculated as the net output of a sector after accounting for intermediate inputs. The model is specified as;

AGProd =f(FDIMan, LegIns, EXch, INf) (3)

In the process of estimation, parameters and stochastic term "U" are incorporated into the model to take care of the variables that may influence the dependent variable but are not captured in the model. Then, the econometrics form of the above relationship has been expressed as:

$AGProd_t = \alpha_o + \beta_1 FDIMan_t + \beta_2 LegIns_t + \beta_3 EXch_t + \beta_4 INf_t + \mu_t$ (4)

To enhance the estimation of equation 4, some of the variables were transformed into a log-linear form by taking the natural log to minimize the problem of spurious regression in the analyses. The variable in rate and percentages are not log, thus;

$ln AGPROd_t = \alpha_0 + \beta_1 lnFDIman_t + \beta_2 ln LegIns_t + \beta_3 EXch_t + \beta_4 INf_t + u_t$ (5)

Where; Ln = natural logarithms; α_0 = autonomous component of agricultural

β_1, β_2 ,β_3, β_4, to β_9 are parameters to be estimated, And μ_t = Stochastic error term or disturbance term. The ARDL model is express as follow;

$$ln AGPROd_i = \alpha_0 + \sum_{i=1}^{m} \beta_{1i} \Delta ln AGPROd_{t-i} + \sum_{i=1}^{n} \beta_{2i} \Delta lnFDIMan_{t-i} + \sum_{i=1}^{o} \beta_{3i} \Delta lnLegIns_{t-i} + \sum_{i=1}^{p} \beta 4i \Delta lnEXch_{t-i} + \sum_{i=1}^{r} \beta_{5i} \Delta INF_{t-i} + \delta_1 ln AGPROd_{t-i} + \delta_2 lnFDIMan_{t-1} + \delta_3 lnLegIns_{t-1} + \delta_4 lnEXch_{t-i} + \delta_5 INf_{t-i} + \varepsilon ct_{t-1} \quad (3.3)$$

These models contains the lag value of the dependents variables and the lag value of each of independents variable; where log is the natural logarithm, Δ indicates the variable in the first difference, α_0 is an Intercept, t refers to the time period in years from 1981–2022, and Ɛct is a white-noise error term. Lags (m,n,o,p,r,) are determined using the Akaike information criteria (AIC).

4. Results and discussion

Unit Root Test (Test of Stationary)

According to the classical linear model assumption it shows that data should be stationary (mean and variance of the series should be constant), For this purpose we have to estimate the relationship among the variables. For clarity and ease of understanding the results of ADF and PP unit root test is extracted as depicted on Table 4.1.

Table 4.1;Unit Root Test (Test of Stationary)

Variable	**ADF Test for Unit Root**				**Phillip Perron (PP) Test for Unit Root**			
	ADF test statistics	**Test Critical Value**		**I(d)**	**Phillip Perron**	**Test Critical Value**		**I(d)**
		(5%)	**10%**			**(5%)**	**10%**	

					(PP) Adj. t-Stat			
LnAGPROd	-4.96417	-2.938	-2.607	1(1)	-5.02111	-2.9389	-2.6079	1(1)
LnFDIMan	-7.03401	-2.951	-2.614	1 (1)	-7.48437	-2.951125	-2.61430	1(1)
LnLegIns	-6.57210	-3.529	-3.196	I(1)	-6.95459	-3.529758	-3.19641	I (1)
EXch	-4.71548	-3.533	-3.198	I(1)	-4.51574	-3.533083	-3.19831	I(1)
INf	-3.88374	-3.562	-3.215	I(0)	-10.3688	-2.938987	-2.60793	I(1)

Source. Researcher's computation, 2024

The run results of the ADF and PP as shown in Table 4.1 with constant unit roots test reveals the results of the following, AGPROd, FDIMan, LegIns, EXch variables are stationary after first differencing while INF was stationary at level, under Argumented Dickey Fuller (ADF) test of stationary. However, all the series are stationary at first differencing I(1) using Philip perron approaches. From the run of ADF-test and PP results it can deduced that this estimations have obtained the condition for conducting ARDL estimation. Therefore the variables are not integrated of the same order. Hence, the used of the bounds testing approach as in Pesaren, Shin & Smith (2001) is appropriate for this analysis.

Table 4.2;
Lag selection criteria

Endogenous variables: lnagprod. Exogenous: lnfdiman lnlegins exch inf

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-343.9239	NA	4113.169	22.51122	22.74251	22.58662
1	-228.0985	186.8152*	12.02347*	16.65152	18.03925*	17.10388*
2	-202.5238	32.99964	13.28127	16.61444*	19.15861	17.44378

Source: Author's computation (2024) using E-view 10

From Table 4.2, the result of lag section criteria which is a pre-requisite for conducting the bound test and cointegration. The appropriate lag order was selected before the ARDL bounds test approach for cointegration. The result shows that the lag order is 2 based on the minimum value AIC (16.63444*). The appropriateness of lag order avoids the spuriousness of ARDL bounds testing approach to cointegration results.

Table 4.3
Autoregressive Distributed Lag (ARDL) Bound test

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	6.309655	4
	Critical Value Bounds	
Significance	I(0) Bound	I(1) Bound
10%	2.2	3.09
5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37

Source: Author's computation (2024) using E-views 10

The estimated result of the ARDL bounds test reveal F-statistic value of 6.309655. This indicates that the value is far greater than the lower bound and upper bound that is I(0) and I(1) at 1%, 5% and 10% levels of significance. This shows that all the values are less than the F-statistics. Therefore, we conclude that there is co-integration among the variables.

Table 4.4:
Autoregressive Distributed Lag (ARDL) estimation results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNAGPROD(-1)	0.712118	0.102193	6.968344	0.0000
LNFDIMAN(-1)	-0.070848	0.118162	-0.599583	0.5555
LNFDIMAN(-2)	0.128920	0.108328	1.190086	0.2479
LNLEGINS(-1)	0.034882	0.015900	2.193790	0.0402
EXCH(-1)	-0.190225	0.000273	0.824491	0.0194
INF(-2)	-0.002049	0.001139	-1.799121	0.0871
C	7.661757	2.703713	2.833790	0.0103
R^2	0.993183		Durbin-Watson stat	2.066575
Adjusted R-square	0.989434		Prob(F-statistic)	0.000000
F-statistic	264.9133			

Source: Author's computation (2024) using E-views 10

Table 4.4 presents the ARDL estimation results for agricultural production (AGPROD) in relation to FDI in the manufacturing sector, legal institutions, exchange rate, and inflation in Nigeria. Key findings include: AGPROD (-1) 1% increase in the previous year's AGPROD resulted in a 71% rise in the current year's AGPROD. FDI to Manufacturing; 1% increase in FDI flow to the manufacturing sector led to a 13% increase in agricultural production, though the effect was statistically insignificant (p = 0.2479). Furthermore, 1% increases in payments for property rights protection contributed to a 3% rise in AGPROD. Exchange Rate and Inflation (EXCH and INF);

both had negative effects on agricultural production, with INF being statistically insignificant at the 5% level. The F-statistic (264.9133, p = 0.000000) indicated joint significance of all model variables. The R^2 value of 99% demonstrated that the model explained most of the variation in agricultural production, and the adjusted R^2 of 98.94% confirmed the model's reliability. The Durbin-Watson statistic (2.067) and LM test confirmed the absence of serial autocorrelation. Overall, the model highlighted the significant influence of FDI and other variables on agricultural production in Nigeria.

Table 4.5

ARDL Cointegrating and Long Run Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFDIMAN	0.523403	0.557566	0.938729	0.0491
LNLEGINS	0.148152	0.033508	4.421395	0.0003
EXCH	0.001142	0.000909	1.256695	0.2233
INF	-0.004637	0.004595	-1.009168	0.3249
C	26.61421	0.630533	42.20910	0.0000
CointEq(-1)*	-0.287882	0.041849	-6.879129	0.0000

Source: Author's Computation (2024) using E-views 10

The ARDL error correction model ECM (-1) which measures the speed of adjustment to equilibrium of FDI to manufacturing industry and agricultural production is -0.287882 was found to be statistically significant at 5% level. This indicates adjustment to long term equilibrium in the dynamic model. Apanisile and Okunlola (2014) posit this as an evidence of a stable long term relationship. The coefficient of error correction term of (-0.287882). This implies that deviations from the short term production output will be adjusted in a long run but however at a slow rate of 29%.

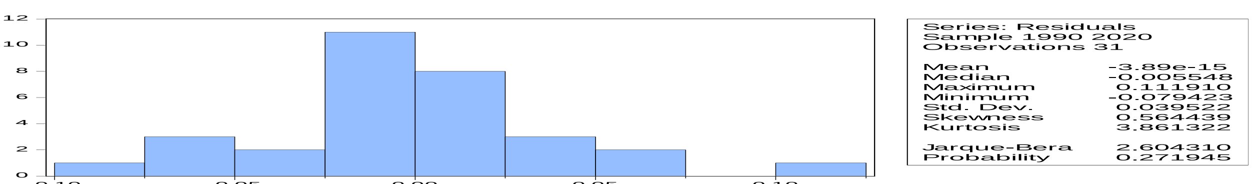

Fig 4.1: Normality test

From figure 4.7, the model revealed that there exists normality in the model distribution. This is because the probability value of jarque-Bera test (0.128030) is greater than 0.05 percent at 5% level of significant

Table 4.6
Serial correlation test and Heteroskedasticity Test: Breusch-Pagan-Godfrey

Breusch-pagan Test	F-statistic	Obs*R-squared	Prob. F(2,18)/ Prob. F(12,26)	Prob. Chi-Square(2),(7)
Serial Correlation LM Test	0.106155	0.373039	0.8998	0.8298
Heteroskedasticity Test	0.124288	0.273676	0.8836	0.8721
Hypothesis 1: Null	There is no serial autocorrelation among the variables			
Hypothesis 2: Null	There is no hetroschedasticity among the variables			

Source: *Author Computation (2024) Using E-views 10*

Under the test for serial correlation the residual test adopted the Breusch-Godfrey serial correlation linear method. The null hypothesis of no serial correlation in the residual was accepted. The insignificant value of the observed R-squared probability at 5 per cent significant level was used as the statistical yardstick. Heteroscedasticity-test shows that the probability values of F-statistics and observed Obs*R-squared are greater than 0.05 probability value at 5% level of significance. Therefore, the null hypothesis of no Heteroskedasticity in the residual was accepted, that means the residuals are homoscedastic because the probability of F-statistics (0.8836) and Obs*R-squared (0.273676) are both greater than 0.05%

Stability of model parameters

The stability of model parameters was examined using statistics of Cumulative Sum of Recursive Residual (CUSUM), as of cumulative sum of squares and of recursive residuals (CUSUMSQ). The former test was used for investigating systematic changes in the estimated coefficients and the latter test was used for examining sudden and accidental changes in stability of the coefficients. Both the CUSUM and CUSUMSQ plots indicated stability in the coefficients over the sample period as both graphs fall within the critical region (see Figures 4.8 and 4.9).

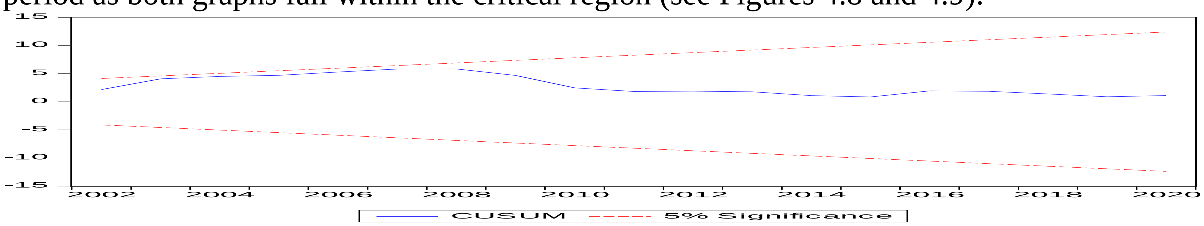

Fig 4.2 Cusum test

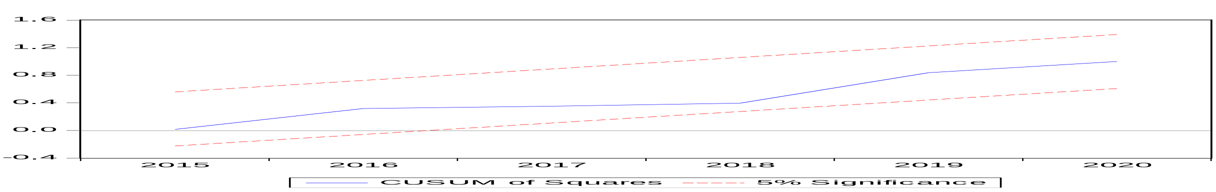

Fig 4.3 Cusum of Square test

The figure 4.8 and 4.9 reveals stability test results of the model as deviated from stability points and restored back to stability at the end of the period as indicated by the blue lines falling within the 5% bounded lines. This implies the model will converge in the long run and is dynamically stable at the start and end period.

5. Discussion of major findings

The ARDL estimated results for Agricultural Production AGPROD (-1), FDI to manufacturing industry, legal institution, exchange rate, and inflation in Nigeria. Computed coefficient result of AGPROD (-1) is 0.712118, this shows that 1% point rise in preceding year AGPROD led to 71% increase in the present year AGPROD. The estimated results of the variable AGPROD also revealed that 1% increase in FDI flow to manufacturing industry contributed to about 13% increase in agricultural production in Nigeria in the short run and also in the long run. The probability value of FDIman was however insignificant (0.2479) at 5% level in the short run and significant in the long run. According to Obi-Nwosu, Ogbonna, and Ibenta, (2017), FDI had impacted manufacturing capacity in Nigeria. Therefore, we can justify that FDI flows to manufacturing sector will significantly affect agricultural production in the long run. The estimated result was consistent with theoretical expectation of the study. On the contrary, Marius, (2019) show no support for any significant relationship between FDI and manufacturing sector performance, but a strong positive correlation exists between manufacturing output and agricultural production in Nigeria.

The estimated results of LegIns revealed a co-efficient value of 0.034882 (3%), this means that 1% increase in the payment on property right protection led to 3% increase in AGPROd in short run and in the long run. This result showed that 1% increase in legal institution (payment for property right) will increase investors' confidence in agricultural production in Nigeria by 14% in the long run. Estimated results and coefficients values of EXch, and INf are all negative while INf was insignificant at 5% level. This implies that 1 % point's decrease or fall in EXch also contributed significantly to AGPROD. Therefore, reducing the inflation rate to farmers and exchange rate will have significant contribution on agricultural production.

5.1 Conclusion

The ARDL model results provide valuable insights into the factors affecting agricultural production in Nigeria. The study reveals that agricultural production is highly persistent, with past performance significantly influencing current output. FDI flows to the manufacturing sector have a positive long-term impact on agricultural production, though its short-term effect is not statistically significant. Legal institutions, particularly those related to property rights protection, play a crucial role in boosting agricultural production, with both short-term and long-term positive effects. Additionally, a reduction in exchange rates significantly benefits agricultural output, while inflation has a negative, though less immediate effect.

5.2 Recommendations

The results highlight the importance of both economic stability and strong institutional frameworks in enhancing agricultural production in Nigeria. Therefore, we recommended:

i. To enhance the positive long-term impact of FDI in manufacturing on agricultural production, the government should create a supportive environment through tax incentives, infrastructure development, and reduced bureaucratic hurdles.
ii. Policymakers should prioritize agricultural growth by increasing public and private investments, improving farmers' access to finance, promoting modern farming techniques, and developing infrastructure like irrigation, roads, and storage. Strengthening agriculture-manufacturing linkages, such as partnerships between producers and manufacturers and focusing on value-added processing, can improve productivity in both sectors.

Reference

Adeagbo, K. A., & Jimoh, O. R. (2023). Foreign Direct Investment (FDI) on Agricultural and manufacturing output in Nigeria, *International Journal of Business Economics & Management Science* (IJBEMS), *2*(2), 11-28.

Ayanwale, A. B. (2007). FDI and Economic Growth: Evidence from Nigeria, *AERC* Paper 165, African Economic Research Consortium, Nairobi.

Edeh, C. E., Ogbodo, J. C. & Onyekwelu, U. L. (2020). Impact of government expenditure on agriculture on agricultural sector output in Nigeria (1981-2018). *International Journal of Research and Innovation in Social Science, 4*(10), 68 - 80.

Edeh, C. E., Ogbodo, J. C. & Onyekwelu, U. L. (2020). Impact of government expenditure on agriculture on agricultural sector output in Nigeria (1981-2018). *International Journal of Research and Innovation in Social Science*, *4*(10), 1-14.

Ifeanyi, M. (2022). Conceptual Exploration of Foreign Direct Investment Inflow towards Improving Food Production in Nigeria, *Journal of Accounting and Management,12*(2), 25-41.

International Finance Corporations- IFC, (2023). Role of the private sector in development. A joint report of 31 multilateral and bilateral development finance institutions. Retrieved on July 14, 2024 from http://www.edfi.be/component/ downloads/downloads/54.html.

Marius, I. (2019). Foreign Direct Investment and Performance of Manufacturing Sector in Nigeria: any Link to Agricultural Production? *Saudi Journal of Business and Management Studies*, *4*(1), 56-61.

Msuya, E. (2007). The Impact of Foreign Direct Investment on Agricultural Productivity and Poverty Reduction in Tanzania. *MPRA Paper No. 3671*, http://mpra.ub.uni muenchen.de/3671/

Nigeria Investment Promotion Council - NIPC (2022). Investor’s guide to Nigeria, priority areas of industrial investment: Opportunities by Sector, Agriculture: http://www.nipc.gov.ng//opportunities.html

Obi-Nwosu, V.O., Ogbonna, K. S. & Ibenta, N. S. (2017). Foreign direct investment inflow and manufacturing Capacity in Nigeria: *Zik Journal of Multidisciplinary Research 2*, 31-45

Organisation for Economic and Cooperative Development-OECD. (2017). *OECD Benchmark Definition of Foreign Direct Investment: Fourth Edition*.

Osabohien, R., Oluwalayomi, D.A., Itua, O. Q. & Elomien, E. (2020). Foreign direct investment inflow and employment in Nigeria. *Investment Management & Financial Innovations, 17*(1), 77-89

Sajo, S.A., & Suleiman, P.G, (2023). Impact of domestic investments on agricultural production in Nigeria, *International Journal of Innovative Science and Research Technology (IJISRT), 8*(12) 1-16.

Seriki, A. (2022, September 13), 45th regular meeting of the national council on agriculture and rural development. Thisdaylive. Retrieved December 9, 2022, from: https://www.thisdaylive.com

Udoh, E. J. (2011). Estimation of loan default among beneficiaries of a state government owned agricultural loan scheme, Nigeria. *Journal of Central European Agriculture, 9*(2), 1-15.

World Development Indicators (2021). World Bank’s Database. Retrieved from https://databank.worldbank.org/source/world-development-indicators.