

TRADE OPENNESS AND AGRICULTURAL EXPORT IN NIGERIA

By

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Abstract

This work examined the impact of trade openness on Nigeria's agricultural products exports for the period 1970 to 2018. Using ARDL methodology, the analysis revealed that in the long run trade openness had a positive but statistically insignificant effect on agricultural export while in the short run its effect was positive but significant. Based on such outcome, it was recommended amongst others that government should adopt selective trade barriers to allow the agricultural sector benefit from openness to trade.

Keywords: trade openness, agricultural exports, auto regressive distributive lag.

JEL: F19 F50 Q17

Introduction

Because it is natural to them, developing countries should count on agriculture for their growth. Agriculture plays a central role in their food equation, employment generation, and provision of industrial raw materials, and is their first step towards processing and mechanization. It is a precondition for industrialization according to Kenny (2019). For Nigeria, it was the main foreign exchange earner, contributing over 90 percent of export earnings from independence to the early 1970s. The coming of oil and the subsequent neglect of agriculture changed all of that, and Nigeria became a net importer of food and agrarian products, losing its place as one of the world's leading producer and exporter of agricultural commodities (Udah *et al.* 2015).

Hard as it may seem, the world is today seeking ways to ease out crude oil from the energy equation, on account of its perceived negative environmental impact. For Nigeria whose principal export product is crude oil, a rearrangement of the nation's export basket has become an imperative. As a result, consensus has developed on the need to broaden export earning sources by tapping some of the numerous economic opportunities existing in the country, ranging from human endowment, solid minerals and agriculture to tourism and industry.

Agriculture is the country's natural candidate in this effort to broaden export earnings sources, on account of her special agricultural endowment and age long practice. Indeed, not only Nigeria but many African nations are endowed with arable land and natural resources which if fully harnessed

would provide them with comparative advantage in world agricultural trade. From the experiences of developed nations, agriculture provides for African nations, huge potential for high-productivity jobs, great wealth, and can propel economic growth especially if countries can expand agricultural exports (Golub and Hayat 2014). Chetthamrongchai *et al.* (2020) observed that export commodity by a country represents one of the important sources of foreign income that can ease pressure on balance of payments (BOP) and generate employment.

Trade openness is an important issue needing to be addressed if developing countries such as Nigeria resolve to adopt and use agricultural export trade to drive growth. Not only does the convergence of export led growth models by most countries of the world engender unequal competition, but the unfavourable terms of trade associated with primary commodities export produce inequitable participation in international trade. In addition, powerful nations are today quick to make recourse to trade barriers, which barriers hamper free trade flow, notwithstanding regional and multilateral treaties. The Russia/Ukraine war and the blockage of millions of tons of grain is a case in point. Policy shifts occasioned by perceived threats to national interests also introduce compromises inhibiting free flow of goods and services, more so as unending international economic challenges make this a frequent occurrence. In this connection the trade war between China and the US comes to mind, as also the economic sanctions by the Western world against Russia. All these call for an on-going re-examination of the challenges posed by the status of national borders through which agricultural export trade can flow. Using the Auto Regressive Distributed Lag (ARDL) approach, the paper therefore considers the effectiveness of trade liberalization in the promotion of agricultural export. The rest of the paper is structured as follows: section two reviews extant literature; section three specifies methodology; section four presents result; while section five concludes and offers recommendations.

Review of Literature

Openness to trade provides opportunities for local firms to expand their market and explore new areas of operations. Developing countries do benefit from openness, but they lack the capacity to compete in the international market. Most of the exports of developing countries are primary products such as agricultural products (Mehara and Baghbanpour, 2015) which place them at a serious disadvantage with the developed countries. Chetthamrongchai *et al.* (2020) opined that increasing exports are important not only for developing but also developed economies, since the growth of export has forward and backward links to all sectors in the economy. Waithe *et al.* (2011) argued that export expansion may not only make it possible for exporting countries to get

access to new technologies but also accelerate new technology development in the home countries.

Empirically, studies have been done by researchers to find out the impact of trade openness on the export of agricultural products. These include Inusa and Umaru (2021) that found trade openness to affect agricultural performance. Shobande (2019) studied economic integration on agricultural export performance in selected West African countries found that openness is the major predictor of agricultural export performance. Oriavwoke and Eshenake (2017) investigated the determinants of agricultural exports in Nigeria from 1980 to 2015 using ordinary least squares (OLS) methods. The result of the analysis indicates that trade openness has a positive and significant impact on agricultural exports. Malik (2010) studied the impact of economic reforms and trade liberalization policies on agricultural export performance of Pakistan using error correction methods (VECM). The empirical results suggest that agricultural export performance is more sensitive to the domestic supply – side conditions which change due to policies. The empirical conclusions also indicate that there exists a unique long-run relationship among real value of agricultural exports and openness. Zeray and Demie (2016) investigated the determinants of food export supply of Ethiopia from 1981 to 2012 using co integration and error correction approaches. The finding of the study revealed that food export supply of Ethiopia is affected by openness of the country for international trade. Maity and Ghosh (2015) examined the impact of trade openness on the export of tea from India to different countries. The objectives of the study are to examine the relation between changes in policy regimes during the period 1991-1993 to 2011-2012 using the CUSUM and CUSUMQ test. The study did not reveal any positive sign for tea export and trade openness. Udah *et al.* (2015) evaluated the determinants of agricultural export in Nigeria using regression analysis. The regression analysis shows that export intensity is positively related to agricultural export. They measured export intensity as agricultural export as a percentage of real GDP. De Shiva *et al.* (2013) examined trade liberalization effects on agricultural production growth in Sri Lanka from 1960 to 2014 using multiple regression analysis. The result show that trade liberalization had a positive effect on agricultural production growth. The analysis concluded that trade openness; investment and interest rate were significant factors that were positively related to agricultural production growth. Boansi *et al.* (2014) examined the determinants of fresh pineapple exports from Ghana for the period 1984 – 2009 using ordinary least squares (OLS) estimator. The results revealed that both volume and value of exports have positive association with trade openness. Djokoto (2013) examined the relationship between openness and agricultural performance for the period 1995 to 2009. The results showed that there is no long-run relationship between trade openness on one hand and agricultural

performance on the other hand. In the short-run, trade openness exerted a statistically significant negative effect on agricultural performance.

Research Method

The model is an adaptation of Prebisch (1950) as modified by Okoh (2004) and used by Folawewo and Olakojo (2010). The model is:

$$AEXP = F (AO, WGDPR, EXR, GEXP, TOP, BC, RP).....(1)$$

where: AEXP = value of agricultural export; AO = agricultural output; WGDPR = world GDP growth rate; EXR = exchange rate of exporting country; GEXP = government expenditure on the agriculture sector; TOP = trade openness; BC = bank credit to the agricultural sector; RP = relative price of non oil export. Functionally, the equation becomes:

$$\ln AEXP = \delta_0 + \delta_1 AO + \delta_2 EXR + \delta_3 WGDPR + \delta_4 GEXP + \delta_5 TOP + \delta_6 \ln BC + \delta_7 RP + \mu(2)$$

where δ_s are parameters to be estimated while μ represents the error term.

Data were analysed using the autoregressive distributive lag (ARDL) method which uses the bounds test approach based on the unrestricted error correction model (ARDL) as developed by Pesaran and Smith (1995) and used by Pearson, Shin and Smith (2001). This method was adopted because of its advantage of analysing data irrespective of its stationarity. This model also allows for the variables to take a sufficient number of lags which enables it to capture data generating process in a general-to-specific modeling framework. The bounds test procedure is based on the unrestricted error correction model (UECM), itself a simple parameterization of a general ARDL model.

The ARDL model is stated thus:

$$\ln AEXP = \delta_0 + \delta_1 AO + \delta_2 EXR + \delta_3 WGDPR + \delta_4 GEXP + \delta_5 TOP + \delta_6 \ln BC + \delta_7 RP + \delta_8 \sum_{i=0}^n \Delta AO + \delta_9 \sum_{i=0}^n \Delta EXR_{t-1} + \delta_{10} \sum_{i=0}^n \Delta WGDPR_{t-1} + \delta_{11} \sum_{i=0}^n \Delta GEXP_{t-1} + \delta_{12} \sum_{i=0}^n \Delta TOP_{t-1} + \delta_{13} \sum_{i=0}^n \Delta \ln BC_{t-1} + \delta_{14} \sum_{i=0}^n \Delta RP_{t-1} + \mu_t \quad (3)$$

Data for the study were sourced from the Central Bank of Nigeria (CBN) statistical bulletin, Food and Agricultural Organization Statistics (FAOSTAT), World Bank Commodity Price Data (The Pink Sheet), and World Bank development indicators (WDI).

Results

Table 1 summary of unit root results

Variable	LNAEXP	EXR	WGDPGR	AO	TOP	GEXP	LNBC	RP
Order of Integration	I ~ (1)	I ~ (1)	I ~ (1)	I ~ (1)	I ~ (1)	I ~ (1)	I ~ (0)	I ~ (1)

Table 1 shows that all the data series, except bank credit, were stationary at first difference while bank credit is stationary at level. This thus justifies the use of auto regressive distributive lag (ARDL) model.

The levels equation follows upon the establishment of a long run relationship among the variables.

TABLE 2

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AO	-0.007763	0.006868	-1.130435	0.2686
LNBC	0.177275	0.036443	4.864394	0.0000
WGDPGR	0.058534	0.029523	1.982689	0.0581
EXR	0.000570	0.000786	0.724603	0.4752
GEXP	0.002217	0.004570	0.485220	0.6316
TOP	0.004798	0.003626	1.323104	0.1973
RP	0.232286	0.060412	3.845029	0.0007
C	11.38021	0.678364	16.77597	0.0000

EC = LNAEXP - (-0.0078*AO + 0.1773*LNBC + 0.0585*WGDPGR + 0.0006

*EXR + 0.0022*GEXP + 0.0048*TOP + 0.2323*RP + 11.3802)

Table 2 shows that trade openness in the long run has positive but insignificant impact on agricultural export. This differs from the findings of Djokoto (2013) who found no long run relationship and, Maity and Ghosh (2015) who found no positive relationship. Oriavwoke and Eshenake (2017), however, found a positive and significant relationship between trade openness and agricultural export. Our result was not unexpected as there are still elements of protectionism in the trade policy of the country. Jassim *et al.* (2021) argued against complete openness when they noted that economic exposure negatively affects industrial production, local product, and non-oil exports and as a result, there is direct relationship with unemployment rates in the local economy.

The error correction (ECM) shows that trade openness in the short run has a negative and significant effect on agricultural export. The CointEq(-1) is correctly signed and highly significant. It is worthy of note that all the variables are significant under the short run except world output

TABLE 3

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNAEXP(-1))	0.266040	0.080031	3.324227	0.0026
D(LNAEXP(-2))	0.337616	0.083749	4.031277	0.0004
D(AO)	0.019603	0.005282	3.710963	0.0010
D(LNBC)	0.368260	0.086092	4.277491	0.0002
D(LNBC(-1))	0.157919	0.075565	2.089830	0.0466
D(WGDPGR)	-0.005445	0.010576	-0.514808	0.6110
D(GEXP)	0.007779	0.001411	5.513753	0.0000
D(TOP)	-0.004883	0.002172	-2.248101	0.0333
D(TOP(-1))	0.006744	0.002088	3.230143	0.0033
D(RP)	-0.073900	0.026453	-2.793645	0.0097
D(RP(-1))	-0.277332	0.033497	-8.279329	0.0000
CointEq(-1)*	-0.743891	0.068538	-10.85372	0.0000

CUSUM test and CUSUM of squares test were conducted to find the stability at 5% level of significance. The result as presented below shows it is stable at both CUSUM and CUSUM of squares.

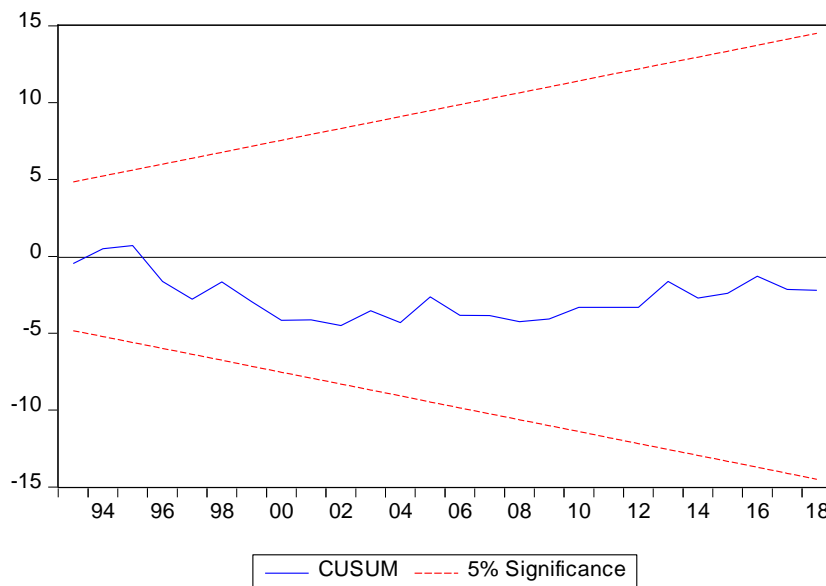


FIGURE 1: CUSUM

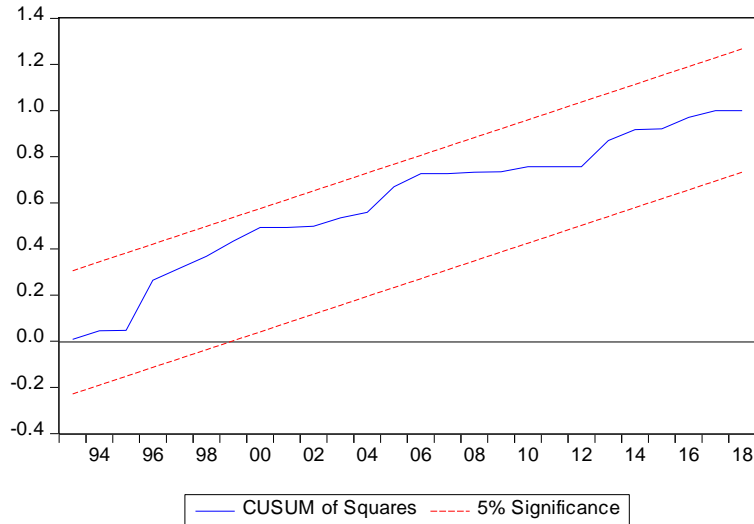


FIGURE 2: CUSUM OF SQUARES

Conclusion and Recommendation

The marketing Boards were abolished in order to embrace openness and so this study was carried out to find out how far trade openness has affected agricultural export. The variables used include relative price (RP), agricultural output in index form (AO), exchange rate (EXR), agricultural export (AEXP), world GDP growth rate (WGDPGR), government expenditure on agriculture (GEXP), bank credit to the agricultural sector (BC), and trade openness (TOP). The analysis shows a long run relationship between agricultural export and the dependent variables. Trade openness does have a positive but insignificant relationship with agricultural export in the long run but a significant and positive relationship in the short run.

Though the effect of trade openness on agricultural export is not statistically significant in the long run, the reverse is the case in the short run, indicating the need not to ignore trade openness. This is all the more so as the relationship is positive in both time frames. In line with these findings, it was recommended that government should adopt selective trade barriers that will facilitate greater agricultural export. Also, minimum value added should be specified for all agricultural export products. Finally, active use should be made of multiple Free Trade Agreements (FTAs) to promote our agricultural exports considering our level of technological development and the predominant methods of farming in Nigeria.

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