International Journal of Mechanical Engineering and Technology (IJMET)
Volume 10, Issue 03, March 2019, pp. 295–304, Article ID: IJMET_10_03_030
Available online at http://www.iaeme.com/ijmet/issues.asp?JType=IJMET&VType=10&IType=3
ISSN Print: 0976-6340 and ISSN Online: 0976-6359

EFFECTS OF FOREIGN TRADE ON AGRICULTURAL OUTPUT IN NIGERIA (1981-2018)

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ABSTRACT

The current study examined the impact of foreign trade on agricultural output in Nigeria based on data sourced from 1981 to 2018 by employing a number of estimation techniques such as Cobb-Douglas, unit root testing, autoregressive distributed lag among others within the context of two profound theories of exchange rate - the vent – for surplus theory of international trade; factor endowments theory. Our study observed that foreign trade exerts negatively on agricultural output. Our results have some empirical implications.

Key words: Foreign trade, agricultural productivity, Nigeria, Unit root test, stationary

Cite this Article: NWANJI, Tony Ikechukwu, LAWAL, Adedoyin Isola, ASAMU, Festus, INEGBEDION, Henry, Effects of Foreign Trade on Agricultural Output in Nigeria (1981-2018), *International Journal of Mechanical Engineering and Technology* 10(3), 2019, pp. 295–304.
http://www.iaeme.com/IJMET/issues.asp?JType=IJMET&VType=10&IType=3

1. INTRODUCTION

Nigeria has been noted to be a gifted country when it comes to natural resources. Every country that is industrialized today passed through agrarian era. In fact, agricultural sector still remains the backbone of the industrial sector. In most developing nations, foreign trade is very central to all facets of economic growth and development which include agriculture. Prior to the discovery of oil in 1960's, agriculture was the main source of revenue to the nation (Lawal, A. I., Asaleye, A.J., IseOlorunkanmi, J. & Popoola, 2018); (Adedoyin Isola

Lawal, Nwanji, Asaleye, & Ahmed, 2016); (Asaleye, A. J., Isoha, L. A., Asamu, F., Inegbedion, H., Arisukwu, O., Popoola, 2018); (Ayopo, Isola, & Olukayode, 2016).

Nigeria has been noted to be one of the countries who depend on importation, preference for foreign products, with a huge neglect on locally produced product. The Nigerian agricultural sector has experience low production output due to self-inflicted factor of massive importation of food items to feed the ever increasing population. The nation does not create enough food to meet the demand of its citizens. This delivers a great deal of issues with respect to agricultural advancement. By and large, there is less motivation for neighborhood ranchers to develop, when less expensive, more attractive foods are transported in (Lawal, A.I., Nwanji, T.I., Adama, I.J., Otekunrin, 2017); (Asaleye, A. J., Popoola, O., Lawal, A. I., Ogundipe, A. & Ezenwoke, 2018). There is requirement for consideration regarding be paid on Agricultural output. This paper examined the effect of foreign trade on agricultural output in Nigeria with a focus on the export channel.

OBJECTIVE OF THE STUDY

The main objective of the study is to examine the effect of foreign trade on the growth of agricultural output in Nigeria; hence specific objectives are as follows:

- To examine the relationship that exists between agricultural exports and agricultural output.
- To examine if there is a relationship between exchange rate and agricultural output.
- To examine if there is a relationship between custom duties on imported agricultural equipment and agricultural output.

2. THEORETICAL FRAMEWORK

Two theoretical notes governs this work, they are briefly discussed as follows:

2.1. Factor Endowments Theory

David Ricardo Theory contended that the premise of global exchange is the relative favorable position in creation cost. His model does not give a response to the inquiry why nations have near preferred standpoint and similar disservice in the generation of different products. Ricardo display does not build up why there are contrasts underway plausibility bend of two nations. The Heckcher-Ohlin model of exchange expresses that relative favorable position in the cost of creation is clarified only by the distinctions in the factor enrichment of the Nations. Factor blessing, for example, accessibility of assets incorporates endowment of nature and also man-made methods for creation. He contended that the factor enrichments of nations are unique; there are countries that have wealth of capital while others have plenitude of work. Accordingly, a work serious country has near cost advantage in the creation of merchandise that are work serious, while capital bottomless nations have near cost advantage in the generation of merchandise that require capital-serious innovation. One ramifications of this casing work is that exchange builds the genuine come back to the factor that is moderately copious in every nation and brings down the genuine come back to the next factors (Lawal, A. I., Somoye, R.O.C., Babajide A. A. and Nwanji, 2018); (Lu, Li, Zhou, & Qian, 2017); (Skorepa & Komarek, 2015).

2.2. The Vent – For Surplus Theory of International Trade

The hypothesis of vent-for-surplus was created by Adam Smith (1937) to broadening household advertise. It was extended with regards to creating countries. This hypothesis accepted positive relationship between universal exchange and financial development. As per this hypothesis, the opening of world markets to remote agrarian social orders makes

openings not to migrate completely utilized assets as in the customary models yet rather to make utilization of in the past underemployed land and work assets to deliver more noteworthy yield for fare to remote markets. Additionally, the sit out of gear assets would be enough used with advancement of exchange and it will expand the generation of essential items for trade in this manner moving the household economy towards its generation plausibility wilderness (Nakatani, 2018); (Thorbecke, 2018).

2.3. Empirical Framework

(Erten & Metzger, 2019) employed a comprehensive cross-country dataset from 1960 to 2015 for a set of 103 developed and developing economies so as to know whether or not exchange rate manipulation induces changes in labour market. The study observed that developing economies with an undervalued real exchange rate experiences increase in female labour force participants.

(Guzman, Antonio, & Stiglitz, 2018) examined the impact of exchange rate policies on economic development and observed that a stable and competitive exchange rate policy can positively impact on any observed externality and any market distortions, which will in turn induce positive economic growth. The authors further observed that conventional industrial policies that enhances the elasticity of the aggregate supply to the exchange rate ((Y. Chen & Ward, 2019); (Kim & Hyun, 2018); (He, Zhu, Chen, & Shi, 2015); (Parsley & Popper, 2014); (Adedoyin Isola Lawal, Babajide, Nwanji, & Eluyela, 2018); (Adedoyin Isola Lawal et al., 2019); (Ayopo, B. A., Isola, L. A. & Olukayode, 2016); (Ayopo, B. A., Isola, L. A. & Olukayode, 2016); (Ayopo, Isola, & Olukayode, 2015)).

(Bouvet, Ma, & Assche, 2017) assessed the impact of firm's import content on the degree of tariff and exchange rate pass-through into export prices for the Chinese economy. The study employed pricing-to-market model as well as firm-level data for the period 2000 to 2006, and observed that a firm's import content share significantly impact negatively on the depth of exchange rate pass-through but does not affect the level of tariff pass-through (Isola, L. A., Frank, A. and Leke, 2015); (Fashina, Asaleye, Ogunjobi, & Lawal, 2018); (Lawal, A. I., Oye, O. O., Toro J. & Fashina, 2018); (Smallwood, 2019); (Alley, 2018)..

(P. Chen, Zeng, & Lee, 2018) assessed the effect of currency under- and overvaluation on China's export and the spillover effects of these misalignments toward the exports of 9 Asian main markets. The study traced the core force for global trade imbalance to deviation from the long run equilibrium value as against prior believes that it was induced by exchange rate fluctuations. The study further identified both bilateral and weighted average real exchange rates as driven factors of Renminbi (RMB) misalignments (Rodriguez, 2016).

For the Iranian economy, (Khalighi & Fadaei, 2017) examined the impact of exchange rate on export as a key factor in foreign currency income emanating from agricultural produce, based on data sourced from 1991 to 2001. The study employed simple ordinary least square and stationary tests. The study observed that exchange rate is key crucial factor for dates export and also for exporters. The study further observed that exchange rate unification without appropriate exchange rate policy regime will induce a negative effect on the economy (Demian & Mauro, 2018); (Bouraoui & Phisuthtiwatcharavong, 2015); (OO Oye, AI Lawal, AA Eneogu, 2018); (Lawal, A. I., Nwanji, T. I., Oye O. O., Adama, 2018); (A. I. Lawal, 2014).

For the Argentinean economy, (N. Chen & Juvenal, 2016) employed both theoretical and empirical models to examine the impact of real exchange rate changes on behavior firms' exporting multiple products with heterogeneous level of quality. The model was characterized with a demand elasticity that decreases with quality; forecast more pricing – to – market and a smaller response of export volumes to a real depreciation for higher quality goods. The study

noted existence of robust heterogeneity of response of export prices and volumes to changes in the exchanges rate regime (Spengler, Miller, Neef, Tourtellotte, & Chang, 2017); (Lawal, A. I., Awonusi, F. and Oloye, 2015)

3. MATERIALS & METHODS

Base on the nature of the objective of this study, secondary data will be employed.

Secondary data: can be referred to as any information that was gathered by other researchers or investigators. For example, census data, financial records and statistics are considered secondary data The data will be collected from the annual CBN statistical bulletin, National bureau statistics (NBS), and Federal Ministry of Agriculture (FMA).

3.1. Model Specification

Using of Cobb-Douglas growth theory, a mathematical form of our model would be built on a single equation model which would involve specifying a multiple regression equation to check the economic relationship between agricultural output as the dependent variable, with Value of Agricultural Output (VAO) as a proxy, and the independent variables which comprises of (AE, ACGSF, RER, IDI), government expenditure on agriculture as well as Labor and capital which will also be independent variables because Cobb-Douglas theory is a production theory. The model is therefore specified in a production function form as:

VAO= f (AEX, ACGSF, RER, IDI, GEA, LAB, GFC)

Econometrically, the above equation 1, becomes

$AGDP = a_0 + a_1AEX + a_2ACGSF + a_3RER + a_4IDI + a_5GEA + a_6LAB + a_7GFC + \mu$…….. (2)

VAO= Agricultural Output

AEX= Agricultural Export

ACGSF= money supply (physical money)

RER= broad money (savings deposits, money market mutual funds and other time deposits).

IDI= Real Interest Rate

LAB= Labor (Employment)

GFC= Capital (GFCF)

GEA= Government Expenditure on Agriculture

RER= Real Exchange Rate

a_0, a_1, a_2, a_3, a_4, a_5, a_6 = Parameters

μ= Error term.

4. METHOD OF DATA ANALYSIS

The study adopts econometric method of analysis to evaluate the effect of foreign trade on agricultural output making use of Auto-Regressive Distributed Lag (ARDL) model. However, for the estimation of the model, the variables must be stationary at level or first difference, hence, Unit Root Test for stationarity specifically, the Augmented Dickey-Fuller (ADF) test would be carried out.

4.1. Unit Root Test

The Augmented Dickey-Fuller test was conducted for the variables to test for stationarity and non-stationarity of the data used.

	T-stat	Probability	Significance level	Integration order
AGDP	-3.604426	0.0008	1st Difference	I(1)
AEX	-3.555213	0.0123	At level	I(0)
ACGSF	-6.559533	0.0000	1st Difference	I(1)
IDI	-5.406382	0.0001	At level	I(0)
EXR	-3.644683	0.0099	1st Difference	I(1)
GEA	-6.983048	0.0000	1st Difference	I(1)
LAB	-6.373825	0.0000	1st Difference	I(1)
GFCF	-3.689676	0.0092	At level	I(1)

Source: Author's computation with EViews 10

The table above presents the summary of unit root tests results gotten at levels and first difference. The decision rule for the ADF Unit root test states that the ADF Test statistic value must be greater than the Mackinnon Critical Value at 5% absolute term for stationarity to be established at level and if otherwise, differencing occurs using the same decision rule.

4.2. ARDL Cointegration

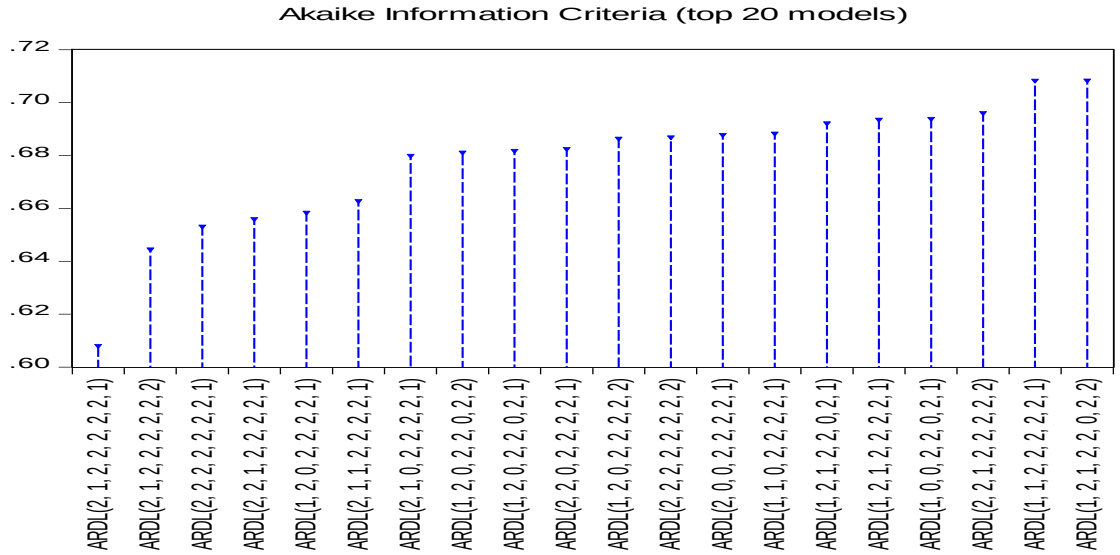
The unit root test above shows a combination of 1(0) and 1(1) therefore, ARDL is a most suitable technique of estimation to be used.

VARIABLES	COEFFICIENT	STANDARD ERROR	T-STAT	PROBABILITY
AEX	-0.208852	0.172811	-1.208558	0.2501
ACGSF	-0.024556	0.256397	-0.095772	0.9253
EXR	0.042386	0.012483	3.395365	0.0053
IDI	-0.160911	0.070502	-2.282363	0.0415
GEA	-0.029355	0.033150	-0.885519	0.3933
LAB	-1.051787	0.357803	-2.939571	0.0244
GFCF	0.046348	0.059296	0.781632	0.4496
C	0.360152	1.931846	0.186429	0.8552

Source: Author's computation Eviews 10

R-SQUARED= 0.998645 Adjusted R-squared=0.996272

R-SQUARED= 0.998645 this shows that the independent variables jointly explain about 99.8% variation in the dependent variable. The AdjustedR^2 = 0.996272 and it takes into cognizance the degree of freedom. The AdjustedR^2 is usually less than the R^2 and it shows that after removing the unwanted variables, the independent variables explain about 99.6 percent of the dependent variable.



Source: Author's computation Eviews 10

The above is the Akaike Information Criteria graphical representation and it shows the most appropriate ARDL model to be used. The lower the Akaike Information Criteria model, the more appropriate the model and the criteria for this is the values (2, 1, 2, 2, 2, 2, 2, 1).

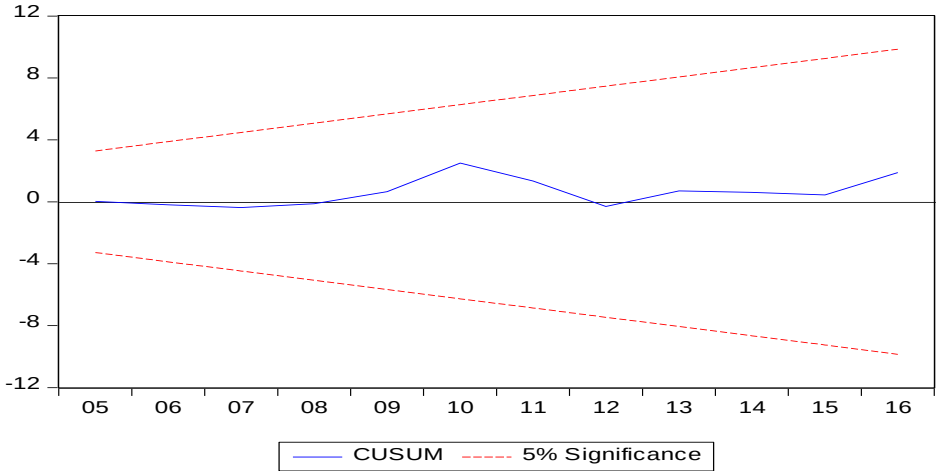
4.3. F Bounds Test

F-statistic value	Significance	I(0) BOUND	I(1) BOUND	Decision
10.04	10%	1.92	2.89	Long run relationship
	5%	2.17	3.21	Long run relationship
	2.5%	2.43	3.51	Long run relationship
	1%	2.73	3.9	Long run relationship

Source: Author's computation Eviews 10

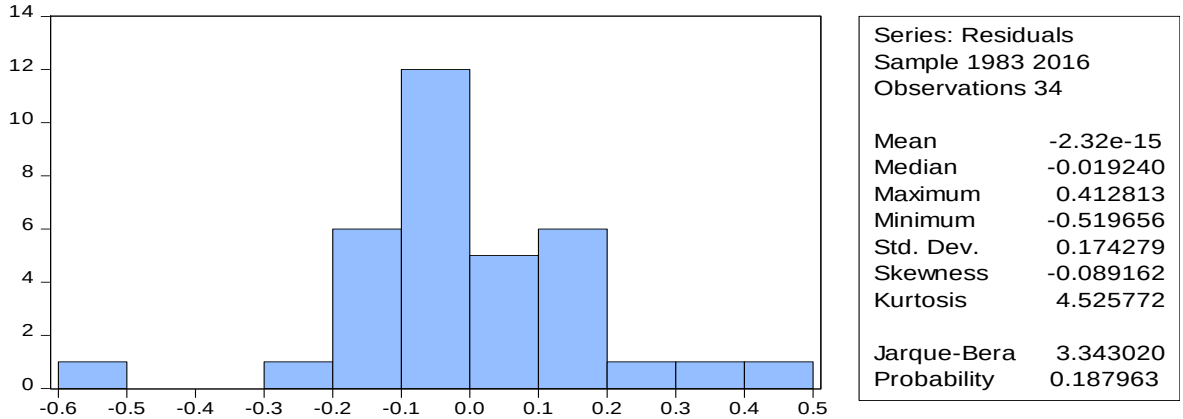
If the F-stat is greater than the lower class boundary I(0) and upper class boundary I(1) there is a long run relationship and reject the null hypothesis. In the table above the F stat 10.04 is greater than the critical values of 1(0) and I(1) at 10%, 5%, 2.5% and 1%, it therefore shows a long run relationship and therefore means they are co integrated.

4.4. Stability Test



Source: Author's computation using eviews 10

4.5. Histogram



Source: Author's computation using eviews 10

The above graph presents the test of normality for the model. From the results above, the Jarque-Bera probability values is 3.343020 which is greater than 0.05. Therefore, the null hypothesis that errors are not normally distributed in the model is rejected.

4.6. Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	4.170406	Prob. F(2,10)	0.0482
Obs*R-squared	15.46211	Prob. Chi-Square(2)	0.0004

Source: Author's computation using Eviews 10

The above serial correlation test is good because there is serial correlation and this is seen when the Chi-Square is less than 0.05 and above it is 0.0004.

4.7. Heteroskedasticity Test: ARCH

Heteroskedasticity Test: ARCH

F-statistic	1.275456	Prob. F(2,29)	0.2945
Obs*R-squared	2.587222	Prob. Chi-Square(2)	0.2743

Source: Author's computation using Eviews 10

The table above represents the Heteroskedasticity. From the result, the prob. Chi-Square is 0.2743 which is greater than 0.05. Therefore, the null hypothesis which is that there is no Heteroskedasticity between the variables will be accepted.

5. CONCLUSIONS

This study sheds light on the effect of foreign trade on agricultural output in Nigeria. The evaluation covered a range from 1981 -2016. The data for the study were acquired from CBN Statistical Bulletin for various years, CBN Annual Report and Statement of Account, NBS. To achieve its objective, the study was sub-divided into five chapters. It began with the general introduction, followed by statement of the problem with three basic research questions, objectives and the need that necessitated the study. Within this section, the scope and limitations encountered in the course of execution were clearly stated. Related literatures were reviewed in chapter two. The contending issue was first dealt with, i.e. The conceptual definition of term and argument as viewed from different perspectives. From the literature, it was identified that most of the countries that open up their border with respect to foreign trade experienced growth in key sectors of the economy which include agriculture and manufacturing sectors. Theoretical issues were reviewed and one theory was adopted for the study. On the basis of the above theoretical background, the empirical model of this study will start with a Cobb –Douglas production function, given the fact that vent –for surplus theory is a better model for developing countries therefore, researcher adopted the aggregate production function framework model developed by Michael et.al. (1991) which incorporates export shares as a proxy for changes in openness with some modifications, in terms of inclusion of some vital variable. Empirical literatures were reviewed to give momentum to the study Relevant data for the study, its sources, procedures for its generation and methodology used in presenting and analyzing it were identified.

6. CONCLUSION AND RECOMMENDATION

The agricultural sector that consists of sub-sectors namely, crops, livestock, fishery and forestry has had a very slow growth. It was discovered among the sub-sectors that fish had major contribution to the agricultural sector with livestock following closely. Crop and forestry subsectors have very low average growth rates. From the results so far, agricultural growth has been slow. The result of this study raised fundamental concerns about the role of foreign trade

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