EFFECT OF FOREIGN TRADE ON FOOD SUPPLY IN NIGERIA (1981-2016)

Ali, A[1]., Biam, C.K[1]., Ayoola, J.B[1].,and Ezihe, J.A.C.[1]

1-Joseph Sarwan Tarka University, Makurdi, Benue State. P.M.B 2373Makurdi

Corresponding author: aliayuba90@gmail.com and ayuba.ali@uam.edu.ng

Abstract

This study was undertaken to analyze effect of foreign trade on food supply in Nigeria between 1981-2016. Annual time series data collected from secondary sources were analyzed using descriptive statistics and inferential statistics such as unit root test, Johansen co-integration test, vector error correction model (VECM)and t-test. The results of trend analysis showed that the mean value of food supply is 7.7 Trillion Naira, the mean value of exports is 1.26 trillion Naira, the mean value of trend of imports is 1.68 trillion naira and the mean value of household consumption expenditure is 959 billion Naira over the period under review. The result further revealed that the coefficient of exports (-0.39) was negative and significant at 1% probability level. The coefficient of imports (0.079) was positive and significant at 5% level of probability. The coefficient of tariffs on imported food was negative (-0.189) and significant at 1% probability level. The coefficient of exchange rate was negative (-0.46) and significant at 1%. The result also revealed that deceleration in exports led to deceleration in food supply in Nigeria in the short run and acceleration in imports lead to acceleration in food supply in Nigeria in the short run. Change in coefficient of exports was negative (-0.028) and significant at 10% probability level. Change in coefficient of imports in short run was positive (0.0302) and significant at 10% probability level. The change in coefficient of tariffs on imported food was negative (-0.00392) and significant at 1% probability level. The change in coefficient of exchange rate was positive (0.007402) and significant at 1% probability level. The change in coefficient of household consumption expenditure was negative (-0.17) and significant at 10% probability level.. Finally, the study recommends that policy makers should develop export and import strategy that encourage private investors in food industries and government should increase agricultural spending to enhance local food production.

Keywords: food supply, export, import and household consumption expenditure

Introduction

Foreign trade is concerned with the relationship amongst nations in both the economic and financial sense; and it promotes a life-sustaining role in coordinating socio-economic performance and the possibilities for less developed countries. Foreign trade is the

economic force that spurs commerce, promotes technology and growth; it plays a very important role in the formation of economic and social attributes of countries around the world (Adeleye *et al.*, 2015). It concerns the study of the causes and consequences of the international exchange of goods and services and of the international improvement of factors of production (Obadan and Okojie, 2010). Over the years, developmental economists have long recognized the role of foreign trade in the economic growth process of national economies as trade provides both foreign exchange earnings and market stimulus for accelerated economic growth (Omoke and Ugwanyi, 2010; Iyoha and Adamu, 2011).

Foreign trade in most countries represents a significant share of gross domestic product (GDP) and has been an area of interest to policy makers as well as economists (Azeez *et al.,* 2014). It enables nations to sell their domestically produced goods to other countries of the world (Sebatine*et al.,* 2015). It is has been regarded as an engine of economic growth, which leads to steady improvement in human status by expanding the range of people's standard and preference (Omoju and Adesanya, 2012). It trade plays a vital role in restructuring the economic and social attributes of countries around the world since no country can grow without trade (Adeleye *et al.*, 2015).

Foreign trade is one of the most leading dynamic macroeconomic issues confronting economies of African region. The dynamism has made it important issue to be considered for economic growth and development of Nigeria (Obiora, 2009). Nigeria as a developing country has been grappling with realities of development process not only politically and socially, but also economically, stressing that the economic growth of Nigeria depends on her trade with other nations (Muhammad *et al.,* 2015). The predication for foreign trade depends on the veracity that the global nations are different in their natural resources endowment, scale of production, capacity for growth preferences, technology and sustainable development (Omoke and Ugwanyi, 2010). Furthermore, because of these major discrepancies, the involvement in foreign trade is vindicated for the creation of thoroughfares for nations to exchange consumer goods and services they do not have capacity for. Difference in resources present a case where nations can only consume what they are capable of producing, but trade has invigorated them to conssume what other nations are able to produce (Iyoha, 2011).

In spite of Nigeria's rich endowment in black oil and other mineral resources, the well being of her economy still largely depends on agricultural sector for national output and employment generation. The agricultural sector contributes to the Gross Domestic Product

(GDP), average of 38% in the last 8 years with crop 80%, forestry 3% and fisheries 4%. It provides employment for about 65% adults' labor force and the food fiber need for large and increasing population of Nigeria (Bola, 2007). Its significant contribution on national food self sufficiency cannot be over emphasized accounting for over 90% of the total consumption requirement and providing the needed foreign exchange earnings for capital development project (Olatunji *et al.,* 2010)

Food remains the most crucial need for human survival. Nigeria strives to meet the food supply needs of her citizens in a food security and food sufficiency sense by promoting food production within borders and complementing as necessary with importation across borders (FAO, 2015). Nigerian Government has made several efforts to encourage adequate food supply in the country through various programs and policies such as, the National Fadama Development Project (NFDP) which was aimed at reducing poverty and increasing farm productivity and income of farmers, the Anchor Borrowers' program and the Agricultural Transformation Agenda with its set objective of transforming the agricultural sector to providing sufficient food of international standard and improving the standard of living of rural farmers.

Foreign Trade Statistics (2014) showed that Nigeria is the 119th most complex economy and the 41st largest export economy in the world which makes Nigeria experience sharp increase in the value and volume of trade with other parts of the world. In 2013, Nigeria exported $94.8b worth of food produce and imported $41.6b worth of foods. The components of exports and imports indicated that the top most exports of Nigeria are cocoa, beans, crude petroleum; while top most imports are wheat, rolled tobacco and refined petroleum.

Food accounts for more than half of the household expenditure, and increased food prices seriously reduce access to food and ability to purchase other necessities, (FAO, 2013). Experts estimated that rising food prices have driven about 44million people into poverty in developing countries since substantial part of their income is used in purchasing these foods they do not have. The household consumption expenditures are a very important component which depends on the income of the individual households. The household maintains the equilibrium among the consumption and saving through budget constraints and needs (Garba, 2013).

In order to ensure supply response to foreign trade, the Federal Government of Nigeria had made efforts in embarking on trade relations through the World Trade

Organization (WTO), making imports and exports easier and also programs aimed at increasing production which in turn increases food supply. Despite all these efforts made by the Federal Government of Nigeria, it seems food supply response to foreign trade is still fluctuating. Therefore, there is need to analyze food supply response to foreign trade in Nigeria.

Food constitutes a core component of several of the most widely used indicators on nutrition, health and poverty accounting for 50 percent household budget (USDA, 2011). The inability of the agricultural sector to attain self –sufficiency in food production which in turn brings about sufficiency in food supply has led to a situation of aggregate demand for exceeding aggregate supply leading to demand pull inflation in the economy (Olatunji *et al.,* 2010). It makes up the largest share of the total household expenditure in low-income countries on average, causes starvation, malnutrition, increased mortality rate and political unrest (Onwuka, 2017). Food shortage is a serious problem facing the world and prevalent in sub-saharan Africa, caused by economic, environmental and social factors (Olaniyi, 2011 ; FAO, 2015), which in turn leads to increase in demand for food resulting in increase in price of food, which affects household consumption expenditures. Household expenditures are affected severely by shortage in food supply which results to inflation in prices of foods and affects individual consumption in the households (FAO, 2012). There are a number of short term effects of food shortages which have impact on children, mothers and adults as in malnutrition, hunger and related death. Long term effects of food shortage affects prices of food as a result of forces of demand and supply (FAO, 2012).

The broad objective of this study is to analyze food supply response to foreign trade in Nigeria (1981-2016): The specific objectives were to: analyze the trends of food supply in Nigeriaand analyze the effect of foreign trade on food supply in Nigeria

In this study the following hypotheses were stated and tested based on the specific objectives;

Ho_1: Imports have no significant effect on food supply.

Ho_2: Exports have no significant effect on food supply.

Theoretical Framework
1. **Comparative advantage theory**

Ricardian theory pointed out a flaw in the absolute advantage model and he introduced the concept of comparative advantage i.e a country can produce those goods which it can produce comparatively better than the other country, Ricardo considered opportunity cost instead of financial cost. He emphasized that comparative advantage is the way for a country to specialize in the efficient production of a good.

In the real world, specialization according to comparative advantage, leads to increased global production and means better living standards for everyone. David Ricardo elaborated the theory of Adam Smith and advised that countries should produce products that they are comparatively better at than other countries; he had created the model of comparative advantage. Ricardo was not in favor of tariffs and other restrictions of trade and he stated that comparative advantage was a way of country specializing in goods to gain a more efficient production (Gbosi, 2003). The main example of Ricardo's comparative advantage theory was about cloth and wine trade between two countries, the England and Portugal. In this example, he explained that England required 100 men to produce cloth and 120 men for wine production. So, it would be in the favor of England to import wine and export cloth whereas, Portugal might utilize 80 men for wine and 90 for cloth production. Ricardo further explained that it is beneficial for Portugal to export wine in exchange for cloth with England (Ricardo, 1817).

According to Chang (2009), the concept of comparative advantage is one of the few concepts in economics that is more than common sense. He further stated in the same article that the beauty of this theory is that it illustrates how even a country having no absolute cost advantage in any sector can benefit from trade by specializing in industries at which it is least bad (Development Policy review, 2009). According to Langdana and Murphy (2014), there are several assumptions related to the Ricardian trade model which include: there are only two countries and two commodities; there are only two factors of production, labour (L) and (K); there is perfect competition in all industries (including the factor market and the finished goods market); labor is all of the same level of skill and efficiency within each country; labor and capital are perfectly mobile within a country (and thus, always able to fill any production need within that country) but cannot shift between countries; there is free trade that involves no trade barriers or frictional transaction costs; there are no transportation costs. Also, while not explicitly stated by Ricardo, it is implied that there are no environmental or infrastructural costs; production operates with constant return to scale and constant costs; both countries have identical technology and technology is fixed, that is,

there is no technological change; and each country fully utilizes all resources (labour and capital are fully employed).

Methodology

The longitudinal survey design was adopted for this study. Time series data from the period of 1981-2016 were collected on annual basis for the trend of the following variables: food supply, import, export, household consumption expenditure, tariffs, exchange rate and government spending and taxes.

Data for this study were obtained from secondary sources. The data were obtained from Central Bank of Nigeria (CBN) publications and annual reports, National Bureau of Statistics (NBS), Federal Ministry of Agriculture and Rural Development, Food and Agriculture Organization statistics (FAOSTAT). Variables for which data were obtained include: volume of imports, volume of exports, annual household consumption expenditure, exchange rate, tariffs and annual food supply. The data for all variables cover a period of 36 years (1981 – 2016).

Descriptive statistics was used to describe objective 1and Vector error correction model (VECM) was used to analyze objective 2, while student t-test was used to test hypotheses 1and 2.

In order to obtain more meaningful insight, logarithmic transformation of these variables was adopted. The unit root test of all variables wascarried out, the Augmented Dickey Fuller (ADF) method was used to test for the presence of unit root in each variable (an indication for non-stationarity). This is because the use of data characterized by unit roots may lead to serious errors in statistical inference, and the Johansen procedure was employed to test for Co-integration in the model.

Vector Error Correction Model (VECM)

$$lnFoss_{t-i} =$$
$$a_0 + a_1 lnExch_{t-i} + a_2 lnExpo_{t-i} + a_3 lnImpo_{t-i} + a_4 lnFoss_{t-i} + a_5 lnHhe_{t-i} +$$
$$a_6 lnTariffs_{t-i} + a_7 lnGovt\ sp_{t-i} + lnTaxes_{t-i} + \partial ECM_{2t} + u_{1t}.$$

Where;

FS_{t-i} = Food supply

$Exch_{t-i}$ = Exchange rate

$Expo_{t-i}$ = Exports

$Impo_{t-i}$ = Imports

Hhe_{t-i} = Household consumption expenditure

$Tariffs_{t-i}$ = tariffs

$Govt\ sp_{t-i}$ = Government spending

$Taxes_{t-i}$ = Taxes ECM_t = error correction term

u_t = error term

Results and Discussion

Trend of food supply

The trend of food supply is presented in Figure 1. The result showed that food supply ranged between 2.30 trillion Naira and 17 trillion Naira with the mean of 7.70 trillion Naira over the years under review. Between the year 1981 and 1983 food supply showed a minimal decrease, this means that aggregate food supply was low. There was a noticeable slight increase annually in supply of food in Nigeria between the periods of 1984 to 1985. These increases may be attributed to increase in the number of River Basin Authorities which had the mandate of increasing food production. The trend of food supply also showed a steady increase between the 1986 up to the year 2000, also between 2001 to 2009 there was sharp increase in the supply of food. It maintained its steady increase from 2010 to 2016.

During the period of 1981 and 1983 the aggregate low food supply was as a result of civilian Government who gave less attention to agricultural production programme Operation Feed the Nation initiated by the Regime of the Military Government. Within the period of 1984 and 1985 increase in food production was due to the policy of the Federal Government that encouraged local production thereby accruing to increased food supply in the country. In the period of 1986 to 2000 the steady increase is as a result of improvement

in Government program such as Structural Adjustment Program (SAP) meant to boost food production in the country, and the importance of increased food production was noticed as Nigeria is one of fast-growing nation in terms of its population.

Furthermore, within 2001 to 2009 the sharp increase was a result of democratic Government on board that has a well-defined policy framework to improving agricultural sector which boast food production and which, in turn, increased food supply in Nigeria. The steady increase of period 2010 to 2016 was also as a result of government program Agricultural Transformation Agenda (ATA, 2011) and also Anchor Borrowers programme meant to increase food production and sufficiency which translate to increase food supply in Nigeria. This could also be attributed to the Agricultural Transformation Agenda of the immediate past administration (2010-2015) that is considered to be the most purposeful and serious government that attempted to achieve a hunger-free Nigeria through agriculture. Its agricultural policies were intended to drive income growth, accelerate food and nutritional security, generate employment and transform Nigeria into a leading player in global food markets by making millions of farmers to grow wealth (Nwalen, 2019)
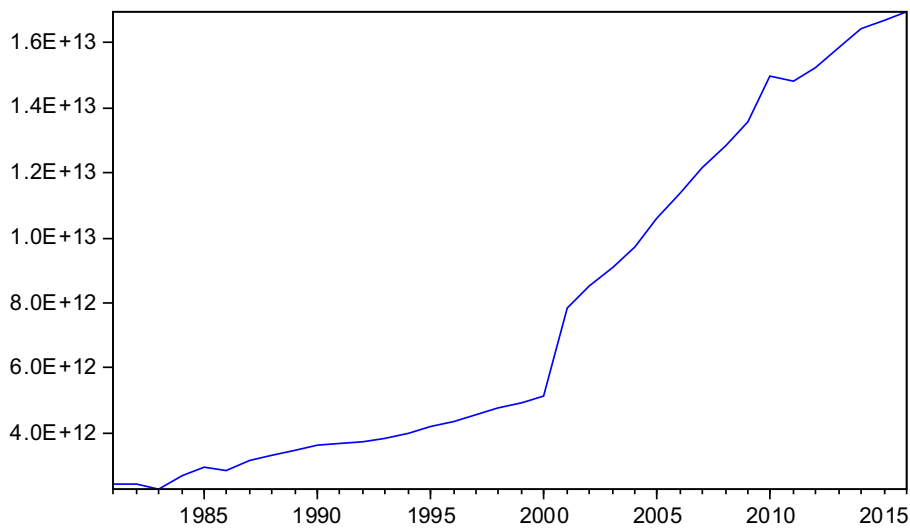

Figure 1: Trend of Food Supply in Nigeria from 1981 to 2016

Effect of foreign trade on food supply
1. Unit Root Test

Table 7 presents preliminary investigation of the properties of variables prior to regression using Augmented Dickey–Fuller test (ADF). The ADF test result indicates that all the variables were not stationary at level but stationary on first difference. The result implies that the level form of these variables exhibit random work or have multiple means of covariance or both. However, first difference of the variables are integrated or stationary. Linear combination of non-stationary variables using OLS produces spurious result leading to invalid inference. The existence of unit root in level form of the variable necessitate Co-integration test to determine whether long run relationship exists among these variables. According to Enger and Granger (1987), linear combination of non-stationary variables are often co-integrated.

Table 1: Unit Root test for all Variables

Level			first difference	
Variables	**t-Statistic**	**Prob. Value**	**t-Statistics**	**Probability value**
Foss	-0.06421 (-3.63290)	0.9457	-5.552081*** (-3.639407)	0.0001
Export	-1.997030 (-3.646342)	0.2866	-7.758302*** (-3.646342)	0.0000
Import	-1.460701 (-3.632900)	0.5414	-6.88074*** (-3.639407)	0.0000
Exch rate	-1.563571 (-3.632900)	0.4902	-5.031536*** (-3.639407)	0.0002
Tariff	-1.729026 (-3.639407)	0.4081	-8.846659*** (-3.639407)	0.0000
HHE	-0.342524 (-3.632900)	0.9082	-6.082624*** (-3.639407)	0.0000
Govt. Sp	-1.021936 (-3.632900)	0.7346	-8.504972*** (-3.639407)	0.0000
Taxes	-0.981530 (-3.632900)		-6.724531*** (-3.639401)	0.0000

 Note: (***) denote rejection of null hypothesis at 1% significant or probability level. Based on Makinon (1996) one sided P -values t -critical value of the corresponding t. statistics given in parenthesis. **Foss** = food supply; **Exch rate** = Exchange rate; **Govt SP**= Government spending on agriculture and **HHE** = Household consumption expenditure a
  Source: Author's Computation (2019) from E-views 10

1.   Johansen Co-integration Test

Co-integration test investigation was carried out on the series properties of I(1) variables through the Johansen co-integration test to determine whether long run linear combination of non stationary variable is stationary. This is based on the assumption that linear combination of non stationary can be stationary (Enger and Granger, 1987). Using trace statistics, the result revealed that combination of these variables has one co-integrating equation and this means that linear combination of these variables has a single long run linear combination or relationship. However, maximum Eigen statistics criterion shows two co-integration equations, and this means that linear combination of these variables has two co-integration equations. The implication is that linear run linear combination of these variables can be modeled with OLS without the risk of spurious result. However, the trace statistics is adopted in this research for the purpose of simplicity in analysis. Thus, based on trace statistics value   (66.43) which is greater than the critical value of 46.23,   a long run relationship   exists between food supply between exports, imports, tariffs, exchange rate, government spending on agriculture, household expenditure and taxes with one co-integrating equation.

Table2: Unrestricted Co-integration Rank Test (Trace)

Hypothesized No of (ECS)	Eigen Value	Trace Statistic	0.05 Critical value	Probability **
None *	0.858285**	66.43394	46.23142	0.0001
At most 1	0.642696	34.99174	40.07757	0.1675
At most 2	0.537427	26.21233	33.87687	0.3080
At most 3	0.453969	20.57273	27.58434	0.3029
At most 4	0.281824	11.25536	21.13162	0.6218
At most 5	0.219394	8.421266	14.26460	0.3375
At most 6	0.055462	1.940034	3.841466	0.1637
At most 7	0.003489	1.230065	1.946523	0.1126

Note: ** denote rejection of null hypothesis at 5% significant level based on Mackinnon-Haug-Michelis (1999) P. Values

Source: Authors Computation (2019) from E-Views 10

Long-run response of food supply to foreign trade

The equilibrium relationship between the variables in the long run motivated the construction of the Error Correction Mechanism (ECM) .The application of ECM was necessary because of the existence of co-integration among variables. The result of ECM is presented in table 3. The result shows the long run impact of foreign trade on food supply, the coefficient of determination (R^2) of the model was 0.731 indicating that 73.1% variation in food supply was explained by food supply in the previous year, export in the previous year, imports in the previous year, household consumption expenditure in the previous year, and taxes in the previous year. The result further showed that in the long run, export and import significantly affected food supply. Specifically, the coefficient of export (-0.39) is negative and significant at 1% level of probability and this is in line with the a priori expectations. This implies that a unit increase in export food will decrease the food supply by 0.39. The negative long run effect of export on food supply implies that export outflow of food reduced food supply. This decrease in food supply could be due to attractive macroeconomic policy of the government that encourages domestic food production for food sufficiency which, in turn, can be exported to trading partners and this leads to rejection of null hypothesis 1. This means that the Federal Government has taken policy measure that encourages local production like the Agricultural Transformation Agenada (ATA) and ADPs. This is at variance with the findings of Uremadu and Onyele (2010) who found positive agricultural exports are insignificant on growth of the economy in Nigeria. But the findings of Abolagba *et al.* (2010) and Gbaiye *et al.* (2011) are in consonant, who found that agricultural exports has positive impact on the Nigeria economy

The coefficient of import (0.079) is positive and significant at 5% level of probability. This implies that for a unit increase in import will increase food supply by 0.079 and this is also in line with a priori expectations. This is could be due to policy measures taken by government to augment food supply in the country to meet the total food demand with the increasing rapid growth of the country population wise thereby allowing food import from other countries. This leads also to rejection of null hypothesis 2. This is in line with the findings of Anowor and Agbarakwe (2014) who found that volume of food import increases food supply in the country.

The coefficient of tariffs on imported food is negative (-0.189) and significant at 1%

probability level and it is in line with a priori expectations. This implies that a unit increase in tariffs on imported food will decrease food supply by 0.189 and this could be due to macroeconomic policy of the government to reduce imported foods and as tariff increases it affect the rate imported food by importers.

The coefficient of exchange rate is negative (-0.46) and it is line with the a priori expectations. This means a unit increase in exchange rate will decrease food supply by 0.46. Most persons export food which thereby affects food supply in the country as substantial domestic production is exported. This is due to monetary policy of government that allows for easy export thereby causing deficit in food supply in the country. This is in line with findings of Nwalem (2019) who found exchange to have negative impact on output it decrease the output of selected crops in Nigeria. However, it is different from findings of Aliyu (2011) who found that appreciation of exchange rate exert positive impact on real economic growth in Nigeria, Edwards and Levy-Yeyati (2003) found evidence that countries with more flexible exchange rates grow faster; Anowor and Agbarakwe (2014) that showed 0.3 percentage increase in the RG

Table 3 : Long – run response of food supply to foreign trade

Variables	Coefficient	Standard error	t-statistics
Food supply(-1)	1.000	-	-
Exports (-1)	-0.397803***	0.05664	-7.02
Import (-1)	0.079694***	0.03755	2.122
Tariffs (-1)	-0.189500***	0.03650	5.19240
Exchange Rate (-1)	-0.467296***	0.05416	-8.62870
Constant	-36.92567	-	-

Note: (***) denote rejection of null hypothesis at 1% and 5% significant level respectively.

Source: Author's Computation (2019) from Eviews 10

The short run result from the Error Correction Model (ECM) is presented in the table below 4. The Error Correction Term (ECT) is -0.0672 is statistically significant and negative which indicates a moderate speed of adjustment of variable towards equilibrium. This

implies that 6.7% deviation from equilibrium position is corrected within the year. It further implies that it takes more than 13 years before deviation from equilibrium position in food supply is fully corrected

The coefficient of determination R square is 0.731 indicating that 73.19% of the variation in food supply was explained by food in the previous year, export in the previous year, import in the previous year, tariffs on food imports on previous year, exchange rate on previous year, government spending on agriculture in the previous year, household consumption expenditure in previous and taxes in previous year. Change in coefficient of export is negative (-0.028) and significant at 1% probability level. This means that for deceleration in export leads to deceleration on food supply by 0.028 in short run.

Change in coefficient of import is positive (0.0369) and significant at 10% probability level. This means that acceleration in import will also lead to acceleration in food supply by value of the coefficient 0.0369. The change coefficient of tariffs on import is negative (-0.000392) and significant at 1% probability level. This means that a deceleration in change on import on tariffs will lead to deceleration in food supply by 0.000329.

The change in coefficient of exchange rate is positive (0.007402) and significant at 1% probability level. This means that as acceleration in exchange rate increases, it will lead to acceleration of food supply by 0.0074. This is line with the study of Oyakhilomen *et al.* (2014) who found that excessive devaluation of the Naira could be detrimental to the contribution of agriculture to the gross domestic product through its inflationary effect on trade (agricultural input importation and agricultural product exportation) and investment in the agricultural sector of Nigeria's economy. This result is also consistent with the work of Goldstein (2002), who found that an attempt to over-stimulate the economy by expansionary monetary policy or currency devaluation will result in higher rate of inflation, but no increase in real economic growth.

The change in coefficient of government spending on agriculture is negative (-0.20437) and significant at 1% probability level. This means deceleration in Government spending will lead to deceleration in food supply by the value of the coefficient - 0.173 which is different from a priori expectations. This is different from the finding of Onakoya and Somole (2013) who found that public expenditure positively have adverse effect on agricultural output in a short run. The coefficient of taxes is positive (0.043780) and

statistically insignificant. This means that either acceleration or deceleration in taxes has no significant influence on the acceleration or deceleration in food supply. Household consumption expenditure have negative coefficient of (-0.17) and significant at 5% probability level. This means that deceleration in household consumption expenditure leads to deceleration in food supply. This agrees with finding of Thomas and Canagarajah (2002) who found that decreased private consumption increased RGDP by 2 percent.

Table 4: Short – run response of food supply to foreign trade

Error Correction:	D(SER12)	D(SER09)	D(SER10)	D(SER11)	D(SER13)
CointEq1	-0.67211	-3.553377	-1.786804	-1.865580	0.823448
	(0.17221)	(0.80843)	(1.45613)	(1.25309)	(0.60353)
	[-3.90280]	[-4.39541]	[-1.22709]	[-1.48878]	[1.36438]
D(FOOD SS(-1))	-0.153258	-2.690824	3.649370	0.386797	-1.537823
	(0.08864)	(1.21408)	(2.18678)	(1.88186)	(0.90637)
	[-3.1513]	[-2.21635]	[1.66883]	[0.20554]	[-1.69668]
D(FOOD SS(-2))	-0.107874	2.268921	0.827728	-0.367326	0.754704
	(0.15702)	(1.11897)	(2.01548)	(1.73445)	(0.83537)
	[-0.68700]	[2.02768]	[0.41069]	[-0.21178]	[0.90344]
D(EXPORT(-1))	- 0.02837	0.424056	0.148492	0.368580	-0.396968
	(0.05002)	(0.21396)	(0.38538)	(0.33165)	(0.15973)
	[5.67172]	[1.98193]	[0.38531]	[1.11136]	[-2.48521]
D(EXPORT(-2))	-0.012491	0.056705	0.527869	0.205828	-0.220040
	(0.02840)	(0.20241)	(0.36458)	(0.31375)	(0.15111)
	[-0.43976]	[0.28015]	[1.44787]	[0.65603]	[-1.45615]
D(IMPORT(-1))	-0.03697	-0.194063	-0.213096	-0.129026	-0.101673
	(0.02060)	(0.14680)	(0.26441)	(0.22754)	(0.10959)
	[-1.79466]	[-1.32197]	[-0.80593]	[-0.56704]	[-0.92774]
D(IMPORT(-2))	-0.025186	0.245264	0.119770	-0.189342	0.081486
	(0.01864)	(0.13282)	(0.23923)	(0.20587)	(0.09916)
	[-1.35134]	[1.84662]	[0.50065]	[-0.91971]	[0.82181]
D(TARIFFS(-1))	0.000392	0.587188	0.204761	-0.509545	0.003802
	(0.00114)	(0.14316)	(0.25785)	(0.22190)	(0.10687)
	[2.9227]	[4.10174]	[0.79411]	[-2.29632]	[0.03557]
D(TARIFFS(-2))	-0.011007	0.141634	0.075181	-0.065944	0.053326
	(0.00400)	(0.14030)	(0.25270)	(0.21747)	(0.10474)
	[-2.75175]	[1.00953]	[0.29751]	[-0.30324]	[0.50913]
D(EXCH RATE(-1))	0.007402	-0.790843	0.213026	-0.743366	0.187332
	(0.05310)	(0.37843)	(0.68162)	(0.58658)	(0.28252)
	[0.13939]	[-2.08980]	[0.31253]	[-1.26729]	[0.66308]
D(EXCH RATE(-2))	- 0.204347	-1.199369	-1.689815	-0.412708	0.306400
	(0.06136)	(0.43727)	(0.78761)	(0.67779)	(0.32645)
	[3.33026]	[-2.74285]	[-2.14551]	[-0.60891]	[0.93860]
C	1.670320	-37.25856	-8.526906	-15.26185	4.560996
	(1.41300)	(10.0694)	(18.1368)	(15.6079)	(7.51730)
		-	-	-	

	[1.18211]	[3.70019]	[0.47014]	[0.97783]	[0.60673]
GOVT SPENDING	- 0.17330	2.047863	0.733385	-0.644419	-0.198619
	(0.006099)	(0.43362)	(0.78103)	(0.67212)	(0.32372)
	[-2.84814]	[4.72274]	[0.93900]	[-0.95878]	[-0.61356]
TAXES	0.043780	0.251839	0.366506	-0.363727	-0.101821
	(0.04715)	(0.33603)	(0.60525)	(0.52085)	(0.25086)
	[0.92847]	[0.74946]	[0.60555]	[-0.69833]	[-0.40589]
@MOVAVC((GOVT SPENDING(-2)),5)	-0.256339	-0.496395	-0.442638	1.208091	0.109067
	(0.07779)	(0.55434)	(0.99846)	(0.85924)	(0.41384)
	[-3.29535]	[-0.89547]	[-0.44332]	[1.40599]	[0.26355]
@MOVAVC((TAXES (-2)),5)	0.015815	-0.366505	-0.179103	0.662374	-0.230900
	(0.05492)	(0.39136)	(0.70491)	(0.60662)	(0.29217)
	[0.28798]	[-0.93649]	[-0.25408]	[1.09190]	[-0.79029]
R-squared	0.731218	0.880750	0.612471	0.476248	0.596800
Adj. R-squared	0.479235	0.768954	0.249163	-0.014770	0.218800
Sum sq. resids	0.044194	2.244305	7.281116	5.392190	1.250836
S.E. equation	0.052556	0.374525	0.674589	0.580527	0.279602
F-statistic	2.901854	7.878151	1.685817	0.969919	1.578835
Log likelihood	59.95253	-2.888590	-21.71881	-16.91349	6.464742
Akaike AIC	-2.747033	1.180537	2.357425	2.057093	0.595954
Schwarz SC	-2.014165	1.913405	3.090293	2.789961	1.328822
Mean dependent	0.057356	0.241941	0.130668	-0.033206	0.195589
S.D. dependent	0.072828	0.779169	0.778514	0.576287	0.316344

Determinant reside covariance (dof adj.)	1.20E-06
Determinant resid covariance	3.76E-08
Log likelihood	46.50215
Akaike information criterion	2.406116
Schwarz criterion	6.299477

Note: Food SS = Food Supply, Exch rate = exchange rate
Source: Author's computation (2019) from e-views 10

Stability diagnostics

Figure 2 presents the result for structural break of the model using the CUSUM of squares test. The CUSUM of square test line is situated between the gridlines, this implies that it lies between two standard deviation or 95% confident interval level. The graph show that the fitted model is stable and relevant for policy direction. The residual test for heteroscedasticity with chi-square value of 89.27 and probability value of 0.78 which means the model is homoscedastic. The autocorrelation test for fitted model was confirm

using the Breusch-Godfrey LM test for serial correlation. The F statistics for Breusch-Godfrey LM test is 0.65 and its probability value 0.88. This implies that the estimated model is not suffering from serial correlation. Under the null hypothesis that the residuals are normally distributed. From the regression model, the joint JB 86.16 (0.060) which is a proxy for stochastic error does follow a normally distributed.
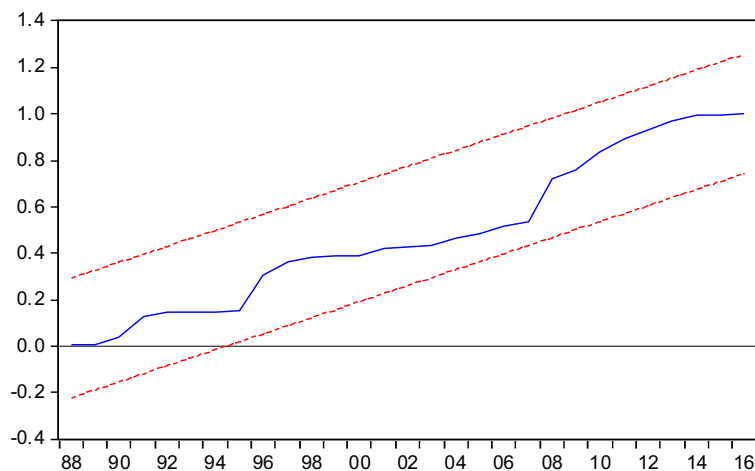

Figure 11: Chow test for structural break

Conclusion and Recommendations

This study was carried out to analyze effect of foreign trade on food supply in Nigeria and its implication for household consumption expenditure. The study showed the direction of growth of food supply, export, import and household consumption expenditure all accelerated over the period under review. The study also showed that export and import had significant impact on food supply in Nigeria in the long and short run, respectively. The result further showed tariffs on import of foods and exchange rate had negative relationship with food supply in the long run. Furthermore, the result revealed that change in deceleration of exports lead to deceleration in food supply in Nigeria in the short run and acceleration in food imports lead to acceleration of food supply in Nigeria in the short run. The short run effect of tariffs on foods import and exchange rate leads to acceleration of food supply in Nigeria. The short run effects of government spending lead to decreased food supply.

Based on the findings of the study, it is recommended that:

Import tariffs incentives should be provided to attract food industries to import food since

food import augments food supply in the country and encourage trade between Nigeria and other countries. Exchange rate should be reevaluated to encourage local producers to exports foods where they shall have premium for their produce. Government should impose a stringent policy such that her spending on agriculture will be accessed by farmers to boost local production making food readily available locally.

References

Abolagba, E.O., Onyekwere, N.C. and Agbonkpolor, B.N. (2010), Factors Affecting Agricultural Exports in Nigeria 1970-200 with Reference to Cocoa and Rubber.. *Journal of Human Ecology*, 29(3):181-186

Adeleye, J.O., Adeteye, O.S. and Adewuyi, M.O. (2015). Impact of international trade on economic growth in Nigeria (1988-215). *International Journal of Financial Research*, 6(3):12-15

Anowor, O. and Agbarakwe, H. U. (2014), Foreign Trade and Nigeria. *Journal of Development Societies,* 5(6):77-82

Chang, R., Kaltani, L., and Loayza, N.V.(2009). Openness can be good for growth: the role of policy complementaries. *Journal of Development Economic, 90(1): 33–49.*

Dickey, D. and Fuller, W.A. (1980). Distributions of the estimators for autoregressive time Series with a Unit Root. *Journal of the American Statistical Association.* 74(366): 427-431.

Edward S. and Levy – Yeyati E. (2003) „flexible Exchange Rates As Shock Absorber". NBER working paper

Engle, R. Granger, C. (1987), Co-integration and Error Correction: Representation, Estimation and Testing. Journal of Econometrica, 55(2):251-276

Ezike, I. and Amah, P. (2011) Macroeconomic impact of trade on the Nigerian growth: An empirical evaluation. *Research Journal of Business management and Accounting*, 1(4): 079-083.

Federal Ministry Agriculture and Rural Development (FMARD 2011): www.federalministryofagriculture: Bulletin on agricultural trade policies. Retrieved 12:05:2018 10:25am.

Federal Ministry of Agriculture and Rural Development (2011), Agricultural Transformation Agenda: We Will Grow Nigeria's Agricultural Sector, Abuja

Food and Agriculture Organization (FAO, 2012). The State of Food Insecurity in world. Economic growth is necessary but not sufficient to accelerate reduction of hunger and malnutrition. Rome, FAO.

Food and Agriculture Organization (FAO, 2013). www.fao.online.org retrieved 20/05/2018, 11.05am.

Food and Agriculture Organization (FAO, 2015): The State of Food Insecurity in the World. 2014, FAO, Rome.*from the Brazilian Agro-IndustrialEconomy, 1960-1995, Nebula, 4(1), pp.* 184-194.

Gbaiye, O., Adeyemi O., Osabuohein, E. and Olugbire (2011), Exports and Economic Growth Nexus. Development Review, Pakistan.

Gbosi, A. N. (2003): Fundamentals of International Economics and Finance. Pack

Publishing, Abakiliki.

Goldstein, M. (2002). Managed floating plus: Institute for international economics.Policy analysis in international economics.*CBN Journal of Applied Statistics, 5(2):16-17*

Iyoha, M.A &Adamu (2011): The impact of external trade on economic growth in Nigeria: A Road map for the twenty –First Century. West African Social and Management Sciences Review, 2(1): 1-30.

Johansen, S. (1991). Estimation & Hypothesis Testing of Cointegration Vector in Gaussian Vector Autoregressive Models. Econometrica. 59(6): 1551-1580.

Langdana, F. and Murphy, P.T. (2014). International Trade and Global Macropolicy. Springer Science+Business Media. New York. 13.

Muhammad, M.Y. and Benedict, N.A. (2015). The impact of international trade on economic growth in Nigeria: 1981 – 2012. *Journal of Economics*, 2(3):6-7.

Nwalem, M. P. (2019 Analysis of the Effects of Private Investment and Exchange Rate on the Output of Selected Crops Output in Nigeria. Ph.D Thesis Submitted to Department of University of Agriculture, Makurdi, Benue State, Nigeria.

Obiora, K.I. (2009). "How much do trading partners matter for Nigeria's growth? A contribution to the debate on decoupling and spillovers. *Journal of Economic and Monetary Integration,* 9(1)106-110.

Ogen, O.(2007),The Agricultural Sector and Nigeria Development: A Comparative Perspectives from Brazilian Agro-industrial Economy, 1960-1995.

Olaniyi, E. (2011). Food Insecurity: Implication for Nigeria and the World at large. Department of Economics, University of Lagos. 77.

Omoju, O.,andAdesanya, O. (2012). Does trade promote growth in developing countries? Empirical evidence from Nigeria. *International Journal of Development and Sustainability,* 1(3) 16-18.

Onakoya A. B. and Somole, R. O. C. (2013) The impact of public capital expenditure on economic growth in Nigeria, *Global Journal of Economics and Finance,* 1(2):1-11.

Onwuka, I.O. (2017). Reversing Nigeria's food import dependency. Agricultural transformation. *Agricultural Transformation Development*, 2(1):1-12.

Oyakhilomen .O., Falola .A. and Grace Z. R.(2014). Nexus of Exchange Rate Deregulation and Agricultural Share of Gross Domestic Product in Nigeria. *CBN Journal of Applied Statistics 5 (2).*

Ricardo, S. (1817). The Principle of Political Economy and Taxation. Academia Publishing.

Sabastine, O.U. and Kingsley, O.O. (2015). Impact of selected agricultural Exports on the growth of the domestic economy. *Academia Journal of Agricultural Research* 4(5)281-291.

Saheed, Z. S. (2014). Impact agricultural credit guarantee funds on domestic food supply in Nigeria. *British Journal of Economics, Management and Trade*, 4(8):1273-1284.

Tamba, N. A. A. (2017). Analysis of the nexus between agricultural commodity trade and agricultural growth in Cameroon:1970-2014. M.Sc. Thesis submitted in the Department of Agricultural Economics, Federal University of Agriculture, Makurdi-Benue State, Nigeria. 77.

Thomas, S. and Canagarajah, S. (2002), Poverty in Wealthy Economy. The case of Nigeria. IMF Working Paper No 2/114

United States Department of Agriculture (USDA, 2011): International Food Consumption Patterns 2010, Washington D.C.

Uremadu, S.O., Onyele K.O. and Ariwa, F.O. (2016). The impact of selected agricultural export in the growth of the domestic economy. *Prime Journal of Business Administration and*