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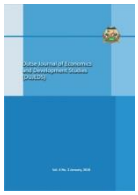

DETERMINANTS OF DEMAND FOR AGRICULTURAL IMPORT IN NIGERIA (1981-2015)

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Abstract
The objective of the study is to explore and address determinants of demand for agricultural import in Nigeria. To achieve that thus, a quarterly time series data from 1981 – 2015 on agricultural import, real gross domestic products, exchange rates, external reserves and processed agricultural products obtained from CBN Statistical Bulletin were estimated by the ARDL model. The estimation result shows that in the short-run, real gross domestic products and external reserves were statistically significant and positively related with coefficients 2.70 and 0.003 respectively. While exchange rates and processed agricultural products were statistically significant and negatively related with coefficients -0.20 and -3.11. In the long-run, the coefficient of real gross domestic products and external reserves were respectively 1.57 and 0.003 and they were positively related. Also, exchange rates and processed agricultural products were -0.25 and -2.97. *It is therefore recommended that to avoid excessive agricultural importations and its demand by consumers, import restriction tool such as embargo and quota on certain commodities that have comparative advantage should be re-invigorated. Also, farmers/exporters of agricultural products should improve their quality control and preservation procedures.*

Keywords: Agricultural imports, agricultural products, autoregressive distributed lags, demand function, import and export.
JEL Classification:

Introduction

It is not oblivious that nature does not distribute resources equally in every country. This indeed made it possible for economic theorists to propound theories on international trade. That is why according to Igberi, Nwibo and Odo (2012) classical economists such as Adam Smith, David Ricardo, John Stuart Mill, Alfred Marshal etc. attached much importance to foreign trade in a country's development. They in other words regarded it as an engine of growth. Foreign trade is one of the most important components of aggregate economic activities. It also provides impetus for industrial development by making inputs available for domestic production particularly in developing economies like Nigeria (Uche, Anne & Chekwebe, 2015).

However, instead of Nigeria to import those goods that it cannot produce, it opts for what it has a comparative advantage such as food and other agricultural commodities. Specifically, the import bill for food is always more than that of export – which was not used to be in 5 decades ago. As far back as 1960s, Nigeria was largely a producer and of course a net exporter of major agricultural products such as cocoa, palm products, rubber, groundnuts and cotton. These collectively contributed between 60 – 70% of the country's GDP (Olawamiwa & Busola, 2014; Adegboye, 2004; Olasunkanmi, Adebayo, Abiodun & Adewunmi, 2005). Sequel to this, thus, Nigeria was globally acknowledged as "rich in agriculture". This thereby encouraged both the government and citizens to prioritize agricultural produce. This is supported by Food & Agriculture Organisation (2002)'s study that as at Nigeria's independence in 1960 and throughout the 1960, 70% of the Nigerian populace had agriculture and allied occupations as their means of livelihood.

Unfortunately for agriculture, the fact that Nigeria used to be the net exporter of agricultural products started changing dimension in the early 1970s. It however became worst in the late 1970s when the country experienced tremendous increase in oil as

major foreign exchange earnings. The fact was that the oil boom of 1970s caused an almost complete neglect of agriculture. According to Olawamiwa *et al*. (2014), from 1972 onwards, oil gained ascendancy over all other commodities as the largest contributor to the GDP and also a major foreign exchange earner.

The aforementioned episode subsequently caused Nigerian economy to be overwhelmed by influence of the external sector due to the huge foreign exchange receipts from crude oil exports. These inflows consistently drive the level of imports. The combined effects of rising imports and exports in the last two decades was manifested in higher index of trade openness which fluctuated between 23 – 56% during 1960 – 2010 (Englama, Oputa, Sanni, Yakub, Adesanya & Sani, 2013).

Although import is vital to economic growth and development particularly when it is associated with industrial goods, but it is contrariwise in Nigeria. The agricultural products which are supposed to be produced locally, are being imported – notwithstanding the millions of hectares of arable land Nigeria is endowed with. Therefore, over the past decades, according to Uche, *et al*. (2015), Nigeria has been faced with severe problems of external balance stemming from a persistently growing current account deficit. Of the forms of disequilibrium in balance of payment, deficit balance happened to be more worrisome than surplus; and is the common feature of most developing economies. This is by virtue of their overdependence on imported goods (Ichoku, Nteegah & Ikpe, 2013).

Sequel to the challenges spawned by the increased import bill of Nigeria, the government prior to 1986 SAP introduced some import policy control measures which subsequently did not solve all the problems. Furthermore, in 1986, the government opted for some import control measures such as import substitution strategy, high tariff rates, outright ban on some categories of commodities coupled with the use of administratively determined exchange rates (Ichoku, *et al.*, 2013). The consequence of this according to them was that non-oil imports remained on a steady rise with no solution yet in sight.

Following the non-efficacy of some import control measures as it is revealed in studies such as Ichoku, *et al.*, (2013) and Uche, *et al*. (2015), particularly in the area of agriculture, the researcher resolves to empirically ascertain the determinants of agricultural import in Nigeria. That will subsequently enable the researcher to forward recommendations that will help in reducing agricultural import bill. Against this background, the study intends to address the determinants of Nigeria's demand function for agricultural import.

This study is structured in to 5 sections. Section one deals with the introduction. Section two and three unfold the literature review and the methodology respectively. Further, analyses of results and summary and conclusion are discussed in section four and five respectively.

Literature Review

Import demand is goods and services bought from other countries. Imports are therefore of two types – visible imports and invisible imports (Anyanwuocha, 2011). Imports are surplus goods and services of other countries that come into the country. Imports are divided into visible and invisible (Johnson, 2003). The individual and market demand function refers to the functional relationship between individual/market demand and the factors affecting individual/market demand (Yal, 2016). According to MSG (2017), demand function is a mathematical function showing relationship between the quantity demanded of a commodity and the factors influencing demand.

The concept of consumption function is believed to have been introduced into macroeconomics by John Maynard Keynes in 1936, who used it to develop the notion of a government spending multiplier (Hall and Taylor, 1986). The Keynesian consumption function expresses the level of consumer spending depending on three factors – disposable income, autonomous consumption and marginal propensity to consume (Tejvan, 2017).

The principle of absolute cost advantage pointed that a country will specialize and export a commodity in which it has an absolute cost advantage (Smith, 1776). Consequently, each country will benefit by specializing in the commodity in which it has an absolute advantage, obtaining the other commodity through trade. The benefit derives from obtaining the imported commodity at a lower real cost through trade than through direct production at home (Robert, *et al*., 2003).

According to Ricardo (1817), it is not the absolute but the comparative differences in costs that determine trade relations between two countries. He clearly showed, that absolute cost advantages are not a necessary condition for two nations to gain from trade with each other. Instead, trade will benefit both nations provided only that their relative costs, that is, the ratios of their real costs in terms of labour inputs, are different for two or

more commodities (Robert, *et al*., 2003). The idea is that each nation is better off making what it is relatively more efficient in production.

According to Heckscher and Ohlin (1919), regions or countries have different factor endowments. It means that some countries are rich in capital while some are rich in labour. In their theory, the concept of factor endowments or factor abundance is a reason countries specialize in different line of production and export. In the Kravis' (1956) model, a country produces and exports those goods which are available, that is, goods developed by its entrepreneurs and innovators. By availability he means an elastic supply. In short, as per Kravis' theory of availability, international trade takes place because of differences in the availability of certain products among countries.

Posner (1961) opined that trading countries have similar factor endowments and identical production functions for established products but technology is different between the trading countries. This difference in the technology leads to introduction of new products and new production processes by a firm in a country – which might acquire a temporary comparative advantage in the exports of its products to other countries. This comparative advantage could be called as '*technology gap*'. Vernon's model is a generalization and extension of the technological gap model. Generally, a product passes through the three stages during its life time. These stages are - (a) New product stage, (b) Maturing product stage and (c) Standardized product stage (Vernon, 1966).

The Brander- Krugman model of reciprocal dumping considers a situation in which two firms of two countries resort to dumping in each other's domestic market. The situation in which dumping leads to a two way trade in the same product is known as reciprocal dumping (Brander & Krugman, 1983).

Starting with Ordinary Least Square method of Analysis, Elliot (1986) disaggregated imports as petroleum and nonpetroleum imports. Consequently, petroleum imports were estimated as a function of exports of refined petroleum products and real GDP, where both variables have a positive impact on petroleum imports. By adopting the same technique as Elliot (1986), Erlat and Erlat (1991) assessed the performance of Turkish export and import and used annual data for the period 1967-87. International reserves therefore were found to be the most important variable in explaining import demand; while relative prices have no significant explanatory power on import demand.

The next econometric technique reviewed by the researcher was autoregressive distributed lag bounded model. Starting with Tang and Nair (2002), the study evaluated the stability of the import demand function in Malaysia. Import demand, income, and relative price were found to be cointegrated. Narayan and Nayaran (2005) employed the cointegration tool and thereby adopted the ARDL bound test. They estimated the long-run disaggregated import demand model for Fiji using relative prices, total consumption, investment expenditure, and export expenditure variables over the period 1970-2000.The results indicated a long-run co-integration relationship among the variables. By using same approach, Bahamani and Kara (2003) estimated the import and export demand function for nine industrial countries. The results show that long-run income elasticity is greater in import demand function while in the export demand function, it is relatively inelastic.

In a study by Mwega (1993), the error correction model had been used to investigate the short-run dynamic import function in Kenya. The study revealed that, import demand exhibits low elasticities with respect to relative price and income. By adopting the same technique, Narayan and Rusell (2005) investigated the determinants of import demand in Brunei, Darusallam and the effect of population and oil prices on import demand. Results showed that aggregate imports are inelastic in the short run and long run with respect to income and world petroleum prices, but were price inelastic with respect to population. By also adopting same approach, Ivohasina and Hamori (2005) furthermore analyzed the long-run relationship among the variables in the aggregate import demand functions of Madagascar and Mauritius. It was found there were existence of cointegration relationship between the variables.

In Nigeria, Starting with autoregressive distributed lag (ARDL) bound test, Babatunde (2006) carried out a study on 'Import demand in Nigeria' with data from 1970 to 2006. The variables were income, aggregate import, price of domestic goods and price of imports. It was found that import demand was strongly determined by the selected variables. Babatunde subsequently did a collaborative work with Egwaikhide with the similar method and therefore published Babatunde and Egwaikhide (2010). In the study, they empirically analyzed the aggregated import demand behaviour for Nigeria using annual data between 1980 and 2006. The bound test analysis was used to estimate the long run relationship between import demand and its determinants. The study found that import, income, and relative prices were cointegrated.

Uche, *et al.,* (2015) estimated price and income elasticities of import in Nigeria for the period 1970 – 2013 by employing same technique (ARDL). The co-integration results showed that there was a long run relationship between import demand and the chosen explanatory variables which imply that all the variables move together in the long run. Englama, *et al.,* (2013) yet adopted the ARDL technique to empirically examine the import demand function for Nigeria. The variables used were GDP, domestic prices, nominal exchange rate, external reserves and import demand. The result showed that changes in import demand were responsive to changes in all the explanatory variables, with highest rate of responsiveness stimulated by changes in income. This revealed that aggregate demand for imports in Nigeria was highly income elastic.

In Nigerian context, four different literatures have been reviewed with respect to ordinary least squares technique (OLS). One of them is Ajayi (1975). Factors that are important in the determination of retained imports in Nigeria for the period 1960–1970 were studied. Using the method, it was found that relative prices and real income are important determinants of the demand for retained imports. Ichoku, *et al.,* (2013) is the second literature that used OLS which has been reviewed by the researcher. From the empirical estimation of the static model it was established that the coefficients of the level of foreign reserve, import capacity were statistically significant while those of real income, real exchange rate and SAP policy were statistically not significant.

Olayide (1968) focused on only some selected commodities of Nigeria's imports in the period 1948-1964. Evidence from the OLS multiple regression models indicated that terms of trade, real income (measured by GDP) and the index of trade restrictions had fairly good parameter estimates. Finally on OLS, Igberi, *et al.,* (2012) having used the same methodology concluded that, agricultural import demand to its determinants, except for trade openness was inelastic.

Big Ben (2016), by using Vector Error Correction Model, estimated the aggregate import demand model in Nigeria. Results indicated that, the existence of an underlying long-run stationary steady state relationship between import demand and real exchange rates; world price index and disposable in Nigeria - real exchange rates, world price index, disposable income and the structural adjustment policy, jointly significantly cause import demand in the long run in Nigeria with causality running from the explanatory variables to imports.

Having reviewed the above empirical literature however, the researcher could not get access to a study which incorporates local manufactured or processed food in the import demand function. Thus, the researcher resolves to carry out a study subsequently to ascertain whether local manufactured and processed foods (by local industry) help to reduce the volume of import of beverages and other processed foods, in Nigeria or not.

Methodology

In an attempt to assess the determinant of demand function for Nigeria's agricultural import, a multivariate model is adopted from the work of Uche, *et al*. (2015) which was earlier adopted from Goldstein and Khan (1985).

Following the work of Uche, *et al*. (2015) and Goldstein and Khan (1985), a linear functional relationship is therefore justified for this study.

$$AM_t = f(RGDP, PAP, EXR, EXRES) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

Where: t – time period, AM – agricultural import, RGDP – real gross domestic product, PAP – processed agricultural products, EXR – exchange rate, EXRES – external reserves. Equation 1 can be linearly expressed as follows:

$$AM_t = \alpha + \beta_1 RGDP + \beta_2 PAP + \beta_3 EXR + \beta_4 EXRES + E_t \ldots\ldots\ldots 2$$

Where α- intercept; $\beta_1 - \beta_4 =$ slope (parameters to be estimated); and E_t- error term at time period

Estimation Technique: ARDL Bound Test (short run and long-run relationship)

The econometric technique of data analysis adopted in this study is Autoregressive Distributed Lags (ARDL) model as formulated by Pesaran and Shin (1997). Since, the variables under study are I(1) and I(0), the justifying fact for adopting the ARDL approach is that, it provides an alternative test for examining a long-run relationship regardless of whether the underlying variables are purely *I(0)* or *I(1)* (Pesaran, *et al*., 1997). By and large, the bound test (or ARDL bound test) is always jointly used to estimate a long-run relationship among the selected variables.

Moreover, the import demand model for a long-run relationship in ARDL form could be specified as:

$$\Delta AM_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i}\,\Delta AM_{t-i} + \sum_{i=0}^{n} \alpha_{2i}\,\Delta AM_{t-i} + \sum_{i=0}^{n} \alpha_{3i}\,\Delta RGDP_{t-i} + \sum_{i=0}^{n} \alpha_{4i}\,\Delta PAP_{t-i} + \sum_{i=1}^{n} \alpha_{5i}\,\Delta EXR_{t-i} + \sum_{i=1}^{n} \alpha_{6i}\,\Delta EXRES_{t-i} + \beta_1 AM_{t-i} + \beta_2 RGDP_{t-i} + \beta_3 PAP_{t-i} + \beta_4 EXR_{t-i} + \beta_5 EXRES_{t-i} + E_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3$$

Where: Δ denotes the difference operator; $\alpha_1 - \alpha_6\ with$ their summations are the short-run dynamics; and $\beta_1 - \beta_5$ are the long run relationship. The bound test having satisfied the co-integration condition, it enabled the researcher to specify and as well estimate error correction coefficient. It reflects the speed of adjustment to equilibrium when there was a shock. So, the error correction component is added in the equation 3.3 and establish equation 4.

$$\Delta AM_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i}\,\Delta AM_{t-i} + \sum_{i=0}^{n} \alpha_{2i}\,\Delta AM_{t-i} + \sum_{i=0}^{n} \alpha_{3i}\,\Delta RGDP_{t-i} + \sum_{i=0}^{n} \alpha_{4i}\,\Delta PAP_{t-i} + \sum_{i=1}^{n} \alpha_{5i}\,\Delta EXR_{t-i} + \sum_{i=1}^{n} \alpha_{6i}\,\Delta EXRES_{t-i} + \alpha_7 ECM_{(-1)} + E_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4$$

Where ECM is the error correction term resulting from the verified long-run equilibrium relationship and α_7 is a parameter indicating the speed of adjustment to the equilibrium level after any particular shock.

Apriori Expectations

i. For the expectation of the unit root test, the researcher expects the variables to be *I(0)* and *I(1)* and not *I(2)*. This will subsequently enable him to adopt the ARDL model (Pesaran *et al*., 1997).

ii. The parameters for the short-run dynamics such as $\beta_1\ and\ \beta_4$ are expected to be positive while $\beta_2\ and\ \beta_3$ are expected to be negative (in equation 3.2).

iii. For the long-run dynamics, the condition $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 \neq 0$ is expected (in equation 3.3) (Uche, *et al.*, 2015).

iv. The parameter α_7 (of the error term) in the equation 3.4 is expected to be negative and significant to ensure convergence of the dynamics to the long-run equilibrium. The value of the co-efficient α_7 which signifies the speed of convergence to the equilibrium process usually ranges from -1 to 0. The value of -1 signifies perfect and instantaneous convergence while 0 means no convergence after a shock in the process (Englama, *et. al*., 2013).

Analysis of Result and Discussion of Findings

Since, the variables under study are I(1) and I(0) as presented in Table 4.1, the justifying fact for adopting the ARDL approach is that, it provides an alternative test for examining a long-run relationship regardless of whether the underlying variables are purely *I(0)* or *I(1)* (Pesaran, *et al*., 1997).

Table 1: Estimated Output for Unit Root Test

VARIABLES	AUGMENTED DICKEY FULLER		PHILLIP-PERRON	
	I(0)	I(1)	I(0)	I(1)
AM	3.8544	-6.1210***	-2.7616	-10.3729***
	(1.0000)	(0.0000)	(0.2144)	(0.0000)
EXR	-2.0999	-10.1862***	-2.2349	-10.1707***
	(0.5409)	(0.0000)	(0.4663)	(0.0000)
EXRES	-1.8286	-6.5545***	-2.2015	-12.4994***
	(0.6856)	(0.0000)	(0.4847)	(0.0000)
PAP	-4.1263***		-3.9129**	
	(0.0073)		(0.0140)	
RGDP	2.7130	-4.3338***	-4.2924***	
	(1.0000)	(0.0039)	(0.0044)	

Source:

Notes: ***, ** & * denote level of significance at 1%, 5% and 10% respectively. Also, the values in the parentheses represent the prob. value.

Short-run Significance: ARDL Approach

To estimate the variables in the model, the researcher resolves to select Akaike Information Criterion (AIC) for an optimal lag selection. Subsequently, it chose ARDL (4, 0, 0, 0, 3) which the results followed it as presented in table 1.

Beholding clearly the table (in table 4.2), all the explanatory variables such as real gross domestic products, exchange rates, processed agricultural products and external reserves were significant at 5% level of probability. Obviously, the co-efficient of RGDP shows that agricultural imports were more income elastic. It implied that as income increases by 1%, agricultural imports increase by 2.70% (at lag 1), 1.88% (at lag 2) and 3.42% (at lag 3). While the coefficients for exchange rates and processed agricultural products were negative and implied a negative relationship between them and the agricultural imports. That is, agricultural imports are expected to decrease by 1% if there is 0.20% and 3.11% increase in exchange rates and processed agricultural products respectively. Further, as external reserves rise by one unit, agricultural import will increase by 0.003. Most importantly, all the sign of the estimated parameters conformed to the appriori expectations.

Further, the adjusted R-squared estimated as 0.90 implied that 90% variation in agricultural imports were explained by real gross domestic products, exchange rates, processed agricultural products and external reserves. In essence, the remaining 10% is determined by peripheral variables (not captured in the model). What really supported the coefficient of determination is the F-statistic which happened to be 103.88 (0.0000). It implied that the explanatory variables were jointly significant in explaining the agricultural demand function for Nigeria's imports. The Durbin Watson statistic as computed as 1.85 implied the absence of serial correlation among the residuals of the estimated equation.

Table 4.2: Estimated Output for ARDL Short-Run Computation

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
AM(-1)	1.204879	0.100072	12.04013	0.0000
AM(-2)	-0.846455	0.206866	-4.091797	0.0001
AM(-3)	0.577216	0.282404	2.043936	0.0433
AM(-4)	-0.441926	0.180847	-2.443651	0.0161
EXR	-0.196403	0.199400	-0.984974	0.0268
EXRES	0.002506	0.000671	-3.735357	0.0003
PAP	-3.111686	1.215807	-2.559359	0.0118
RGDP	1.152122	0.495169	-2.326727	0.0218
RGDP(-1)	2.699828	0.511789	5.275271	0.0000
RGDP(-2)	1.882439	0.545987	-3.447771	0.0008
RGDP(-3)	3.422268	0.573168	5.970795	0.0000
C	-127.0603	31.89325	-3.983925	0.0001
R-squared	0.910735	Mean dependent var		71.11707
Adjusted R-squared	0.901968	S.D. dependent var		148.5453
S.E. of regression	46.50971	Akaike info criterion		10.60896
Sum squared resid	242273.2	Schwarz criterion		10.88190
Log likelihood	-645.7558	Hannan-Quinn criter.		10.71984
F-statistic	103.8807	Durbin-Watson stat		1.851609
Prob (F-statistic)	0.000000			

Source: Author's Computation, 2018

Bound Test for Co-integration Test

Unlike vector error correction model, the co-integration test criterion for an autoregressive model is bound test. This is done to detect whether there is/no long-run relationship among variables. To ascertain the presence of co-integration among variables, the F-statistic would be compared with the upper and lower bounds test critical values as compiled by Pesaran, et al., (1997). According to Englama, et al., (2013), when the estimated F-statistic exceeds the upper bounds critical value, then there exists a long-run relationship among variables of interest, while an estimated F-statistic below the lower bound critical value connotes no co-integration among variables. Moreover, when the estimated F-statistic lies in between the lower and the upper critical values, then an indeterminate conclusion is reached.

However, the results obtained as presented in table 4.3 revealed that the null hypothesis (that there is no long-run relationship among agricultural imports, exchange rates, real gross domestic products, external reserves and processed agricultural products) is rejected. This is because the F-statistic even at 1% was greater than the bound upper critical value. It is therefore concluded that, in other words there is a long-run relationship among the variables.

Table 3: Estimated Output for ARDL Bound Test

Test Statistic	**Value**	**k**
F-statistic	9.006536	4
Critical Value Bounds		
Significance	**I0 Bound**	**I1 Bound**
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: Author's Computation, 2018

Long-run Relationship: ARDL/Bound Test Approach

Like in the short-run dynamics, with reference to table 4.4, all the variables under study were found to be statistically significant. For instance, real gross domestic products at lag 1 & 2 are expected to increase agricultural imports by 1.57% and 3.20% respectively if there is one unit increase. Also, agricultural imports are supposed to decrease by 0.25% and 2.97% if there is one unit increase in exchange rates and processed agricultural products respectively. Finally, there is also a long-run positive relationship between agricultural imports and external reserves – as when the latter increases by one unit, agricultural imports will increase by 0.002%. Unlike the short-run results, here the adjusted R-squared is lower. That is 40% variation in the agricultural imports are explained by real gross domestic products, exchange rates, external reserves and processed agricultural products in the long-run.

Table 4: Estimated Output for ARDL Long-Run Computation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(AM(-1))	0.702326	0.106369	6.602756	0.0000
D(AM(-2))	-0.097459	0.130222	-0.748406	0.4558
D(AM(-3))	0.414376	0.181070	2.288485	0.0240
D(RGDP)	-0.966644	0.510737	-1.892647	0.0610
D(RGDP(-1))	1.567124	0.438661	-3.572518	0.0005
D(RGDP(-2))	3.204565	0.565128	-5.670510	0.0000
C	-133.0882	32.86858	-4.049101	0.0001
EXR(-1)	-0.245760	0.202459	-2.213879	0.0273
EXRES(-1)	0.002523	0.000698	-3.612298	0.0005
PAP(-1)	-2.966442	1.227040	-2.417559	0.0172
RGDP(-1)	3.104635	0.596002	5.209099	0.0000
AM(-1)	-0.510009	0.077816	-6.554031	0.0000
R-squared	0.454657	Mean dependent var		2.557782
Adjusted R-squared	0.401096	S.D. dependent var		60.37715
S.E. of regression	46.72518	Akaike info criterion		10.61821
Sum squared resid	244523.2	Schwarz criterion		10.89114
Log likelihood	-646.3290	Hannan-Quinn criter.		10.72908
F-statistic	8.488666	Durbin-Watson stat		1.874690
Prob(F-statistic)	0.000000			

Source: Author's Computation, 2018

Error Correction Model

Following the attainment of the evidence of long-run relationship among the variables, it is pertinent we determine the speed of adjustment to equilibrium. To achieve that, error correction model (ECM) is employed. The result is however presented in table 5.

Fortunately, as expected in the appriori expectation, the estimated coefficients as shown in table 4.5., is -0.506286. Most importantly, the ECM is statistically significant (prob. 0.0000). The result reflected the speed of adjustment to equilibrium when there was a shock. In other words, it will take about 0.5 quarter for agricultural import to respond to changes in any of the explanatory variables. In addition, it could also imply that deviations from equilibrium were restored by about 0.5% over the next quarter.

Table 4.5: Estimated Output for ECM

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(AM(-1))	0.711165	0.106137	6.700468	0.0000
D(AM(-2))	-0.135290	0.127647	-1.059878	0.2915
D(AM(-3))	0.441926	0.180847	2.443651	0.0161
D(EXR)	-0.196403	0.199400	-2.984974	0.0268
D(EXRES)	0.002506	0.000671	-3.735357	0.0003
D(PAP)	-3.111686	1.215807	-2.559359	0.0118
D(RGDP)	-1.152122	0.495169	-2.326727	0.0218
D(RGDP(-1))	1.882439	0.545987	3.447771	0.0008
D(RGDP(-2))	3.422268	0.573168	-5.970795	0.0000
CointEq(-1)	-0.506286	0.076015	-6.660335	0.0000

Source: Author's Computation, 2018

Discussion of Findings

To start with the aspect of the research gap, it is revealed that processed agricultural products have a negative significant impact on agricultural imports. This is perhaps the reason the efforts Nigerian government is putting to make sure processed and manufactured agricultural products are produced and consumed locally. In some cases, the Nigerian government succeeds in amassing the agricultural output but sometimes unsuccessful in the area of manufacturing and processing. For example, the initiation of Agricultural Credit Guarantee Scheme (although it is not a new establishment). The main motive for its establishment is to ensure realization of large output from agriculture. This subsequently has been having impact on agricultural output. According to Knoema (2014), food production index of Nigeria increased from 24.6 index in 1975 to 117.8 index in 2014, growing at an average annual rate of 3.44%.

The above success of production index could not completely translate to agricultural manufacturing industry boom. This is possibly the fact that the factors that facilitate such manufacturing are not adequate and equipped. Even the former Managing Director of International Monetary Fund, Christine Lagarde, during her visit to Nigeria in 2014 stressed the need for Nigeria to provide sufficient power supply and transportation networks. This, according to her will facilitate cost efficiency and healthy competition of local agricultural commodities not merely domestically but globally.

Naira exchange rate has been worsened by the Nigeria's excessive agricultural import bills. This invariably fuels local inflation. In other words, it seems to be a direct relationship between the nation's agricultural import and the level of inflation. For instance according to Dickson (2016), from early 90's, not only did the inflation rate progressively increase with agricultural import, but the highest inflation rate ever of 72.8 percent recorded in 1995 occurred the same year that the country had the greatest quantum leap in agricultural import bill. This is perhaps the reason behind poor competition of Nigerian agricultural manufacturing industry and non-patronage of local agricultural commodities by Nigerians.

Moreover, the coefficient of exchange rates implied a negative relationship between it and the explained variable (agricultural imports). In other words, the demand for agricultural imports was exchange rates inelastic. It is obvious that currently despite the rapid increase in the exchange rate; the decrease in the demand for agricultural imports is not much.

Above all, the income tends to be the most leading factor in determining the demand for agricultural imports. As earlier mentioned, the demand for agricultural imports is highly income elastic. This is evidenced from the continuous increase in the real gross domestic products in simultaneity with the volume of agricultural products being imported day in day out. This indeed thereby confirms the theory of elasticity of demand – that the demand for substitute goods is income elastic. Foreign agricultural commodities being close substitutes to that of local, its demand according to the result obtained was highly income elastic.

Conclusion and Recommendations

The research study explored the determinants of demand for agricultural imports in Nigeria. Autoregressive distributed lags (ARDL) model and bound test for co-integration were used to determine both the short-run and long-run dynamics of the agricultural imports to the changes in economic activity/income (RGDP), exchange rates, local processed commodities and external reserves. It can therefore be concluded that agricultural import demand can have implication on agricultural import, and this can undermine agricultural development in the country despite the comparative advantage of the country in agricultural production.

Based on the conclusion derived above, following a significant influence of processed agricultural

products on agricultural imports, there is need for government to provide ample/well-equipped infrastructures that will facilitate the manufacturing of local processed agricultural products. However, to avoid excessive food importations and its demand by consumers, sequel to the high elasticity of real gross domestic product, import restriction tools such as embargo and quota on certain commodities that have comparative advantage (such as rice), should be re-invigorated.

The degree of inelasticity of exchange rates could be taken care of, if consumers would as a matter of fact disregard the common saying "foreign goods are always superior to local goods". Thus, in order to revive the glory of agriculture, consumers need to patronize the locally produced commodities. Also, the inelasticity can be taken care of, if Nigerian farmers/exporters of agricultural products will improve their quality control and preservation procedures. The fact that some agricultural goods which had to undergo primary production locally, but externally secondary/tertiary production, public private partnership especially with foreigners need to be made. Finally, CBN should direct all commercial banks to apportion a higher amount of loanable fund to agriculture both at extractive and manufacturing stage.

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