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Faculty of Business and Economics

Effects of International Trade on the Development of Agriculture in Nigeria

Dissertation

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Abstract

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Historically, agriculture has dominated the economy of Nigeria. Even though crude oil accounts as the largest source of government revenues and budget financing, agriculture is still the backbone of Nigeria's growth and development. For instance, agriculture serves as a catalyst for employment, the largest non-oil exports, and a major contributor to real GDP. Thus, the importance of agriculture in the country cannot be overemphasised. Against this background, this present research determines both internal and external factors that are either contributing to or militating agricultural development in Nigeria, using OLS, Granger Causality, IRF and VDA approaches as well as descriptive techniques. The results suggest that agricultural export-led economic growth in Nigeria. Further results reveal that trade openness, exports, fertiliser application, area harvested, domestic consumption, world price and agricultural ODA explain the variation in agricultural performance in the country. Also, the results suggest an inverse relationship between the trade openness and economic growth as well as between openness, import, loans and agricultural performance in the country. Arguably, agricultural export could spur growth, but over-reliance on the processed imports as postulated by the dependency theories may hurt producers and the overall sustainable agricultural development in Nigeria.

Nigeria should take advantage of its tropical climates and wide areas of arable land in producing a broad range of agrarian commodities that it has a comparative for domestic consumption and export as postulated by trade theories. For Nigeria to protect and encourage small-scale producers and traders, and experience self-sufficiency, positive trade balance in food and agriculture, and overall agricultural development, large scale farming and agro-processing should be promoted while the imports of commodities that the country could cheaply produce should be discouraged. The country should also encourage a stable domestic and foreign investment in agriculture; provide critical infrastructure and modern farm technologies, educate producers and traders on food safety, international standards and requirements.

Key words: agriculture, comparative advantage, constraint, development, export, import, market access, performance

Abstrakt

Verter, N. Vliv mezinárodního obchodu na rozvoj zemědělství v Nigérii. Mendelova univerzita v Brně, 2014. Dizertační práce.

Zemědělství již historicky patří mezi dominantní odvětví v ekonomice Nigérie. Přesto, že v současnosti největším zdrojem vládních příjmů i rozpočtového financování je ropa, zemědělství stále tvoří páteř růstu a vývoje Nigérie. Například, právě zemědělství je rozhodujícím katalyzátorem pro oblast zaměstnanosti, tvoří největší podíl na vývozu komodit mimo ropu, je hlavním přispěvatelem k reálnému HDP. To znamená, že význam zemědělství pro další rozvoj této země nelze podceňovat. Právě v tomto kontextu je přínosem výzkum interních i externích faktorů, které determinují resp. přispívají k rozvojí zemědělství v Nigérii a jejich hodnocení pomocí OLS, Granger Causality, IRF a VDA přístupů, stejně jako využití popisné techniky. Výsledky výzkumu prokazují, že zemědělský export přispěl ekonomickému růstu v Nigérii. Podrobnější rozbor věnovaný souvislostem rostoucí otevřenosti obchodu, vývozu a domácí spotřeby, vývoji světové ceny, stejně jako změnám sklizňových ploch, používání hnojiv a ODA k zemědělství umožňuje vysvětlit rozdíly ve výkonnosti zemědělství v zemi. Výsledky výzkumu naznačují inverzní vztah mezi otevřeností obchodu a ekonomickým růstem, hodnotí důsledky otevřenosti, dovozu i financovámí na změny v samotném zemědělství. Nesporně, zemědělský export je předpokladem k urychlení růstu, druhou stránkou je však závislost na struktuře a míře dovozu z hlediska celkového udržitelného rozvoje zemědělství a pozice producentů v Nigérii.

V souladu s teoriemi agrárního obchodu by proto měla Nigérie využít tropického klimatu a rozsáhlých ploch orné půdy na výrobu široké škály komparativně výhodných agrárních komodit, pro domácí spotřebu i vývoz. Využít zejména podpory malovýrobců i obchodu pro posílení soběstačnosti s příznivým dopadem na obchodní bilanci v potravinách a rozvoj celého sektoru. Velké podniky a zpracovatele podpořit i z hlediska růstu konkurenceschopnosti na světovém trhu, což se promítne i v možnosti omezení dovozu levnějších komodit a agrárních produktů. V těchto souvislostech také podpořit stabilní domácí i zahraniční investice do zemědělství umožňující rozvoj kritické infrastruktury a moderních zemědělských technologií, rozvoj vzdělávání výrobců, zpracovatelů a obchodu v oblasti bezpečnosti potravin, mezinárodních norem a doporučení.

Klíčová slova: zemědělství, komparativní výhoda, rozvoj, omezení, export, import, přístup na trh, výkonnost

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LIST OF ABBREVIATIONS

ACGSF	Agricultural Credit Guarantee Scheme Fund
ACP	African, Caribbean and Pacific Countries
ADF	Augmented Dickey-Fuller Test
AfDB	African Development Bank
AfDF	African Development Fund
AMS	Aggregate Measurement of Support (in the Agreement on Agriculture)
AoA	Agreement on Agriculture
ASEAN	Association of Southeast Asian Nations
AU	African Union
AVE	Ad Valorem Equivalent
CAADP	Comprehensive African Agriculture Development Program
CBN	Central Bank of Nigeria
DDA	Doha Development Agenda
DR	Doha Round
EC	European Communities
ECOWAS	Economic Community of West African States
EU	European Union
EUROSTAT	Statistical Office of the European Communities
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	The Food and Agriculture Organization Corporate Statistical Database
FDI	Foreign Direct Investment
FMARD	Federal Ministry of Agriculture and Rural Development
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
ha	hectare
hg	hectogram
HS	Harmonized Commodity Description and Coding System
IDA	International Development Association
IMF	International Monetary Fund
IRF	Impulse Response Function
ITC	International Trade Centre
LDCs	Least Developed Countries
NAMA	Non-Agricultural Market Access
n.a	not available
NBS	National Bureau of Statistics
NEPC	Nigerian Export Promotion Council

n.e.s	not elsewhere specified
NTL	National Tariff Line
ODAA	Official Development Assistance to Agriculture
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Square Regression
PP	Phillips-Perron Test
PSE	Producer Subsidy Equivalent (Agriculture)
REER	Real Effective Exchange Rate
RTAs	Regional Trade Agreements
SAP	Structural Adjustment Programme
SDT	Special and Differential Treatment (for developing countries)
SITC	Standard International Trade Classification
SPS	Sanitary and Phytosanitary Measures
SSA	Sub-Saharan Africa
SSG	Special Safeguard (in Agreement on Agriculture)
TDMs	Trade-distorting Measures
ST	Special Treatment (in Annex 5, Agreement on Agriculture)
TFA	Trade Facilitation Agreement
TI	Transparency International
TPI	Trade Performance Index
TRQ	Tariff Rate Quota
UK	United Kingdom
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
URAA	Uruguay Round Agreement on Agriculture
USA	United States of America
VAR	Vector Autoregression
VDA	Variance Decomposition Analysis
World Bank	International Bank for Reconstruction and Development
WTO	World Trade Organization

1 INTRODUCTION

The rapid expansion of the movement of goods, services and capital across national borders, typical of the development for the last six decades has been reshaping the economic and political situations in many countries worldwide, partly due to foreign trade. While most countries across the continents have embraced foreign trade as a vehicle for growth and development (Frankel and Romer, 1999; Shirazi and Manap, 2005; Krugman, Obstfeld and Melitz, 2010; Todaro and Smith, 2015; WTO, 2015), others are still sceptical about it (Verter and Osakwe, 2015a).

World organizations, such as the World Bank, World Trade Organization (WTO), and scholars, especially agricultural economists opine that agricultural trade is a catalyst for growth, especially in developing countries where it is the largest source of foreign earnings and national incomes, and are poised to develop. Thus, they have some arguments in favour of trade, in general, and food and agricultural products, in particular. They argue that trade brings a broad variety of goods and services that spur choices of consumers in the countries involved (Verter and Bečvářová, 2014a; WTO, 2015). To some extent, trade maintains stable demand and supply that allows efficient exchanges and stimulate economic growth and development in countries (Stiglitz and Charlton, 2007; Krugman, Obstfeld and Melitz, 2010; Bečvářová, 2011; Erokhin, Ivolga and Heijman, 2014; Verter and Bečvářová, 2014a; Kang, 2015). Also, due to uneven distribution of land resources and the climatic conditions in countries and continents, it has made a trade in agricultural commodities in inevitable. Consequently, trade could either complement or supplement domestic production to the countries involved (FAO, 2003a).

Global trade in food and agricultural commodities continues to expand rapidly. However, the structure and pattern of trade varies significantly by product and by region (FAO, 2015). Undoubtedly, the integration of food and agriculture into the global trade have come with benefits and challenges to the countries involved. Advanced economies have greater market share in the world trade in agriculture than least developed countries (Smutka et al., 2015). This is partly because they have better modern technologies, processing and manufacturing industries and more access to finance.

Agricultural trade still faced stringent constraints in the global markets largely because of trade restrictions and other trade-distorting measures, such as market access, export competition, and

domestic support. These issues were first brought to the WTO negotiating table in the Uruguay Round (from 1986-1994) and the continued in the present Doha Round which started in 2001 (GATT, 1994; Anderson and Martin, 2005; Stiglitz and Charlton, 2007; McCally and Nash, 2007; Laborde and Martin, 2012).

The trends in international trade have remarkably risen since the creation of General Agreement on Tariffs and Trade (GATT), in 1948, and later the World Trade Organization (WTO) in 1995 as a body of trade negotiations, policies, and rules. Even though the WTO has made progress in the expansion of global trade through the reduction of trade restrictions, such as tariffs, quotas and subsidies, trade policies and rules still favoured mostly developed economies at the expense of the developing economies (Verter and Bečvářová, 2014a). Besides global trade issues, other issues also confront the agricultural development in the developing countries, such as Nigeria. Among other issues are inadequate modern farm inputs and technologies, limited access to finance, storage, and sound policies in the sector.

Nigeria is endowed with buoyantly abundant mineral resources and agricultural commodities. The country's major agro-based products, such as cocoa, yams, peanuts and palm kernel are yet to be fully developed for industrial and commercial purposes. Prior to the advent of crude oil in Nigeria in the 1960s, the country was dependent solely on the agriculture as the main source of foreign earnings and employment generation. Despite the importance of agriculture to the country, its production and exports have steadily declined since the country started lifting crude oil, especially during the oil boom in the 1970s. Consequently, agriculture is no longer the largest source of foreign revenues, as crude oil is presently playing the role. Partly due to the neglect of the agriculture, poverty and hunger persist in Nigeria. Even though Nigeria is an agrarian nation, the country was among the countries reported with worst in food security challenges in the world in 2015 (Economist Intelligence Unit, 2015). Notwithstanding, Nigeria still has a chance of rapidly benefiting from export trade in agricultural products for development.

Nowadays, despite the fact that crude oil and gas have accounted for over 80% of Nigeria's exports (mono-economy), agricultural production is still the main source of income, food security employment and livelihood for the rural dwellers. In other words, over 50% of the Nigerian population engaged in the agricultural activities for food and market. Until recently, agriculture accounted for a 40 % contribution to the real GDP for the past three decades (currently over

20%). Thus, the importance of agriculture to the nation's socioeconomic development cannot be overemphasised.

Because of the recent increase in oil production in some importing countries, such as the USA, Ghana and Tanzania coupled with crude oil price volatility in the global market, the demand for Nigeria's crude oil has dropped significantly. Moreover, the financial stability of the Africa's largest economy has been threatened as the country's economy is currently vulnerable to the global oil price shocks and the patterns of volatility. The present shocks in the shortfall of government revenues have become imperative for the country to look beyond oil production and exports for survival, notably, agriculture.

Some scholars have attempted to determine the influence of agrarian foreign trade on the economic growth (Eicher, 1967; Marshall, Schwart and Ziliak, 1988; UNEP, 2002; Anowor, Ukweni and Martins, 2013; Bbaale and Mutenyo, 2011; Gbaiye et al., 2013; Ijirshar, 2015; Ojo, Awe and Ogunjobi, 2014; Onogwu, 2014) and agricultural production (Eicher, 1967; Abolagba et al., 2010; Daramola, 2011; Onogwu, 2014; Kareem et al., 2013) in Nigeria. However, empirical evidence from those studies so far has remained inconclusive or rather contradictory. Also, none of these research studies have fully used all the variables of interest in this present dissertation to determine the impacts of trade on the development of agriculture in Nigeria. Also, research on this issue is still scanty, thus, the significance of this study.

Given that studies on this issue is scanty and the urgent need for economic diversification in Nigeria, it is inevitable that more research efforts are made to further study and provide relevant information for the much-expected policy review that would drive agricultural performance in the country. For these reasons, it has become imperative to examine the influence of trade on the performance of agriculture, in recent decades, and provide new policy thrust for agricultural development in Nigeria.

2 AIM AND METHODOLOGICAL APPROACH

The objective of the dissertation is to assess the effects of international trade on agricultural production in Nigeria. The role of the agrarian sector in the state's economy will be discussed, with a special focus on the current situation and the real possibility of the involvement of producers and processors in foreign trade in agricultural commodities in agribusiness environment.

To achieve this main aim, the following approach has been specified:

(1) The starting point of the whole solution is the **theoretical background** related to the international trade issues. Specifically, the dissertation surveys both traditional and modern trade theories, such as mercantilism, absolute advantage, comparative advantage, factor endowment, country similarity theory, national competitive advantage, gravity model, intra-industry trade, and attempts to link both trade theories with agriculture.

In this context, it is necessary to analyse the world trade negotiations, rules, agreements and their implications for the current model of agriculture. A subchapter in this study is dedicated to assessing global trade rules, negotiations and agreements on agriculture within the framework of GATT/WTO. Given that Nigeria is a member of the WTO, and as an agrarian country which agriculture dominates non-oil exports, agreements that were made or will be made at the WTO may well directly or indirectly impact the performance of the sector in the country.

Relevant research questions are as follows:

- What are the agreements, achievements and challenges of multilateral trade negotiations (MTN) on agriculture within the framework of GATT/WTO?
- Is the import of agricultural products a threat to domestic production or enhancing competition and encouraging production efficiency in Nigeria?
- What are the constraints to agricultural production and exports in Nigeria?
- Is international trade in agriculture, stimulating agricultural performance and economic growth in Nigeria? If yes, what are the key determinants?
- Why is Nigeria a net importer of food? Any implications for trade balance?
- Is trade liberalization included trade in agricultural commodities?

(2) In the framework of **own research work**, these and other questions are answered in the subsequent chapters in this dissertation. Their solution requires, in particular:

- ✓ to examine the importance of agriculture to the economy of Nigeria
- ✓ to determine the effect of foreign trade on agricultural productivity in Nigeria. Some external factors that appear to drive agricultural development will be investigated
- ✓ to examine both internal and external constraints to agricultural exports.
- ✓ to analyse the commodity value chain and specify the challenges faced by the farmers including market access.

The dissertation is oriented to the analysis of international trade on agricultural productivity and economic performance in Nigeria. Parts of the results from the data analysis are compared with selected countries, especially from the African sub-region. Finally, recommendations are made to take advantage and explore her potentials in the opportunities inherent in the present multilateral trading system and bring about sustainable agricultural development.

2.1 Sources of Materials

For the purpose of this study, mostly secondary data such as books, journals, statistical bulletins, articles, and other sources are used. Specifically, the data was obtained from reliable and reputable government and world organization agencies, such as Central Bank of Nigeria (CBN) Statistical Bulletins; United Nations Conference on Trade and Development (UNCTAD) annual statistical reports; Food and Agriculture Organization of the United Nations (FAO) annual statistics; International Monetary Fund (IMF); International Trade Centre (ITC); World Bank (WB) World Development Indicators; World Trade Organization (WTO); Organization for Economic Cooperation and Development (OECD); National Bureau of Statistics (NBS); and Statistical Office of the European Union (EUROSTAT).

It is worth to mention that, because the researcher is a local farmer and trader, some views in this dissertation are based on his personal experience. Also, in September 2014, the researcher personally, interviewed some local farmers in some rural areas of Benue State, Nigeria. During the interview, the researcher went to their farms to observe the situation in the areas.

Annual time series data for the period between 1967 and 2013 for the empirical analysis were obtained from the sources mentioned above. The time-frame for the empirical analysis is selected

because it appears to reflect the trends in the relationship between the variables of interest. Also, due to data constraint, the author could not find statistical data in all the variables of interest within and beyond the timeframe. All the statistical data in the models are run using statistical software, such as EViews and Gretl.

Although much information is used in this work, the researcher could not get much data on some relevant indicators that may have made this dissertation more comprehensive. As a result, other variables that are likely to have impacts on agricultural productivity in the country were not incorporated in the models as well as in the descriptive analysis. Also, some data obtained from the world organizations are estimated, and the data differs considerably among these organizations. Consequently, some of the findings in this work may not reflect the realities in Nigeria and elsewhere in this study.

2.2 Structure of the Work

Chapter three surveys both traditional and modern trade theories, such as mercantilism, absolute advantage, comparative advantage and factor endowment, country similarity theory, national competitive advantage, gravity model, and intra-industry trade. Some theories of economic growth are briefly surveyed. Also, the chapter attempts to link both trade theories to agriculture. Agribusiness in the current model of agriculture is investigated. The chapter assesses the WTO AoA from the Uruguay to the present Doha Rounds. Finally, some empirical evidence related to the present research is surveyed to gain more knowledge and the direction of the study.

Chapter four presents the position of agricultural production in Nigeria: Prospects and challenges. It also highlights the importance of agriculture in the country. Nigeria's socioeconomic, political and geographical profile is presented in the beginning of this chapter to partially understand the strength, weakness, opportunities and threats to agricultural development.

Chapter five deals with Nigeria's foreign trade in agricultural products and inputs. Agricultural trade policies are briefly assessed. Prospects and structures of trade are highlighted. Some agricultural trade data are compared with selected countries. Finally, the chapter also assesses some constraints to trade in agriculture in Nigeria.

Chapter six attempts to verify some external and internal determinants of agricultural performance in Nigeria. Specifically, the chapter: assess internal determinants of crop production,

the effect of agricultural trade on economic growth; and determinants of trade on agricultural production. The empirical findings are compared with the available statistical data (practical) as well as with the conclusions from the previous studies related to the current investigation.

Finally, **Chapter seven** concludes the study with a summary and conclusions. The findings of the study are summarized based on the relevant research questions for a better understanding.

2.3 Model Specification

Given that the theme of the research is about agricultural development, and crops account for over 80% of total production, it is important *to determine the effects of domestic factors on crop production in Nigeria***.** Therefore, crop output is captured as a dependent variable, whereas, fertilizer, land, loans, and producer price are used as explanatory variables as follows:

$$QCP = F\ (FC, ACL, AL, PPI) \quad (1)$$

Thus, model 1 is then mathematically specified to include log and error term as follows:

$$lnQCP = \beta_0 + \beta_1 lnFC + \beta_2 lnACL + \beta_3 lnAL + \beta_4 lnPPI + \varepsilon \quad (2)$$

Where;

lnQCP denotes the natural log of the annual quantity of crops produced in Nigeria, measured in tonnes. *lnFC* stands for the natural log of fertilizer consumption, measured in tonnes. Fertilizer application on farms is among the paramount factors of agricultural production. Given that soil has lost it manure, the application of fertilizer is expected to improve total agricultural output. *lnACL* is the natural log of agricultural-cultivated land, measured in hectares *(ha)*. The land is another primary factor of agricultural production. Nigeria has a vast agricultural land area. It is assumed that if agricultural land is fully utilized for production, total quantity of agricultural output will be increased. *lnAL* is the natural log of commercial loans to agriculture (in Nigerian currency, Naira), captured for capital. It is the amount of guaranteed loan received by farmers under the agricultural credit guarantee scheme Fund (ACGSF). *lnPPI* denotes the natural log of the producer price index, captured for an annual change of farm gate prices. It is the annual changes in prices received by farmers for primary agricultural commodities as collected at the first point of sale, while $\beta_1, \beta_2, \ldots\ldots \beta_4$, are coefficients of each variable in the model. Finally, ε represents the error term. All the explanatory variables in the model are expected to have a positive effect on crop production in Nigeria.

To determine if agricultural export- led economic growth in Nigeria, the real gross domestic product is being explained by the agricultural exports, trade openness in agricultural commodities, and real effective exchange rate. The model is specified as follows:

$$\text{RGDPG} = \text{F (AX, ADO, REER)} \quad (3)$$

Thus, model 3 is then mathematically specified to include log and error term as follows:

$$RGDPG = \beta_0 + \beta_1 AX + \beta_2 ADO + \beta_3 REER + \varepsilon \quad (4)$$

Where;

RGDPG denotes the Real Gross Domestic Product growth (%), proxied for economic growth. In this article, economic growth is mainly used in place of real GDP growth rate. *AX* stands for the agricultural export quantity index (2004-2006 = 100). FAO defines agricultural export quantity index as an aggregate agricultural and aggregate food product which represent the changes in the price-weighted sum of quantities of commodities traded between countries. *ADO* is the agricultural degree of openness [(agricultural export + agricultural import)/nominal GDP]. It is also called agricultural trade-to-GDP ratio or agricultural trade openness ratio, measured for the integration of agricultural trade into the global economy. *REER* is the real effective exchange rate index (2010 = 100). *REER* is the nominal EER (a measure of the value of a national currency against a weighted average of several foreign currencies) divided by a price deflator. An increase in REER implies that exports become more expensive than imports. Therefore, an increase indicates a loss of trade competitiveness (World Bank, 2015). All the explanatory variables in the model are expected to have positive impacts on economic growth in Nigeria.

To determine the effects of trade on total agricultural production in Nigeria, the quantity of domestic agricultural products (the dependent variable) is being explained by the volume of agricultural exports, volume of agricultural imports, the world price of agricultural primary products, trade openness, FDI and ODA as follows:

$$\text{AP} = \text{f (AX, AM, WP, ADO, FDI, ODAA)} \quad (5)$$

Thus, model 5 is then mathematically defined to include log and error term as follows:

$$AP = \beta_0 + \beta_1 lnAX + \beta_2 lnAM + \beta_3 lnWP + \beta_4 lnADO + \beta_5 FDI + \beta_6 ODAA + \varepsilon \quad (6)$$

Where:

AP is the net agricultural production index; the production index is a measure of agricultural development. An increase in the index signifies the development of agriculture in an economy. FAO's index of agricultural production shows the relative level of the aggregate volume of agricultural production for the individual year in comparison with the base period 2004-2006. *AX* is the volume of agricultural exports in Nigeria. An increase in agrarian exports may well trigger demand for the available output in the country for exports. A prior expectation is for outputs and exports to cause each other to change positively. *AM* is the volume of agricultural imports. Given that smallholder producers characterize agricultural production in Nigeria, their costs of production is always high as they cannot produce in large quantities to enjoy economies of scale. An increase in imports may hinder their production as they are not likely to favourably compete with their foreign competitors regarding price, quantity and quality. *WP* is the world price of raw agricultural products. An increase in world prices of agricultural products, especially in primary commodities, such as cocoa beans, sesame seeds are likely to stimulate exports, which might, in turn, encourage production. *FDI* is the growth rate (%) of foreign direct investment, proxied by foreign investment in agriculture. Until recently, the inflows of *FDI* in Nigeria largely concentrated in the oil sector. However, the investment of multinational corporations into agriculture, especially firms that use agrarian products as inputs has increased in recent years. By implication, *FDI* serves as an important driver for domestic enterprise and agribusiness development in the agrarian recipient countries. *ODAA* is the growth rate (%) of official development assistance to support agricultural production for food security, and the general wellbeing of producers in Nigeria (agricultural ODA). All the variables (except agricultural import) in the model are expected to have positive effects on agricultural production in Nigeria.

In the light that cocoa is the main non-oil foreign exchange earner and the leading agricultural export product in Nigeria, this research also attempts *to determine the effects of trade and other factors on cocoa production* in the country. The general form of the estimated model is specified as follows:

$$QCP = f\ (QCX, CWP, OPEN, ACH, CYIELD, DCC) \quad (7)$$

Thus, model 7 is then mathematically defined to include log and error term as follows:

$$lnQCP = \beta_0 + \beta_1 lnQCX + \beta_2 lnCWP + \beta_3 lnOPEN + \beta_4 lnACH + \beta_5 lnYIELD + \beta_6 lnDCC + \varepsilon \quad (8)$$

Where;

lnQCP is the natural log of the annual quantity of cocoa bean production (tonnes), it is the raw cocoa bean output. *lnQCX* represents the natural log of the raw quantity of cocoa export (tonnes). *lnCWP* stands the natural log of the world price of cocoa beans; it is the average daily cocoa bean prices New York/London (US ¢/lb.). Given that over 50% of cocoa output is exported annually, an increase in export would stimulate producers to produce as the demand for the output might increase. *lnOPEN* denotes the natural log of trade openness index ((Exports+ Imports)/Nominal GDP)*100), is an indicator of free trade. *lnACH* denotes the natural log of the area of cocoa harvested; it is the area from which a cocoa crop is gathered, this variable is captured for the farm size of the cocoa crop. *lnCYIELD* is the natural log of cocoa yield per hectare, measured as kilograms per hectare (hg/ha) of harvested land of cocoa bean in Nigeria. *lnDCC* is the natural log of the natural log of domestic cocoa consumption (tonnes). A priori expectation is for all the variables to have positive signs. In other words, all the explanatory variables are expected to have positive effects on cocoa production in Nigeria. Even though the aim of this part of the research is centred on trade and cocoa bean production, area harvested, yield per hectare and domestic consumption are also included in the model because they seem to play a role in the variation of annual cocoa output in Nigeria and elsewhere the crop is grown.

To avoid reporting spurious regression outcomes, some models, such as Augmented Dickey-Fuller (ADF) coined by Dickey and Fuller (1979), while Phillips-Perron (PP) coined by Phillips and Perron (1998) for testing of a unit root in a time series data are used. The standard ADF test is carried out by estimating after subtracting from both sides of the equation:

$$\Delta y_t = \alpha y_{t-1} + x_t'\delta + \varepsilon_t \tag{9}$$

The null and alternative hypotheses are written as:

$$H_0: \alpha = 0 \ , \ H_1: \alpha < 0 \tag{10}$$

Similarly, Phillips–Perron test involves fitting the regression as follow:

$$y_i = \alpha + \rho y_{i-1} + \epsilon_i \tag{11}$$

The unit root test determines whether the series is stationary at the level, first or second difference. Unlike ADF, the PP test does not require that the ARIMA process is specified and would, hence, be less prone to the model misspecification than the ADF stationarity test. Also, the PP stationarity test corrects for serial correlation in a non-parametric fashion.

Also, Granger causality, Impulse Response Function (IRF) and Variance Decomposition Analysis (VDA) tests will be run after unit root tests are carried out in this study. Before the Granger causality, IRF and VDA approaches, the unrestricted vector autoregression (VAR) model will be performed. The VAR model is typically used for forecasting systems of interrelated multivariate time series data and for analysing the dynamic impact of random disturbances to the system. The mathematical representation of a VAR is:

$$y_t = A_1 y_{t-1} + \ldots + A_p y_{t-p} + \beta x_t + \varepsilon_t \tag{12}$$

Where;

y_t is a k of vector of endogenous variables, x_t is a d vector of exogenous variables, while $A_1, \ldots A_p$ and B are matrices of coefficients to be estimated in the model, and ε_t is a vector of unobservable or white noise. The most common approach for testing if there is a causal relationship between two variables is Granger causality. The model was proposed by Granger (1969) to answer the question of whether x causes y and see how much of the current y could be explained by previous values of y and then to see whether adding lagged values of x could improve the explanation. The mathematical representation of Granger causality is:

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \ldots + \alpha_l y_{t-l} + \beta_1 x_{t-1} + \ldots + \beta_1 x_{-l} + \varepsilon_t \tag{13}$$

$$x_t = \alpha_0 + \alpha_1 x_{t-1} + \ldots + \alpha_l x_{t-l} + \beta_1 y_{t-1} + \ldots + \beta_1 y_{-l} + \mu_t \tag{14}$$

for all possible pairs of *(x, y)* time series in the group in the Granger equation. The Wald statistics for the joint hypothesis is:

$$\beta_1 = \beta_2 = \ldots = \beta_l = 0 \tag{15}$$

for each equation. The null hypothesis is that x does *not* Granger-cause y in the first regression and that y does *not* Granger-cause in the second regression.

3 LITERATURE REVIEW

3.1 Theories of International Trade

International trade is identified as among the key forces that are driving globalization in recent decades. Both traditional and modern trade theories have attempted to explain the reason(s) why countries trade and the benefits derived from such transactions. The former strongly emphasizes that trade takes place due to the relative costs of production while the latter argues that there are many factors beyond the costs of production. This subchapter has briefly highlighted traditional theories such as mercantilism, absolute advantage, comparative advantage and factor endowment theories. The subchapter has also looked at the modern trade theories such as country similarity theory, international product life cycle theory, national competitive advantage theory, gravity model, new trade theory, and intra-industry trade. Finally, the subchapter has attempted to link both traditional and modern trade theories to agriculture. More attention is paid to the structure of agricultural trade in SSA countries and developed countries.

3.1.1 Traditional Theories of Trade

Mercantilism: Historically, **mercantilist** is regarded as the first theories of international trade. The theory was dominated by cross-border trade discussions and policies in the West between 16^{th} and 18^{th} centuries. The model stressed that nations should simultaneously discourage imports through tariffs and quotas and encourages exports through export subsidies and support, in addition to the collection of valuable metals. Mercantilism promoters promoted export trade because its increase a country's good (wealth) and vice versa to import (Paul, 2008). The theory argued that for a country to maintain a favourable balance of trade, import substitution and the accumulation of financial wealth (mostly gold and silver) should be encouraged, and export should be promoted. According to a notable promoter of mercantilism, Thomas Mun, *"the ordinary means, therefore, to increase our wealth and treasure is by foreign trade, wherein we must ever observe this rule; to sell more to strangers yearly than we consume of theirs in value"* (Mun, 1664, p. 7). The theory assumed that the world has a fixed and limited amount of wealth, therefore, for a nation to improve its wealth, it has to either directly or indirectly take some resources from another country.

Critics of the mercantilist model argue that the theory is 'a false unity to disparate events,' which to some extent, hindered growth, especially from the underdeveloped nations. For instance, David Hume's price-specie-flow doctrine (18th century) argued that a favourable balance of trade would be possible, albeit only in the short run. Smith (1776) stressed that the mercantilist system was nothing but a tremendous conspiracy by the industrialists and merchants to the detriment of consumers. Smith argued that the theory did not give domestic consumers the opportunity to choose varieties of products that were produced in other countries. The theory was regarded as a *'zero-sum game'*, or a *'win-lose game'* which means that any gain made by a nation might bring a corresponding loss to another country that involved in the trade. Ekelund and Tollison (1981) viewed 'Mercantilism as a rent-seeking society'.

Absolute Advantage Trade Theory: This theory was coined by Adam Smith (1776) who is regarded as the father of modern economics, and who was the first person that advocated free trade. Smith explains absolute advantage as the process by which an individual or country can produce a particular product at a lower cost than another or in the other country. Therefore, a country that trades across national borders should specialize in producing goods that it has an absolute advantage over another.

Smith argued *"what is prudence in the conduct of every private family can scarce be folly in that of a great kingdom. If a foreign country can supply us with a commodity cheaper than we ourselves can make it, better buy from them with some part of the produce of our own industry employed in a way in which we have some advantage''* (Smith, 1776, p. 357). Smith maintained that the specialization in the production of goods and services would lead to increasing the total output. Also, global efficiency in the utilization of available resources when a country exports a portion of goods it produces at a lower cost and imports the products that its trading partner produces at a lower cost than at home. Smith argued that as advocated by mercantilism, it was impossible for countries involved in a trade to have benefited from such transactions because the export of one country is another country's import.

According to Smith (1776), all countries would benefit if they practice the free trade and specialize in what they could produce cheaply. This implies that trade is possible when a country produces a particular commodity using less labour about the other state and vice versa. Smith argued that, in the era of the free market, even though a state's employment might exceed the

domestic consumption, it would encourage the nation to improve its productive powers. Consequently, the revenue and wealth of the country would be tremendously accelerated.

Smith assumed that every country or person had an absolute advantage over another. What if the nation has an absolute advantage in producing everything? Conversely, what if a nation is bad at producing everything? Will the former continue to produce all the products for domestic consumption and exports while the latter continue importing everything? Will it be possible for both countries to trade and have mutual benefits when one country produces all the goods? Comparative advantage theory has answered these questions.

Comparative Advantage Theory: To address some issues that were not answered in the absolute advantage theory, the theory of comparative advantage was propounded by David Ricardo (1817). Ricardo argued that countries would mutually benefit from trade even if one has an absolute advantage over the other in producing of all the goods that they trade. Ricardo stressed that the country should specialize in producing goods that it has the highest output at the lower opportunity cost relative in comparison with the other country. Arguably, so long as the costs of production differs between countries that trade, each nation has a comparative advantage for a product that recorded highest in production efficiency.

Comparative advantage theory is based on some of the following assumptions: only two countries involve in trade; trade only two products; there is perfect competition; no effects of trade on income distributions between countries that trade together; the level of technology differences exist across countries; trade is necessary partly due to the differ in labour productivity in countries; labour is the only factor of production; no trade restrictions and there is a balance of trade and no costs of transportation between countries. However, critics stressed that the theory failed to explain the reasons why labour productivity and technologies differ between countries that involved in the trade. The Factor proportions theory based on comparative advantage model attempted to throw light on why labour productivity and technology vary in countries.

Heckscher – Ohlin Trade Theory: The Heckscher-Ohlin Theorem (H-O model) was coined by Eli Heckscher (1919), and Bertil Ohlin (1933) based on the Ricardian comparative advantage. The model argues that the pattern of production and trade between nations depend on the available domestic factors of production. The H-O model stresses that trade takes place because of the differential in the comparative costs of factors of production in countries. These factors

(labour and capital) are either in abundant or insufficient within countries. Consequently, it has become imperative for nations to export products that they have a competitive production factor(s) and import inputs or goods that are scarce domestically (Blaug, 1992). A difference in the use of capital per worker was identified as a significant factor in explaining differences in labour productivity in countries (Berkum and Meijl, 2000). The H-O theory further argues that factor endowments are immobile between nations, and countries utilize various combinations to produce a broad range of products. The outputs are likely to have constant returns to scale, identical factors and production functions in countries that trade.

In contrast to the Ricardian's comparative advantage that assumes that only one factor of production (labour) existed, the H-O model assumes that two factors of production (labour and capital) are available. This model is also known as the '2 × 2 × 2 model' which simply means two countries involve in trade, producing two products, and have two homogeneous factors of production. This formulation is based on the work of Paul Samuelson (1949) who develops a mathematical model from the original insights of the H-O assumptions, called the Heckscher-Ohlin-Samuelson (HOS) theorem. The HOS theory assumes that tastes, preferences, and technologies are identical in countries, but that each product uses one of the factors more intensively, in a free market and perfect competition exists in all markets.

Due to the tedious task of determining the pattern of trade in the world of various products, instead of the H-O model, Jaroslav Vanek (1968) extends the model to become Heckscher-Ohlin-Vanek (HOV) model. Vanek establishes for the first time, a testable prediction about, who imports what, who exports what and the factor content of trade. They argue that produced goods and services contain labour and capital factors. The HOV model maintains that nations would export the services of, their abundant production factors. This implies that in the capital-abundant nations, the capital-labour ratio is likely to be higher in production in comparison with consumption (Leamer, 1980). The HOV concept in mathematical terms: The capital-labour ratio for product *X* is simply K^X/L^X, whereas for *Y* is K^Y/L^Y. If $K^X/L^X > K^Y/L^Y$, *then*, production of product *X* is capital intensive relative to the production of product *Y*. Conversely, production of *Y* is likely to be relatively labour intensive: If $K^X/L^X > K^Y/L^Y$, then, $L^Y/K^Y > L^X/K^X$. Nation *A* is said to be capital endowed relative to nation *B* if $(K/L)^A > (K/L)^B$. In such a scenario, nation *B* is likely to be relatively labour abundant. By and large, H–O model concluded that the

capital-abundant nations are likely to export capital-intensive goods, and in return, import labour-intensive goods. Similarly, labour- abundant nations may well export labour-intensive commodities, and in return, import capital-intensive products.

However, results from some empirical tests have contradicted the H-O's hypothesis (see Leontief Paradox, 1953; country similarity theory by Linder, 1961; and Bowen, Leaner and Sveikauskus, 1987). Contrary to the H-O model, Leontief (1953) result shows a paradoxical conclusion that the USA, the world's most capital-abundant country- exported labour-intensive products and imported capital- intensive products. Similarly, Trefler (1993) empirically tested the model and established that Leontief was right, after all. Also, unlike the H-O model, studies by Trefler also confirmed that absolute levels of technology vary between developed and developing economies.

Linder (1961) finds out that export and import mainly take place in countries with similar factor endowments and technologies. Linder argues that countries with the same levels of per capita income and tastes are more likely to trade with each other. Bowen, Leaner and Sveikauskus (1987) results do not support the HOV hypothesis of a precise connection between factor content and factor supplies in 27 nations investigated. After calculating the ratio of 27 nations' factor endowments to their world supply and examining their trade, found out that for nearly half the factors of production and commerce moved in the opposite direction to that which supposed to have been predicted based on the HOV hypothesis

The negative or contradictory results of tests of the factor proportions model have left global economists searching for alternative explanations of trade patterns (Goldin, 1990). After the 1950s, studies have revitalised the factor content of international trade by allowing the levels of technology to vary in nations. Nevertheless, the same difficulty remains with the Ricardian model; the cogent reasons why the levels of technology differ in countries worldwide are not vividly explained by the traditional theories of trade. More so, in recent decades, substantial volumes of exports and imports have taken place in countries with similar factor endowments and technology. Given the unexplained patterns of trade, the needs for the modern theories of international trade are inevitable.

3.1.2 Modern International Trade Theories

Country Similarity Theory: This theory was postulated by a Swedish Economist, Staffan Burenstam Linder in 1961, to describe the patterns global trade. Linder runs an empirical analysis after Leontief hypothesis. His results suggest that rather than differences in the supply side of production factors as assumed by H-O factor- proportions, products are mostly traded based on similar demand structures in countries. Linder argued that countries with similar demands for goods might well establish related industries. Hence, they will trade with each other, but differentiated products.

Linder assumes that consumers living in countries that have similar levels of per capita income and development may well have the same tastes and could proportionally consume the same quality products. Therefore, those countries are likely to trade and consume the same quantity and quality of goods and services. Using Linder's approaches, most econometric studies have found the positive association between the share of intra-industry trade and the average level of per capita income in countries (Bergstrand, 1990).

International Product Life Cycle Theory: The model was propounded by Raymond Vernon (1966) in response to the failure of the H-O's trade model. In explaining the pattern of international trade, Vernon proposed five stages of product life cycle. Firstly, the introduction of new production to the market stimulates trade, mostly takes place in similar regions or countries. Secondly, the growth stage leads to competition, capital intensity and increase for exports and transfer of technology from the innovating country, and foreign investment to other countries. Thirdly, maturity leads to the decline in exports from the innovating country. Fourthly, the saturation takes place at a stage in which the sales or distribution of the product(s) reach the peak position, and finally, the phase of declining as overseas production intensified. It is characterized by a concentration of production in the developing countries, thus innovating country becoming a net importer of some products that they formerly introduced to the market. Vernon stressed that early in the life-cycle of a product, the labour used is connected with that properties come from the producing nations. Production of this product is moved to other countries after known and utilized in a domestic market.

To sum it up, Vernon's theory stressed that companies would first and foremost produce and locally consumed a product before exporting it. In the long run, the production and sales locations

of the enterprise's products may change. A comparative advantage of a given product may shift from one country to another.

Intra-Industry Trade: Intra-industry trade (IIT) is in sharp contrast with the traditional trade theory, which based on constant returns to scale and perfect competition. The IIT model stressed that international trade takes place as a result of economies of scale, product differentiation and imperfect competition between and within industries and countries. The first far-reaching study of the extent of IIT was carried out by Grubel and Lloyd (1971). They devised an index called the Grubel-Lloyd index to measure the degree of this type of trade as a share of total trade as:

$$\mathrm{GL}_i = \frac{(X_i+M_i)-|X_i-M_i|}{X_i+M_i} = 1 - \frac{|X_i-M_i|}{X_i+M_i} \quad \therefore\ 0 \leq GL_i \leq 1 \tag{16}$$

Where;

X_i is the export; M_i denotes the import of good i. Therefore, If $GL_i = 1$, there is only intra-industry trade, no inter-industry trade. This means, for example; a nation understudy exports the same quantity of products i as much at it imports. In the opposite direction, if $GL_i = 0$, there is no intra-industry trade, only inter-industry trade. This would mean that the nation understudy only either exports or only imports product i. Grubel and Llyoyd (1971) confirmed high ratios in the main advanced economies.

Before IIT model was adequately developed, Loertscher and Wolter (1980) had already established some stylized facts about partial correlations between the nation and industry features as well as the extent of trade overlaps. Their result shows that the share of intra-industry trade is high when the trading partners are well developed and do not vary much in their level of growth and development. Also, when they are large, they do not differ too much in size (Helpman, 1999). In the same direction, studies by Krugman (1980); Helpman and Krugman (1986) and Helpman (1999) indicate that product differentiation, economies of scale, and various kinds of behaviour are consistent with factor price equalization. Similarly, IIT with homogeneous products, mostly takes place in industrialized countries. Bergstrand's (1990) finding suggests a greater similarity of two nations' per capita incomes might associate with more IIT both for supply by Heckscher-Ohlin-Samuelson (H-O-S) and demand by Chamberlin-Linder reasons simultaneously. In the same fashion, McCorriston and Sheldon (1991) confirm that IIT exists between the EU and the USA in food and agricultural commodities. Bergstrand (1990) stresses

that those propositions evolved from a restricted set of assumptions, IIT in this model develops only among horizontally differentiated products; other models have shown such trade among homogenous goods under different market structures. H-O-S models have predicted two-way trade in vertically differentiated products.

Davis (1995) argues that the theoretical issue addressed on might also have significant implications for trade policy. The empirical importance of IIT, and 'the perceived inability of the traditional theories to account for it, have been taken as key pieces of evidence in favour of the increasing returns theory. Increasing returns, of course, is often associated with imperfect competition. Yet, IIT *"could arise, per the traditional theories, even if returns to scale are constant and markets perfectly competitive. A determination of the cause of this trade would then have significant implications for appropriate trade policy, which depends critically on the underlying market structure"* (p. 203).

The New Trade Theory: The new trade theory (NTT) was championed by Paul Krugman (1979) and others (Helpman and Krugman, 1986). They pointed out that comparative advantage or factor endowment models are necessary. Nevertheless, the theories did not adequately explain patterns of cross-border trade. Krugman emphasized that the increasing returns to scale and network effects that take place in key firms were seemingly the drivers of trade patterns. Krugman calls these companies as the market first movers, and they get first mover advantages, mostly based on cost advantage. Krugman argues that if there are enormous economies of scale and increasing returns to specialization in industry, global demand for goods and services may support only one or fewer number of firms.

Consequently, in the long run, for firms to be able to enter a market and remains competitive in a given country, they may require subsidies and other support from the government. The Krugman model has, among others, assumes two identical countries (home (H) and foreign (F)) in terms of technology and preferences. There is one non-traded factor of production (labour) and equal endowment across nations, $L_H = L_F$. There are a significant number of competitors in the market, with many varieties of products (i.e. product differentiation). Each firm produces its variety of goods and acts as a monopolist. Arguably, nations that had an early entrant to such businesses have a first-mover advantage. In the long run, the price may fall as more firms enter the market;

consumer preferences are homothetic and identical across countries. Krugman (1981) opines that intra-industry takes place when there is an exchange of varieties of the same differentiated goods.

Krugman (1979 and 1980) argues that the gains from trade arise due to a larger number of varieties of goods available to consumers. Greater production of each type results in higher real income as prices are reduced due to increasing market size and competition. Krugman maintains that comparative advantage does not solely depend on the differences in factor endowments; rather it depends on the economies of scale and network effects that occur in the critical industries.

Porter's National Competitive Advantage Theory: This model popularly known as **Porter's Diamond** was coined by Michael Porter (1990). Trade patterns are determined by the level of businesses and economic situations in countries that traded. Porter pointed out that, *"the only meaningful definition of competitiveness at the national level is national productivity"* (Porter, 1990, p. 6). Porter postulated four keys to a state's competitive advantage in comparison to the other nations: factor conditions; demand conditions; related and supporting industries; and firm strategy, structure and rivalry.

According to Porter (1990), factor conditions are the basic (i.e. natural resources, location, vegetation and climatic condition and fertile land for agricultural production) and the advanced (i.e. communication, skilled workers, deregulation of markets, research and development) determinants available in a given economy. Demand conditions are the level of customers' demand for goods and services produced in a particular economy. Related and supporting industries are determined by the level of investments in advanced factors of production and the spill over from the similar industries that lead to both the domestic and global competitiveness of industries. For firm strategy, structure and rivalry, Porter argues that they are the conditions in a country that explains how companies are established, managed, organized, controlled, and that determines the features of the domestic competition. Porter maintained that local rivals and the search for competitive advantage within a country could stimulate organizations or companies with bases for attaining such competitive advantage on a more international stage.

Porter further maintained that nations should export products from these enterprises in where all the four pillars of the diamond are conducive, whereas, in that areas that are not favourable, countries should import. The Government has a vital role to play in ensuring that businesses

maintain a high quality of production, service delivery and healthy competition among firms (Grant, 1991). Nations are likely to benefit from trade even if they do not vary in factor endowments.

The Gravity Model of Trade: This model has also provided an empirical explanation of international trade. This model stresses that the economic sizes and distances between nations are the primary factors that determine the patterns of trade across national boundaries. The model argued that larger economies are more likely to produce goods and services for domestic consumptions and exports than small economies. More so, these economies generate more revenues from their products sold, paving ways for people to buy more import products. The theory further stressed that the distance or geographical location between individual countries or markets has an influence on the cost of imports and exports of products. The basis of the gravity model assumes that only size and distance are the paramount drivers of trade in the following:

$$T_{ij} = A^* Y_i^* Y_j / D_{ij} \quad (17)$$

Where: T_{ij} is the value of trade between country i and country j, A is a constant term, Y_i is the GDP of country i, Y_j is the GDP of country j, D_{ij} is the distance between two countries (country i and j). This implies that, *"the value of trade between two countries is proportional, other things equal, to the product of the two nations' GDPs, and diminishes with the distance between the two countries"* (Krugman, Obstfeld and Melitz, 2010, p. 12). Deardorff (1998) opined that the gravity model of trade was firstly empirically analysed by Tinbergen (1962); Pöyhönen (1963) to determine trade flows based on the gravity equation; however, they gave only intuitive justification. Pöyhönen (1963) concludes that the tentative analysis of foreign trade undoubtedly reveals the existence of structural characteristics that were bound to affect the conceptions of the drivers of the geographical distribution of commerce. Arguably, the impact of trade policy could be estimated only by isolating the factors that are likely to affect the *'distribution, without ascribing the observed differences in their entirety to any single factor'* (p. 7).

New *'New Trade'* Theory: The new *'new trade theory'* (NNTT) following the Ricardian, H-O model, NTT, and IIT models that emphasised that trade are mostly carried out with homogeneous products (equal in productivity). IIT stressed that trade in similar products, mostly takes place in industrialized countries, while inter-industry trade with heterogeneous products takes place in both developed and developing countries. NNTT maintains that agricultural markets are often

either faced with imperfect competition either through the downstream or upstream sector. Farm products are modelled as differentiated and monopolistic competition along the supply chain.

The NNTT, however, has one major shortcoming: it is based on the assumption of a representative firm (Krugman, 1980), which contradicts the reality on the ground. Usually, firms are rather heterogeneous than homogeneous; i.e., firms vary in their productivities. Marc Melitz (2003) is regarded as a pioneer that analyses the implications of firm heterogeneity for foreign trade. Melitz work also led a foundation to the NNTT. Melitz stresses that firm heterogeneity is an additional source of comparative advantage: even though on average, no firm of a particular sector might be productive enough to export, given the dispersion of its productivities. Notwithstanding, there still might be some companies left, which are producing enough to export. This insight is significant as it yields an explanation for the reason nation's even exports or imports in sectors where they appear to have a comparative advantage or disadvantage. The other major impetus of Melitz model is that free trade does not only lead to resource reallocations within sectors, but also between sectors; resources are mostly reallocated from least productive companies to higher productive firms. Otherwise, small enterprises and exporters will be forced to fold up as they could not compete favourably with the larger firms in the market, at least in the short run. Melitz, Helpman and Yeaple (2004), nevertheless, stress that domestic protections of infant industries would impede productivity; lowering protections may stimulate healthy competition and higher productivity.

As with NTT, there is now a discussion of the applicability of NNTT to agriculture, too. For instance, Gopinath Sheldon and Echeverria (2007) try to address this subject in a broad context. They argue in favour of NNTT. Their studies show that there might not be a right export decision on agriculture in comparison with other industries. Notwithstanding, there may be an underlying export decision in agricultural trade. Farmers may be aware of the net export positions of their country on the global market and consider this information, among other things when they would decide on farming more or less export-intensive commodities.

However, critics stress the works of Gopinath Sheldon and Echeverria (2007) is rather intuitively, as hard facts are missing. The authors only intuitively motivate their position with enough empirical evidence. Nevertheless, neither farm heterogeneity in productivity nor fixed trade costs in agricultural exporting can be rejected; it conforms to the theory at least to apply agriculture

trade models with firm heterogeneity. They *"are observed in multiple dimensions: productivity, size, and capital and skill intensity"* (p. 17). In continuation with Melitz Model, studies of Ahn, Khandelwal and Wei (2011) confirm that firms either select non-export or export of agrarian products based on the volume of production. They conclude that, rather than an underlying production decision, the decisions of farmers to produce export-intensive products is directly linked to export trade.

3.2 Theories of Economic Growth and Development

The interest of scholars, governments, and world organizations in the factor(s) that stimulate economic growth is not new. Instead of the new preoccupation of scholars, the progress of nations has traditionally been at the centre of economic writing and debates (Thirlwall, 2006) in development economics. Classical theories of economic growth argue that specialization by "comparative advantage' usually taken to mean that the optimal production and export of primary commodities, is necessary for economic growth in developing countries (Marshall, Schwart and Ziliak, 1988). Since the 1950s, many economists have postulated theories of growth and development. For the purpose of this study; some of those models are briefly highlighted.

One of the earliest economic growth models was independently coined by Harrod (1939) and Domar (1946). The Harrod-Domar model (1939; 1946) argued that the total outputs that could lead to economic growth depend on the level of capital accumulation and productivity in a given economy. The steady equilibrium of economic growth largely depends on a particular country's policy to increase savings and investment flows, and further put to efficient use for higher productivity. They argue that there is no natural reason for the economy to have a balanced growth (Harrod, 1939). The model is a functional economic connection in which the GDP growth (g) depends on the domestic net savings rate (s) and inversely on the domestic capital- output ratio (k) that is:

$$g = s/k \quad or \quad y = f(k) \tag{18}$$

Similarly, the **balanced growth theory** was propounded by an economist, Ragnar Nurkse (1952). The nurkse hypothesis opines that the government of underdeveloped countries simultaneously need to make substantial investments in a broad range of industries for growth and development to take its full course. It would lead to an increase in complementary demand between economic sectors. Thus, the market of the country would be tremendously enlarged the market size,

productivity would be stupendously increased. As a consequence, the industry will be stimulated to invest a given market. Nurkse maintained that investing in both the industrial and agricultural sectors of the economy may well lead to a balanced growth. The increasing inter-sectoral linkages between agriculture and manufacturing is a necessary condition for the sectors to provide a market for the commodities of the other and in turn, supplies the necessary primary materials for the growth development of the other.

Nurkse's theory emphasized those countries still underdevelop partly due to the small market size, investment, and productivity. On the other hand, Nurkse has been nicknamed as an export pessimist, because the model argued that undeveloped countries should not heavily depend on exports as a determinant of economic growth. Also, underdeveloped countries should internally generate funds for investments. Significant investment should be channelled to modern technology, machines, and production processes for market expansion, high productivity that would catapult to tremendous growth and development. Nurkse concluded, the small size of the local market in a low-income nation can thus lead a constraint to the application of capital by a firm working for the market. Therefore, the small domestic market is a limitation to growth and development.

The *"Lewis Model or Lewis dual-sector model"* is one of the first development economic theories that were coined by Sir Willian Arthur Lewis (1954). The model is regarded as one of the structural change theories of underdeveloped economies. The model looked at how economies have transformed from subsistence (agriculture) economy to a modern (industrial) one. Lewis groups economic activities into two sectors; firstly, the traditional subsistence farming sector that is characterized by zero or negative marginal labour productivity- because rural people mainly worked and produced what to consume. Lewis argued that developing countries have a surplus of the unproductive labour force in the agricultural sector. Secondly, the modern capitalist is an urban industrial sector, which bought food and other inputs from the traditional sector for consumption in the production processes, and the traditional sector, in turn, supply surplus labour to the industries in cities (Cypher and Dietz, 2009; Todaro and Smith, 2015). The connections between the two can be recognized as the transfer of surplus labour from traditional subsistence to the modern sector that brings expansion in the output to the later and employment opportunities to the former. The ‘self-sustaining growth’ and increasing job opportunities are

assumed to continue until all surplus rural labour is absorbed in the modern sector. At this point, any additional worker withdrawn from a subsistence sector will be at the cost of loss of food production.

Like Lewis' model, the ***'patterns-of-development'*** was painstakingly analysed by Chenery and his colleagues. They observed the structural change in some developing countries during the post-war era. They focused on the process through which the economic, industrial, and institutional structures of underdeveloped economies are transformed over time. Also, they paid attention to what made it possible for new industries to replace traditional agriculture as an engine of economic growth and development. In contrast to the Lewis model, patterns-of-development analysts argued that increase in savings and investment are necessary but not sufficient conditions for economic growth and development (Todaro and Smith, 2015).

One of the most referenced historical models of economic growth was coined by a notable American Economist and Political theorist Walt Whitman Rostow (1960). In his theory known as **Rostow's stages-of-growth model**, Rostow stressed that economic growth can be achieved through industrialization. He postulated five stages of growth, include: the traditional society; the preconditions for take-off; the take-off; the drive to maturity; and the age of high mass-consumption. In line with Harrod-Domar growth model, Rostow also maintained that one of the strategies necessary for economic take-off is the mobilization and utilization of both domestic and foreign capital to generate sufficient investment that would stimulate economic growth (Todaro and Smith, 2015). Rostow stressed that national and foreign capital is sufficient for growth and argues that growth occurs in distinct stages, that is, developing countries undergo a linear process of modernization, akin to developed countries in the 19th century. There is a need for external funds and expertise, along with modern planning and investment methods to stimulate growth, especially in the developing countries (Mackinnon and Cumbers, 2007).

In linking stages of growth theory to agriculture, Rostow argued that agriculture is paramount for the *"take-off stage"* of a country's economic growth. The pervasive importance of farming to the economy of developing countries, if boosted for rapid production and exports, the speed of economic growth in those countries would be sustained. Presently, agriculture still accounts for

over 20% share of the GDP in many Sub-Saharan African (SSA)[1] countries, Nigeria inclusive. Thus, the importance of the agricultural sector as an engine of economic take-off cannot be overemphasized. However, technological advancement and innovations are preconditions for agriculture to drive to maturity, which is presently a significant challenge to a substantial proportion of smallholder farmers and producers in the underdeveloped countries.

Some notable economists (Chenery and Bruno, 1962; Chenery and Strout, 1966) later adapted to the economic model. They maintain that labour supply was sufficient to stimulate growth. Notwithstanding, they argued that capital was the only constraint to higher productivity and growth, which has been the case for developing countries like Nigeria. They further identified two gaps: savings and trade balance as constraints to production and growth. They argued that foreign capital bridges the gaps of limited domestic capital in underdeveloped countries.

In contrast to the classical theories/modernization school, **the structural theories**, however, argued that the specialization of less developed nations in the production and exportation of primary commodities have retarded their economic growth and development (Marshall, Schwart and Ziliak, 1988). For instance, the dependency theory led by Raul Prebisch (1950) and his colleagues at the United Nations Economic Commission for Latin America (UNECLA), were disturbed by the uneven development between the global south (periphery) and global North (core). They stressed that wealthy nations have dominated and exploited peripheral countries over the decades. They maintained that some developing countries had continued exporting primary commodities like agricultural products and crude oil, while the West exports manufactured goods and processed agricultural products. Consequently, it has led developing countries to rely on the West for support in the form of aid, loans, and foreign direct investment. They further argue that modernization theory fails to recognize that Imperialism, Colonialism, and neo-colonialism are solely responsible for the development of advanced economies and underdevelopment of other

[1] The United Nations classifies *Sub-Saharan Africa (46 countries):* Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo, Democratic Republic of the Congo, Côte d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, South Africa, South Sudan, Swaziland, United Republic of Tanzania, Togo, Uganda, Zambia, Zimbabwe

nations. They called for the peripheral to reduce over-reliance on the core for manufactured products and aid.

The ***dependency theory*** was later expanded by an American Historian and Social Scientist, Immanuel Maurice Wallerstein in 1974. In the world system theory, Wallerstein added the third category of countries (semi-peripheral). He then divided the capitalist economy into the core (advanced economies), semi-peripheral (newly industrialized countries), and peripheral (least developed countries). Wallerstein argued that the core has exploited the peripheral for their cheap labour, raw agricultural commodities, and other products. While the semi-peripheral stands in between advanced countries, but with less sophistication of technology, and they have no control over global markets. Consequently, they are also being exploited by the core just as they, in turn, take some roles in the exploitation of the peripheral. The core promotes capital accumulation in the world economy by enforcing unequal trade policies to the peripheral.

Wallerstein predicted that a worldwide economic crisis would reach where the world capitalist system might collapse, thereby paving the way for a possible revolutionary change. Wallerstein called for import substitution or withdrawal of the underdeveloped countries from the global economy. Wallerstein (1974) and Stavrianos (1981) further argue that domestic economies of South America, Asia and Africa were distorted and reorganized for the production of low-cost products for the benefit of the western world. They stress that the process undermined economic growth in developing countries and exacerbated the inequality between advanced and less advanced economies.

To sum it up, the dependency theory suggests that specialization in the export of primary commodities from least developed countries has impeded the economic growth and development of these nations. Arguably, this has left them in a weak and vulnerable position in the global economy, evident in their inability to compete favourably with the sophisticated advanced industries. For this reason, social articulation is distorted, and the domestic market is undermined due to the crippled sectoral development that could stimulate domestic production and exports.

Between the 1980s and 90s, some scholars later proposed the adoption of neoliberalism in countries across the globe (Lal, 1983; Balassa, 1978). Their main arguments were that developing countries should reduce state intervention in their economies and embrace the free market economy. They propose economic reforms through structural adjustment programmes (SAPs) to

promote exports and free trade (Colman and Okorie, 1988). According to Lal (1983), the application of classical economics to both developed and developing countries was inevitable. Lal stresses that the imperfect planning of a state was worse than the imperfect market system. However, critics argued that growth through SAPs failed to alleviate poverty in the developing countries SAPs led to the privatization of public enterprises, cuts in public services, and the introduction of user charges. Free trade has exposed many agro-allied industries in Nigeria and other developing countries into import competition from already well-established global firms that led to the closure of many these infant industries. Those well-established companies in the West have a competitive edge over their counterparts in the developing countries regarding quantity, quality, and price, and market access in agricultural products. Also, many farmers and exporters in the USA, the EU, and other advanced economies enjoy more support than those from developing countries, especially SSA countries. For instance, the former tremendously benefits from agricultural export subsidies and domestic support. As a consequence, Nigeria and other SSA countries heavily depend on cheap processed food and other products from developed countries for domestic consumption as postulated by the dependency theory.

3.3 Linking Trade Theories to Agriculture

This subchapter is an attempt to add knowledge to the existence studies that attempted to link trade theories to food and agriculture in recent years (Abbott and Kallio, 1996; Berkum and Meij, 2000; Josling et al., 2010; Pokrivčák, Ciaian and Kancs, 2011; Campi and Duenas, 2014). Also, more emphasis is given to trade theories with reference to agricultural products of SSA, which takes the lion's share of their GDP and trade. Historically, between 17th and early 20th century, the share of agricultural trade as a percentage of total global trade was above 50%. Nonetheless, this has steadily decreased over the decades as fuels and mining, and manufacturing products have taken over.

In 2014, the share agricultural product on the world merchandise exports was 9.5% ($1,765 billion), while fuels and mining (20.5%), manufactures (i.e. iron and steel, chemicals, automobiles, office and telecom equipment, clothing and textiles account for 66.2% (WTO, 2015). Agricultural exports by region shows Europe (40.8%) with the highest share in the world, followed by Asia (22.4%) and North America (15.7%), South and Central America (12%), while Africa, which heavily depends on agriculture, merely accounts for 3.6% in 2014 (Table 3.1).

Table 3-1: Exports of agricultural products (US$ billions, %) of regions by destination, 2014

	Value	Share in region's exports		Share in world exports		Annual percentage change		
	2014	2010	2014	2010	2014	2010-14	2013	2014
World	1,765.4	100.0	100.0	100.0	100.0	6.6	5.2	1.6
Europe								
World	719.5	100.0	100.0	41.8	40.8	6.0	8.1	1.4
Europe	546.1	78.7	75.9	32.9	30.9	5.0	7.7	1.4
Asia	54.7	6.2	7.6	2.6	3.1	11.3	9.9	4.1
North America	31.4	4.0	4.4	1.7	1.8	8.1	7.1	6.2
Africa	30.4	3.6	4.2	1.5	1.7	10.1	10.4	6.5
Middle East	25.4	2.7	3.5	1.1	1.4	13.0	13.6	3.8
CIS	22.3	3.5	3.1	1.5	1.3	2.5	8.3	-17.4
SCA	7.6	1.0	1.1	0.4	0.4	8.5	4.3	4.6
Asia								
World	395.7	100.0	100.0	21.4	22.4	7.9	2.0	2.1
Asia	232.0	59.0	58.6	12.6	13.1	7.7	0.9	1.4
Europe	49.6	13.8	12.5	3.0	2.8	5.3	2.4	1.9
North America	46.0	11.5	11.6	2.5	2.6	8.1	-3.9	8.8
Middle East	26.7	6.1	6.7	1.3	1.5	10.6	14.5	-2.0
Africa	24.7	5.3	6.2	1.1	1.4	12.3	3.8	5.5
CIS	8.2	2.4	2.1	0.5	0.5	4.6	3.2	-1.8
SCA	5.7	1.7	1.4	0.4	0.3	2.6	2.1	-5.5
North America								
World	276.7	100.0	100.0	15.6	15.7	6.7	3.4	3.9
North America	107.8	38.3	39.0	6.0	6.1	7.2	5.0	5.2
Asia	104.8	37.5	37.9	5.9	5.9	7.0	0.5	2.5
Europe	26.7	9.9	9.7	1.5	1.5	6.1	9.0	6.2
SCA	21.3	6.9	7.7	1.1	1.2	9.5	12.9	7.1
Africa	7.7	3.6	2.8	0.6	0.4	0.3	-2.3	-3.7
Middle East	6.1	2.6	2.2	0.4	0.3	2.4	-3.9	9.2
CIS	2.0	1.0	0.7	0.2	0.1	-1.6	-17.8	-26.4
SCA								
World	212.3	100.0	100.0	12.0	12.0	6.6	5.0	-1.7
Asia	65.7	25.5	30.9	3.1	3.7	11.9	16.5	-1.9
Europe	48.6	26.6	22.9	3.2	2.8	2.7	0.0	-0.4
SCA	33.6	16.0	15.8	1.9	1.9	6.4	-0.6	-5.4
North America	30.2	13.7	14.2	1.6	1.7	7.6	3.5	5.2
Africa	12.2	6.0	5.7	0.7	0.7	5.4	-7.6	-10.2
Middle East	11.7	6.9	5.5	0.8	0.7	0.7	5.0	-11.2
CIS	8.4	4.5	4.0	0.5	0.5	3.6	5.1	9.4
Africa								
World	63.6	100.0	100.0	3.8	3.6	5.3	6.7	2.8
Europe	22.0	39.5	34.5	1.5	1.2	1.9	7.0	0.1
Africa	17.1	24.9	26.9	0.9	1.0	7.4	9.8	0.1
Asia	14.2	16.7	22.2	0.6	0.8	13.1	4.9	17.5
Middle East	4.7	8.8	7.4	0.3	0.3	0.7	11.5	-5.8
North America	2.8	4.7	4.4	0.2	0.2	3.6	-8.1	6.1
SCA	1.4	2.1	2.2	0.1	0.1	7.0	-6.2	-0.7
CIS	1.3	1.7	2.0	0.1	0.1	8.9	8.9	8.9

Source: WTO, 2015

Notes: CIS denotes Commonwealth of Independent States**;** SCA stands for South and Central America

Global trade has increased over the past two decades, and developing countries share on the total merchandise trade has also increased. Notwithstanding, foreign trade in agriculture has grown more from the developed countries than African nations that are regarded as agrarian nations. Notwithstanding, the developing countries' share of agricultural exports to other developing countries has also increased, albeit not as manufactured products. However, their share of agricultural exports to developed countries has stagnated. Arguably, developed economies' trade restrictions on agricultural commodities have stifled trade (FAO, 2003a; Mccally and Nash, 2007; Stiglitz and Charlton, 2007; WTO, 2014), growth and development in SSA countries.

Table 3.3 shows top ten exporters and importers of agricultural products by crops for the period 1995-2013. Surprisingly, even though in SSA, agriculture is the mainstay of their economies, they are conspicuously missing among the largest exporters of these commodities in the world. Table 3.4 shows the results of the merchandise trade specialization index (TSI)[2] by-products spanning the period 1995-2012. The positive values signify that Africa has net exports of those products. Thus, the need for specialization in the production and exports of those products as postulated by Ricardo's comparative advantage and H-O model, while negative values suggest that Africa imports more than it exports (net consumption), the continent should either step up production or continue to import if it cannot cheaply produce in large quantities at home.

In Africa, apart from tropical products all other commodities are in net import status (Table 3.4), and this situation is likely to intensify over the next decade (FAO, 2015). For instance, as shown in Appendix Table 3A, developing countries, especially SSA are net exporters of tropical commodities, which need to be given serious attention, as it suggests that, they have a comparative advantage and a broad range of benefits in those tropical products.

Is the doctrine of mercantilism dead or still alive? Mercantilism model seems to have gone; however, trade in primary, semi-processed and processed agriculture, is still protected which was

[2] *TSI* is also known as normalized trade balance by a product. It measures the degree of specialization in the production/consumption of goods through trade. This is normally calculated for each product group and compares the net flow of goods (exports minus imports) to the total flow of goods (exports plus imports).

Formula of TSI: $TSI_{ji} = \frac{X_j^i - M_j^i}{X_j^i - M_j^i}$ Where: TSI_{ji} is the index of trade specialization of economy *j* for goods *i* in a specific period, *i* is the product or product groups, *j* is the economy (country or country group), X_{ij} is the economy's *j* exports of goods *I*, and M_{ij} is the economy's *j* imports of goods *i*. The range of values is between -1 and 1, the positive value signifies that an economy has net exports (hence it specializes on the production of that specific product) and negative values means that an economy imports more than it exports (net consumption).

seen as the sole features of mercantilism. For instance, export subsidies, quotas, tariffs and other forms of trade distortions by various governments worldwide, especially the advanced economies have heavily hurt SSA, which exports primary and semi-processed agricultural products mostly. Arguably, the doctrine of encouraging domestic production and exports and discouraging imports as postulated by mercantilism is still alive in agriculture, albeit in different forms. Agricultural protectionism mostly in the West does not stand in the way of the advantages of free trade in SSA countries.

Table 3-2: Leading exporters and importers of agrarian products (US$ billions, %), 2014

	Value	Share in the world exports/imports				Annual percentage change			
Economy/indicator	2014	1980	1990	2000	2014	2010-14	2012	2013	2014
Exporters									
EU (28)	670.4	n.a	n.a	41.9	38.0	5.8	-2.3	8.0	1.2
-extra-EU (28)	177.8	n.a	n.a	10.0	10.1	8.6	2.9	8.5	1.1
USA	182.2	17.0	14.3	13.0	10.3	6.3	2.3	2.1	3.7
Brazil	87.9	3.4	2.4	2.8	5.0	6.4	0.0	4.9	-3.1
China	74.5	1.5	2.4	3.0	4.2	9.6	2.4	6.0	6.2
Canada	68.1	5.0	5.4	6.3	3.9	6.9	4.5	4.5	3.7
Indonesia	44.1	1.6	1.0	1.4	2.5	5.2	-6.5	-5.3	3.4
India	43.5	1.0	0.8	1.1	2.5	17.1	21.5	6.7	-2.7
Thailand	39.7	1.2	1.9	2.2	2.3	3.1	-11.7	-4.0	-1.5
Australia	38.6	3.3	2.9	3.0	2.2	9.3	2.7	-2.1	2.8
Argentina	37.9	1.9	1.8	2.2	2.1	2.3	-4.7	-2.7	-9.8
Russia	30.9	-	-	1.4	1.7	9.6	3.2	-5.5	8.4
Malaysia	30.1	2.0	1.8	1.5	1.7	1.1	-12.8	-11.4	0.3
New Zealand	29.0	1.3	1.4	1.4	1.6	10.3	0.1	11.7	7.8
Viet Nam	26.5	n.a	n.a	0.7	1.5	12.1	5.3	-0.5	14.0
Mexico	26.4	0.8	0.8	1.7	1.5	8.9	-0.9	10.3	5.2
Above 15	1,429.9	n.a	n.a	83.5	81.0	n.a	n.a	n.a	n.a
Importers									
EU (28)	675.5	n.a	n.a	42.7	36.1	4.8	-4.8	6.4	1.5
-extra-EU (28)	182.8	n.a	n.a	13.2	9.8	4.4	-6.9	2.9	2.4
China	170.1	2.1	1.8	3.3	9.1	12.0	8.4	5.5	2.8
USA	156.9	8.7	9.0	11.6	8.4	7.7	3.4	3.3	7.1
Japan	81.9	9.6	11.5	10.4	4.4	1.4	-2.4	-8.2	-4.8
Russian	41.2	n.a	n.a	1.3	2.2	3.1	-2.8	6.4	-7.8
Canada	40.1	1.8	2.0	2.6	2.1	5.9	4.0	2.3	3.5
South Korea	35.0	1.5	2.2	2.2	1.9	7.1	-4.6	0.9	4.8
Mexico	30.0	1.2	1.2	1.8	1.6	6.3	-7.4	7.9	2.8
Hong Kong, China	29.2	n.a	n.a	n.a	n.a	9.1	3.2	11.3	5.0
retained imports	19.7	1.0	1.0	1.1	1.1	10.3	4.2	11.8	5.7
India	27.3	0.5	0.4	0.7	1.5	11.2	13.8	-4.9	11.9
Saudi Arabia	24.8	1.5	0.8	0.9	1.3	8.8	8.3	10.3	-0.4
Indonesia	22.2	0.6	0.5	1.0	1.2	9.2	-6.7	2.9	3.3
Malaysia	20.2	0.5	0.5	0.8	1.1	5.9	1.3	-6.8	1.0
Turkey	18.1	0.1	0.6	0.7	1.0	8.8	-6.9	3.3	6.8
United Arab Emirates	17.8	0.3	0.4	0.5	1.0	10.9	13.3	9.6	-0.1
Above 15	1,381.0	n.a	n.a	81.5	73.7	n.a	n.a	n.a	n.a

Source: WTO, 2015

Advanced economies heavily dominate export trade in agricultural products (Table 3.2)[3]. As postulated by IIT model, most of the agricultural trade occur among advanced economies, notably, intra-EU agrarian trade. Even though agriculture accounts for a substantial share of GDP[4] and labour force in SSA, none of these countries are among the top major exporters in the world. Instead, some of these countries ranked highest in agricultural import as a percentage of their total merchandise imports (Table 3.3). More so, some SSA countries, such as Nigeria, Burundi, Central Republic of Africa, Zimbabwe, Angola, Gabon, Gambia, Niger, Rwanda and Uganda are net importers of food products.

It has become paramount to ask some questions: do SSA countries have a comparative advantage or factor proportion in agriculture? If they do, then why are they not among the major exporters despite having a substantial share of their labour force in its production? Low agricultural productivity, insufficient agricultural technologies, and market distortions are identified as the reasons why SSA countries are not among the top major exporters of agricultural products. Data available from FAOSTAT (2016) shows that in the SSA, only Nigeria was among the top twenty agricultural producers[5] in the world in 2013.

Undoubtedly, without the empirical observation that, the share of the labour force in agriculture has not kept pace with productivity,[6] but capital or technology. Notwithstanding, given that the top major producers are also the largest populous countries in the world, their active labour force in agriculture (i.e. China, India, Indonesia, Nigeria, Turkey) and technology (i.e. USA, Japan, France) may count for the variations of their agricultural productivity. However, the largest exporters of agricultural products have the lowest share of the labour force in the sector.[7] On the hand, most SSA countries which agriculture is the mainstay of the economy and accounts for a

[3] Top ten major *net exporters of agricultural products* in 2013: Argentina (1), Brazil (2), Netherlands (3), India (4), Thailand (5), China (6), Australia (7), New Zealand (8), USA (9), and Vietnam (10) (UNCTAD, 2016).
[4] *Agriculture, value added (% of GDP)* in 2014: Sierra Leon 62%, Central African Republic 58%, Chad 53%, Ethiopia 42%, Guinea-Bissau 44%, Togo 42%, and Burundi 39% (World Bank, 2015).
[5] Major producers: *Value of gross Agricultural Production* (Constant 2004-2006 Billion US$) ranked in 2013: China ($612), USA ($196), India ($191), Brazil ($91), Turkey ($62), Japan ($62), and Nigeria ($60) (FAOSTAT, 2016).
[6] Available data from the World Bank (2015) shows countries with *agriculture value added per worker* (constant 2005 US$) in 2014: Germany $39,490 (2014), France $84,574 (2014), Netherlands $70,859, Belgium $68,736 (2014), Nigeria $4,760 (2014), Zimbabwe $279 (2014), Uganda $215 (2014), Sierra Leon $927, etc.
[7] *Employment in agriculture* (% of total employment) and year: USA 2% (2010), Netherlands 3% (2011) and Germany 2% (2012), EU 7% (2014), Belgium 1% (2012), Spain 4% (2012) (World Bank, 2015).

substantial share of total employment[8] are the lowest producers and exporters of agricultural products in the world.

Classical theories of trade emphasised that countries should produce and export what they have costs or factor advantage over another country. However, the reverse seems to be the case for agriculture as the West (i.e. USA and EU) spends an enormous amount of money to support producers without which most of them would not have been still in the agricultural markets without support. For instance, Common Agricultural Policy (CAPs)[9] of the EU takes the highest on the Union's annual budget. In 2014, about €58 billion or 40% of the EU's total budget was for CAPs. This figure was more than 70% in some decades ago (European Commission, 2014).

As postulated by Smith, Ricardo, and H-O models, some SSA countries, such as Ghana, Ethiopia, Ivory Coast and Nigeria have taken advantage of their unique and favourable tropical climatic conditions by producing and exporting agricultural commodities (i.e. absolute or comparative advantage) that could not be produced in advanced countries in large quantities despite their technical know-how. As compared to other raw agricultural products, data available indicate there is trade liberalization in some tropical agricultural products such as cocoa beans, coffee, tea, rubber and bananas. For instance, Nigeria and Ghana recorded over 60% and 75%, respectively, average annual cocoa export as a percentage of domestic output between the period 1987 and 2011 (Verter and Bečvářová, 2014a). Similarly, SSA accounted as top major exporters of some other tropical products, albeit in small quantities and with low prices.

In the same way, statistical data available from FAO (2016) shows that Côte d'Ivoire was the fifth largest exporter of rubber Nat dry in 2013; Egypt was the fourth exporter of maize; Ethiopia, Nigeria, Burkina Faso, Tanzania and Ghana were the 2nd, 3rd and 4th, fifth and sixth largest exporters of Sesame seed respectively in 2013 (Table 5.6). Over 65% of total world cocoa bean production exported from Côte d'Ivoire, Ghana, Nigeria and Cameroon. Similarly, Côte d'Ivoire,

[8] *Employment in agriculture (% of total employment)* and year: Zambia 72% (2005), Uganda 66% (2009), Liberia 50% (2010), Ethiopia 82% (2004), Mali 42% (2004), and Sierra Leon 69% (2004) (World Bank, 2015).

[9] *Common Agricultural Policy (CAP)* is the EU's comprehensive system of agricultural subsidies, schemes and marketing measures designed to manage agricultural production and trade within the EU member countries and across the globe. CAP was born in 1962. The CAP made it possible provide an affordable, and a broad range of food for EU citizens and as well as fair standard of living for farmers in the countryside. The CAP stresses that farming is not just about food, it is also about rural communities or countryside and its precious natural resources. Consequently, the CAP also provides funds for rural development in the EU member states.

Guinea-Bissau, Ghana and Benin were the top major exporters of cashew nuts in the world. Most of these products were exported unprocessed or partially processed. Apart from tropical agricultural commodities (Appendix Table 3A and Table 3.3), traditional theories of trade appear not to stand in the case of primary agricultural products as advanced economies still restrict trade in non-tropical products.

Table 3-3: Food imports (% of merchandise imports) by ranking, 1970-2013

Country	2013	2012	2011	2010	2009	2008	2005	2000	1990	1970
Benin	40.3	37.9	33.9	38.6	31.1	36.1	29.9	21.9	n.a	17.8
The Gambia	37.3	33.2	32.8	36.1	34.3	29.8	37.7	34.5	n.a	31.7
Central African Republic	36.0	29.6	31.2	28.1	39.3	25.9	17.2	29.3	n.a	16.9
Niger	32.9	31.7	15.8	15.1	15.5	24.9	34.2	38.5	n.a	14.2
Cabo Verde	32.1	27.9	25.4	27.7	29.4	27.7	30.5	31.0	n.a	n.a
Sao Tome and Principe	30.6	30.4	32.4	29.8	35.9	27.3	38.4	30.8	n.a	n.a
Tonga	29.7	29.0	29.8	29.1	33.7	28.6	20.5	23.2	27.8	n.a
Yemen Rep.	28.7	32.5	31.5	30.8	27.8	24.8	28.1	35.6	n.a	n.a
Samoa	27.3	25.7	26.1	24.5	30.1	25.5	21.3	n.a	27.1	29.0
Senegal	23.8	24.1	23.0	22.4	24.2	25.9	28.1	23.3	28.7	28.9

Source: Author's computation based on World Bank, 2016

Krugman (1981) provides the first theoretical explanation of the effect agricultural exports on national development. Krugman argues that the expansion of farm exports could lead to a significant increase in the demand for the countries' outputs, which in turn result in a rise in real output. The study of IIT in food and agricultural products may be seen as ways of determining the significance of economies of scale in agricultural trade. Early studies found that agriculture was largely an inter-industry in nature, albeit raw products. However, McCorriston and Sheldon (1991) find that trade in processed food and agricultural products between the USA and the EU was largely an IIT in nature. Similarly, as shown in Table 3.1, intra-regional trade accounts for a substantial share of agricultural exports in Europe (76%), Asia (59%), and North America (39%). Even though African countries, trade within Africa is low, it increased from 25% in 2010 to 26% in 2014.

Given that modern trade theories stress that gains from trade are heavily determined by imperfect competition, economies of scale and technological advancement (Smutka et al., 2015), most poor producers from SSA countries are being left in the cold as they lack the capacity to withstand advanced economies. As earlier mentioned, insufficient technologies, and market distortions have impeded SSA farmers from benefiting from a comparative advantage in agriculture. Therefore, they are not able to produce in bulk and enjoy an average cost of production. The landscape of

agrarian trade is currently characterized by processed products from the West, at the expense of raw, bulk commodities substantially from the SSA countries.

Table 3-4: Merchandise trade specialization index in Africa, 1995-2012

YEAR	1995	1998	2000	2005	2008	2009	2010	2012
All allocated products (SITC 0 to 8 + 961 + 971)[10]	-0.04	-0.12	0.09	0.11	0.08	-0.01	0.06	0.04
All food items (SITC 0 + 1 + 22 + 4)	-0.07	-0.12	-0.10	-0.16	-0.26	-0.15	-0.17	-0.30
Beverages and tobacco (SITC 1)	0.11	0.05	0.02	-0.06	-0.13	-0.05	-0.06	-0.13
Agric. raw materials (SITC 2 less 22, 27 and 28)	0.29	0.29	0.34	0.31	0.18	0.18	0.32	0.21
Fuels (SITC 3)	0.60	0.53	0.68	0.72	0.66	0.63	0.63	0.61
Food and live animals	-0.04	-0.08	-0.09	-0.14	-0.24	-0.12	-0.13	-0.29
Cereals and cereal preparations	-0.85	-0.85	-0.86	-0.83	-0.87	-0.80	-0.82	-0.87
Wheat (including spelt) and meslin, unmilled	-0.98	-0.98	-0.98	-0.98	-0.98	-0.98	-0.98	-0.99
Rice	-0.88	-0.84	-0.82	-0.74	-0.87	-0.76	-0.78	-0.91
Maize (not including sweet corn), unmilled	-0.64	-0.74	-0.80	-0.76	-0.72	-0.67	-0.76	-0.79
Vegetables and fruits	0.43	0.42	0.42	0.45	0.41	0.39	0.38	0.32
Vegetables, roots, tubers, prepared, preserved, n.e.s.	-0.08	-0.23	-0.17	-0.16	-0.20	-0.30	-0.28	-0.38
Coffee, tea, cocoa, spices, and manufactures thereof	0.69	0.67	0.61	0.59	0.64	0.69	0.70	0.56
Coffee and coffee substitutes	0.68	0.65	0.54	0.14	0.36	0.42	0.49	0.41
Cocoa	0.96	0.97	0.96	0.96	0.95	0.96	0.95	0.85
Chocolate, food preparations with cocoa, n.e.s.	-0.21	-0.28	-0.24	0.02	-0.02	-0.07	-0.03	-0.38
Tea and mate	0.16	0.14	0.19	0.25	0.25	0.22	0.27	0.18
Beverages and tobacco	0.11	0.05	0.02	-0.06	-0.12	-0.05	-0.06	-0.13
Tobacco, unmanufactured; tobacco refuse	0.47	0.36	0.42	0.21	0.30	0.31	0.27	0.36
Tobacco, manufactured	-0.36	-0.41	-0.47	-0.37	-0.36	-0.21	-0.21	-0.31
Oil seeds and oleaginous fruits	-0.01	0.14	0.10	0.03	0.01	0.04	0.01	-0.17
Crude rubber (including synthetic and reclaimed)	0.30	0.05	0.12	0.16	0.32	0.28	0.43	0.36
Natural rubber & similar gums, in primary forms	0.51	0.33	0.38	0.39	0.50	0.51	0.58	0.48
Synthetic rubber	-0.59	-0.63	-0.54	-0.47	-0.51	-0.56	-0.49	-0.56
Animal and vegetable oils, fats and waxes	-0.49	-0.60	-0.53	-0.55	-0.62	-0.58	-0.64	-0.62
Animal oils and fats	-0.80	-0.87	-0.77	-0.77	-0.47	-0.34	-0.34	-0.35
Agricultural machinery (excluding tractors) & parts	-0.79	-0.87	-0.80	-0.81	-0.86	-0.85	-0.85	-0.85
Tractors (excluding those of 71414 & 74415)	-0.89	-0.86	-0.83	-0.90	-0.81	-0.89	-0.88	-0.91
Food-processing machines (excluding domestic)	-0.83	-0.85	-0.81	-0.86	-0.89	-0.87	-0.88	-0.87

Source: Author's analysis based on UNCTAD, 2016

By and large, international trade in agriculture has recently been recognized as an important driver of economic growth, especially in SSA countries where agriculture is the major export products. This subchapter surveys a broad range of both traditional and modern theories of trade concerning farming. Historically, trade in agrarian products was concentrated on comparative and factor endowment models. The application of modern theories in the agricultural sector has been increasing in recent years. In this survey, it could be concluded that those models help in explaining the current patterns of trade. All the theories appear to be less relevant in SSA

[10] Standard International Trade Classification (SITC): The SITC is a classification developed by the UN for statistical analysis of trade data. In the SITC, articles are grouped by classes of goods such as food, chemicals, transport equipment, machinery and raw materials, and also by stage of fabrication and by industrial origin.

countries than in industrialized countries. For instance, even though agriculture is the primary employer of labour, principal export commodities from the SSA countries, they are not the top major exporters of agricultural products. Instead, some of them are net importers of food and agricultural commodities. This is partly, due to limited market access of the raw products, low productivity due to limited capital and technology. To gain more from trade and experience a favourable trade balance in agriculture, SSA countries should take advantage of their unique climatic conditions and concentrate on producing those commodities that cannot be produced by the West in large quantities for economies of scale, self-sufficient and positive trade balance in agriculture.

3.4 Agribusiness in the Current Model of Agriculture

Theories related to the advancement agribusiness as a distinct discipline include Coase's (1937) treatment of the 'nature of the firm'. Coase argued about firm's production, prices, and the need for the reduction of transaction costs. In the same spirit, Penrose (1959) coined the theory of the growth of the firm. The model stressed that a firm's resources *'include the physical things a firm buys, leases or produces for its own use and the people hired on terms that make them effectively part of the firm. Services, on the other hand, are the contribution these resources can make to the productive operations of the firm'* (p. 67). Penrose maintained that heterogeneity among companies (within an industry) takes place because even companies with similar factor endowments could produce them in unique combinations that yield different services. Furthermore, Barney's (1991) Resource-Based View of the firm (RBV) provided an important background for understanding or explaining of an agribusiness firm's existence, heterogeneity, growth and competitive advantage.

The term *"Agribusiness''* was coined by John Davis and Ray Goldberg, in 1957. They argued that the concept of agriculture as an industry had already existed for over 150 years ago, during which a typical family would not only cultivate and raise food products, but also produce and utilize the means or inputs necessary for the agricultural production such as tools, fertilizers, processing and retailing. In other words, agribusiness involves all businesses that are carried out inside and outside the farm gate, bringing commodities from the farms to the consumers. Agribusiness comprised not only of food and agricultural production, but also involved 'other processes such as generation or acquisition of production inputs, use of farm produce in different

forms through processing and trading of farm products. Hence, there begun a *"specialization"* into different aspects of the agricultural industry process. However, each of these parts relies on the entire process, such that, one cannot function without the rest.' Goldberg and Davis (1957) defined agribusiness as *"the total of all operations involved in the manufacture and distribution of farm supplies; production operations on the farm; and the storage, processing and distribution of farm commodities and items made from them"* (p. 2).

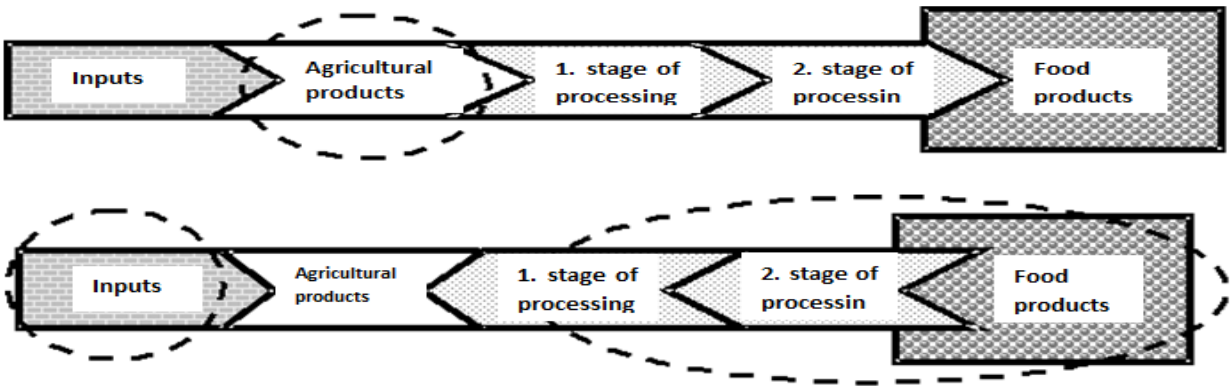

Figure 3-1: Supply- and demand-oriented commodity chain
Source: Bečvářová, 2005

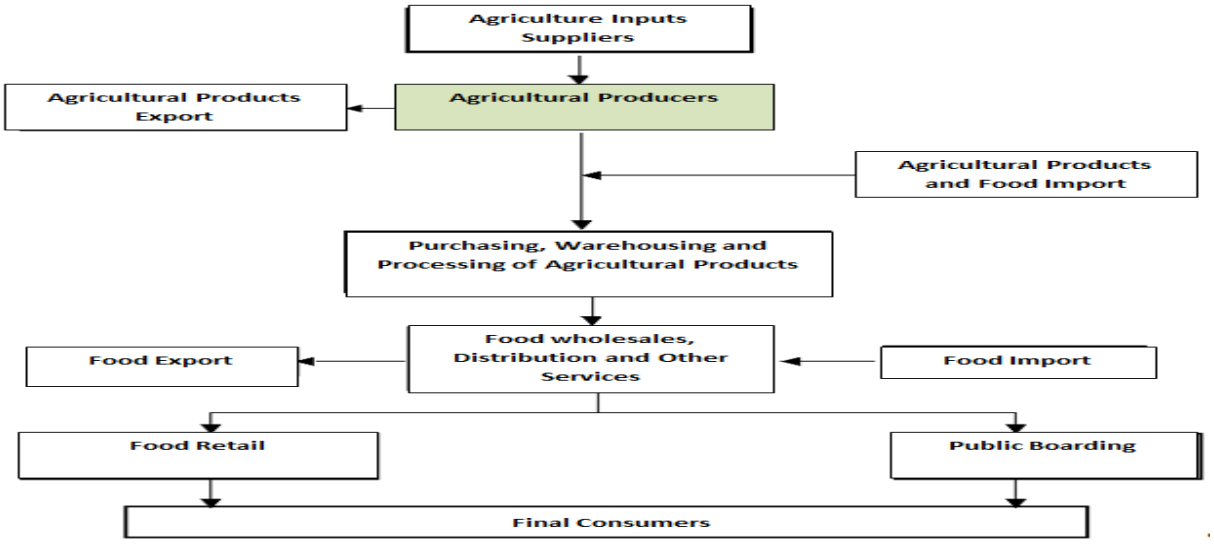

Figure 3-2: Basic structure of agribusiness
Source: Bečvářová, 2001

Similarly, Bečvářová (2005) illustrates agribusiness which starts from inputs procurement used for agricultural production, processing the outputs, and then marketing and distributing the products through wholesalers and retailers to the consumers (Figure 3.1 and Table 3.2). As

defined, an agricultural value chain is a complex, and an integrated production network consists of several activities that add value to a final product (Bečvářová, 2005; FAO, 2015). The interdependent linkages between the chain and the security of a market-driven demand for the finished product can provide suppliers, processors, producers, and marketing firms with more secure access to buying and selling of their products. Consequently, this reduces risks and costs of doing business and improves access to finance and other services that are needed by those within the value chain (FAO, 2015). Agribusiness has been shaping the processes of production and distribution of agricultural commodities in recent years. For instance, it typically leads to the inclusion of firms in sectors that to some extent involved in the production, processing and distribution of food and agricultural products to the final consumers (Bečvářová, 2008). Also, the process influences processing and distribution that, in turn, shapes the demand for primary products, allocation and utilization of production factors (Bečvářová, 2011).

Michael Porter first mentioned the term value chain in 1985 in the book, *'Competitive Advantage.'* Porter illustrated on how firms could enjoy a competitive advantage over others in an economy by adding value to their organization (Porter, 1985). Value chain was later incorporated into agricultural production and the development and related activities. The OECD and WTO (2015) maintain that *"the internationalisation of production has given rise to complex cross-border flows of goods, know-how, investment, services and people, referred to as supply-chain trade. These chains can offer developing countries new opportunities to integrate into the global economy by allowing firms to join international production networks rather than having to build their own from scratch"*. The increasing fragmentation of production across national borders pinpoints the need for nations across the globe to have an open, transparent and predictable trade regime as tariffs; non-tariff other restrictive measures hurt both foreign suppliers and domestic producers (p. 166).

3.5 World Trade Organization and Agriculture

The World Trade Organization (WTO) was established on 1st January 1995 under the Marrakech Agreement, as the successor to the General Agreement on Tariffs and Trade (GATT) which was created in 1948. The organization has 162 member countries, as of 30 November 2015. The major mission of the organization is to deal with global trade rules, negotiations and agreements. The organization's function is to ensure that trade flows are carried out smoothly, predictably and

freely for the equal benefits of the member countries. Since the creation of GATT/WTO, it has made progress in the expansion of world trade and financial flows through the reduction of trade restrictions and distorting measures (Table 3.5).

Table 3-5: The nine trade negotiation rounds under the GATT and WTO

Round	Date	Duration	Country	Subjects covered	Achievements
Geneva	1947-1948	7 months	23	Tariffs	Signing of GATT, 45,000 tariff concessions affecting $10 billion of trade
Annecy	1949	5 months	13	Tariffs	Nations exchanged about 5,000 tariff concessions
Torquay	1950-1951	8 months	38	Tariffs	Nations exchanged about 8,700 tariff concessions, reducing the 1948 tariff levels by 25%
Geneva	1956	5 months	26	Tariffs	$2.5 billion in tariff reductions
Dillon	1960-2	11 months	26	Tariffs	Tariff concessions worth $4.9 billion of world trade
Kennedy	1964-7	37 months	62	Tariffs, Anti-dumping measures	Tariff concessions worth $40 billion of world trade
Tokyo	1973-1979	74 months	102	Tariffs, non-tariff measures, "framework" agreements	Tariff reductions worth more than $300 billion dollars achieved
Uruguay	1986-1994	87 months	123	Tariffs, non-tariff measures, rules, intellectual property, dispute settlement, textiles, **agriculture,** the creation of WTO, etc.	The creation of the WTO and a further range of trade negotiations, leading to major tariff reductions (about 40%) and agricultural subsidies.
Doha	2001-	Ongoing	161	Tariffs, non-tariff measures, **agriculture**, competition, investment, etc.	WTO Members agreed to fully remove agricultural export subsidies in the Tenth Ministerial Conference, held in Kenya, in December 2015.

Source: WTO

The principal approaches for the progress on free trade within the GATT and later WTO have been periodic multilateral negotiating rounds. There have been nine of such rounds altogether. The negotiation rounds started in 1947 with the Geneva Round that established the GATT, with the sole focus of multilateral tariff reductions from Geneva round in 1947 to Dillion round. From Kennedy round onward, other trade restriction issues, such as anti-dumping and intellectual property rights were included in the negotiations. Presently, Doha Round which commenced in 2001 is still on-going (Table 3.5). Until the 1980s, GATT rules, negotiations and agreements were mainly concentrated on manufactured products; in particular, the restrictions on raw agricultural commodities remained in place (Mackinnon and Cumbers, 2007). Trade negotiations and issues related to agricultural trade were for the first time included in the Eighth Round (Uruguay Round) and continued in the present 9th Round, Doha Round (Table 3.5).

What are the agreements, achievements and challenges of multilateral trade negotiations (MTN) on agriculture by the WTO? This present research is an attempt to assess the achievements made and challenges faced by WTO negotiations and rules from the Uruguay Round when agriculture

was first brought to the round table to the ongoing Doha Round.[11] The broad achievements, timeframes, and areas covered in the rounds are summarised and presented in Table 3.5. Specifically, WTO negotiations and agreements on agriculture are analysed in the following subchapters.

3.5.1 The Uruguay Round and Agriculture

The issue of trade in agricultural products was intentionally excluded from the early start of GATT Agreement's life. The consensus of the leading forces was that the sector is unique, that, could not be treated as other economic sectors for reasons of national food security. The limited relevance of the GATT to agricultural related trade issues led to increasingly high levels of protection and domestic support for the sector, especially in advanced economies, such as the EU and the USA. Nonetheless, under GATT rules, agriculture got special treatment (ST) in the export competition. Even though export subsidies were not allowed for industrial products, they were not prohibited in agricultural commodities. Arguably, some net exporters sought to continue and maintain their market share through trade-distorting support (TDS) such as export subsidies and limited domestic market access. Their policies had led to increasing global tension and disputes over agricultural trade. For instance, between 1980 and 1990, over 60% of total trade disputes submitted to the GATT dispute settlements were connected to agriculture. Before the Uruguay Round, there were no bound tariffs[12] on agriculture, as member countries had had subsidies of various kinds starting from the point of production to the market price support. These reasons, coupled with the disadvantage in the LDCs had paved the way for the inclusion of agriculture in the trade negotiation agenda.

Since the beginning of the WTO Rounds in 1947, for the first time, agriculture was discussed in the 8th multilateral trade negotiations (MTN), known as the Uruguay Round (UR), took place between 1986 and 1994, embracing 123 countries across the globe as contracting parties. The UR came to force on 1st January 1995, in the same year that the WTO was established by Article 20 of the Marrakesh Agreement on Agriculture (AAM). Unlike the previous rounds, the EU, and the

[11]***Round***: In GATT/WTO context, a multilateral trade negotiation. There have been ninth rounds: Geneva (1947), Annecy (1949), Torquay (1950-1), Geneva (1955-6), Dillon (1960-1), Kennedy (1963-7), Tokyo (1973-9) and Uruguay (1986-94). The ninth round was launched in Doha in 2001 (Table 3.5).

[12]***Bound tariff*** or tariff binding is a commitment, under the GATT, by a country not to increase the tariff on a product above a specified level, also known as ceiling bindings.

USA were not the only parties with a keen interest in the agricultural sector. Japan and the Cairns Group[13] were the other powerful stakeholders.

The fact that farming, at last, came within the MTN during the Uruguay Round, more than four decades after the creation of the GATT, is globally accepted as an achievement, a step in the right direction. The hope enormously intensified that the process of free trade of this highly protected sector would achieve tremendous results by 2000. According to the WTO (2002), the broad objective of the UR that was agreed by the WTO member countries was to establish a fair and market-oriented agricultural trading system, and a reform process was to be *'initiated through the negotiation of commitments on support and protection and through the establishment of strengthened and more operationally effective GATT rules and disciplines'*. The long-term objective of the Round was to *'provide for substantial progressive reductions in agricultural support and protection, sustained over an agreed period, resulting in correcting and preventing restrictions and distortions in the world agricultural markets'* (p. 33).

In concrete objectives, Member countries ratified to achieve specific binding commitments in reducing agricultural protections in ***three pillars: market access, export subsidies, and domestic support***. Market access takes into accounts of various trade restrictions (mainly tariffs) that are confronting imports.[14] Domestic support looks at subsidies and other programmes, including those that raise or guarantee farm gate prices and farmers' incomes. Agricultural subsidies were divided into *"trade-distorting"* or *"non-trade-distorting"* by the WTO. The WTO further divides domestic support into three categories: Amber Box,[15] Green Box,[16] and Blue Box.[17] The most

[13]***Cairns group*** is an interest group of 20 agricultural exporting countries. The name Cairns, comes from the city where the meeting of the countries mentioned here took place in Cairns, Australia. The Group was formed in 1986, a month before the beginning of the UR, presently included 20 nations: New Zeeland, Australia, Canada (advanced economies), Chile, Peru, Columbia, Brazil, Guatemala, Costa Rica, Paraguay, Bolivia, Argentina, Uruguay, Philippines, Malaysia, Indonesia, Pakistan, Vietnam, and Thailand, South Africa (developing countries). The sole concerns of the group has been to make sure that agrarian issues are addressed by persuading the US and the EU to reduce their farm support measures, tariffs, and export subsidies.

[14] Market access commitments are listed in Articles 4 and 5 AoA and they refer to bindings, tariff reduction, and specific commitments of each nation in this category. Article 4:2 AoA prohibits the use of non-tariff measures on agricultural products, except otherwise provided for in Article 5 and Annex 5. Similarly, article 4:2 lists the non-tariff measures which have to be abolished, remedied or reverted to tariffs.

[15] ***Amber Box:*** Includes subsidies connected to agrarian price support and thus considered the most dangerous trade-distorting measures; also known as the Aggregate Measure of Support (AMS).

[16] ***Green Box:*** domestic support for agricultural related activities that are allowed without limits. Because they are unlikely to increase production, distort trade, or at most causes minimal distortion in the systems. The green box is explained in Annex 2 of the WTO AoA. For the EU and the US, one of the most significant allowable subsidies in this category is decoupled support which is paid directly to producers in the regions. Initially, Green Box was not included in the commodities under reductions, particularly expenditures that were directly connected to food security initiatives.

important classes of the boxes mentioned are the trade-distorting Amber Box subsidies. Under the UR AoA, developed countries were committed to reducing their Amber Box, also known as an aggregate measurement of support (AMS).[18] They planned to cut it by 20% for the period between 1995 and 2000 (six years) whereas developing countries agreed to reduce their Amber Box subsidies by 13% for the period between 1995 and 2004 (ten years). Export subsidies are measures used by exporting countries to make exports artificially competitive and distort healthy competitions (Table 3.6). In addition to the three pillars, a far-reaching agreement on Sanitary and Phytosanitary Measures (the *'SPS'*)[19] were also ratified. To liberalise trade in agricultural products, all WTO members, except LDCs were required to make commitments in all the areas regarded as trade distorting measures. Implying that developing countries were given a limited element of Special and Differential Treatment (SDT)[20] in the agreement (Table 3.6).

On the other hand, the doors opened for the Green Box subsidies to be increased to any levels as no limits were set on them. These include subsidies for research and extension programs, and "decoupled"[21] income support payments practiced the EU, and others (Africa, 2011). UNCTAD-India Team (2007) argues that even though these subsidies were technically not linked to the levels of production (i.e. are *"decoupled"*) or price support. Their subsidies to agricultural farmers have an impact on production decisions, which were to some extent linked to both production and trade-distorting measures. Arguably, removing advanced nations' Green Box subsidy might hurt their producers and exporters, while LDCs might be stimulated positively.

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[17] ***Blue Box:*** subsidies that are directly connected to setting production or the number of animals, but under programs which also requiring farmers to set-aside part of their land or limit production by imposing production quotas. These are subjected to WTO rules to be 'partially decoupled' from production and are not subject to WTO reduction commitments because they are deemed less trade-distorting than price-linked subsidies. In the EU, they are also known as direct payments.

[18] ***Aggregate Measurement of Support (AMS),*** *or simply,* ***'AMS'*** means *'the annual level of support, expressed in monetary terms, provided for an agricultural product in favour of the producers of the basic agricultural product or non-product-specific support provided in favour of agricultural producers in general, other than support provided under programmes'* (WTO, 2002, p. 36).

[19] The **SPS** Agreement sets out the main rules for food safety and animal and plant health standards. It also encourages governments to establish national SPS measures consistent with global standards, guidelines, and recommendations.

[20] ***Special and differential treatment (SDT)*** is a set of GATT/WTO special provisions (GATT 1947, see Article XVIII) that gives developing countries special right or exempts them from the same stringent trade rules and disciplines of advanced nations. In the URAA, for example, LDCs are exempt from any reduction commitments to continue domestic production of staple crops for food security purposes.

[21] ***Decoupled*** in the WTO refers to support to farmers that are not connected with prices or agricultural production. Introduced by the CAP EU reform in 2003 reform, it is the removal of the relationship between the production of a particular product and the receipt of a direct payment. The possibility of keeping a connection between production and direct payments was maintained in the 2013 CAP reform. The reason is to support the sustained production of particular products so as to avoid land falling out of farming in vulnerable areas.

As shown in Table 3.6, the round was planned to end by 2000 (2004 in the case of LDCs). The first effective rules governing foreign trade in agriculture were introduced. All agricultural commodities were brought under MTN and regulations by the WTO's Agreement on Agriculture (AoA), also called the Uruguay Round Agreement on Agriculture (UR AoA). WTO Members for the first time agreed to open their markets and drastically reduce trade- distorting subsidies for a healthy completion in agriculture. Table 3.6 further shows a broad view of the numerical targets for cutting subsidies and protection through the three pillars- market access (tariff reductions), export subsidies, and domestic support. The three pillars of the AoA that have been committed by WTO Members.[22] Similarly, ***de minimis***[23] as part of the Amber Box supports in small, minimal or negligible permitted amounts of domestic support was limited to 5% of the value of production in developed countries, 10% in developing countries (Table 3.7). To simplify the guide to the WTO on the "modalities", *de minimis* was treated separately from the Amber Box (WTO, 2008).

Table 3-6: The reductions in agricultural protection and subsidies agreed in the UR

Pillars	**Developed countries** 6 years: 1995–2000	**Developing countries** 10 years: 1995–2004
Market access- Tariffs		
Average cut for all agricultural products	–36%	–24%
Minimum cut per product	–15%	–10%
Domestic support		
Cuts in total ("AMS") support for the sector (base period: 1986-88)	–20%	–13%
Export subsidies		
Value of subsidies (outlays)	–36%	–24%
Subsidised quantities (base period: 1986-1990)	–21%	–14%

Source: WTO, 2004

During the UR, the annual world trade in processed, value added, agricultural commodities were about $235 billion. This was up to 60% of total world agricultural trade, average 1996-2000, and it had grown over the last 20 years faster than raw agricultural commodities. Similarly, the exports of processed agricultural products annually increased by 6% during the period between

[22] LDCs did not have to reduce subsidies or tariffs. The base level of tariff cuts was the bound rate prior to 1 January 1995. Only the rates for reducing export subsidies appear in the agreement. The other figures targeted were used to calculate countries' legally binding "schedules" of commitments. The newly committed tariffs and tariff quotas, covering all agricultural products, took effect in 1995. Many developing countries also used the option of offering ceiling tariff rates in cases where duties were not "bound" before the Uruguay Round. LDCs do not have to cut their tariffs (WTO, 2004).

[23] ***De minimis*** as part of the Amber Box supports in small, minimal or negligible amounts of domestic support permitted in economies (limited to 5% of the value of production in advanced economies, 10% in developing countries, see Table 2.7). In order to simplify the guide to the "modalities", de minimis is treated distinctively from the Amber box.

1981 and 2000, whereas as raw products grew by 3.5% during the period under review, raising their global market shares in total trade in agriculture from 55% between 1981-1990 to 60% between 1991-2000. During the period under study, LDCs share of trade in processed agricultural products declined. Partly due to stringent trade barriers in processed products (Appendix Table 3C), developing countries heavily remained dependent on the exports of primary agricultural commodities. Similarly, their share in global exports of processed agricultural products declined from 53% between 1981 and 1990 to 48% between 1991 and 2000. LDCs share also declined from 2.3% to 1.8% in commodities such as coffee. For instance, the share of the trade of the ten major coffee-exporting developing countries in international roasted coffee decreased to 2% from 7% for the period between 1981-1990 and 1991-2000 (FAO, 2003b).

Table 3-7: De minimis percentages in developed and developing countries

Country	**De minimis before Rev.4 (%)**	**Rev. 4 reduction**		**De minimis after reduction (%)**
		Reduction by **(%)**	Paragraph in Rev.4	
Brazil	10	33.3	31	6.7
Canada	5	50	30	2.5
EU	5	50	30	2.5
India	10	0	32	10
Indonesia	10	0	32	10
Japan	5	50	30	2.5
Korea	10	33.3	31	6.7
Mexico	10	33.3	31	6.7
Philippines	10	0	32	10
South Africa	10	33.3	31	6.7
Thailand	10	33.3	31	6.7
Turkey	10	0	32	10
USA	5	50	30	2.5

Sources: Brink, 2014

Is trade liberalization included trade in primary tropical products? Even though, tariff escalation has been reduced during the post- UR, it persists in many commodity chains. FAO's analysis showed that in 12 out of 17 major commodity chains, substantial tariff escalation persists, notably at the first stage of processing. In the top import markets, the tariff escalation was most evident in primary tropical products such as cocoa, tea, fruit, sugar, and coffee (Appendix Table 3C). This partly has hindered major exporting countries, mostly SSA from diversifying into the exports of processed agricultural products.

WTO members were made to convert their agricultural non-tariff measures such as quantitative restriction into bound tariff measures, also known as the era of *'tariffication'*.[24] The further reduction of these tariffs has so far made agricultural markets substantially more predictable, and to some extent, promoted healthy competition and free trade in the sector. Tariff-rate quotas (TRQs)[25] is seen as an important outcome of the UR AoA.

Table 3-8: Green Box, Blue Box, AMS and PSE support levels of EC and US, 1986-1997

EC and USA	**Base Period (1986-88)**	**1995**	**1996**	**1997**
EC (Millions ECU)				
Green Box	9,233.4	18,779.2	22,130.3	-
Blue Box	-	20,843.5	21,520.8	-
AMS product specific supports including de minimis	73,644.9	49,823.4	50,751.5	-
Total (green box, blue box, de minimis and AMS)	82,878.3	90.222.8	95,131	-
PSE (millions US$)	99,619	94,605	85,000	109,670
USA				
Green Box (millions US$)	24,098	46,041	51,825	51,249
Blue Box	-	7,030	-	-
AMS product specific supports Including de minimis	24,659	6,310.9	5,867.8	6,474.7
Total (green box, blue box, de minimis and AMS)	49,658	60,767.9	58,807.8	58,291.7
PSE (Millions US$)	41,428	15,205	23,500	30,616

Source: WTO, 2000

Studies by UNCTAD (2003) reveals a worldwide reduction of 50% in all agricultural tariffs brought about an aggregate welfare gain of $21.6 billion to countries involved in the trade in 1997. It also indicated that all the world regions gain as a result of tariff cuts. Nonetheless, gains vary widely both in absolute and in relative terms. The study also showed welfare changes in trade liberalization in agriculture during the export subsidy regime. It indicated a modest worldwide welfare loss. These losses were primarily associated with an exacerbated allocation of the available resources within nations. Arguably, the removal of export subsidies would not necessarily drive the distribution of resources. As seen in Table 3.8, one of the main dilemmas since the beginning of the implementation of the WTO AoA in 1995 was that of domestic support. Measured regarding the AMS was agreed to be reduced by 24% by developed countries.

[24] ***Tariffication*** is the procedure where the agricultural market-access provision in which all agricultural Non-tariff barriers (NTBs) to trade measures (i.e. licensing, quotas, and voluntary export restraints) are converted into bound tariffs. As part of the UR AoA Market Access, all non-tariff border measures were "terrified" by participants before a tariff reduction was made.

[25]***TRQ*** is a trade policy mechanism used by countries to protect a locally-produced product from import competitions. This policy combines both tariffs and quotas used to restrict imports in countries. Under the AoA, WTO members replaced non-tariff border measures on imports with tariffs. Consequently, market access chances are in some cases ensured by TRQs: imports up to the given quota quantity could enter with a low or zero tariff rate whereas imports above the quota quantity enter with a higher tariff rate. Nonetheless, for many commodities, the right to use a "special safeguard" in agriculture to impose an additional tariff if some conditions are met regarding the volumes of import or prices is possible (Brink, 2014).

However, despite these reductions, rather than decreased, the overall level of supports, on the whole, have improved in the USA and the EU within the period under review.

Even though the UR AoA did not bring the much-expected outcomes, it was able to bring agriculture under MTN discipline and agreement on a partial, gradual free trade. This achievement made the possibility of measuring agricultural support and protection much better, for instance, tariffs replaced quotas. The post-Uruguay Round on the pattern of agricultural protection was characterised by a high dispersion in the rates of the tariff, with a large number of tariff peaks[26] concerning products of interest to LDCs in food and agriculture. Tariff escalation[27] also impeded the inflows of trade in a broad number of products of interest to developing countries (UNCTAD, 2003). Furthermore, because WTO members were *'allowed to achieve tariff reduction commitments by aggregating reductions across a range of different products, they have been able to reduce tariffs on less sensitive products – the ones they do not produce themselves – while maintaining high tariffs (tariff peaks) on goods they do produce'.* Also, to protect local food processors from a fierce competition, it is common to increase tariff rates relative each step in the processing ladder (Action Aid, 2006, p. 10).

Table 3-9: Levels of support to agriculture within OECD countries (US$ billions), 1986-2001

Group/country	1986-1988 (annual average)	1998	1999	2000	2001	1999-2001 (annual average)
OECD	302	339	357	321	311	330
USA	69	91	99	92	95	95
EU	110	125	130	102	106	113

Source: OECD, 2001 and 2002

The WTO AoA required a reduction of agricultural subsidies and abolished new export subsidies, but it had allowed the USA and the EU (CAPs) to continue with their annually agricultural subsidisation at a combined rate of up to $150 billion (Steinberg and Josling, 2003). In the same vein, as shown in Table 3.9, the levels of agricultural support in the OECD countries, notably the USA and EU had not substantially decreased as expected. Instead of a substantial reduction in

[26] ***Tariff Peaks*****:** high tariffs. Many countries usually use two measures of peaks: International Peaks: duties over 15 percent. National Peaks: duties over three times the average of the tariff structure.

[27] ***Tariff escalation*** could be referred as a situation where tariffs increase from raw, semi to processed commodities. The practice lead to a significant protection to processed products in importing countries, depending on the share of value-added in the final output. Therefore, tariff escalation effectively reduces the scope and incentive in the processing of agricultural commodities in exporting countries. The existence of tariff escalation in agrarian markets is regarded as one of the major factors that hinder export growth in the exporting countries, especially from the SSA countries. Two aspects of this effect are seen as critical. Cutting tariff escalation was a huge issue during the UR AoA (FAO, 2003b).

domestic support to farmers and agricultural enterprises, the net result of subsidies were transferred into different Boxes between 1999 and 2001 in advanced economies. Also, industrialized countries' support to agriculture activities was about 9% higher in nominal terms than the period between 1986 and 1988.

Similarly, as presented in Table 3.10, the overall amount of domestic support is calculated as the sum of both TDS and non-trade-distorting subsidies. In 2001, the last year that the EU notified to the WTO, it gave €72.1 billion, while the US, in turn, gave $87.2 billion as domestic support to its producers. DRIFE (2003) argues that the support was in contrast to the levels of domestic support that even the largest developing countries that substantially depend on agriculture were meagerly supported their farmers. For instance, in 1998, India was able to give only $173 million, while Brazil gave only $466 million in domestic support to their farmers (Africa, 2011).

The UR AoA failed to deliver the expected benefits to developing countries, especially SSA. For instance, issues related to agricultural TDS and market access still exist afterward (Stiglitz and Charlton, 2007; Mccally and Nash, 2007; Abdullateef and Ijaiya, 2010). Arguably, a poor result at the URAA was mainly because the big players such as the US and the EU had been too far from being flexible in their commitments on the agricultural impasse. The difficulties in reaching AoA were among the major reasons why it took so long to complete the UR negotiations. As a consequence, following the disappointments and the messy state of affairs in the Round implementation period, it had become imperative for another round of further negotiations. This reason gave birth to another Round, Doha Round.

3.5.2 The Doha Round and Agriculture

Following the end of UR AoA without meeting all the desired expectations, especially of the LDCs, the Doha Ministerial Conference[28] was held in November 2001 in Doha, Qatar, and launched new, comprehensive objectives and sets a timetable for agriculture and other negotiations. Because Doha Round (DR) was formerly initiated to put the *"needs and interests"* of developing countries *"at the heart"* of the round, it is also called Doha Development Agenda (DDA). In continuation with UR AoA and other products, the challenges inherent in getting

[28] ***Ministerial Conference*** is the highest decision-making body of the WTO, which normally meets every two years. It brings together all WTO members, all of which are countries or customs unions. The Ministerial Conference usually takes decision(s) on all matters under any of the multilateral trade negotiations and agreements, agriculture included.

almost all the WTO members to discuss and move forward in the give-and-take of negotiations was and a tedious and complicated initiative. Arguably, with the inbuilt protectionist restrictions on products that have existed for many decades, in their domestic economies, were threatening.

According to the WTO (2015), broadly, the objective of the DR negotiations on agriculture *"is to reduce distortions in agricultural trade caused by high tariffs and other barriers, export subsidies and domestic support. The negotiations take place in the WTO Committee on Agriculture, meeting in special session".* They also take into considerations the socio-political sensitivities in the sector as well as the developing countries' needs (p. 32).

Doha Round Negotiations on Agriculture in a nutshell: Agricultural negotiations began in 2000, with the commitment made by WTO members in the 1986-94 UR to continue with farm trade reforms. Even though negotiations for DR started in 2000, but due to the vested interests of member countries, not much progress could be made until 2001 when the round finally launched. The fourth Doha Ministerial Conference was held in November 2001, launched DDA and sets a timetable for agricultural negotiations. The deliberations were continued, particularly on substantial trade restrictions, such a limited market access to agricultural products that remain after the DDA. The WTO Committee on Agriculture conducted a meeting in special session; also, take into considerations, political sensitivities in the agrarian sector and the needs of LDCs.

In March 2002, WTO member nations met and elaborated on specific topics and discuss alternatives on how to resolve agricultural trade-distorting measures, especially in the advanced economies. After almost three years since the DR was launched, the first virile phase of negotiations about the modalities on AoA was scheduled to be concluded by March 31st 2003.[29] The chairperson of the committee on agriculture, Stuart Harbinson, produced a draft text of an agreement on the modalities to further the contentious negotiations. WTO Members were not under any obligation to accept the proposal as a basis for negotiations. The Harbinson draft proposed among other things, a 60% reduction in domestic support classified as Amber Box over the period of five years; drastic reduction of export subsidies over the period of ten years; Blue Box should be moved into the Amber Box, so that it could be reduced; reducing high tariffs by a

[29] The March 2003 ***Draft of Modalities*** that pushes for further Commitments in the context of the WTO AoA, *"proposes steeper cuts in the higher tariffs; where the tariff on a processed product is higher than for its primary form, the proposed tariff reduction for the processed product would be equivalent to that of its primary form, multiplied by at least a factor of 1.3"* (FAO, 2003b).

larger percentage than low tariffs, through a series of three bands. Tariffs over 90% would be cut by an average of 60 % with a 45% minimum per tariff line. Tariffs between 15% and 90% were to be cut by an average of 50% and a minimum of 35% per tariff line. Tariffs lower than or equal to 15% were expected to be cut by 40% with a minimum per line of 25%. The first draft on the modalities of agricultural trade negotiations were revised for further trade reform steps and the session was to be held in March 2003, but the deadline was missed as it was shifted to August but ended in a stalemate. Following the continued deadlock on agriculture, in August 2003, another interest group, G-20[30] was formed. Just like the Cairns group, the sole agenda of the group has been to push vigorously for a reduction of trade distorting measures for greater market access in advanced economies' markets.

The Fifth Ministerial Conference held in Cancún, Mexico in September 2003. The conference focused on negotiating a framework for approval at rather than modalities. The meeting in Cancún took stock of progress in agriculture, but failed to agree on a framework. Rather, the meeting was soured by discord on agricultural issues, including cotton. It was ended in deadlock on the *'Singapore issues'* on trade facilitation agreement (TFA)[31] which was the only one that remained on the DDA. WTO members agreed on a framework for the negotiation of free trade (i.e. market access and TFA) in agriculture and other sectors in the DDA in April 2004. The Round-the-clock meetings produce *'historic negotiations'* breakthrough in August the same year.

Developing countries have argued that wealthy farmers from the advanced economies are the ones unjustifiably insisting on SDT to protect their agriculture with domestic support, subsidies and a variety of other protective measures. This has adverse effects on the plight of the poor farmers in LDCs, that are producing and living largely at the level of subsistence. Also, competing with the rich counterpart in quite unfair terms, acquires a sharper poignancy when it is seen that the former has a clear comparative advantage in export markets in the actual sense of Ricardo's principle of comparative advantage. It has been submitted that most of these LDCs are in a situation where their legitimate right to exploit this comparative advantage are being denied.

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[30] ***The G-20*** is presently made up of 21 countries: Egypt, Nigeria, Tanzania, South Africa, Zimbabwe, Argentina, Venezuela, Brazil, Bolivia, Paraguay, Uruguay, Chile, Mexico, Cuba, Guatemala, China, India, Indonesia, Pakistan, Philippines and Thailand.

[31] Negotiations on a new Trade Facilitation Agreement (TFA) were launched in July 2004 as part of the DDA. '*They aimed to expedite the movement, release and clearance of goods, including goods in transit, as well as to ensure effective cooperation between customs and other appropriate authorities. After nearly ten years, the negotiations were successfully concluded in December 2013 at the WTO's Ninth Ministerial Conference in Bali'* (WTO, 2015, p. 40).

'To add insult to injury, they are placed in a corner at the negotiating table where they have to behave like supplicants pleading for lenient treatment and some reprieve and not as injured parties demanding just redress of their grievances' (Modwel, 2004, p. 22).

Table 3-10: USA and EU's domestic support to farmers

	US (US$ Billion)			EU (€ billion)			
Indicator	Allowed by WTO	Actual (2001)	Offered levels on allowed (Oct.05)	Allowed by WTO	Actual (2001)	Offered levels on allowed (Oct.05)	Actual with CAP reform (2008)
Amber box	19.1	14.4	7.6	67.2	43.7	20.2	18.8
Blue box	9.3	0.0	5.0	23.7	23.7	12.3	7.0
De minimis	19.8	7.0	10.0	19.0	1.0	3.8	1.0
Sub-total TDS	48.2	21.4	22.7	110.0	68.4	36.3	26.8
Demands on allowed TDS	15 (EU), 12 (G-20)			27 (G-20)			
Green box	n.a	50.7	n.a	n.a	18.8	n.a	n.a
Total	n.a	72.1	n.a	n.a	87.2	n.a	n.a

Sources: Khor, 2007; UNCTAD-India Team, 2007; Africa, 2011

In October 2005, during the preparation for the Sixth Ministerial Conference in Hong Kong, the EU offered to cut its allowed trade-distorting support by reducing its Amber Box by 70% to €20.2 billion. Cutting de minimis support by 80% to €3.8 billion, and reducing the Blue Box to 5.0% of the value of agricultural production or equivalent to €12.3 billion. These would drastically cut the total allowed trade-distorting measures from the previous €110 billion to €36.3 billion, or by 67%. In the same period, the US offered also offered to reduce its allowed trade-distorting support, Amber Box by 60% to $7.6 billion. The US also agreed to reduce its de mininis to $10 billion or 5% of production. The total overall cuts of allowed trade distorting measures by the US translated to $22.7 billion from the previous $48.2 billion, or about 53% (DRIFE, 2003).

WTO Sixth Ministerial Conference in Hong Kong was held in December 2005, and launched Aid[32] for Trade Initiative and approved Hong Kong Declaration. Even though the meeting failed to agree on modalities for negotiations on agricultural related trade-distorting issues, the US and the EU agreed to cut some of their trade-distorting measures. In November 2007, a text on export competition issues was circulated by the Farm talks chair for further negotiations. The

[32]***Aid*** is an ***official development assistance (ODA)*** offered by developed countries to developing countries to facilitate their trade for economic growth and socioeconomic development. Despite the UN MDGs goal 8: develop a global partnership for development, most developed economies failed to meet the aid target of 0.7% of their GNI to developing countries.

deliberations continued until January 2008 when Farm talks chair circulated eight texts on market access, as well as working documents that reflected the progress made in the negotiations and commitments. In May 2008, a couple of revised blueprints issued for a final deal on agricultural and non-agricultural trade formulas for cutting tariffs and trade-distorting farm subsidies were presented. A stepping stone on the way to concluding the DDA was held in July 2008. The main task of the meeting was to settle a range of questions that would shape the final agreement of the DDA. WTO members deliberated over a package, known as the 'July 2008 package.' Under a framework of a *'special safeguard mechanism'* (SSM),[33] developing countries were allowed to increase temporarily their customs tariffs to enable them to cope with the enormous volumes of imports or price fall.

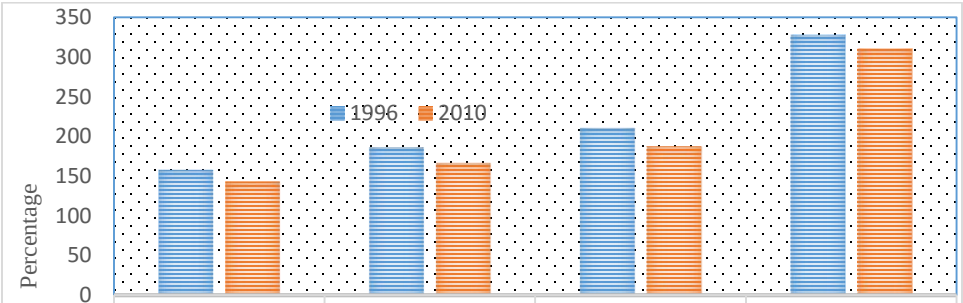
Similarly, a meeting to ensure LDCs have market access, and finance for trade was held in October 2008. While, in December 2008, revised drafts were issued for farm talks, and the latest revisions formulas for cutting tariffs and trade-distorting agricultural subsidies[34] in a final deal were issued. Nevertheless, the DDA meeting also ended in deadlock as both advanced countries (the USA, in particular, wanted more tariffs) and newly industrialized countries (China and India, in particular, wanted to lower tariffs) refused to shift grounds on agricultural trade rules and subsidies, especially on SSM. However, in May 2010, the EU technical *"road-map"* discussed issues among themselves following its presentation on directions in their market access commitments in agriculture, albeit the most tedious issue in the negotiations.

Statistical data presented by Erokhin and Ivolga (2012) show that almost all the global levels of agricultural support are distributed among producers in the EU (39%), the USA (36%) and Japan (15%). These economies jointly provided more than 90% of the total volume of subsidies worldwide in 2011. The share of the economy support in the GDP of agriculture was 39% in the USA, 37% in Japan and 36% in the EU. This implies that trade distorting measures were far from being solved. Therefore, there was every need to continue with WTO AoA. Consequently, the

[33] In ***Doha Round agriculture, SSM*** is a tool that will allow underdeveloped nations to increase tariffs temporarily to deal with import shocks. This measure is used to protect poor smallholder farmers in developing countries.

[34] Mark Malloch Brown, former head of the UNDP, estimated that farm subsidies cost to poor countries: "It is the extraordinary distortion of global trade, where the West spends $360 billion a year on protecting its agriculture with a network of subsidies and tariffs that costs developing countries about US$50 billion in potential lost agricultural exports. Fifty billion dollars is the equivalent of today's level of development assistance."

WTO Eighth Ministerial Conference took place in December 2011, in Geneva. The conference sought to break the earlier deadlock in the DDA, with some progress made in some areas such as agriculture, TFA, and dispute settlement. Agriculture negotiators were focused on identifying issues that were likely to find a chance of achieving an agreement. Trade costs have been identified as among the major bottlenecks to international trade as well as a resilient mutual trade benefits in countries involved (Moïsé and Le Bris, 2013; Moïsé et al., 2013). Figure 3.3 shows that the trade costs in agricultural markets are highest in LDCs. However, the levels of trade costs are out rightly different. Trade costs in agriculture are substantially higher than in manufacturing, in all income groups. These findings have important inference for competitiveness in agriculture. Even though trade costs in agricultural products are decreasing in terms of dynamics, the speed of change is slower than in the manufacturing sector. Effective policies that would dramatically reduce a broad range of trade costs that hurt producers and consumers are urgently needed for improving production and mutual trade benefits as being championed by the WTO in the present Doha Round (OECD and WTO, 2015).



	High income	Upper middle income	Lower middle income	Low income
1996	157.7	186.3	210.5	327.5
2010	143.1	166.6	187.7	310.6

Figure 3-3: Trade costs in the agricultural sector, by income group, 1996 and 2010
Source: OECD and WTO, 2015

Africa (2011) argues that both the US and EU are either maneuvering to exploit existing agreement on agriculture technicalities or create new ones that would enable them to maintain their agricultural supports. These blocks have been moving actual subsidies from the Amber Box to the Blue Box and *de minimis*. They also abused the loose definitions and criteria for Green Box subsidies that have no cut limits. WTO's AoA has been crafted in such a way to allow the big players, notably the US and the EU to maintain their enormous support to their producers by working their way around technical definitions of agricultural subsidies.

In line with the agreement by the advanced economies to support developing countries in trade, a total of $129 billion was disbursed to developing countries to support infrastructure programs and projects such as transport, communications, and energy for the period between 2006 and 2013 (Table 3.11). Asia was the main beneficiary $58.4 billion, followed by Africa with $44.8 billion. This to some extent has partly improved the transportation of agricultural products farms to the markets for sales and consumption. The huge amount of aid disbursements for building productive capacity went to Africa ($39.1 billion) and Asia ($34.5 billion). Also, between 2006 and 2013, AFT to Africa reached $86.5 billion, out of which three-quarters were remitted to the SSA countries where the agricultural farming and trade dominated their challenges.

Table 3-11: AFT share by category (total disbursements for the period 2006-2013)

Category	Type	Share
TPR (US$ 7.6 billion)	TPR	3.1%
Economic Infrastructure (US$ 129 billion)	Transport	29.5%
	Communications	1.9%
	Energy	21.0%
Building Productive Capacity (US$ 109.6 billion)	Business Services	5.4%
	Bank Services	10.1%
	Agriculture	21.6%
	Tourism	0.4%
	Industry/mining	7.0%

Source: OECD and WTO, 2015

In 2012, WTO negotiations on agriculture continued seeking to break the deadlock in the DDA, with some progress made in a couple of areas such as TFA and agriculture. In December 2012, agricultural G-20 countries formed an alliance in the WTO agricultural talks, and to explore how to progress in the DDA negotiations. The G-20 proposal stressed that tariff and subsidy reduction for advanced economies (i.e. the US, EU and Japan) with fewer demands on developing countries.

In March 2013, Members started negotiating the proposals on developing countries' food security stockholding programmes. They discussed the substance of a proposal drastically to reduce price support disciplines for LDCs public stocks and domestic food aid. While in July 2013, Farm talks chair reported modest progress and called for 'an extremely focused' to find common ground in agriculture. It was stressed that consensus on political messages could be possible, but major differences remain on revised rules for domestic support and export subsidies.

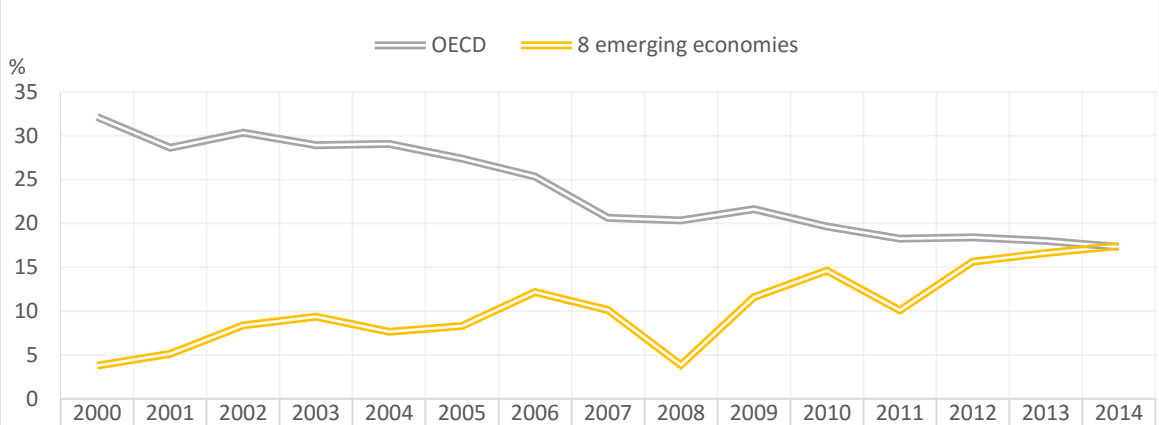
The WTO Ninth Ministerial Conference in Bali, Indonesia, in December 2013 and agreed to continue working in a timely, constructive manner and pragmatic towards identifying some accords to deliver to the ministerial meeting (see WT/MIN(13)/34WT/L/909). The conference welcomed progress on Aid for Trade (AFT),[35] in particular to LDCs. They stressed that the post-2015 development agenda should frame the new AFT work programme. Allowing developing countries more options to provide food security, and encourage donors to continue to support LDCS to boost trade and development.

As presented in Appendix Figure 3D, two-thirds of the donors had specific AFT strategies to support underdeveloped world for trade and development. Since 2012, their major strategies to direct their support more on Trade facilitation, inclusive and sustainable growth, private sector development, and regional integration. Similarly, a ten-year strategy that was adopted in 2013 by the African Development Bank (AfDB) sets out how to leverage recent African performance into a more profound transformation of the economy. The bank aimed at enhancing regional transport corridors to reduce the costs of trade and stimulate African producers to become more competitive while improving adjacent rural areas to have access to markets (AfDB, 2013). Also, the bank launched the $2 billion Africa Trade Fund (ATF), and the Africa Growing Together Fund (AGTF) was created to modernise custom systems, reduce the incidence of non-tariff barriers and enhance standard capacities (OECD and WTO, 2015).

Evidence from a survey carried out by the International Trade Centre (ITC) shows that companies experience non-tariff measures (NTMs) were highest in the export of agricultural products to the OECD member countries (Appendix Figure 3E). Nonetheless, the findings indicate that OECD countries are the major markets for agricultural export destinations from the countries surveyed (ITC, 2015). Despite negotiation on the auspices of the WTO, world trade policies in the agriculture still favour mostly western world at the expense of developing countries. For instance, LDCs, especially from SSA countries are still trying to gain a foothold in growth and development through agriculture and facing barriers put up by the very countries

[35] *The AFT* initiative was launched by the WTO in December 2005 at the Hong Kong Ministerial Conference. A Task Force was established by the WTO established aimed at "operationalizing" AFT in 2006. The initiative proposed that AFT ought to focus on pinpointing the needs within the receiving nations, responding to donors and acting as an intermediary between developing countries and donors. Generally, AFT helps developing countries, and particularly LDCs' trade. In other words, the WTO-led AFT initiative encourages the governments of developing countries and donors to recognize the enormous role that trade could play in growth and development in recipient countries.

most promoting the benefits of trade openness. Trade protectionism, as practiced by developed countries, tends to fall most heavily on the poorest agricultural countries because developed-country protection focused heavily on agricultural commodities. Arguably, the damage this tactic does to the underdeveloped world is immense (Khor, 2007; Todaro and Smith, 2015; Verter and Bečvářová, 2014a). In the spirit SDT to LDCs, the WTO Committee on Agriculture took into account on the issue of improving, developing countries' access to global markets for their agricultural exports (WTO, 2015). WTO farm negotiations held in December 2014. However, it ended in disarray. Thus, another meeting took place in July 2015. Sadly, WTO members were still divided on how to advance agricultural negotiations. Notwithstanding, two papers about domestic support in the agriculture were discussed with a positive progress.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
OECD	32.1	28.6	30.3	28.9	29.1	27.4	25.3	20.6	20.3	21.6	19.6	18.2	18.4	18.0	17.3
8 emerging economies	3.8	5.1	8.4	9.3	7.6	8.3	12.2	10.1	3.9	11.6	14.6	10.1	15.6	16.6	17.4

Figure 3-4: Evolution of PSE in OECD and emerging economies, 2000-2014
Source: OECD, 2015

Because the WTO has not yet resolved all the trade-related issues in the present DDA, particularly on agriculture, the 10th Ministerial Conference was held in Nairobi, Kenya in December 2015. Interestingly, the conference took place in Africa for the first time. Given that agriculture accounts for a substantial share of African trade, GDP and employment, the conference was important for the continent. Also, during this conference, African leaders and other LDCs employed WTO members to have a rethink and agree on agricultural trade-distorting issues to give Africa and other LDCs a more sense of belonging to the world markets. In the same spirit, WTO member took a decision on Agricultural export competition, which is particularly significant to the continent. The WTO members from developed countries agreed to eliminate

agricultural export subsidies that distort trade immediately, while LDCs agreed to eliminate subsidies by 2018 (cotton by 1st January 2017).

In conclusion, this sub-chapter assesses GATT/WTO negotiations and outcomes in agricultural trade. One of the agendas dominated since the beginning of the Uruguay Round in 1986 and later Doha Round in 2001 is the agricultural reform. The negotiations on agricultural distorting issues have been tough in achieving the expected results. There have been disagreements, arguments and counterarguments over food and agriculture as among the major cause of the failure in the WTO negotiations and agreements. As compared to other merchandise trade, despite the efforts being made and achievements made by the WTO so far, agriculture is still the most closed and protected products in a global market. Sadly, agriculture is still the sector most SSA countries have a comparative advantage in production and exportation. However, partially due to limited market access, and other trade distorting measures carried out by advanced economies, notably, the USA and the EU, and recently, newly industrialised countries may have hampered the competitive advantage in underdeveloped countries across the globe. *Although trade AoA have been difficult to be honoured, WTO members are aware that their actions or inactions might have had either positive or adverse effects on other countries.*

3.6 Review of the Empirical Literature

3.6.1 Evidence from Agricultural Exports and Economic growth

There is a long-standing debate over the relationship between the export and economic growth in both advanced and less advanced economies. There are a couple of empirical studies that confirm the robust connection between export and economic growth in countries across the globe. Some studies support the hypothesis of export- led growth (ELG) mostly in the developing nations (Chenery and Strout, 1966; Michaely, 1977; Balassa, 1978; Tyler, 1981; Kavoussi, 1984; Ram, 1985; UNEP, 2002; Shirazi and Manap, 2005; Blížkovský and Moeller, 2014; Kang, 2015). They argue that the exports of goods and services generate foreign exchange that is required to import foreign goods. The increases in underlying commodity imports, in turn, stimulate a nation's capacity to produce in the long run. This is more pronounced in less developed economies that have a heavy disadvantage in the production of capital goods and services.

Empirical evidence of ELG has also been confirmed in the developed countries, such as Germany, Switzerland, Canada, United Kingdom and Japan (Kugler, 1991; Henriques and

Sadorsky, 1996; Boltho, 1996; Frankel and Romer, 1999). Scholars have opined that export is a vital tool for stimulating sustainable economic growth and development in countries that are poised to develop. For instance, Kónya (2004) investigates export-led growth hypothesis in twenty-five OECD countries. Using Granger causality approach, the results reveal that exports Granger cause- economic growth in many OECD countries such as Iceland, Sweden, Canada, Japan and South Korea. On the contrary, the results further show that export does not Granger cause- growth in Luxembourg and the Netherlands.

Until recently, scholars had paid attention mainly to the general phenomena that ELG, research on the relationship between economic sectors, such as agricultural exports and economic growth were not given serious attention. Given that ELG hypothesis has been confirmed in countries, it is worthwhile to determine if agricultural export also led- economic growth. Economists, world organizations and scientist believe that agricultural export is a catalyst for growth, especially in developing countries where it is the main source of foreign earnings and national incomes (Verter and Bečvářová, 2014a). They also have some arguments in support of trade in food and agriculture. International trade brings the total amount of goods and services to the countries involved. It also brings the diversity of commodities that increase choices to the populace. To some extent, agricultural trade maintains a stable demand and supply of commodities that allow efficient exchanges and stimulate economic growth in countries (Erokhin, Ivolga and Heijman 2014; Verter and Bečvářová, 2014b). Also, agricultural exports can accelerate a balanced growth in all countries involved if only issues (i.e. restrictions and distortions) related to the world trade in both primary and processed agricultural trade are speedily addressed or drastically reduced (Anderson and Martin, 2005; McCally and Nash, 2007; Laborde and Martin, 2012; WTO, 2015).

Empirically, Sanjuán-López and Dawson (2010) determine the connection between GDP and agricultural and non-agricultural exports in 42 countries using panel cointegration methods. Their findings indicate that a long-run relationship exists between the variables in the model. The results further show that agricultural exports Granger- cause economic growth. Thus, confirm the export-led growth hypothesis for the 42 countries under study. Similarly, Henneberry and Curry (2010) examine the relationship between agricultural exports and economic growth in Pakistan. Using three simultaneous equations representing GDP, agricultural exports, and imports, they find a favourable relationship between agricultural exports and economic growth in the country.

Kang (2015) investigates the evidence of the export-led growth in major rice exporting countries using some econometric approaches. The results confirm that agricultural export- led growth in the major rice exporting countries such as Pakistan, Vietnam and Thailand. In the same direction, Dawson (2005) examines the contribution of agricultural exports to economic growth in less developed countries. The results show significant structural differences in economic growth between low, lower-middle, and upper-income countries. The findings further indicate that investment in the agricultural export has an effect on economic growth in those countries. Arguably, proactive measures or policies should be promoted for agricultural exports and growth in countries around the globe. In the same line, using panel data analysis, Bbaale and Mutenyo (2011) confirm that agricultural exports-led income per capita in SSA countries. In the same fashion, Shombe (2008) also confirms that agricultural export-led economic performance in Tanzania. Onogwu (2014) finds out that intra-industry trade in cereal crop has positively impacted the gross national income per capita in the Economic Community of West African States (ECOWAS). Arguably, both exports and imports growth rates of these commodities fluctuate over time. Similarly, some studies (Eicher, 1967; Bbaale and Mutenyo, 2011; Gbaiye et al., 2013; Ijirshar, 2015; Ojo, Awe and Ogunjobi, 2014; Onogwu, 2014; Ojide, Ojide and Ogbodo, 2014) have also confirmed the hypothesis that agricultural export-led economic growth in Nigeria. In contrast to agricultural export- led growth arguments above, proponents of the opposite viewpoint opine that the agricultural export does not have a robust connection for fostering economic growth. Studies by Marshall, Schwart and Ziliak (1988), Faridi (2012) do not support the hypothesis that agricultural exports-led growth in the developing countries.

3.6.2 Evidence from Agricultural Production and Trade

Some researchers have empirically determined factors that drive agricultural productivity in Nigeria and elsewhere in the world. For instance, Oyekale (2007) investigates some factors that influence agricultural land expansion in Nigeria. Using Johansen co-integration and error correction model (ECM), the Johansen test suggests that there exist long-run equilibrium relationships among the variables in the model. The ECM findings indicate that the dynamic unrestricted short-run parameters of permanent cropland growth rates, an index of agricultural production, inhabitants, and land have a significant impact on agricultural land expansion in the

country. In the same fashion, Ayinde, Adewumi and Omotosho (2009); Ammani, Alamu and Kudi (2010) also find a positive relationship between areas harvested and crop output in Nigeria.

Because yam is the second largest crop production, after cassava in Nigeria, the country is the largest producer in the world, also, the crop serves as a major source income and food consumption in the country, Verter and Bečvářová (2015) investigate some determinants of yam production in Nigeria. Their results reveal that area harvested, yield per hectare, fertilizer application, producer price and economic growth have a positive relationship with productivity in Nigeria.

Similarly, Brownson, Ini-Mfon and Etim (2012) investigate the drivers of cash crop output volatility in Nigeria for the period between 1961 and 2010. Using an ECM model, the results indicate that the inflation rate, harvested area, and commercial loans have effects on the volatility of agricultural performance in the country. Walkenhorst (2007) determines the effects of agricultural policies on producers. The results suggest that the country's policies towards producers have substantially shifted significantly over the years, while agricultural production has been fluctuating since the country got her independence in 1960.

Kareem et al. (2013) determine some drivers of agricultural productivity in Nigeria. Using OLS and Granger causality approaches, they find out that bank loans to agriculture, foreign direct investment, interest rate and food import value have a positive relationship with agricultural productivity in the country. The result of the Granger causality test also shows that agricultural performance Granger causes commercial loans. On the contrary, Iganiga and Unemhilin (2011); Verter and Bečvářová (2015) find an inverse relationship between commercial loans and agricultural performance in Nigeria. They argue that most loans to agriculture are not channelled to agricultural related activities. Also, most smallholder farmers do not have access to loans granted by commercial banks and other financial institutions. This is partly because of high-interest rates, and lenders ask for collateral securities, which most farmers do not have.

In the same spirit, some researchers have attempted to determine the drivers of the main agricultural export commodities in Nigeria and other nations. For instance, Nadeem (2007) investigates the dynamic effects of economic reforms and free trade policy on the development of agricultural products in Pakistan. Using Johansen cointegration and VECM models, their results indicate that there exists a long-run equilibrium association between the real value of agricultural

exports, openness, competitiveness and global demand for agricultural commodities in the country. The results also provided evidence that agrarian export development is more elastic to changes in domestic factors. Allaro (2011) evaluates the trends of oilseeds (i.e. sesame seed) export performance in Ethiopia for the period 1974-2009. Using ECM approaches, the results signify that the real output and the nominal exchange rate have a positive influence on oilseeds export performance in the country.

Verter and Bečvářová (2014a) determine the factors that drive cocoa exports in Nigeria. Their results indicate that trade openness; world prices and real effective exchange rates (REER) spur exports in Nigeria. Arguably, an increase in demand for the product in the global markets might lead the world price increase, this will, in turn, stimulate producers to increase production for exports and foreign earnings. They conclude that Nigeria has a comparative advantage in the exportation of cocoa beans to the world market. Verter and Bečvářová (2014b) also confirm that trade openness and production have a positive impact on cocoa exports in Ghana. Boansi (2013) finds an ample positive connection between cocoa exports and the output cocoa beans in Ghana. Arguably, increases in cocoa exports could reinvigorate cocoa farmers to double their efforts to boost farming in the country.

Darkwah and Verter (2014) investigate some determinants of cocoa production in Ghana. They find a long run equilibrium relationship between the variables in the model. Their result further reveals that farm size, export and economic growth have positive impacts on cocoa production in the country. On the contrary, their findings show an inverse relationship between the world cocoa price and exports. They argue that Ghanaian government has a rigid pricing policy on the cocoa product to shield local farmers from price volatility. However, the costs of this system to the farmers appear to outweigh its intended benefits. Also, sometimes the difference between world price and farm gate price is wide. The government also fails to increase producer price when world price increases.

Similarly, Amoro and Shen (2013) confirm a positive relationship between cocoa export and production in Cote D'Ivoire. Their study also reveals a positive relationship between rubber production, farm gate price, interest rate and export. On the contrary, their results show an inverse relationship between domestic consumption, exchange rate and rubber export, as well as between domestic consumption and cocoa export in the country.

Yeboah, Shaik, Wozniak and Allen (2008) use a gravity model to estimate cocoa trade in countries. They find out that differences between the economic size of countries, resource endowments, and the sum of the bilateral GDP of the USA as well as the exporting nations were the primary drivers of the cocoa trade from the 16 major cocoa cultivating countries to the USA. They argue that Potential bilateral cocoa export products in the era of free trade could stimulate production and export. Gbetnkom and Khan (2002) investigate the drivers of three major agricultural export commodities in Cameroon. Their results suggest that producer price and road infrastructure, and export credits spur coffee export spur cocoa and coffee exports, while export credits also spur the banana export in Cameroon.

Daramola (2011) finds a robust positive relationship between world price, exchange rates and cocoa export in Nigeria. As expected, the results show an inverse relationship between farm gate price and cocoa exports in the country. Akanni, Adeokun and Akintola (2004) examine the effects of free trade on the principal agricultural products: cocoa, palm kernel and groundnut oil in Nigeria. They confirm that trade liberalisation has a positive connection with these export products. They employ the government to formulate policies aimed at stimulating investment in these products to increase output and export. On the other hand, findings by Abolagla et al. (2010); Amoro and Shen (2013); Verter and Bečvářová (2014a and 2014b) show an inverse connection between domestic consumption and export in Cote D'Ivoire, Nigeria and Ghana respectively.

Yusuf and Yusuf (2007) determine the driving force export performance of three principal agricultural commodities: cocoa, rubber and palm-kernel in Nigeria. Their findings reveal that there exist both short run and long run equilibrium relationships between the variables. Equivalently, Ndubuto et al. (2010) confirm that cocoa export has a positive influence on production in Nigeria. They also argue that Nigeria has a comparative advantage in production and exportation of cocoa beans to the global market.

4 AGRICULTURE IN NIGERIA

4.1 Nigeria Profile

Nigeria is located in Western Africa. The country's population is estimated by the United Nations to be 182 million inhabitants in 2015 (Table 4.1), making it the most populous country in Africa and the 7th most populous country in the world. The country is among the countries with the largest fertility rate (5.7%) in the world (World Bank, 2016), and her population is projected to surpass that of the USA by 2050 (UNDESA, 2015). Nigeria has returned to democracy since 1999 after prolong series of military dictatorships, paving ways for socioeconomic, political and institutional reforms. The government of Nigeria has launched and pursued economic reforms, called the National Economic Empowerment Development Strategy (NEEDS) which centred on improving macroeconomic stability, liberalization, privatization, efficiency and transparency of businesses and public regulations (National Planning Commission, 2004). The economy has grown rapidly, achieving an average annual growth rate of 7% in recent years. After Nigeria rebased her economy, it took over from South Africa and has become the largest economy in Africa, and ranked as the 22nd largest economy in the world, with a nominal GDP worth about $569 billion (Table 4.1) in 2014 (WTO, 2015; World Bank, 2015). The country improved by three places to 124th out of 140 economies in global competitiveness for 2015/2016 rankings. This development was partly driven by the country's fiscal and monetary disciplines (World Economic Forum, 2015).

Nigeria is still far from being competitive in the global market despite experiencing rapid economic growth and reforms in the key sectors. This is partly attributed to institutional corruption and lack of political will to drive critical sectors to witness an inclusive growth and development. For instance, the corruption perception in Nigeria 136/168 (scored 26/100) in 2015 (Transparency International, 2015). This suggests that there is still a large scale corruption in the country, which to some extent undermined development in Nigeria. Also, poverty rate in the country rather than decreases, it increased from 54% in 2004 to 63% in 2010 (NBS, 2012), with the population in multidimensional poverty was 51% (88.4 million people) in 2013 (UNDP, 2015). Sadly, unemployment rate has drastically risen from 5.3% in 2006 to 29.2% in 2015 (NBS, 2016a), and the present crude oil price crunch has worsened compounded the situation.

Table 4-1: Nigeria profiles

BASIC INDICATORS						
Population (thousands, 2015)		182 202	**Rank in world trade**, 2014		Export	Import
GDP (million current US$, 2014)		568 508	Merchandise		39	49
GDP (million current PPP US$, 2014)		1 049 102	excluding intra-EU trade		26	31
Current account balance (million US$, 2012)		20 353	Commercial services		114	38
Trade per capita (US$, 2012-2014)		978	excluding intra-EU trade		87	24
Trade to GDP ratio (2012-2014)		33.0				
Ease of doing business (2015)		169/189	***Annual percentage change***			
		2014	2010-2014	2013	2014	
Real GDP (2010=100)		123	5	5	6	
Exports of goods and services (volume, 2010=100)*		66	-13	-46	...	
Imports of goods and services (volume, 2010=100)*		69	-11	12	...	
TRADE POLICY						
WTO accession		1 January 1995	**Contribution to WTO budget** (%, 2015)			0.4
Trade Policy Review		28, 30 June 2011	**Import duties collected** (%, 2010-2012)			
GPA accession		-	in total tax revenue			0.0
Tariffs and duty-free imports			to total imports			0.0
Tariff binding coverage (%)		19.1	**Number of notifications to WTO and measures in force**			
MFN tariffs	Final bound	Applied 2014	Outstanding notifications in WTO Central Registry			20
Simple average of import duties			Goods RTAs – services EIAs notified to WTO			2 – 0
All goods	118.3	11.9	Anti-dumping (30 June 2015)			...
Agricultural goods (AOA)	150.0	15.6	Countervailing duties (30 June 2015)			...
Non-agricultural goods	49.2	11.4	Safeguards			0
Non-*ad-valorem* duties (% total tariff lines)	0.0	0.0	**Number of disputes** (complainant – defendant)			
MFN duty-free imports (%, 2012)			Requests for consultation			0 – 0
in agricultural goods (AOA)		0.0	Original panel / Appellate Body (AB) reports			0 – 0
in non-agricultural goods		4.0	Compliance panel / AB reports (Article 21.5 DSU)			0 – 0
Services sectors with GATS commitments		32	Arbitration awards (Article 22.6 DSU)			0 – 0
MERCHANDISE TRADE		*Value*	*Annual percentage change*			
		2014	2010-2014	2013	2014	
Merchandise *exports*, f.o.b. (million US$)		97 000	4	-10	-7	
Merchandise *imports*, c.i.f. (million US$)		60 000	8	10	7	
		2014**			2014[b]	
Share in world total exports		0.51	**Share in world total imports**			0.31
Breakdown in economy's total exports			**Breakdown in economy's total imports**			
By main commodity group (ITS)			By main commodity group (ITS)			
Agricultural products		8.3	Agricultural products			16.4
Fuels and mining products		79.9	Fuels and mining products			17.5
Manufactures		3.4	Manufactures			45.6
By main destination			**By main origin**			
1. European Union (28)		42.2	1. European Union (28)			31.1
2. India		12.6	2. China			21.7
3. Brazil		9.5	3. USA			8.7
4. USA		8.5	4. India			4.7
5. South Africa		4.8	5. Niger			3.6
Unspecified		1.3	Unspecified			5.5

WTO, 2015; WITS, 2016

Note: *Refers to 2013 and to the average annual percentage change for 2010-2013, **Breakdowns by destination/origin refer to 2013

Nigeria ranked 152/185 (low HDI), 0.514 in HDI, and life expectancy (53 years) in 2014 (UNDP, 2015). Nigeria is among the countries reported with worst in food security challenges, scored 37/100 (100 means food secured) and ranked 91/109 (109 denotes the least country) countries in 2015 (Economist Intelligence Unit, 2015). The above indicators show that Nigeria's growth has not been proportionally translated into a robust socioeconomic and agricultural development. Consequently, social inclusion and inclusive growth remain major policy bottlenecks. Lack of shared prosperity has partly fuelled tensions and insecurity, which are among the major

challenges Nigeria has been facing in recent years. It ranges from terrorism (Boko Haram)[36] to armed robbery, from the kidnapping of the wealthy (expatriates included) for ransom to extra-judicial killings, and from ethnic crisis to overcrowded urban areas. As a consequence, Nigeria's position in political stability and absence of violence/terrorism index (-2.5 weak; 2.5 strong) terribly decreased from -0.7 in 1998 to -2.1 in 2014 (World Bank, 2015).

Nigeria is one among the SSA countries that are endowed with abundant food and agricultural resources, such, as yams, cocoa, cassava, rice, sugar cane, maize, and millet. Prior to the advent of crude oil in Nigeria in the 1960s, and the oil boom in the 1970s, the country solely depended on agriculture for food and market and as a major source of domestic and foreign earnings. At present, agriculture is still the primary source of income for the majority rural dwellers and an integral contributor to the national GDP (Table 4.8, and Appendix Table 4D).

Table 4-2: Nigeria: Land and agricultural areas (1,000 ha), 1961-2013

Indicator	1961	1970	1980	1990	2000	2010	2012	2013
Country area	92,377	92,377	92,377	92,377	92,377	92,377	92,377	92,377
Land area	91,077	91,077	91,077	91,077	91,077	91,077	91,077	91,077
Agricultural area	53,177	61,031	50,439	61,586	71,300	70,000	72,000	70,800
Agricultural area (% land area)	58.4	67.0	55.4	67.6	78.3	76.9	79.1	77.7
Arable land and permanent crops	27,177	35,031	23,103	32,074	41,000	39,700	41,700	40,500
Arable land and permanent crops (% agricultural area)	51.1	57.4	45.8	52.1	57.5	56.7	57.9	57.2
Arable land	23,677	31,881	19,603	28,174	35,000	33,000	35,000	34,000
Arable land (% land area)	26.0	35.0	21.5	30.9	38.4	36.2	38.4	37.3
Permanent crops	3,500	3,150	3,500	3,900	6,000	6,700	6,700	6,500
Permanent meadows and pastures	26,000	26,000	27,335	29,512	30,300	30,300	30,300	30,300
Forest area	n.a	n.a	n.a	17,234	13,137	9,041	8,222	7,812
Forest area (% of land area)	n.a	n.a	n.a	18.9	14.4	9.9	9.0	8.6
Other land	n.a	n.a	n.a	12,257	6,640	12,036	10,855	12,465
Inland water	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300
Total area equipped for irrigation	200	200	200	230	290	293	293	293

Source: Author's analysis based on FAOSTAT, 2016

[36] ***Boko Haram*** is an Islamic extremist group originated in 2009 in the north-eastern Nigeria, fighting to eliminate western education. The group has made life a nightmare for many people not only in the North Eastern Nigeria but also in some areas in Benin Republic, Cameroon, Chad and Niger which are bordered with Nigeria. This notorious terrorist group has so far killed and displaced hundreds of thousands of people, destroyed properties, including farms and yields worth millions of dollars in recent years. These have brought untold hardship, worsen food security challenges, and discouraged FDI to the north-eastern Nigeria, in particular, and Nigeria, in general.

Nigeria was ranked 14th largest in the agricultural land area in the world, and 3rd in Africa, after Sudan and South Africa in 2013. Also, Nigeria ranked the sixth positions in agricultural land as a proportion of total land area in the world, 1st in Africa in the same period under study. Data available from FAO (2016) shows that in 2013, agricultural area, 70.8 million hectares (77.7%) out of Nigeria's total land area of 91.1 million hectares. However, only 40.5 million hectares were classified as arable land and permanent crops, or 57% of the total agricultural area was under cultivation during the period under study. This shows that agricultural production in Nigeria is below the country's capacity as a substantial percentage of the area was not cultivated while the forest cover being depleted. Regrettably, forest cover depleted from 19% in 1990 to 9% in 2013 (Table 4.2), down to 7.7% in 2015 of the total land area (World Bank, 2016). The large-scale deforestation for timber, farming, fuels, and housing for the rapidly increased population has contributed to the significant depletion in forest cover in Nigeria. Consequently, Nigeria has become a net importer of forest products since 1969 (Appendix Figure 5I)

According to the WTO Director-General, Roberto Azevêdo, in an official visit to Nigeria (15 February 2016):

"Around the world governments are struggling with a gloomy economic outlook and a range of challenges to delivering a return to strong growth. Nigeria is no exception. Indeed, the country faces a range of formidable challenges, such as security and governance issues, which have been compounded by the steep decline in oil prices, due largely to global over-supply. This is acting as a brake on economic growth in Nigeria. There are few signs that the decline in commodity prices will be reversed in the near future. Diversifying the economy to reduce dependence on the oil sector is a clear priority. Improving the conditions for trade and investment will be an essential part of the policy mix. By reducing barriers to trade and lowering the costs of doing business across borders, we can help to attract investment, and provide access to new markets for Nigeria's budding business community".

4.2 Trends in Agricultural Production

The climatic condition in Nigeria is diverse. It ranges from the tropical areas of the coast to the arid zone of the north. Thus, it makes possible to farm almost all agricultural commodities that could be cultivated in the tropical and subtropical regions of the world. Agricultural production all over the world has experienced dramatic changes in terms of methods of farming, quality and

annual output. Undoubtedly, these changes are more witnessed in advanced economies than in developing countries, especially SSA countries, such as Nigeria.

Table 4.3 shows the historical data on the value of net agricultural production in Nigeria, Côte d'Ivoire and Ghana in the period between 1961 and 2013. All the countries experienced improvements in agriculture in the period under study. Similarly, the share of Nigeria in the world and Africa slowly increased from 1.1% and 14.9% in 1961 to 1.6% and 17.5% in 2013. Also, the share in crop production increased from 1.6% and 19.2% in 1961 to 2.14% and 21.5% in 2013 in the world and Africa respectively. This shows that Nigeria is a major player in agricultural production in Africa, especially in West Africa. Historically, as shown in Figure 4.1, the annual quantity of total crop output in Nigeria has experienced growth for the period between 1962 and 2014, but fluctuated in some years, especially in 2009.

Table 4-3: Net agricultural production value (constant 2004-2006 1000 US$), 1961-2013

Year/ indicator	Value of agric. production: Côte d'Ivoire		Value of agric. production: Ghana		Value of agric. production: Nigeria			Agric. production in Nigeria (% of world production)		Value of Agric. prod in Nigeria (% of Africa production)	
	Agriculture	Crops	Agriculture	Crops	Agriculture	Crops	Livestock	Agriculture	Crops	agriculture	crops
1961	1,014.5	895.0	1,452.0	1,362.0	7,211.5	6,966.9	683.6	1.09	1.57	14.88	19.18
1965	1,252.0	1,107.3	1,541.1	1,426.0	8,440.7	8,307.3	733.5	1.14	1.67	15.29	19.74
1970	1,619.5	1,456.1	1,840.7	1,711.1	10,517.3	10,533.1	933.6	1.25	1.84	16.31	21.08
1980	2,580.2	2,344.4	1,621.0	1,413.1	9,380.0	8,225.3	1,671.0	0.89	1.17	12.65	15.00
1990	3,719.5	3,390.4	1,956.3	1,701.8	15,460.2	14,940.1	1,847.3	1.14	1.65	15.67	20.13
2000	5,355.7	5,006.2	4,155.4	3,867.3	25,707.4	25,164.9	2,644.6	1.54	2.23	19.18	24.43
2010	5,759.9	5,284.7	6,595.9	6,234.7	33,243.8	32,579.8	3,561.4	1.54	2.23	17.51	22.31
2012	6,485.0	5,973.1	7,359.2	6,980.2	34,889.5	33,268.9	3,711.9	1.54	2.16	17.37	21.51
2013	6,660.3	6,130.9	7,621.3	7,213.9	36,377.0	34,441.9	3,792.9	1.57	2.14	17.50	21.46

Source: Author's analysis based on FAOSTAT, 2016

In the same vain, from Africa, only Nigeria was among the top twenty agricultural producers in the world in 2013. Available data from FAO (2016) indicates that, in 2013, Nigeria ($36 billion) ranked 10th largest producer of agricultural products in value (Constant 2004-2006, US$) in the world (Appendix Table 4A), after China ($538 billion), India ($251 billion), USA ($220 billion), Brazil ($147 billion), Indonesia ($65 billion), Russia ($47 billion), Argentina ($43 billion), Turkey ($39 billion), and France ($38 billion). This development is partly attributed to the government efforts to stabilise prices, fertilizer subsidies (FMARD, 2015; World Bank, 2016), a more stable and coherent policy environment, proving soft loans to producers.

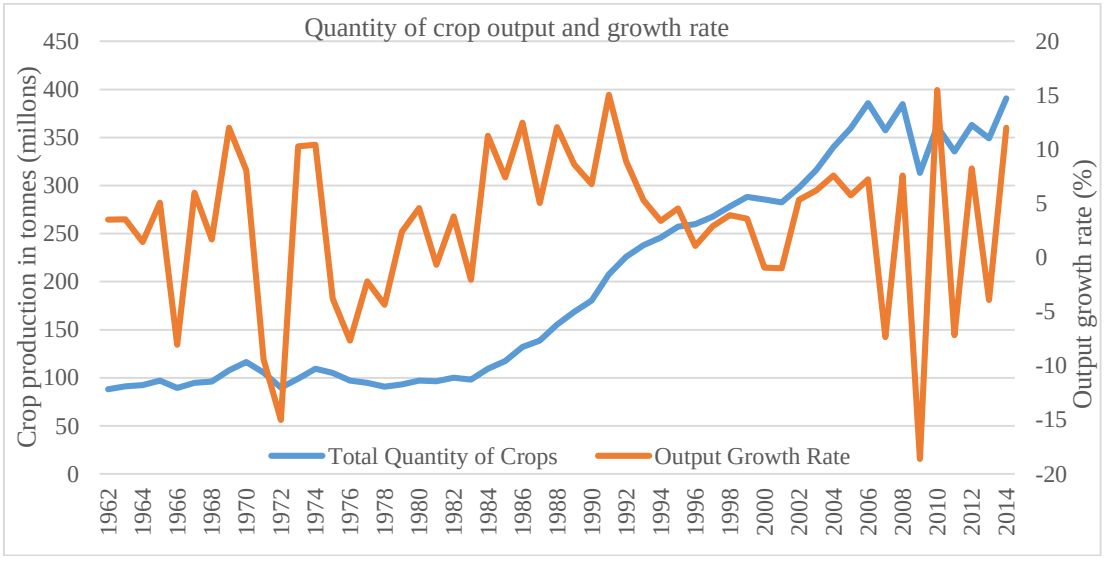


Figure 4-1: Nigeria: Total crop output (tonnes, millions) and growth rate (%), 1962-2014
Source: Own work, based on FAOSTAT, 2016

Although the increment in agricultural production both in quantity and values signifies the development of the agrarian sector, value added per worker shows that Nigeria did not perform as expected relative to other countries (Table 4.4). As presented in Figure 4.2, the net agricultural output index in Nigeria, Ghana, Cote D'Ivoire, West Africa, Africa, EU and the World for the period between 1961 and 2013, except for the EU, all the economies' output indices are higher than Nigeria. Implying that agrarian performance in Nigeria is below Africa and global averages.

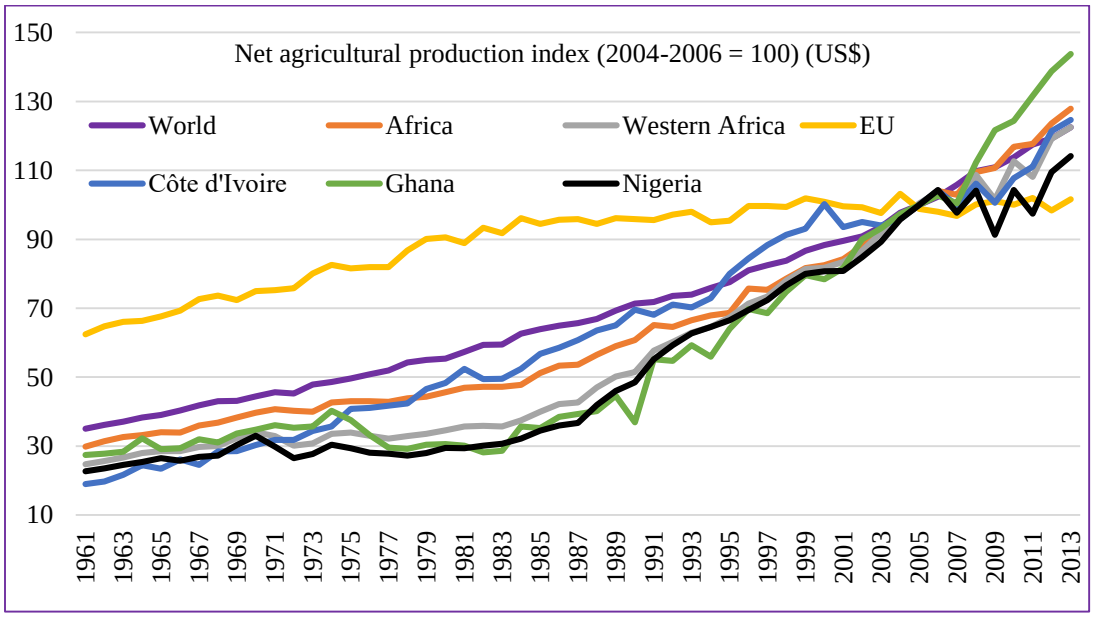


Figure 4-2: Net agricultural production index (2004-2006 = 100) in Nigeria and others, 1961-2013
Source: Author's analysis based on FAOSTAT, 2016

Table 4.4 presents agriculture, value added per worker[37] in Nigeria and some selected economies between 1981 and 2014. As compared with advanced countries, agriculture value added per worker in Nigeria and other SSA countries is relatively low. Nonetheless, Nigeria's performance is above the world, SSA and LDCs average, and the value has steadily increased during the period under study, albeit at a slow pace. In another development, agriculture, value added growth rate fluctuated but recorded only positive between 1982 and 2014.

Table 4-4: Agriculture value added per worker (cons. 2005 US$), and growth rate, 1981-2014

Country/Region	**1981**	**1990**	**2000**	**2005**	**2010**	**2013**	**2014**
Nigeria	**709.5**	**1,044.2**	**1,489.0**	**2,952.5**	**4,063.1**	**4,575.4**	**4,760.3**
Kenya	420.8	414.6	351.6	376.8	375.2	391.0	395.8
Malaysia	3,492.6	4,811.7	5,485.3	6,792.2	8,397.7	9,673.7	10,127.0
Netherlands	20,596.4	31,040.0	43,100.7	50,759.7	60,454.8	66,237.7	70,859.4
SSA	n.a	494.5	473.6	604.0	673.6	705.3	745.9
World	649.7	764.7	1,065.6	1,169.3	1,292.3	1,377.2	n.a
Value added growth rate (%)							
Year	**1982**	**1985**	**1990**	**2000**	**2010**	**2013**	**2014**
Malaysia	6.5	2.0	-1.7	6.1	2.4	1.9	2.1
Nigeria	**2.5**	**17.6**	**4.3**	**3.0**	**5.8**	**2.9**	**4.3**
South Africa	-8.5	20.3	-7.1	4.7	-0.3	1.5	5.6
SSA	**1.8**	**6,25**	**-0.7**	**0.7**	**4.6**	**2.9**	**4.4**
World	**4.9**	**2.4**	**3.4**	**3.0**	**2.8**	**4.6**	**2.8**

Source: World Bank, 2016

4.3 Structure of Agricultural Production

Agricultural production in Nigeria is divided into four Categories: crops, livestock, forestry and wildlife, and fishing (Appendix Table 4D). Subsistence farming also known as the traditional method of production accounts for the over bulky of agricultural practices in the country. The traditional cash and export crops grown on large scales are cocoa, rubber, palm kernels, rubber, and groundnuts.

Although livestock (i.e. cattle, sheep and goats) meagrely contributes the overall agricultural output and GDP (Appendix Table 4D), its performance in real terms appears to surpass crops, total agriculture, and non-agricultural products in Nigeria for the period under review (Figure 4.3). This development is partly because the price of livestock is relatively stable, and producers' willingness to invest heavily in the sub-sector. However, livestock production in Nigeria just as in some SSA countries is below global standards as most cattle, sheep and goats are still in the

[37]Agriculture value added per worker is a measure of agricultural productivity. Value added in agriculture measures the output (ISIC divisions 1-5) less the value of intermediate inputs (World Bank, 2016).

hands of pastoral owners. For instance, Nigeria is yet to develop ranches and grazing reserve areas even though the Grazing Reserve Law of 1964 was promulgated to set aside areas to be used by pastoralists for grazing and to protect crop farmers. However, in reality, the reverse is the case as Fulani herdsmen move around farmers' farmlands with their cattle across the country, destroying farm crops, which in turn, lead to constant conflicts between them (pastoralists) and the crop farmers. Until these issues are adequately addressed by properly developing grazing areas and ranches, agricultural development and ecosystem are threatened in Nigeria.

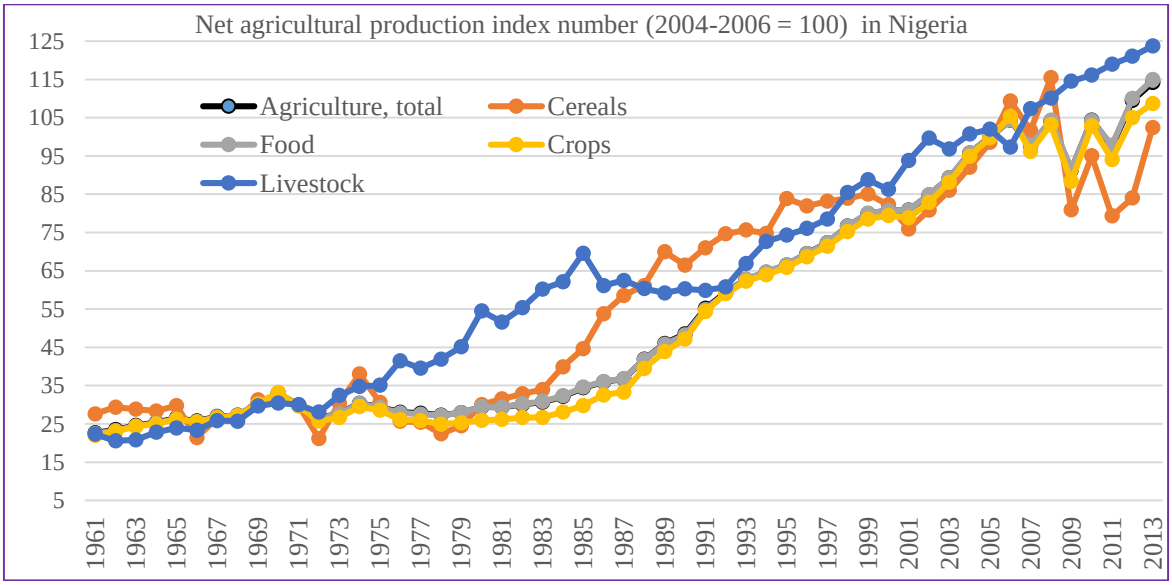


Figure 4-3: Nigeria: Net production index (2004-2006 = 100) by selected categories, 1961-2013
Source: Author's analysis based on FAOSTAT, 2016

Table 4.5 presents top twenty (20) agricultural outputs by-product in Nigeria and its global ranking between 1961 and 2014. The total overall output of the 20 top most crops increased from over 33 million tonnes in 1961 to about 168 million tonnes in 2014. Regarding the production of individual products, between 2000 and 2014, Nigeria recorded as the largest producer of cassava, yams, cocoyam, cow peas and shea nuts in the world. The country ranked the second largest producer of cashew nuts, Sweet potatoes, etc.; ranked third in sorghum, groundnuts, palm kernels and peanut (Table 4.5); ranked as the fourth largest producer of products, such as cocoa, ginger, papaya (pawpaw) and goats in the world. Nigeria also accounts for a significant proportion of the global output agrarian product, such as millet, rubber, fresh tomatoes, plantains and sesame. It suggests that Nigeria has a comparative and competitive advantage in the production and exportation of these products if fully developed for global competitiveness.

As shown in Table 4.5, cassava is also the largest agricultural output in quantity in Nigeria. In the same direction, the crop output increased from 7 million tonnes in 1961 to 55 million tonnes in 2014. Consequently, Nigeria moved from fourth to the first world largest cassava producer between 1965 and 2014. In the same direction, the share of Nigeria in the global production also increased to over 20% of global, 37% of Africa and 63% of West Africa in 2014 (Appendix Table 4B). Nigeria's Federal Ministry of Agriculture and Rural Development (2014) maintains that despite Nigeria's position in the world, the country contributes close to zero percent in terms of global value added for trade in cassava-based products. Sadly, the country hardly produces **starch and ethano**l from **cassava product.** More so, the cycles of boom and bust of production have created disincentives for producers due to low prices, and limited market access.

Recently, cassava has been included as among the six target crops by the Federal Ministry of Agriculture for attention, '*given its many industrial end uses. Current production, however, is used only for traditional foodstuffs, aside from a few first movers into value-added products such as high-quality cassava flour. Achieving profitability in these nascent value chains will require overcoming the logistical challenges of smallholder production networks and cassava's extremely low value-to-bulk ratio, along with obstacles in transport infrastructure. The public-private Cassava Development Corporation has been formed to drive progress in the industry by creating collection points that allow smallholders to consolidate loads for long-distance transport. Improving underlying infrastructure and adapting business models can help spur private investment'* in the sector (World Economic Forum, 2014, p. 10). To urgently diversify the economy, the present government is making an effort to substitute the importation of wheat flour with domestic cassava flour, establish new cottage industries to stimulate local producers a sustainable production.

As presented in Table 4.5, also the second largest agricultural output is **yams**. Similarly, the total annual production of the crop increased from 3.5 million tonnes in 1961 to 45 million tonnes in 2014. Nigeria is also by far the largest producer of yams in the world. Nigeria accounted for over 66% of the world and 72% of West Africa's production in 2014 (Appendix Table 4B). Just like cassava, Nigeria is yet to develop value added for domestic consumption and global trade in yam-based products. This shows that Nigeria has a great potential and opportunity of developing and being a major global market player in other major commodities, such as cassava and yams. In

2014, Nigeria recorded maize as the third largest output volume, with 10.8 million tonnes, and contribute only 1% of global production. This is partly because maize is produced in almost every part of the world. Notwithstanding, the country accounted for 15% of Africa and over 55% of West Africa's total output of the crop in 2014 (Appendix Table 4B). This suggests that the country is a major producer of this crop in the continent.

Table 4-5: Nigeria: Top twenty agricultural output (tonnes 1,000) and global rank, 196-2014

Indicator/year		**2014**		**2000**		**1980**		**1961**	
Rank	Commodity	Q ('000)	GR	Q ('000)	GR	Q ('000)	GR	Q ('000)	GR
1	Cassava	54,832	1	32,010	1	11,500	4	7,384	4
2	Yams	45,004	1	26,201	1	5,248	1	3,500	1
3	Maize	10,791	11	4,107	17	612	35	1,107	17
4	Oil, palm fruits	7,968	4	8,220	3	5,750	2	6,750	1
5	Sorghum	6,741	3	7,711	2	3,690	4	3,958	4
6	Rice, paddy	6,734	14	3,298	17	1,090	23	133	n.a
7	Vegetables, fresh nes	6,180*	4	3,945	4	972	14	826	13
8	Fruit, citrus nes	3,800	2	3,250	1	1,800	1	1,000	1
9	Sweet potatoes	3,478	2	2,468	2	100	0	149	n.a
10	Groundnuts	3,413	3	2,901	3	471	6	1,565	2
11	Taro (cocoyam)	3,273	1	3,886	1	208	5	1,147	1
12	Plantains	2,780*	6	1,969	4	1,042	6	798	5
13	Cow peas, dry	2,138	1	2,150	1	510	1	431	1
14	Tomatoes	1,565*	14	1,261	12	325	21	176	20
15	Sugar cane	1,468	n.a	695	n.a	870	n.a	172	n.a
16	Pineapples	1,420*	8	912	5	600	3	500	2
17	Millet	1,385	5	6,105	2	2,354	3	2,644	3
18	Onions, dry	1,320*	11	593	15	400	14	350	10
19	Fruit, fresh nes	1,280*	7	1,648	3	930	3	590	3
20	Potatoes	1,248	n.a	599	n.a	40	n.a	18	n.a
Total (top 20 products)		**166,820**	**-**	**114,000**	**-**	**38,512**	**-**	**33,401**	**-**
Roots and Tubers		107,835	2	65,164	2	17,096	5	12,198	7

Source: Author's analysis based on FAOSTAT, 2016. Notes: * indicates data in 2013; GR denotes global rank of individual products; Q stands for quantity output in thousand tonnes; n.a denotes not available

Nigeria is the third largest producer of sorghum in quantity in the world, after the USA and Mexico. Similarly, Nigeria contributed 10%, 23% and 56% in the share of global, Africa and West Africa respectively in the total crop output in 2014 (Appendix Table 4B). Just like yams and cassava, most of the domestic output is being used as household consumption and market, especially in the rural areas. Nowadays, the crop is also used for processing of beverages and commercial animal feed. Interestingly, the largest brewing firm in Nigeria, the Nigerian Breweries (MNCs) has engaged and support farmers in the form of backward vertical integration to enhance cultivation, which it uses as inputs for brewing beer and malt. Although Nigeria substantially produces sorghum, it is not prominent in the regional and global markets. It exports less than 1% of total output partly because it has become inputs to the Nigerian Breweries since

the 1980s. This shows that sorghum is a significant crop in Nigeria that needs serious attention for its development and supply to the firms.

Regrettably, Nigeria produces large tomato belt, accounted for 9% and 57% of total tomato outputs in Africa and West Africa respectively in 2013 (Appendix Table 4B), the country is now the second largest importer of tomato paste in the world (Table 5.6), after Germany. Even though about 200 thousand farmers in the country produce about 1.6 million tonnes annually, over 50% is lost before reaching the market or due to the perishable nature of the product. Consequently, smallholder farmers have to bear the burden of these losses and price uncertainty, which to some extent, leads to the disincentive to increase production. As a result, the available domestic market supply cannot meet the demand of over 2 million tonnes annually.

Until recently, indigenous tomato processing plants, such as Lau Tomato Processing Company in Taraba State, Wanunne Tomato Processing Plant in Benue State, Galf Tomato Factory in Jigawa State, Manto Tomato Processing Plant in Gombe State and Wanunne Tomato Processing Plant in Benue State, Perfect Integrated Foods Industry Ltd in Ondo State, and Savannah Integrated in Borno State are non-functional and remained moribund for decades. Available data from the FMARD shows that the non-functional industries have processing and packaging capacities ranging from 7 to 1,050 metric tonnes of tomato paste per day. Inadequate market supply chain channels and processing plants, unstable power supply, lack of tomato import control are some identified factors militating investment in tomato processing chains in Nigeria.

Is Nigeria, producing enough agricultural commodities for domestic consumption and exports? Even though agricultural output, prominently, crop production (Figure 4.1 and Table 4.5) has increased over the past decades, it has not matched with the agricultural labour force, population growth (Table 4.4 and Table 4.7), and land available for cultivation (Table 4.2). The local production of fisheries and livestock is about 30% below the domestic demand for consumption. Inadequate production of these products is partly attributed to inadequate finance (Table 4.6), limited modern inputs (Table 4.6 and Table 5.13), lack of clean and efficient crops and livestock processing facilities and networks or value chains.

4.4 Agricultural Value Chain and Competitiveness

Agricultural value chain development, global integration and competitiveness are regarded among the key drivers available for growth in developing economies (ITC, 2015), such as Nigeria to have access to larger global markets, modern technologies and timely attain diversification in all spheres of the economy (Ogunleye, 2014). Nigeria is substantially endowed with human capital and products that can be formed a robust foundation for local, global value chain and competitiveness for general economic progress and agribusiness development.

The country is heavily endowed with abundant agricultural products, such as cocoa, cassava, wheat, yams, palm kernel, sesame seed, groundnut, cotton, tomatoes, rice, maize, rubber, fisheries and livestock (Table 4.5 and Table 5.6). Despite the enormous potentials in value addition, there is limited support for local producers and processors in facilitating their participation in the global value chain competitiveness (GVC). Individuals and SMEs with limited funds and know-how mostly undertake the production and processing of products that could be integrated into the GVC without significant active support from the Nigerian government and other stakeholders. Coordination of agricultural related activities in the country is somewhat. For instance, there is no robust and sound coordination among farmers, processors, farm gate buyers, retailers and wholesalers in the value-added process in the country. Suppliers and customers do not have codes and standards that would drive farmers or producers to comply with given quality criteria for export. In other words, farmers, processors, sellers and buyers are yet to be holistically integrated vertically (backward and forward) or horizontally into the value chain processes as being practiced in advanced economies.

Studies by the UNCTAD-EORA GVC database shows that Lesotho, Tanzania, and Seychelles recorded a total GVC participation rate of 0.66, 0.67 and 0.74 respectively while Nigeria the largest economy in Africa scored only 0.45. These nations ‘demonstrated strength in backward integration relative to forward integration, suggesting that they use more imported inputs in their overall exports. On the contrary, Nigeria's strength is in forward integration, implying that the country's exports are dominated by raw inputs that are used in third countries' exports' (Ogunleye, 2014). In the same direction, UNIDO, CBN and BOI (2010) analysis the development of agricultural value chains in Nigeria. The study identifies finance as among the major bottlenecks to GVC in the country. The study further reveals that Nigeria has highest potentials in cassava,

yams, beans, maize, beans, tomatoes, rice, meat/leather, cotton and fisheries, palm and poultry. Studies of FAO (2004) showed that, agribusiness and value chains have started converging in Nigeria in recent years. Also, some firms have started moving into vertical integration. Three among the firms that presently involve in vertical integration in Nigeria are highlighted below:

The Nigerian Breweries PLC

It is a multinational corporation (presently, a subsidiary of Heineken N.V) that engages in brewing activities in Nigeria since the 1980s. It is the pioneer and the largest brewing firm in the country. Currently, the firm has engaged and supported farmers through backward vertical integration to enhance cultivation. The firm uses the crop as inputs for brewing beer and malt. Although Nigeria substantially produces sorghum, it is not prominent in the regional and global markets. Nigeria exports less than 1% of total output partly because Nigerian Breweries has been using it as input to since the 1980s. This implies that sorghum is a key crop in Nigeria. Therefore, it needs serious attention for its development to further supply to the firms and, in turn, contributes to agrarian development in the country.

Dangote Sugar PLC

"To this end, our board is following a prudent course of action that will support our backward integration projects and enable our Company to sustain a stronger financial footing in the future." Aliko Dangote, Chairman, Dangote Sugar Refinery PLC

Dangote is a sugar value chain that is currently tapping into the coined National Sugar Development Policy (NADP) to develop GVC in the sugar industry. The firm has integrated sugar cane plantation via milling to marketing and distribution of the finished product. Currently, Dangote Sugar is a leading brand that has made a tremendous impact on the Nigerian sugar sector. The firm's sugar refining facility in Nigeria is the largest in SSA, with 1.44 tonnes yearly output installed capacity.

The company actively pursues a backward integrated master plan aimed at producing over 1.5 million tonnes of sugar annually. Dangote Sugar also plans to invest N180 billion in four factories located Kebbi and the Sokoto States and has 150 thousand hectares of land allocated for the project in Kwara, Sokoto, Kogi, Taraba, kebbi and Jigawa States, all in the northern Nigeria. These activities have created tens of thousands of jobs along the value chain and

started experiencing an export performance of sugar to the global markets, particularly within the ECOWAS markets. The firm has invested heavily in farming activities, farm and irrigation expansion networks, and importation of sugarcane varieties for processing. This is important to move away from the old tradition that refined sugar was mainly imported for consumption (Dangote Sugar, 2014).

Olam International Limited

Olam was first launched in Nigeria in 1989, trading one product, cashew nuts from Nigeria to India. The particular initial activities of the firm were the procurement of raw commodities, such as cashew, rice, cocoa and shea nuts for exports. The firm steadily expanded its operations into three principal business streams: exports, imports, and branded packaged food products. Presently, the firm has about 3,500 staff spread throughout Nigeria, engaged in helping to improve its value chain activities from origination, grading, processing, marketing and distribution in the country to the export of agricultural products such as cocoa, sesame, rice, wheat, and cotton. To have a substantial share in Nigeria, Olam opened offices and operational units across all geopolitical zones of the country. The firm has a broad and expanding network of agricultural producers, suppliers, retailers, wholesalers, local buying agents (LBAs), customers and service providers. Presently, these systems encompass about 500 thousand farmers and have created over tens of thousands of jobs in indirect employment.

Olam invested over 19 billion Nigerian Naira, in 10 thousand hectares of farms with the integrated mill that directly employs over 950 persons from the surrounding communities, produced 36 thousand metric tonnes of rice for the Nigerian market in 2013. The farm also supports an ‘outgrow programme' whereby the Olam farm supports surrounding rice-growing communities with training, pre-finance, fertiliser and seeds to improve their paddy yields. Presently, over 3 thousand farmers engaged in the programme, with a target of 16,000 by 2018. This investment is particularly in line with the Nigerian government Agricultural Transformation Agenda (ATAs) to produce rice for the domestic consumption thereby boosting food security and self-sufficiency. The Rockefeller Foundation internationally recognised olam as a catalytic for agrarian innovation in Africa in 2013.

The drive to develop the fresh fruit produce, value chain received support from the private sector. For instance, the ***Transcorp Group*** established a US$6.5 million orange processing plant.

Similarly, ***Dansa Foods Ltd*** also invested US$75 million in building 2.5 million tonne capacity tomato paste and pineapple processing plants in Nigeria (CBN, 2013). During the SAPs period, the Nigerian government encouraged backward integration, but inconsistencies in fiscal policy initiatives between 1986 and 1995 constrained producers from increasing production of vital agricultural primary materials for domestic processing and export. Even though backward integration and the privatization are presently emphasized as a good policy direction of the current democratic government, growth in the agribusiness sector has not improved significantly. To sum it up, the agricultural sector is being integrated value chains for domestic and global competitiveness, albeit at a slow pace. A robust backward and forward integration within the rural and urban economic sectors will provide a resilient catalyst for production, food security, revenues that would, in turn, stimulate economic growth.

4.5 Producer Constraints

Nigeria faces both external and internal constraints that limit its ability to respond favourably to opportunities brought by the global trade in raw and processed agricultural products, at least, tropical commodities. Despite the favourable climate and arable land, labour force, abundant natural water supply, and broad areas of arable land (Table 4.2), Nigeria is among the countries reported with worst in food security challenges, scored 37/100 and ranked 91/109 countries in 2015 (Economist Intelligence Unit, 2015). Historically, Nigeria has faced many constraints, both internal and external, in its efforts to develop her agriculture and achieve the objectives of improving production, food security and export earnings. Internal constraints include low yields, poor critical infrastructures, trade structures, low producer prices and market access. Other constraints are storage (post-harvest issue) and marketing, the small size of farms, limited access to finance, insufficient modern farm inputs and technologies, low level of farm mechanization, educational attainments, and extension services, and policy- induced disadvantages leading to biased against agricultural development. Some of these bottlenecks are briefly highlighted below.

Internal market access and infrastructure: The channels of distributing of agricultural products from farms after harvest to homes and markets have been major constraints to production and supply in Nigeria. Due to poor road networks, especially in the rural areas, producers and distributors of agricultural products suffered from moving farm produce to the markets. Consequently, must perishable products got rotten before reaching to the end users.

Also, smallholder farmers hardly get much return on their investment partly due to the high cost of transportation and other expenses that are related to production and distribution of farm products. Agricultural commodities, *notably perishable products*, suffer from delays, inefficient harvesting, packaging, and storage, which are among the most significant contributing factors to post-harvest losses, waste and quality deterioration in Nigeria.

Table 4-6: Nigeria: Global competitiveness indicators by rank and score (scale ranges 1-7 best)

Indicators	2015-2016 Rank	2015-2016 score	2013-2014 score	2012-2013 score
Financial market development	**79**	**3.8**	**3.2**	**3.3**
-Efficiency	110	3.0	4.1	3.3
-Affordability of financial services	122	3.5	3.5	3.8
-Ease of access to loans	135	1.6	1.6	1.9
-Venture capital availability	128	2.0	1.9	2.3
Infrastructure	133	2.1	2.3	2.3
-Transport infrastructure	124	2.5	2.7	2.9
--Quality of overall infrastructure	133	2.4	2.7	3.0
--Quality of roads	125	2.7	2.7	2.7
--Quality of railroad infrastructure	103	1.5	1.5	1.8
--Quality of port infrastructure	112	3.0	3.2	3.4
--Quality of air transport infrastructure	111	3.4	3.2	3.6
-Electricity and telephony infrastructure	135	1.7	1.9	1.7
--Quality of electricity supply	139	1.4	1.8	1.7
Goods market efficiency	100	4.1	4.1	4.2
-Competition	80	4.4	4.3	4.3
--Domestic competition	**61**	**4.5**	**4.3**	**4.4**
--Foreign competition	**127**	**3.6**	**4.1**	**4.2**
---Prevalence of non-tariff barriers	18	4.8	4.6	4.1
---Trade tariffs % duty	126	12.9	11.0	11.0
---Business impact of rules on FDI	34	4.9	4.7	4.6
---Burden of customs procedures	135	2.8	3.0	3.2
---Imports as a percentage of GDP % GDP	139	14.4	28.7	28.9
-Quality of demand conditions	121	3.4	3.7	3.8
--Degree of customer orientation	123	3.8	3.9	4.2

Source: World Economic Forum, 2015

Lack of critical rural infrastructure, especially roads, raises the cost of agricultural inputs for smallholder producers and reduces output prices paid to them. Even though Nigeria established a Directorate for Food, Roads and Rural Infrastructure (DFRRI), and agricultural development projects (ADPs) aimed at tackling the problem of rural roads and general infrastructure, these institutions failed to achieve the expected results partly due to the lack of political will for policy implementations (Daramola et al., 2005; Verter and Bečvářová, 2014c). The limited and poor quality of roads and rail transportation networks in the country (Table 4.6), especially in the rural

areas inhibit timely access to inputs, increase costs of production, and delays appropriate supply of output to the markets. As a consequence, rural farmers experience high transaction costs of taking inputs to the farms and output to the markets. High transport costs are among the factors militating agricultural development in Nigeria (Phillip et al., 2009; Verter and Bečvářová, 2014c)

Table 4-7: Government expenditure and total credit to agriculture (US$ millions), and total population (1,000)

Country	Indicator	2003	2005	2008	2010	2012	2013	2014
Nigeria	Govt exp. (US$ millions)	124	584	1,446	707	614	n.a	n.a
	Credit (US$ millions)	480.6	370.3	897.5	854.3	2,017.6	2,213.9	223.7
	Population (1,000)	132,582	139,611	151,116	159,425	168,240	172,817	177,476
Cote d'voire	Credit (US$ millions)	83.9	81.9	80.6	n.a	82.0	160.1	223.7
	Population (1,000)	17,492	18,133	19,262	20,132	21,103	21,623	22,157
Ghana	Credit (US$ millions)	n.a	n.a	242.6	342.5	352.7	354.3	328.6
	Population (1,000)	20,305	21,390	23,116	24,318	25,545	26,164	26,787
Egypt	Govt exp. (US$ millions)	n.a	808	1,113	1,387	1,879	1,904	n.a
	Credit (US$ millions)	849.1	1,114.6	1,218.7	1,140.5	1,026.4	905.4	n.a
	Population (1,000)	20,305	21,390	23,116	24,318	25,545	26,164	26,787
Czech Rep.	Govt exp. (US$ millions)	956	1,649	2,795	2,605	2,403	2,175	n.a
	Credit (US$ millions)	723.1	1,007.9	2,149.0	1,751.4	2,240.9	2,379.8	2,322.1
	Population (1,000)	10,212	10,231	10,398	10,507	10,545	10,545	10,543
Singapore	Govt exp. (US$ millions)	43	39	72	85	107	n.a	n.a
	Population (1,000)	4,255	4,496	4,850	5,079	5,300	5,405	5,507

Source: FAOSTAT, 2016

Low Access to Agricultural Credit: Investment in agriculture has been identified as one of the most significant and effective strategies for a sustainable economic growth, poverty reduction, and improved wellbeing in rural areas where the substantial number of the world's poor live (FAO, 2016). As shown in Table 4.7, low investment in agrarian related activities from both public and private sectors might have partly militated agricultural development in Nigeria. Because the majority of smallholder farmers are poor, they suffered from limited access to credit and loan packages, thereby constraining higher productivity (Izekor and Olumese, 2010; Verter and Bečvářová, 2015; Izuogu and Atasie, 2015). These financial institutions, always demand high-interest rates and collateral, which screen out most smallholder rural farmers. Also, affordable loans to agriculture are often short term, with fixed repayment periods; these most times do not suit annual cropping (Phillip et al., 2009). Even though financial market (79/140), where commercial banks are rated as relatively sound, food and agricultural producers and traders' access to finance remains problematic (Table 4.6 and Table 4.7) in Nigeria (World Economic Forum, 2015). Lack of adequate provision for agricultural loans to producers has constrained a sustainable cultivation in the country. This issue is attributed to the risk in

agriculture, the difficulty of estimating returns on investment, and the inability of many producers to provide the required collateral securities (Phillip et al., 2009; Migap and Audu, 2012) although in some cases, the perceived risk is more than the actual risk of lending to farmers.

Financial Policy for agricultural development in Nigeria, historically, include concessional interest rates, credit guidelines by CBN; rural banking schemes; direct lending; and agricultural credit guarantee schemes. These policies failed to yield desired results, partly because banks have not been ready to grant loans to smallholder farmers and exporters. Lending to agriculture was largely concessional before the deregulation of interest rates in 1987. The regular market rate charged on all loans applied to agriculture between 1987 and 2000. In 2000, banks submitted their proposals for a lower interest rate to farmers under the Agricultural Credit Guarantee Scheme Fund (ACGSF) to the CBN given the high rate of default by ACGSF beneficiaries. As a consequence, the high cost of capital continued to pose a constraint to agriculture production and exports included. Also, the effectiveness of the policy remained contentious, so long it lasted.

Low Fertilizer Use and Yield: Because of the persistent loss of soil manure or nutrients, fertilizers use, along with other farm inputs is the most significant contributors to rising agricultural production by improving yields and thus securing food security and export. Even though Nigeria has proven 180.5 trillion cubic feet of natural gas reserves and ranked ninth position in the world in 2015,[38] a large quantity of phosphate rock deposits, local fertilizer production, supply and use is still insufficient. Figure 4.4 presents yield per hectare of cereals in Nigeria and some selected countries for the period between 1961 and 2013. The country recorded similar performance in cocoa yield per hectare during the period under review (Appendix Figure 4C). Sadly, Nigeria, Ghana and Gambia (SSA countries) performed below expectations as yield per acre in most of those countries was higher than SSA nations. Partly due to low fertilizer applications, traditional seed with lower yields, and the declining of soil fertility are identified among the factors that are militating higher yields in recent time. Fertilizer production for domestic farm consumption may be inadequate in Nigeria. Although the country spent a substantial amount of dollars for fertilizer importation (Table 5.8), which in turn, has become a

[38] For more information on Proved Reserves of Natural Gas in Nigeria and other countries, see http://goo.gl/ZZ6KtJ

net importer (Table 5.3 and Table 5.2), many farmers still find difficulties in accessing it partly due high prices, and delays in distributions. Smallholder farmers annually spend enormous amounts on fertilizer imports, which increase the cost of production and decrease net incomes and wellbeing. The introduction and distribution of modern high-yielding (hybrid) crop varieties would lead to greater yields of various crops in the country.

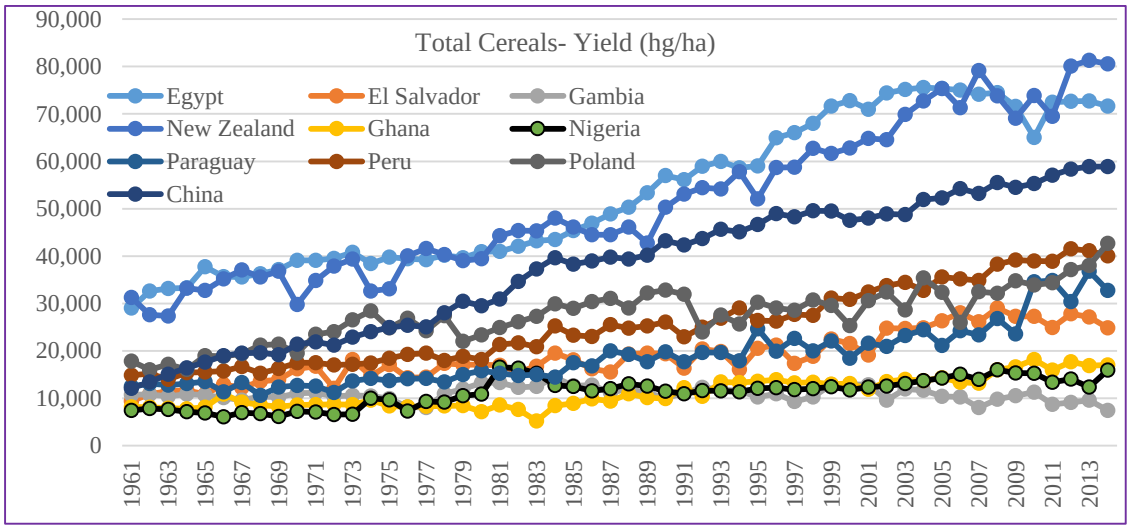


Figure 4-4: Cereal yield per hectare in Nigeria and some selected economies, 1961-2013
Source: Author's analysis based on FAOSTAT, 2016

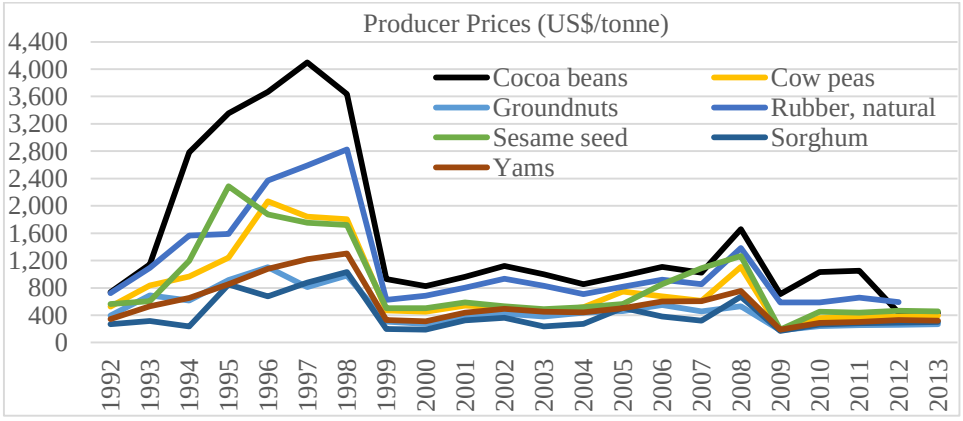


Figure 4-5: Producer prices of some selected agricultural commodities in Nigeria, 1992-2013
Source: Author's analysis based on FAOSTAT, 2016

Historically, mostly state-owned enterprises used to engage in the supply of fertilizers, but owing to the high-level bureaucratic bottlenecks, biases in delivery and general defects, their operations were largely ineffective. This negative development seems to be changing in recent years. A fertilizer subsidy has been prominent. For instance, in 2012, the government of Nigeria introduced a scheme, Growth Enhancement Support Scheme (GESS), a mobile technology aimed at transferring

fertilizer subsidies directly to farmers, and *'taking the government out of the business of procuring and distributing fertilizer. The support scheme now helps up to twice as many farmers, at one-sixth the cost. The transfer system relies on a database of more than 10.5 million farmers, who, as registered recipients of the subsidies, now have a better chance of gaining access to formal or regulated financial services. Based on this initial success, the system is expanding, aided by a digital identification system and biometric signatures, taking financial services far into Nigeria's rural hinterland'* (World Bank, 2016, p. 94). However, more still need to be done to make sure that fertilizer reaches to the many poor smallholder farmers and on time. For instance, it is frequently marred by institutional corruption. Most time government officials divert fertilizer and other farm inputs for their personal gains. As a result, the majority of the smallholder farmers either do not benefit from the limited available agricultural subsidies or it is supplied to them after the time for its application expired. Until recently, subsiding farmers were tagged as subsidizing corruption.

Inadequate modern farm inputs and technologies are identified among the major constraints to agricultural development in Nigeria. Farmers still largely use traditional methods and inputs, such as hand axes, cutlasses, hoes and woods for farming (Verter and Bečvářová, 2014b). The government has put in place some policy measures to support farmers with agricultural inputs; however, the reverse has always been the case. Notwithstanding, wealthy farmers have started using modern farm inputs, such as machinery, insecticides, and fertilizer to improve productivity and the quality of output, while, small-scale farmers still use traditional methods of farming (Verter and Bečvářová, 2014c). As a result, their total output is low relative to the labour force involved in production. The largest producers and exporters of agrarian products have the least percentage of employment in agriculture (subchapter 3.3) because they largely use modern technologies for production, which is the case in Nigeria and in many SSA countries.

The imports of farm inputs complement the limited domestic ones, but at the same time weakened Nigeria's export base and encouraged over-reliance on the foreign farm inputs at the expense of local input producers. Also, the volatility of exchange rate and input policy somersault sometimes impede transactions. To increase farmers' access to farm inputs in Nigeria, the number of depots was increased, and the government bore transportation cost from domestic and seaports to the depots. Following the SAPs in the 1980s and 90s, grants were reduced. The increase in input prices made it difficult for farmers to procure them in required quantities.

Diseases and pests related issues have also been identified as major constraints to agricultural productivity in Nigeria. These include parasitic nematodes; insects such as tuber and leaf beetles; fungi such as tuber rot, leaf spot, and other viruses (IITA, 2009; Asante, Mensah and Wahaga, 2007; Zaknayiba and Tanko, 2013). These diseases in crops, such as cocoa (International Cocoa Organization, 2014) are likely to reduce annual output and quality. As shown in Figure 5.8, Nigeria has been importing pesticides and insecticides to control pest and diseases in farms and post-harvest losses. However, more still needs to be done to minimise these issues in Nigeria.

Rural-urban migration is another constraint to agricultural production in Nigeria. Lack of investments and uncertainty in the agrarian sector partly made the sector unattractive, and the perceived difference between rural and urban incomes exacerbated rural-urban drift in Nigeria. Even though globally, farming has shifted from labour intensive to capital or technology intensive, the reverse is still the case in some SSA countries, such as Nigeria. Because agricultural production and semi-processing are still labour intensive in Nigeria, the movement of youths from rural to urban areas in large numbers has partly militated agricultural related activities in the country (Verter, 2011). Presently, the persistent conflicts between the Fulani herdsmen (pastoralists) and crop farmers, as well as the terrorist attacks by the dreaded Islamist extremists, Boko Haram have destroyed farms and properties, killed thousands of rural farmers, heightened the risk of food insecurity and hunger, and made rural-urban drift inevitable especially in the North-eastern part of the country.

Agricultural extension services: Many peasant farmers in Nigeria lack the necessary skills in the current model of agricultural production (Phillip et al., 2009; Izuogu and Atasie, 2015) and agribusiness development. The major constraints to Nigeria's agricultural extension service include: lack of a legislated agricultural extension policy, compounded by policy somersaults; poor leadership and coordination, low private sector participator, inadequate and untimely funding*, 'very weak Research-Extension-Farmer-Inputs Linkages system and driven by ineffective top-down, supply-driven, extension approaches'* (Izuogu and Atasie, 2015, p. 11). With the tremendous evolution of a broad range of new crop across the globe, the need for extension services to peasant farmers and producers in the country is inevitable if Nigeria must attain sufficient food status, sustainable agricultural development and global competitiveness. Arguably, the majority of the rural peasant farmers are yet to come to terms with the new model

of production and post-harvest handling techniques, standards and international best practices as championed by the WTO on SPS measures.

Land tenure system: In most areas in Nigeria, *"the communal system of land ownership prevails among most ethnic groups, in which individual ownership of land is embedded in group or kinship ownership". This has been connected with such issues as "limited tenure security, restrictions on farmers' mobility, and the inevitable fragmentation of holdings among future heirs. In addition, group ownership restricts access rights of community members outside the owning group, a situation that limits the use of land as collateral for agricultural credit. Inheritance leads to land fragmentation among future heirs, and subsequent uneconomic farm sizes per member. An important institutional constraint is the absence of clear title to land"* (Phillip et al., 2009, p. 4). In some cases, landowners lend their land to farmers, albeit at exorbitant prices. Thus, the majority of the rural smallholder farmers could not afford, which in turn, limits their farm expansion and total annual output.

Underdevelopment of value addition: The underdevelopment of value addition/chain is identified as an impediment to the performance of agriculture in Nigeria. There is a large scale total disconnection between input suppliers and producers (backward linkages), as well as between producers and distributors (forward linkages) of the final consumers. Given that farming and middlemen in Nigeria are mostly accounted by smallholder producers and distributors, they hardly enjoy economies of scale and government support as being experienced by their counterparts in advanced and newly industrialized economies. Studies by Verter and Bečvářová (2014c) shows that over 20% of yams and other crop commodities in the Benue State of Nigeria lost annually due to lack of value added. They stress that value addition would improve farmers' income, food security and make agricultural related activities attractive to them and vice versa. Most of the Nigerian agricultural products are exported unprocessed.

Lack of political will of the government on the implementation of agricultural policies in the country also constrained its development. Nigeria still faces weak agricultural policy formulation and implementation, institutional, neglecting and regulatory inefficiencies mainly due to lack of the political will and government commitment. Other reasons for policy failures are a lack of continuity of policies and monitoring partly due to persistent military coups that led un-ceremonial changed of regimes; lack of political will for policy implementations primarily owing

to institutional corruption and selfish of the selected few; some of those policies were or are subject to doom from the inception.

Import dependency: As postulated by the dependency theory, Nigeria depends substantially on processed food products (Table 5.2 and Table 5.3) from advanced economies for local consumption. Regrettably, wealthy Nigerians, who have the purchasing power, prefer to consume imported processed food from advanced countries to locally produced products (Table 5.10). Their argument is that, imported food from those countries is more superior to the locally processed food in terms of quality and safety. Over-reliance on imported food which Nigeria has a comparative advantage to produce may have hurt local producers and the overall development of agriculture in the country. Free trade being championed by the WTO has brought both benefits and challenges to small-scale producers at home. Because these measures have exposed many aggro-allied industries in Nigeria to import competition from established global firms, it has led to the closure or stagnation of some of these domestic firms. To curtail the overdependence on food imports, the government has recently banned the importation of some food products, and only some selected products are allowed to access the official exchange rate.

Other factors that are attributed to the underdevelopment of agriculture in Nigeria are unattractiveness of farming, partly due to low commodity prices (Figure 4.5 and Appendix Figure 2B), land degradation and low irrigation. Inadequate irrigation systems and underutilization of agricultural land (Table 4.2), partly account to the underperformance of agriculture in Nigeria. The most Nigerian farmers still rely mainly on rainfall for crop production. Irrigation as a share of agricultural land in Nigeria is below African and world averages (Appendix Table 4E).

To reduce constraints to production and trade, FMARD supports the Development of Agribusiness Entrepreneurship Centres (DAEC). FMARD attempts: to establish farm acquisition and training centres; access to land and finance. Also, to create institutions that support and promote an agricultural transformation agenda, to guarantee minimum prices for food crops to stabilize prices. Revise the Land Use Act to enable easier access to land for investors, and; rapid expansion of irrigation facilities and revamping the already existing ones. The government continues its support to farmers, via the provision of fertilizer and seedlings under the Growth Enhancement Scheme (GES), which was expanded to cover the livestock and fisheries, and mechanization services. Equivalently, about 176,000 farmers benefitted from the Scheme in

2013, as against 34,000 in 2012. Also, a total of 450 million tonnes of seeds and 738,000 stems of high-quality cassava were given to producers. Also, 9 million sprouted nuts of high-yielding oil palm seedlings and 3.5 million pods of high-yielding cocoa hybrids were distributed to farmers. Also, the effort towards improving the country's capacity to mill domestically-cultivated rice was reinvigorated with the establishment of 15 integrated rice mills by the government. Initiatives to build the food resilience of the country were stimulated with the completion of 10 new silos for a sustainable food reserve (CBN, 2013). All these efforts were made to develop agriculture, reduce the importation of food, increase farm earnings and food security in the country. Notwithstanding, constraints to production still linger in the country. Arguably, those issues pinpointed in this Subchapter have put Nigeria's commodities at a competitive disadvantage in the global market and the overall development of agriculture in the country.

4.6 Importance of Agriculture to the Nigeria's Economy

Agriculture represents a significant share of the overall economy in SSA countries and other LDCs. A robust agrarian production leads to a robust economy. It means better jobs, food security, more exports, and incomes to the society. Nigeria, just as in many SSA countries, the sector is the mainstay of the economy. Undoubtedly, even though oil accounts for over 80% of the total value of export products (Figure 5.4), agriculture is still the largest employer of labour, a source of income and poverty reduction of over 70% of the rural population, and food security for the majority of the rural dwellers in Nigeria (NBS and FMARD, 2012; Verter and Bečvářová, 2014c). It provides funds for the import of products in the country. One of the remarkably important of agriculture in Nigeria is its substantial contribution to the total annual real GDP. Until recently, agriculture contributed an average of 40% between 1960 and 2012. After rebasing the country's GDP, agriculture still contributes over the 20% to the economy. The contribution according to categories of agriculture in the country shows crop production the highest contribution to the country's real GDP between 1960 and 2014 (Appendix Table 4D). After the rebased of the economy, some processed agricultural products were moved to the manufacturing sector. These include food, beverages, tobacco, wood and wood products, which contributed 4.9% in 2014 and 4.6% in 2015 to the real GDP.

Historically, the contribution of agriculture to the country's economy has slightly fluctuated in real terms. Arguably, this is not partly because the Nigeria has started moving from agriculture to

other sectors of the economy as being practiced in developed countries, but also it is because the Nigerian government neglected agriculture for crude oil and gas. Given the importance of agriculture to the country's economy, a sustained and accelerated development of agricultural production for food security and trade are crucial to economic growth and development in the country. However, the pace of agricultural development in Nigeria seems to be either stagnant or slow relative to the expectations and the number of people engaged in agricultural production.

Table 4-8: Value added (% of GDP) by sector in Nigeria and some selected economies, 1981-2014

Country	Sector	1981	1995	2000	2005	2010	2011	2012	2013	2014
Nigeria	Agriculture	**28.5**	**32.1**	**26.0**	**32.8**	**23.9**	**22.3**	**22.1**	**21.0**	**20.2**
	Industry	40.0	46.0	52.2	43.5	24.9	27.8	26.7	25.3	24.2
	Services	31.5	21.9	21.8	23.7	51.2	49.9	51.2	53.7	55.5
Cote d'Ivoire	Agriculture	**26.5**	**24.7**	**25.0**	**22.6**	**24.5**	**26.7**	**22.5**	**22.1**	**22.4**
	Industry	18.6	20.8	21.5	22.8	22.4	24.2	22.3	22.3	21.1
	Services	54.9	54.5	53.5	54.6	53.1	49.1	55.1	55.7	56.5
Cameroon	Agriculture	**29.4**	**23.6**	**22.1**	**20.6**	**23.4**	**23.6**	**23.2**	**22.9**	**22.2**
	Industry	29.9	31.2	36.0	32.0	29.9	29.6	30.2	29.9	30.1
	Services	40.7	45.1	41.8	47.4	46.7	46.9	46.6	47.2	47.8
Ghana	Agriculture	**55.3**	**42.7**	**39.4**	**40.9**	**30.8**	**26.0**	**23.6**	**23.2**	**22.4**
	Industry	9.5	26.7	28.4	27.5	19.8	26.2	28.9	28.7	27.7
	Services	35.2	30.6	32.2	31.6	49.4	47.7	47.5	48.1	49.9
OECD members	Agriculture	n.a	n.a	**2.0**	**1.6**	**1.5**	**1.6**	**1.6**	**1.6**	n.a
	Industry	n.a	n.a	27.2	25.6	24.4	24.3	24.1	24.0	n.a
	Services	n.a	n.a	70.8	72.7	74.1	74.1	74.3	74.4	n.a
SSA	Agriculture	**20.8**	**19.7**	**17.3**	**17.3**	**15.5**	**15.1**	**15.2**	**14.7**	**14.7**
	Industry	36.1	32.3	33.6	30.8	27.6	28.4	27.8	27.5	27.0
	Services	44.1	48.0	49.1	51.8	56.9	56.5	57.0	57.8	58.4
World	Agriculture	**n.a**	**6.4**	**4.0**	**3.3**	**3.0**	**3.1**	**3.1**	**3.1**	**n.a**
	Industry	n.a	32.7	29.1	28.3	26.8	27.0	26.7	26.4	n.a
	Services	n.a	60.9	66.9	68.4	70.1	69.9	70.2	70.5	n.a

Source: World Bank, 2016

As the country makes efforts to move from agriculture (primary) to the industrial sector (secondary), the demand for agrarian products as inputs for the industrial sector has been intensified in recent years. The utilization of farm products as industrial raw materials may well indirectly contributes to the economic growth in Nigeria. In other words, the sector is currently being integrated into other sectors for the overall economic transformation, albeit at a slow pace.

5 TRADE IN AGRICULTURE AND POLICIES IN NIGERIA

This chapter deals with Nigeria's foreign trade in agricultural products and inputs. Agricultural trade policies are briefly assessed. Prospects and structures of trade are highlighted. Some agricultural trade data are compared with selected countries in SSA countries and other economies. Finally, the chapter also assesses some constraints to agricultural trade in Nigeria with reference to SSA countries.

5.1 Agricultural Policy

Given that there is no clear- cut distinction between agricultural production and trade policies in Nigeria, this subchapter assesses and summarizes both policies. The colonial government identified the potential of agriculture as a driving force for economic growth and development in Nigeria. For this reason, policies were made to stimulate production and extract the surpluses to its colonial master, the Great Britain. The predominant theme of development during that period was the surplus extraction philosophy or policy whereby enormous products were generated from the rural areas to satisfy the demand for primary materials needed as industrial inputs and food in metropolitan Britain.

This early interest in the extraction policy was on forest resources and other agricultural export products, such as cocoa, coffee, natural rubber, groundnut, sesame seed and palm kernels. Owing to unfavourable climatic conditions for the cultivation these products in the UK, EU, USA and other consuming countries, the demand for these products in advanced economies remain high. Historically, the Nigerian government has formulated and to some extent implemented policies and programmes aimed at addressing production and trade issues and enhancing the path to agricultural development in the country. Nigeria's acknowledges not only production, but also the relevance of trade policy in the country's economy. Therefore, the government has made a strong reference to the vibrant engagement in regional, bilateral and multilateral trade negotiations, as a way of stimulating trade, and attaining full integration into the global economy (WTO, 2011). Trying to get insights on agricultural development in Nigeria, it is imperative in this presently to summarize some of these policies and programmes as follows:

Forest Policy 1937: Due to the continued unregulated exploitation of forestry resources in Nigeria that period, the Forest Act was introduced based on the proposal of the forest conservator

after a conference on forest management. The policy was passed into law, the Forest Act (1937) in Nigeria to address the depreciating forest capital as a result of illegal logging and deforestation for agriculture, housing, and other human- related activities. As shown in Table 4.1, the share of forest cover as a percentage of total land area in Nigeria has been decreasing at an alarming rate over the years. Consequently, Nigeria has been recording negative trade balance in forest resources since 1969 (Appendix Figure 5I). This implies that, if not addressed Nigeria forest resources might be completely depleted in the long run. As shown in Appendix Figure 5I, the trend has started reversing to the opposite direction, albeit at a slow pace.

Agricultural Policy 1946: This policy was aimed at spurring agricultural performance in Nigeria during the British colonial era. The country was compelled to embrace the colonial policy statements and divided into agriculture into five areas based on their comparative advantage in the production of specific commodities. These include: a) Northern provinces for livestock production; b) Northern provinces export such as cotton and groundnut; c) Middle belt, were tasked to concentrate on food production, such as yams and cassava; d) South-eastern province produced and exported crops, such as palm kernel and palm oil; e) South-west were made to specialize in rapid production of export commodities, notably, cocoa and palm kernels. Similarly, *a policy for the marketing of oilseeds, and cotton was launched in 1948.* The policy was geared towards stabilizing post-second world war food and agricultural commodity price hike in the UK. Therefore, the policy for the country to rapidly produce and export those products to the UK market intensified.

Marketing Board Policy (1960-1977): The military government established Commodity Marketing Boards in 1977 with the sole aim of increasing production of exportable agricultural commodities, such as cocoa, cotton, palm produce, rubber and groundnut. During this period, food imports were discouraged, whereas maximum domestic production for consumption and exports was encouraged (UNEP, 2002; Kolawole, 2007; Mou, 2014). An incorporated company in Britain served as sole selling agent for all agricultural produce put together by the Nigerian Produce Marketing Company (Kolawole, 2007). Before trade liberalization, the overall objectives of Nigeria's trade policy were included in the Marketing Board Policy, through which all exportable agricultural commodities were bought by the Nigerian Government at prices lower

than global prices. Notwithstanding, considerate incentives were given to smallholder farmers to increase their acreage and adopt some imported advanced technologies (Okuneye, 1985).

Operation Feed the Nation (OFN) 1976-1979: The cogent aim of this policy was to mobilize the country towards self-sufficiency in food production, and to make agricultural related activities attractive to producers as viable and profitable endeavours. Under this initiative, all agricultural piece of land in both rural and urban areas was to be planted while the government provided farm inputs, such as chemicals, a broad range of seeds, fertilizers, machetes and hoes to the producers. Individuals got these inputs at a subsidized rate. Despite the good initiative, the programme also failed to yield the expected outcomes partly because of the participants' poor farming experience and no formal education or advice was given to them on how to apply the inputs and manage their farms.

The Agricultural Credit Guarantee Scheme Fund (ACGSF) 1977: The ACGSF was established in Nigeria by the military regime, Decree 20 March 1977. The scheme is aimed at improving commercial banks' loans to producers of agricultural products, focusing on agro-allied processing industries and overall agricultural production in the country. Wahab (2011) opines that lack of interest by commercial banks and other financial institutions in Nigeria in financing or granting loans to agricultural related activities made the need for the establishment of the scheme inevitable. Verter and Bečvářová (2014b) argue that even though the scheme is ongoing, many smallholder farmers do not have access to the funds partly due to bureaucratic bottlenecks and institutional corruption.

The Nigerian Export Promotion Council (NEPC) was established and formally inaugurated in 1977 through the Nigerian Export Promotion Decree No. 26 of 1976. The Council stresses the significance of non-oil export, especially agricultural products for the nation's economic growth and development. Against this background, the Council has recently established National Strategy Export Products (NSEP). The Council has listed the 13 priorities products for promotion and divided them into three categories. One of such categories for development and promotion is Agro-industrial, such as cocoa, palm oil, cashew, rice and sugar. This initiative aimed at boosting Nigeria's non-oil export products to diversify from fuel export; increase foreign exchange earnings from different avenues; promoting export related products; giving incentives and supports to Nigerian exporters. Other activities of the council include dissemination of both

domestic and global commodity prices as well as publishing and servicing of trade enquiries, opportunities, and bottlenecks from within and abroad.

Between 1985 and 1987, the government of Nigeria restricted the importation of some food products, such as fruits, fresh milk, roots and tubers, vegetables, and poultry to address the unfavourable global competition and expand export capacity, and encourage domestic farmers to increase production of export crops (UNEP, 2002). During this period, the country also restricted the exportation of some food products such as sugar, milk, floor, and hides and skins. Similarly, food products such as wheat, vegetable oil, corn and rice were banned of imports between 1985 and 1987. Tariffs were increased on the banned products while the centralized marketing of food commodities was reinforced via the creation of Commodity Boards, which handled crops restricted for trade (UNEP, 2002). Partly because of the administrative bottlenecks and lack of monitoring and evaluation framework, the programme did not yield the expected results of improving domestic food production and export.

From the colonial era to independence, major agricultural export products, such as cocoa and palm kernels were marketed through monopoly by the Nigerian Marketing Board, a government agency on behalf of the producers (Ojowu and Mensah, 1988), under the direct control of the government (Cadoni, 2013). To foster trade liberalisation in African countries, the WB and IMF introduced a programme, called **Structural Adjustment Programme (SAPs)** between the 1980s and 1990s. These institutions stressed that agricultural marketing boards in countries, such as Nigeria and Ghana were ineffective, and they suggested in liberalising agriculture following to the liberalisation of foreign exchange. Consequently, the government of Nigeria was the first Western Africa country to scrap its marketing boards in 1986. Also, Nigeria liberalised cocoa trade in the same year (Gilbert, 2009).

Through SAPs, Nigeria was expected to implement a broad range of policy reforms as a condition for receiving financial support from these world's financial institutions (IMF and World Bank). The policy conditions included among other things: privatization its state-owned enterprises, trade liberalization; and currency devaluation. The cogent objectives for liberalization of agricultural products were to stimulate competition in the marketing chain and export, to hand off donors and governments from the burden of marketing commodities while at the same time obtaining a higher proportion of the global prices for commodities, such as cocoa

and palm oil. They maintain that markets are more competitive and efficient than the government in resource distribution. Also, the appropriate role of the government should be to provide an enabling environment and investment climate for the private sector to grow (Verter and Bečvářová, 2014a).

During the SAP period in Nigeria, currency exchange control on all currency transactions were also abolished in 1986 immediately the era of free trade began. They stress that floating exchange rate was better than a fixed exchange rate regime. Thus, market forces should be unhindered to determine the value of a domestic currency against the basket of international currencies. Some studies (CBN, 2008; Ogunleye, 2009; Umaru, Sa'idu and Musa, 2013) established that real effective exchange rate (REER) is a vehicle to trade in several commodities in Nigeria, especially after the SAPs was launched. Partly due to the government and the WTO agreements, the value of agricultural export commodities increased within that period (Figure 5.2).

However, critics argue that these world's financial institutions also brought pains and undermined development in Nigeria more than the anticipated benefits. According to them, free trade has exposed many agro-allied industries in Nigeria to import competition from established global companies that led to the closure these firms. As a result, the country presently relies heavily on processed products from advanced and newly emerging economies for consumption as postulated by the dependency theory (Abdullateef and Ijaiya, 2010; Ogbonna, 2012; Verter and Bečvářová, 2014a). On the contrary, some researchers have divergent opinions on SAP and free trade. For instance, Sulaiman, Migiro and Aluko (2014) argue that SAPs positively influence economic development in Nigeria. They maintain that the reason for underdevelopment and negative trends in the country should be attributed to SAP, but to other indicators, such as mismanagement of public funds, poor infrastructure, and political instability. Similarly, UNEP (2002) argues that trade liberalization through SAPs was a right step in the right economic direction. However, partly because the Nigerian government failed to put in place policy measures to mitigate trade shocks, SAPs brought pains and undermined growth in some sectors in Nigeria.

Following the return of Nigeria from prolonged military regimes to the civilian rule in 1999, the government of Nigeria launched **National Economic Empowerment and Development Strategy (NEEDS) in the same year (1999)**. In agriculture, NEEDS offered farmers improved irrigation, a wide range of crops and machinery that would bolster agricultural productivity and

exports. However, agricultural irrigation remains backward (Appendix Table 4E) as many farmers still rely on increasingly unpredictable rainfall occasioned by the present climate change.

National, Special Programme for Food Security (NSPFS) 2002: The overall objective of the programme was to enhance food production and drastically reduce poverty in the rural areas, and holistically reduce food import bills. Specific aims of the programme were: to assist smallholder farmers for high yields and a total overall output; improve their wellbeing; intensify the effectiveness of research and extension service to farmers in farm management for sound utilization of limited available resources, and supporting state efforts in the promotion of agricultural technologies for self-sufficiency. Even though agricultural production steadily increased, food import bills increased within the period under study.

Recently, the Nigerian government through the **Ministry of Agriculture and Rural Development (FMARD)** has made some reforms and formulated some trade policies, known as the transformation agenda. The ministry has divided its policies into categories: fiscal policies, local content for food (enabling legislations), industrial policies, and financial service policies.

Fiscal Policies: These policies include zero tariffs for the import of agricultural equipment and agro-processing equipment. Increase import tariff on any commodity that Nigeria can produce, such as rice, starch, sugar and wheat, thereby promoting domestic production and local content. Also, the policy gives tax holidays and other incentives to investors in processing plants, especially in staple crop and export processing zones.[39] Also, giving incentives to potential investors in blending plants for ethanol. To adjust the current policy on import levy of 30% for polished or milled rice, 5% for brown rice, and 5% of raw sugar to enhance revenue used to support agricultural productivity.

Local Content for Food: This policy is to substitute 10% of cassava flour from wheat bread flour and reduce dependence on foreign wheat flour, and blending 10% ethanol with petrol.

[39] Export Processing Zone (EPZ) is a given region in which firms can import duty-free products as long as the imported products are used as inputs in producing export products. Traditionally, EPZs are fenced-in industrial estates specializing in manufacturing for exports. Also, EPZs provide a liberal regulatory environment for the firms involved as well as infrastructural services.

Industrial Policies include: Gradually moving away from fertilizer consumption subsidies to support for domestic fertilizer manufacturing industries, while leveraging the industrialization of gas policy. Notwithstanding, Nigeria still heavily depends on fertilizer import and has been experiencing negative trade balance in fertilizer (Table 5.1 and Table 5.2) since the 1950s.

Financial Service Policy: These policies include incentives to farmers' access to weather index insurance; remove the monopoly on agricultural insurance that is currently controlled by the National Agricultural Insurance Company (NAIC). More so, liberalize to allow private sector insurance companies to enter the business of covering agricultural producers in the country.

Recently, FMARD has made some agricultural reforms to strengthen policies, boosting production and export. Among the policies are to liberalize foundation and commercialize seeds to allow the private sector to enter the market. Eliminate government involvement in the distribution of fertilizers and handover the responsibility to the private sector; move away from a direct fertilizer price subsidy to the targeted support to smallholder farmers. Also, to grant incentives to young farmers that engaged in farming not only for consumption, but also engages in producing for domestic and global markets. All these efforts were made to develop agriculture, reduce the importation of food, increase farming earnings and food security in the country.

5.2 Export and Import

Nigeria is among the net exporters, of good and services in the world. The nation recorded negative trade balance only between 1961 and 1965. Nigeria has been recording a positive trade balance since 1966 (Figure 5.1). Nonetheless, the export success is largely dominated by a single product, petroleum. Between 1982 and 2006, oil accounted an average of over 97% of total merchandise exports, but fluctuated and reduced to 90% in 2014 (Figure 5.4). In other words, Nigeria has been practicing what is known as the *'Dutch Disease'* or a mono-product economy as its merchandise export is heavily concentrated (undiversified) in a single commodity. By implication, the mono-product status makes the nation extremely vulnerable and vagary from the shocks or volatility in the global markets.

Prior to the extraction of oil in Nigeria, agriculture was the largest source of exports and foreign earnings, but has changed upon the discovery of oil in the country. Agricultural export products accounted as the nation's principal foreign exchange earner between 1962 and 1968 (Figure 5.4).

Many economies worldwide have moved from agriculture as an important source of export to other sectors of their economies. However, it becomes a source of worry when highly concentrated in a single raw product for export, especially in volatile products, such as oil.

Historically, until the 2016 budget, oil revenues accounted for more than 80 % of the government budget and export earnings in Nigeria. Recently, the increase in oil production in the USA, formerly Nigeria's highest oil export destination, and the recent exploration in other African countries, such as Tanzania, Ghana, and Mozambique, the demand for Nigeria's petroleum products in the global market has been reduced. Also, the persistent slump in crude oil prices in the global market has drastically reduced government revenues, weakened the national currency, and threatened growth and development in Nigeria as it is heavily dependent on oil as the main source of government earnings.

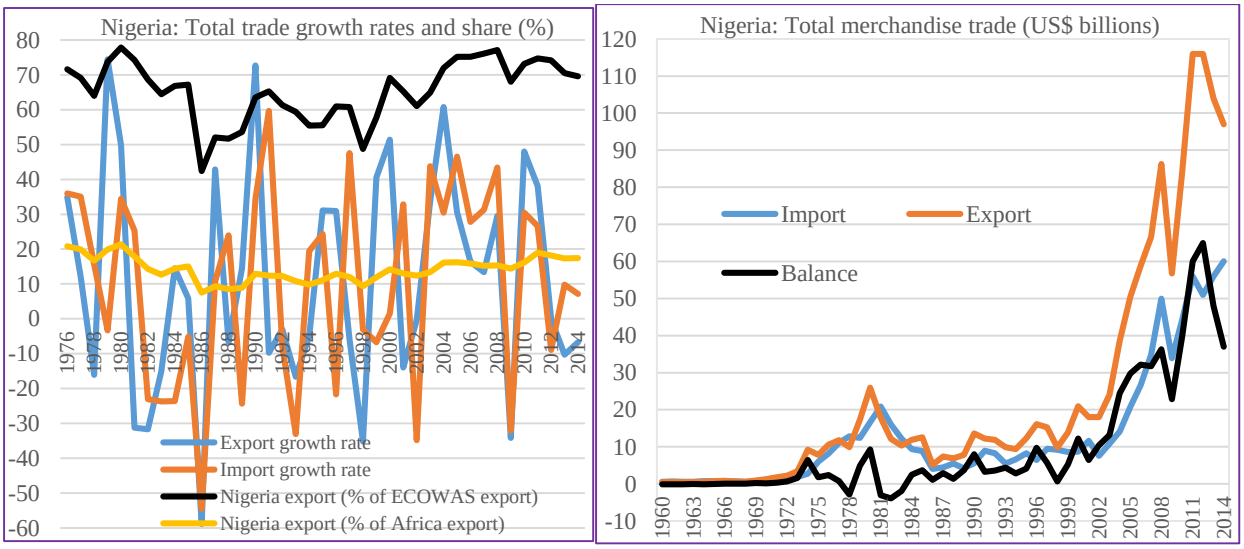


Figure 5-1: Nigeria: Total merchandise trade (US$ billions) and growth rates (%)
Source: Author's analysis based on UNCTAD, 2016

Therefore, it has become imperative for the government to break the jinx, by moving away from the Mono-cultural Economic Policy, and looks beyond oil, notably the agricultural production and export to survive the present oil shock. Despite the fact that Nigeria's export value reduced in 2014, the country still accounted for about 71% and 17% of the total share of ECOWAS and Africa's merchandise exports respectively in the same year (Figure 5.1). This signifies that Nigeria is a major player in the ECOWAS and Africa's markets.

Figure 5.2 shows the volume of Nigeria's exports of food products between 1961 and 2013. Even though fluctuated in the period under review, it increased from US$ 318 million in 1961 to US$ 1.55 billion in 2011, and regrettably, decreased to 1.22 billion in 2013. Figure 5.2 further reveals that Nigeria experienced net agricultural export only between 1961 and 1974. On the contrary, the country has become a net importer of agricultural commodities since 1975 (Appendix Table 5A). This implies that Nigeria is consuming more than it is producing despite regarded as an agrarian nation.

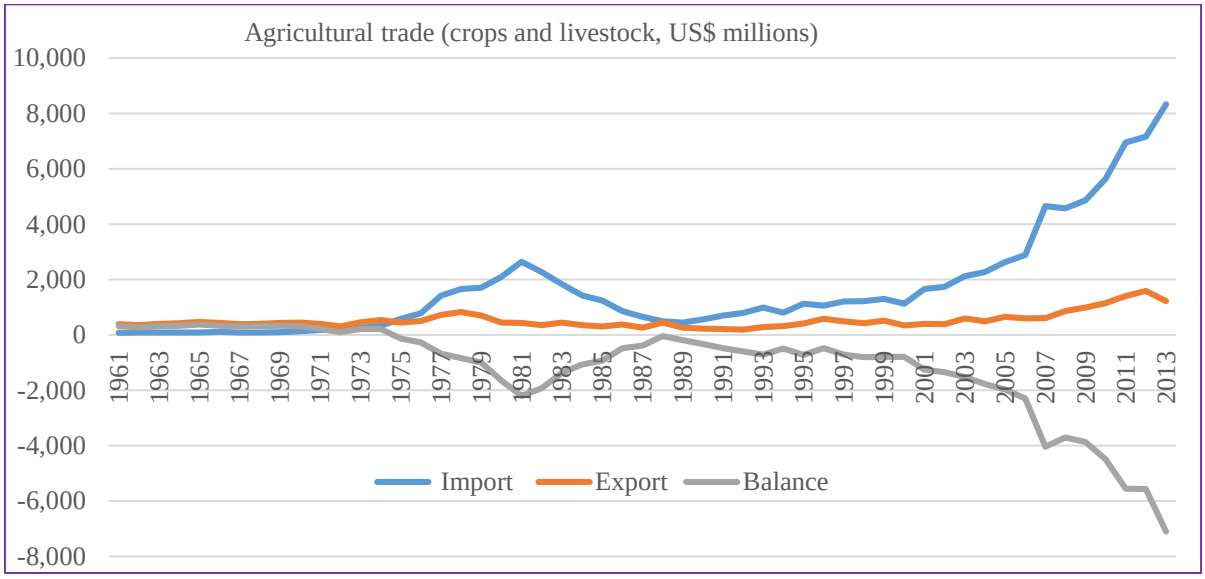


Figure 5-2: Nigeria: Trade in agricultural products (US$, millions), 1961-2013
Source: Author's analysis based on FAOSTAT, 2016

Although the climatic condition in Nigeria is diverse and conducive, that makes it possible to farm almost all agricultural commodities, Nigeria still records negative trade balance in agriculture (Figure 5.2 and Appendix Table 5A) and among the worst with food security issues in the world. As earlier pinpointed out, Nigeria was self-sufficient in food security and a net exporter of agricultural commodities. However, the situation started going in the opposite direction when the country began lifting oil in the 1960s, the civil war between 1967 and 1970, and the oil boom in 1970s. As a consequence, the import of food and agricultural products have substantially increased, and the country has become the net importer. Similarly, agrarian trade indices show a decrease of Nigeria's export index from 1966 to the lowest in 1984, and then began to increase. On the other hand, import index increased during the period under review (Figure 5.3).

Why Nigeria, an agrarian country, is the net importer of food? Arguably, this is largely attributed to market access, trade distorting measures by importing countries, and price volatility in the global primary agricultural markets, which form substantial exports in Nigeria just as many SSA countries. Domestically, Nigeria records adverse trade balance due to the neglect of the sector by the Nigerian government, inadequate modern farm tools and modern technologies, limited access to financial resources to the producers (Table 5.7), low investment, and low value added. Consequently, the country does not stand off to compete favourably in the world markets. *What categories of agricultural products do Nigeria exports and imports?* As postulated by the dependency theory, Nigeria, being a peripheral and partly due to a market access impasse, is still exporting mainly raw agricultural commodities, such as cocoa beans, sesame seeds, and rubber at low prices. On the other hand, the country imports processed food, such as refined sugar, wheat flour and paste of tomatoes (Table 5.1 and Table 5.3). As a result, the country depended heavily on both advanced and emerging economies for the processed food and modern farm inputs (Table 5.2, Table 5.8, Table 5.9, and Figure 5.8) at the expense of local producers.

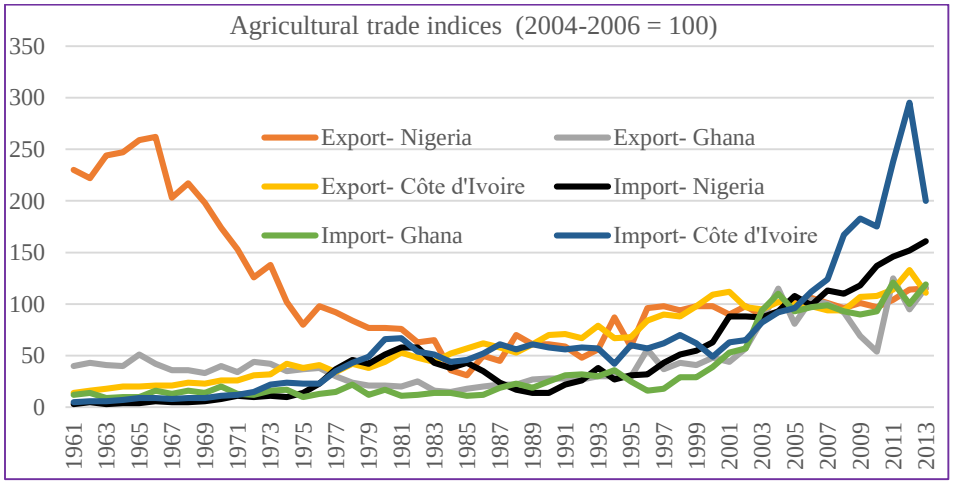


Figure 5-3: Agricultural import and export quantity index (2004-2006 = 100), 1961-2013
Source: Author's analysis based on FAOSTAT, 2016

Sadly, even though agriculture is the mainstay of the Africa's economy, the continent has been performing badly in the world markets. For instance, the merchandise trade specialization index (TSI) according to specific agricultural products in Africa (Table 3.4) and Nigeria (Table 5.1) for the period 1995-2012 shows the poor performance of the continent and country in the global market. The positive values signify that Africa and Nigeria have net exports of those products. Therefore, the specialization in the production and exportation of those products as postulated by

Ricardo's comparative advantage and the H-O model is very crucial for growth and development. Also, negative values (Figure 5.2) suggest that Africa and Nigeria imports more than its exports (net consumption), they should either step up production or continue to import if they cannot cheaply produce in large quantities at home. Also, as shown in Table 3.4 and Table 5.1, Africa, in general, and Nigeria, in particular, respectively, are net exporters of tropical commodities, such as cocoa, coffee, and natural rubber. This implies that they have a comparative advantage and competitive advantage in this broad range of tropical products, albeit only in raw products.

Table 5-1: Nigeria: Merchandise trade specialization index in selected products, 1995-2012

YEAR	1995	2000	2003	2005	2008	2009	2010	2011	2012
Total all products (agriculture, fuels, mining)	**0.20**	**0.41**	**0.38**	**0.38**	**0.24**	**0.25**	**0.32**	**0.38**	**0.43**
All food items (SITC 0 + 1 + 22 + 4)	-0.44	-0.78	-0.51	-0.71	-0.63	-0.50	-0.47	-0.76	-0.67
Food, basic (SITC 0 + 22 + 4)	-0.42	-0.78	-0.49	-0.70	-0.63	-0.51	-0.49	-0.78	-0.69
Beverages and tobacco (SITC 1)	-0.80	-0.96	-0.96	-0.96	-0.67	-0.21	-0.20	-0.28	-0.13
Agricultural raw materials (SITC 2 less 22, 27 and 28)	0.60	0.38	0.06	-0.02	-0.15	**0.28**	**0.08**	**0.17**	**0.12**
Fuels (SITC 3)	**0.93**	**0.96**	**0.96**	**0.96**	**0.83**	**0.87**	**0.88**	**0.89**	**0.89**
Food and live animals	-0.43	-0.79	-0.48	-0.72	-0.67	-0.56	-0.56	-0.80	-0.72
Wheat (including spelt) and meslin, unmilled	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Rice	-0.98	-1.00	-0.99	-0.91	-1.00	-1.00	-1.00	-1.00	-1.00
Maize (not including sweet corn), unmilled	0.97	0.89	-0.68	-0.30	-0.90	-0.81	-0.54	0.01	-0.45
Cereals, unmilled (excluding wheat, rice, barley, maize)	0.90	-0.93	-0.65	0.19	-0.93	**0.82**	**0.99**	**0.81**	**0.92**
Meal and flour of wheat and flour of meslin	-0.34	-0.14	-0.39	0.29	0.49	0.75	-0.79	0.23	-0.44
Cereal preparations, flour of fruits or vegetables	-0.75	-0.98	-0.97	-0.93	-0.98	-0.95	-0.93	-0.93	-0.80
Vegetables and fruits	-0.02	-0.62	-0.40	-0.30	-0.44	-0.41	-0.40	-0.44	-0.41
Vegetables	-0.42	-0.92	**0.40**	**0.33**	**0.04**	**0.19**	**0.00**	**0.02**	**0.20**
Fruits and nuts (excluding oil nuts), fresh or dried	**0.81**	**0.58**	**0.11**	**0.12**	**0.88**	**0.88**	**0.79**	**0.30**	**0.50**
Fruit and vegetable juices, unfermented, no spirit	-0.99	-0.99	-0.99	-0.99	-0.93	-0.76	-0.77	-0.88	-0.81
Sugar, sugar preparations and honey	-0.90	-0.98	-0.93	-0.93	-0.90	-0.86	-0.82	-0.89	-0.82
Sugar confectionery	0.24	-0.71	-0.28	-0.57	-0.15	0.25	0.00	-0.07	**0.31**
Coffee, tea, cocoa, spices, and manufactures thereof	0.78	0.05	0.51	-0.14	0.86	0.85	0.76	-0.03	**0.22**
Coffee and coffee substitutes	-0.70	-0.99	-0.99	-0.99	-0.95	-0.98	-0.92	-0.84	-0.87
Cocoa	**1.00**	**1.00**	**0.98**	**0.96**	**1.00**	**0.99**	**0.99**	**0.00**	**0.30**
Chocolate, food preparations with cocoa	-0.24	-0.83	-0.25	-0.66	-0.88	-0.53	-0.29	-0.90	-0.37
Hides and skins (except furskins), raw	0.71	0.46	-0.35	-0.73	-0.91	-0.79	-0.52	0.30	-0.26
Oil seeds and oleaginous fruits	0.93	0.60	0.30	0.73	0.93	0.97	0.51	-0.17	-0.16
Natural rubber & similar gums, in primary forms	**0.99**	**0.95**	**0.86**	**0.84**	**0.95**	**0.98**	**0.99**	**0.38**	**0.31**
Cotton	**0.42**	**-0.54**	**-0.05**	**0.36**	**0.99**	**1.00**	**0.98**	**0.83**	**0.96**
Crude fertilizers other than division 56	-0.83	-0.90	-0.92	-0.94	-0.91	-0.94	0.55	-0.55	**0.14**
Animals oils and fats	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-0.86	-0.91
Processed Animal and vegetable oils/fats	-0.99	-0.99	-0.98	-0.93	-0.97	-0.98	-0.99	-0.98	-0.97
Fertilizers other than group 272	0.01	-0.99	-0.97	-0.87	-0.96	-0.75	-0.94	-0.48	-0.54
Agricultural machinery (excluding tractors) & parts	-0.94	-0.99	-0.98	-0.99	-0.98	-0.99	-0.99	-0.89	-0.96

Source: UNCTAD, 2016

The International Trade Centre (ITC) develops Trade Performance Index (TPI) aimed at evaluating and monitoring the multi-faceted dimensions of the export performance of individual sectors and countries. The index calculates and monitors the level of diversification and competitiveness of a particular export sector and compares the findings with other nations. The

index not only reveals gains and losses in global market shares, but also sheds light on the factors that are driving these changes. Even though it is mainly quantitative approach limits TPI, it does showcase a systematic position of sectoral export performance as well as comparative and competitive advantages of countries.

Table 5-2: Trade Performance HS: Nigeria (US$ millions, %), 2012 and 2014

Indicators, 2014	Export value	Import value	Net trade value	Export (% of exports)	Import (% of t imports)	Exports (% of world exports)	Imports (% of world imports)	Export Growth (%)	Import growth (%)	Net Trade *
18 Cocoa and cocoa preparations	829.3	22.3	807.0	0.89	0.04	1.68	0.05	-1	48	94.8
44 Wood and articles of wood, etc.	401.3	197.3	203.9	0.43	0.38	0.29	0.14	67	26	34.1
12 Oil seed, grain, seed, fruit, etc, nes	351.9	45.0	307.0	0.38	0.09	0.35	0.04	18	57	77.3
41 Raw hides and skins and leather	286.6	5.6	281.0	0.31	0.01	0.79	0.02	0	4	96.2
40 Rubber and articles thereof	87.6	684.3	-596.6	0.09	1.33	0.05	0.34	-13	7	-77.3
03 Fish, crustaceans, molluscs,etc	77.0	855.6	-778.6	0.08	1.66	0.07	0.78	4	14	-83.5
24 Tobacco and manufactured substitutes	71.5	91.2	-19.7	0.08	0.18	0.17	0.21	13	4	-12.1
09 Coffee, tea, mate and spices	32.7	35.3	-2.6	0.03	0.07	0.07	0.08	22	9	-3.8
08 Edible fruit, nuts, etc	30.8	67.1	-36.3	0.03	0.13	0.03	0.06	28	109	-37.1
31 Fertilizers	20.2	221.8	-201.6	0.02	0.43	0.03	0.31	53	1	-83.3
52 Cotton	18.8	294.2	-275.2	0.02	0.57	0.03	0.5	-11	23	-88
21 Miscellaneous edible preparations	8.6	315.6	-307.2	0.01	0.61	0.01	0.48	58	12	-94.7
55 Manmade staple fibres	5.7	225.7	-22.0	0.01	0.44	0.01	0.56	-12	17	-95.1
19 Cereal, flour, starch, milk preparations	3.3	473.0	-469.7	0	0.92	0	0.73	18	21	-98.6
07 Edible veget. & some roots and tubers	3.1	12.3	-9.3	0	0.02	0	0.02	9	14	-60
10 Cereals	2.2	2,079	-2,076.8	0	4.03	0	1.65	-35	5	-99.8
05 Products of animal origin, nes	2.0	1.3	.630	0	0	0.02	0.01	3	30	18.8
20 Vegetable, fruit, nut, etc food prepar.	1.8	264.5	-262.7	0	0.51	0	0.45	68	14	-98.6
17 Sugars and sugar confectionery	1.3	699.4	-698.1	0	1.35	0	1.48	15	8	-99.6
16 Meat, fish and seafood food prep nes	.142	87.7	-87.5	0	0.17	0	0.19	51	19	-99.7
01 Live animals	.081	16.0	-15.9	0	0.03	0	0.07	9	-24	-99
02 Meat and edible meat offal	.004	5.0	-4.9	0	0.01	0	0		-8	-99.8
Indicators for 2012										
40 Rubber and articles thereof	10,102.0	508.0	9,594.0	7.06	1.42	4.65	0.24	22	13	90.4
18 Cocoa and cocoa preparations	3,795.6	7.8	3,787.8	2.65	0.02	8.68	0.02	-14	56	99.6
08 Edible fruit, nuts, p. citrus fruit, melons	634.9	18.0	616.9	0.44	0.05	0.72	0.02	69	92	94.5
12 Oil seed, grain, seed, fruit, etc, nes	504.9	35.4	469.5	0.35	0.1	0.54	0.04	9	25	86.9
52 Cotton	452.3	13.5	438.7	0.32	0.04	0.68	0.02	54	42	94.2
03 Fish, crustaceans, etc.	331.1	1,418	-1,087	0.23	3.95	0.35	1.47	6	35	-62.1
09 Coffee, tea, mate and spices	89.7	47,3	42.4	0.06	0.13	0.19	0.1	4	12	30.9
01 Live animals	52.3	1.2	50.8	0.04	0	0.24	0.01	131	-13	95.5
31 Fertilizers	50.0	273.1	-223.1	0.03	0.76	0.07	0.33	262	-8	-69
22 Beverages, spirits and vinegar	23.8	535.7	-511.9	0.02	1.49	0.02	0.51	-2	27	-91.5
21 Miscellaneous edible preparatns	18.4	190.4	-172.0	0.01	0.53	0.03	0.32	122	10	-82.4
20 Vegetable, fruit, nut, etc food prepar.	17.5	182.7	-165.2	0.01	0.51	0.03	0.33	92	26	-82.5
17 Sugars and sugar confectionery	10.5	1,020	-1,009.6	0.01	2.84	0.02	1.92	5	14	-98.0
15 Animal,vegetable fats and oils, etc	1.3	224.5	-223.2	0	0.63	0	0.21	46	23	-98.9
10 Cereals	.042	3,436	-3,436	0	9.58	0	2.74	25	24	-100

Source: ITC, 2016. Note: *Net Trade = (X-M)/(X+M) * 100

Table 5.3 presents TPI in fresh processed food and agro-products in Nigeria. The indicators from G1 to G6 represent the general profile of Nigeria's trade in primary and processed food. Even though the country experienced accelerated growth of agricultural export in 2010, the overall relative trade balance (RTB)[40] was negative. Also, its national share of processed food export was

[40] Formula of relative trade balance: $RTB_{ds}^{t} = 100 \times \frac{X_{ds}^{t} - M_{ds}^{t}}{X_{di}^{t} + M_{ds}^{t}}$ where; *t* is the current year, *d* is the country under study, *s* is the selected sector, *X* are the exports, and *M* are the imports. TRB result shows values between -100 and +100 (%), with positive values implying that the nation is a net exporter, whereas negative values indicate that the nation is a net importer (ITC, 2015).

zero. The country witnessed negative trade growth (-21%) in both fresh and processed food export in 2014. Similarly, the relative trade balance in 2014 was also negative for both fresh (-35%) and processed (-75%) food. This signifies that Nigeria was largely a net importer of both fresh and processed food as consumption outweighs production during the period under review.

Table 5-3: Trade performance index in fresh and processed food in Nigeria, 2010 and 2014

Indicator's Description		2010				2014			
		Fresh food	Fresh rank	Processed food	Processed rank	Fresh food	Fresh rank	Processed food	Processed rank
N	No. of exporting countries	180	-	166	-	177	-	165	-
G1	Value of exports (US$ millions)	3,699	n.a	360	n.a	1,438	n.a	134	n.a
G2	Export growth in value, p.a. (%)	98%	1	222%	1	-21%	172	-21%	158
G3	Share in national exports (%)	4%	n.a	0%	n.a	1%	n.a	0%	n.a
G4	Share in national imports (%)	5%	n.a	5%		5%	n.a	8%	n.a
G5	Relative trade balance (%)	17%	n.a	-73%	n.a	-35%	n.a	-93%	n.a
G6	Relative unit value (world average = 1)	2.2	n.a	1.1	n.a	0.9	n.a	0.7	n.a
P1	Net exports (US$ millions)	1,110	31	-1,948	148	-1,586	152	-4,001	156
P2	Per capita export US$/inhabitant)	23.2	133	2.3	147	8.3	156	0.8	155
P3	Share in world market (%)	0.60%	35	0.06%	86	0.02%	69	0.02%	112
P4a	Product diversify. (N° of equiv. products)	6	83	4	122	4	128	3	137
P4b	Product concentration (Spread)	n.a	87	n.a	122	n.a	123	n.a	131
P5a	Market diversification (N° of equiv mkts)	15	17	10	50	7	88	6	97
P5b	Market concentration (Spread)	n.a	18	n.a	54	n.a	89	n.a	98
C1	Relative Δ of world market share p.a (%)	190%	n.a	1,478%	n.a	-14.1%	n.a	-14.3%	n.a
C1a	Competitiveness effect, p.a. (%)	78.1%	3	887%	1	-13.4%	171	-14.7%	156
C1b	Initial geographic specialisation, p.a. (%)	-0.06%	95	-0.68%	103	-4.01%	175	-5.88%	163
C1c	Initial product specialisation, p.a. (%)	-11.8%	175	2.1%	46	-4.88%	152	-4.81%	154
C1d	Adaptation effect, p.a. (%)	124%	1	590%	1	8.2%	9	11.1%	5
C2	Matching with dynamics of world demand	n.a	105	n.a	97	n.a	130	n.a	128
A	Absolute Δ of world market share (%)	0.11%	4	0.01%	26	-0.09%	172	-0.01%	140
P	Average Index: Current Index	n.a	39	n.a	125	n.a	139	n.a	155
C	Average Index: Change Index	n.a	81	n.a	49	n.a	164	n.a	158

Source: ITC, 2016

Notes: C1a- C1d= Change 2006 - 2010 for Change Index for 2010; C1a- C1d = Change 2010- 2014 for Change Index for 20014

Table 5.3, also shows indicators from P1 to P5b, which represent the current Nigeria's trade performance in the global market. The value of per capita exports in Nigeria in 2010 and 2014 shows the value the country's population produced food for world market was below potential. Similarly, the overall share of Nigeria fresh and processed food in the global market share show that Nigeria was not a global player in the world's agricultural market within the period under review. The country's share decreased from 0.6% and 0.06% in 2010 to 0.018% and 0.02% in 2014 in the global proportion of fresh and processed food exports.

The equivalent number denotes the degree of the market diversification horizon of a given country. Table 5.3 reveals that the number of Nigeria's major importing partners reduced from 15

(fresh food) and 10 (processed food) in 2010 to 7 (fresh food) and 6 (processed food) in 2014. This implies that the vulnerability of Nigeria to shocks within destination partners has been intensified. The export destination of these commodities differs from product to product, albeit only a few of those products. For instance, cocoa beans are mostly exported to the EU Member States, such as the Netherlands; sesame seeds are mainly exported to Japan, Turkey while gum Arabic largely to India.

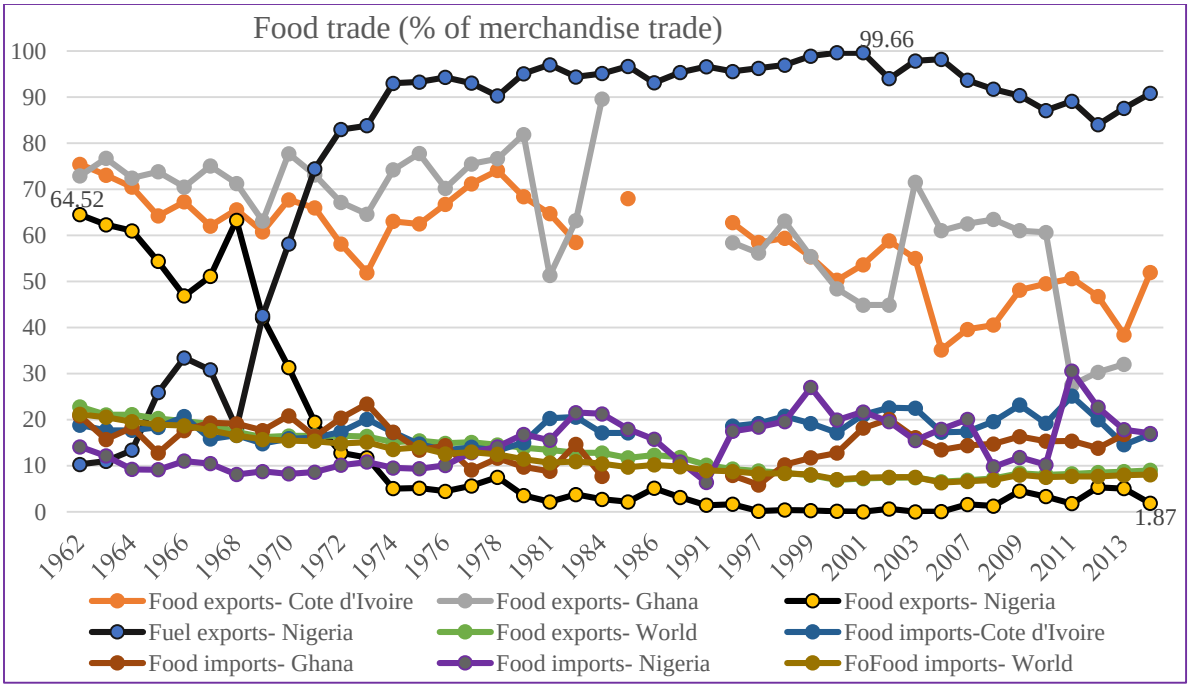


Figure 5-4: Food and fuel trade (% of total trade) in Nigeria and some selected economies, 1962-2014
Source: Author's analysis based on World Bank, 2016

Also, indicators from C1 to C1d represent the decomposition of changes in Nigeria's market share in the world for the previous five years (Table 5.3). The change in competitiveness effect signifies a quota of the relative change of global market share of Nigeria. The positive change in competitiveness effect indicates that Nigeria performed for the period between 2006 and 2010. However, the percentage change in the competitiveness of Nigeria's exports in the global markets drastically reduced as the country recorded an inverse direction in both fresh and processed food between 2010 and 2014. Nonetheless, the results of the adaptation indicator show that Nigeria was unable to adjust export supply changes in the global demand for its agricultural commodities for the period between 2006 and 2014. The positive effect indicates that Nigeria's market share increased in the markets of her importing partners.

5.3 The Structure of Agricultural Exports

In the 1960s, agriculture accounted for over 50% of total merchandise exports in Nigeria. During this period, the country was the major exporter of cocoa, palm oil, cotton, palm kernel, rubber and groundnuts in the world. Owing to the drastic declined of agrarian exports in Nigeria, in particular between 1968 and 2003, the country's food exports as a percentage of total merchandise exports merely accounted. Agricultural exports in total merchandise exports fell from 62% in 1963 to about 42% in 1969, shrank to 5% in 1974, and then declined to less than 0.03% between 2001 and 2003. However, the country has started recording an upward growth, as it reported 5.1% in the share of total exports in 2013, but declined to 1.9% in 2014 (Figure 5.4).

Despite the decline of agriculture in the share of total merchandise exports in Nigeria (Figure 5.4), it still accounts the largest share of non-oil exports. As presented in Figure 5.5, agriculture contributed 47% in total non-oil export, ahead of manufactured (15.2%), semi-manufactured (30.8%), minerals (3.8%) and others (3.2%). Further analysis indicated that the share of agricultural exports by product: Cocoa beans constituted 21.4%, rubber 4.7%, cotton, 2.2%, fish/shrimped 2.1%, and others 16.6% of the total agricultural exports in 2013 (CBN, 2013). This implies that the importance of agriculture as a major source of foreign earnings after oil in the country cannot be overemphasized.

Nigeria's leading agricultural export commodities by quantity are cocoa, sesame seed, bran of wheat, a cake of palm kernel, nuts, natural rubber, dry, cotton and palm oil (Table 5.4). Similarly, the largest export products in terms of value are cocoa beans, rubber, sesame seeds, cocoa butter and cigarettes (Appendix Table 5C). The structure of agricultural export is concentrated in these few commodities and markets. The top 10 export commodities have accounted for over 80% of the total value of agricultural exports from the country (Appendix Table 4B). This implies that Nigeria is vulnerable to the global demand (Table 5.3) and price volatility.

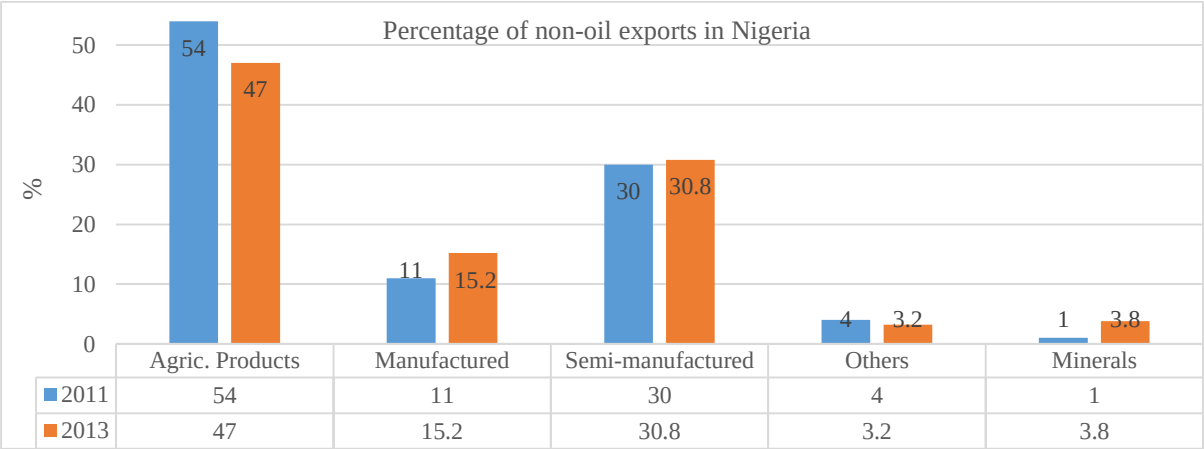


Figure 5-5: Nigeria: Non-oil exports (%), 2011 and 2013
Source: Author's analysis based on CBN, 2013

As presented in Table 5.4, the fifth largest export commodity in quantity in 2013 was *cashew nuts*. The total export quantity of the nut increased from 1 thousand tonnes in 1965 to 75 thousand tonnes in 2013. However, Nigeria's position in the global export shrunk from the fourth in 1965 to the sixth largest exporter in 2013. Even though the share of Nigeria in the world increased from 0.5% in 1965 to 5.6% in 2013, the country's share in the West Africa has drastically shrunk from 65.5% in 1965 to merely 6.8% in 2013 (Appendix Table 5C). This is because some ECOWAS (Cote d'Ivoire, Guinea-Bissau, Benin and Ghana) countries and Tanzania have taken over from Nigeria to become the major players in the global cashew export.

Table 5-4: Nigeria: Top 15 export products in quantity (tonnes, 1,000), 1965-2013

		2013		2010		2000		1980		1970		1965	
Rank	Commodity	Q ('000)	GR	Q ('000)	GR	Q ('000)	GR	Q ('000)	GR	Q ('000)	GR	Q ('000)	GR
1	Cocoa beans	182.9	4	226.6	4	139.0	4	133.9	3	195.9	2	305.6	2
2	Sesame seed	153.4	3	120.0	3	30.2	5	n.a	n.a	12.1	3	20.5	3
3	Bran of Wheat	93.7	13	127.6	10	88.1	9	160.0	7	n.a	n.a	n.a	n.a
4	Cake of Palm Kernel	77.0	4	65.5	4	160.4	4	70.0	2	30.1	4	4.0	9
5	Cashew nuts, with shell	75.2	6	6.6	9	3.0	10	1.0	6	1.0	5	1.0	4
6	Rubber Nat Dry	51.3	12	42.4	12	36.0	7	14.6	8	59.3	4	70.0	4
7	Cotton lint	37.5	21	18.4	22	0.19	n.a	n.a	n.a	28.3	26	24.9	24
8	Cocoa Butter	24.2	7	9.3	13	0.02	46	8.1	6	9.4	4	n.a	n.a
9	Palm oil	18.0	33	13.0	32	8.0	30	n.a	n.a	7.6	10	152.4	1
10	Ginger	14.3	8	5.6	9	4.3	7	n.a	n.a	n.a	n.a	n.a	n.a
11	Cocoa powder & Cake	13.7	11	8.1	16	5.1	16	8.8	7	9.6	6	n.a	n.a
12	Soybeans	8.8	32	11.0	32	9.0	24	n.a	n.a	10.1	6	15.3	5
13	Cottonseed	7.8	2	8.6	1	4.9	5	2.6	8	96.0	7	71.3	10
14	Cigarettes	5.8	n.a	3,443	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
15	Groundnut oil	3.7	9	3.9	11	0.16	17	n.a	n.a	90.3	2	92.2	2

Source: Author's analysis based on FAOSTAT, 2016. Notes: Rank denotes national rank; GR stands for global rank

Surprisingly, commodities such as *groundnut, palm oil* and *soybeans*, which were among the leading agrarian exports, have taken a back seat. For instance, Nigeria was the largest producer and exporter of palm oil, with 40% of market share globally between the 1950s and 1960s, followed by Malaysia and Indonesia. However, Nigeria lost her glory as the country moved from being the largest exporter of palm oil, with 152 thousand tonnes in 1965 down to the 33 positions of world exporters, with merely 18 thousand tonnes in 2013 (Table 5.4). Sadly, Nigeria is presently a net importer of palm oil.

As presented in Table 5.4, the sixth largest export commodity in quantity in Nigeria in 2013 was *natural rubber*. Surprisingly, the total export quantity of natural rubber rather than increase, it declined to 51 thousand tonnes in 2013 from 69 thousand tonnes in 1965. Consequently, Nigeria has taken a back seat in the global market as its rank declined from the fourth to the twelfth largest exporter in the world in 2013. The country's share in the world, Africa and West Africa also drastically shrank from 3.2%, 41.2% and 51.2% in 1965 to 0.6%, 10.2% and 11.9% respectively in 2013 (Appendix Table 5C). This suggests that export performance of Nigeria in rubber is below expectations, just as in many other products.

Nigeria lost its position in *cotton* production and exportation to other African countries like Egypt, Benin, Cote d'Ivoire, Burkina Faso, Mali and Cameroon in similar circumstances. Nigeria's share in the global, Africa and West Africa export of cottonseed also drastically shrank from 15.4%, 38.2% and 76.5% in 1965 to merely 0.6%, 2.7%, and 5.5% respectively in 2013. Sadly, the country's export share in cotton lint in the world, Africa and West Africa also declined from 0.7%, 3.4% and 58.5% in 1965 to merely 0.4%, 3.0% and 4.5% respectively in 2013 (Appendix Table 5C). Also, Nigeria moved from being a net exporter to become a net importer of cotton product (Table 5.2). This negative trend is due to low demand and prices of cotton products fuelled by unhealthy global completion, closing down of many textile companies in Lagos, Kano and Kaduna, and the neglect of the sector by the Nigeria government in the era of crude oil production and export.

Groundnut used to be the major agricultural export commodity in the northern Nigeria during the colonial era and the post-independence in the 1960s and early 70s. During this period, the product was solely exported to the colonial master, the UK through Royal Niger Company. Nigeria lost its glory in the groundnut production and exportation in the world as the days of groundnut

pyramids disappeared. Nigeria was the largest exporter of shelled groundnut and accounted for over 42% share of global exports in quantity for the between 1961 and 1970. Sadly, by 2008, the country took a back seat and lost completely out of global competition as countries, such as India (1), USA (2), Argentina (3) Netherlands (4) China (5) have taken over as the largest exporters of the crop in the world in 2013. The underperformance of groundnut is also shown in its oil export (Table 5.4 and Appendix Table 5C). Nigeria was the second largest exporter of groundnut oil, with 92 thousand tonnes in 1965, but became the 9th largest exporter, with only about 4 thousand tonnes in 2013. Similarly, the country's share of the global, Africa and West Africa also shrank from 19.7%, 30.4% and 33.2% in 1965 to merely 1.2%, 8.8%, and 9.8% respectively in 2013.

In 2013, Nigeria recorded cocoa and sesame as the first and second largest agricultural export commodities in the country. Similarly, the country recorded as the third largest exporter of cocoa and sesame seeds in the same period under review. Given the importance of these two commodities in the export structure in Nigeria, it is imperative briefly to highlight the performance of these crops in subchapters. Thus, cocoa is highlighted in Subchapter 5.3.1 while sesame seed is analysed in Subchapter 5.3.2 below.

5.3.1 Cocoa

Cocoa is grown on more than 10 million hectares worldwide (FAOSTAT, 2016). This represented 0.2% of the global agrarian land (ITC, 2015). The global production of cocoa beans increased from 1.2 million tonnes in 1961 to 4.6 million tonnes in 2013. Similarly, global export also rose from 1.03 million tonnes in 1961 to 3.04 million tonnes in 2004, and then fluctuated and declined to 2.72 million in 2013. This performance is recorded largely because of the high demand of the crop in the importing (consuming) economies, especially in North America and Europe, and recently, in emerging economies, such as India and China.

Cocoa is the leading agricultural products produced and exported in four West African countries: Cote d'Ivoire, Ghana, Nigeria and Cameroon. The production of the crop in these four countries also increased from 816 thousand tonnes or 65% (Cote d'Ivoire 7%, Ghana 35%, Nigeria 17% and Cameroon 6%) in 1961 to 3.1 million tonnes or 64% (Cote d'Ivoire 32%, Ghana 18%, Nigeria 8%, and Cameroon 6%) share of world production in 2013. The performance and positions of these countries have changed significantly during the period under study. For instance, Cote d'Ivoire's market share sharply increased from 7% in 1961 to 32% in 2013 to

become the highest producer in the world. Whereas Ghana and Nigeria's positions sharply declined to become the second and fourth positions respectively in the world, the position of Cameroon regarding production and export remain consistent.

Similarly, these West African countries' exports also increased from 753 thousand tonnes or 73% (Cote d'Ivoire 9%, Ghana 40%, Nigeria 18% and Cameroon 6%) of global export in 1961 to 1.7 million tonnes or 63% (Cote d'Ivoire 30%, Ghana 19%, Nigeria 7% and Cameroon 7%) share of global exports in 2013. On country by country, just as experienced in the production, the export share of Cote d'Ivoire in the global market drastically increased from 9% in 1961 to 30% in 2013, while Nigeria and Ghana's exports reduced in the same period under study. Even though the cocoa output and export have increased over the years, the global market share of these countries has decreased.

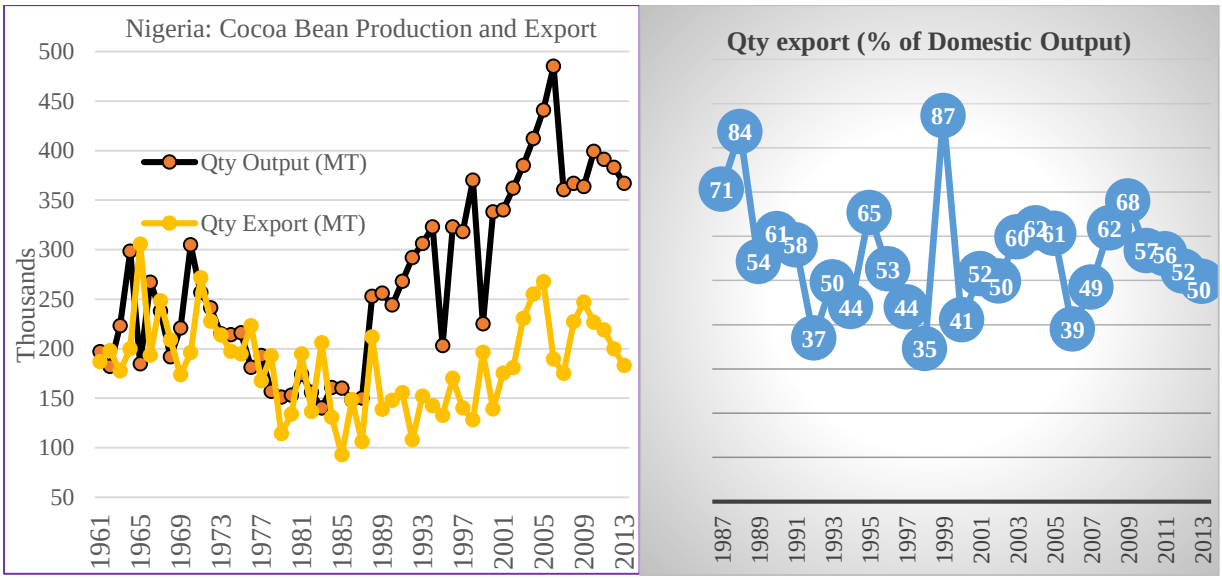


Figure 5-6: Cocoa production and export and export (tonnes, 1,000) in Nigeria
Source: Author's analysis based on FAOSTAT, 2016

Cocoa is the highest agricultural export product in Nigeria and the second leading export products in the country, after petroleum in terms of revenues. Nigeria is the fourth largest cocoa producer[41] in the world, after Cote d'Ivoire, Indonesia and Ghana, and the third highest exporter after Cote d'Ivoire and Ghana. This implies that Ghana, Cote d'Ivoire and Nigeria have a

[41] Cocoa is cultivated in at least fourteen states of the federation, notably in the southern states. The main cocoa cultivating states are Ondo, Ekiti, Edo, Cross River, Oyo, Ogun, Osun and Abia

comparative advantage in the production and exportation of this crop. This is mainly because of the favourable tropical climatic conditions in these countries and the other leading producing economies. As a result, these countries have taken their comparative advantage by cultivating the crop as postulated by the Ricardian and H-O model. Nonetheless, both the producers and exporters of the products still face with many bottlenecks that impede them from enjoying the expected economies of scale regarding production, exports and earnings.

Figure 5.6 shows the annual quantity of cocoa beans produced and exported in Nigeria between 1961 and 2013. The amount of cocoa output increased from 170 thousand tonnes in 1961 to 391 thousand metric tons, about 305 thousand tonnes in 1970 and then, drastically declined to 140 thousand tonnes in 1983. The product recorded the highest output in 2006, with 485 thousand tonnes, and then, declined to 367 thousand tonnes in 2013.

Irregular weeding, inadequate or untimely fertilizer application, diseases and pests, unfavourable weather, small-scale subsistence farms (primarily rely on outdated farming practices) with high production costs, labour force, lack of improved (hybrid) seeds have been identified as among the reasons for low yield per hectare and overall total output in the Africa (ITC, 2001; IITA, 2009; Verter and Bečvářová, 2014a) relative to South American producing countries.

Table 5-5: Trade Performance HS: Nigeria-18 Cocoa and cocoa preparations (US$ millions, %), 2014

Indicator	Export value	Import value	Net trade value	Exports (% of total exports)	Imports (% of total imports)	Exports (% of world exports)	Export Growth (%)	Net Trade*
1800 All industries in sector	829	22	807	0.89	0.04	1.68	-1	94.8
1801 Cocoa beans, whole or broken, raw or roasted	658	0	658	0.7	0	6.58	-4	100.0
1804 Cocoa butter, fat and oil	146	0	146	0.16	0	2.48	28	100.0
1803 Cocoa paste, whether or not defatted	24	0	24	0.03	0	0.7	-1	100.0
1806 Chocolate and other food preparations containing cocoa	1	22	-22	0	0.04	0	8	-94.9
Leading partners								
1. Netherlands	405.0	3.4	401.4	48.81	15.33	0.82	11	98.3
2. Germany	130.0	0.34	129.3	15.64	1.52	0.26	-12	99.5
3. USA	60.0	0.3	70.0	7.23	1.35	0.12	11	99.0
4. Spain	45.0		45.0	5.38		0.09	-12	100.0
5. Canada	32.0		32.0	3.82		0.06	1	100.0

Source: ITC, 2016. Note: *ITC calculates Net Trade = (X-M)/(X+M) * 100

Nigeria cocoa export has slightly fluctuated in the same period under study. The quantity export increased from 106 thousand tonnes in 1987 to 267 thousand tonnes in 2005, and then fluctuated over the years and declined to about 183 thousand tonnes in 2013. Nigeria recorded an average

year-over-year of 55% cocoa exports as a percentage of domestic production between 1987 and 2013 (Figure 5.6). This does not only signify that over 50% of the raw cocoa product is exported, but also, there is market access, albeit only in its primary form. It is also of great important to emphasize that, part of the remaining cocoa output (about 45%) is processed (in the form of butter, paste, powder, and cake) and exported, mostly within the African sub-regions. This suggests that the Nigeria is likely to be exporting more than two third of annual output of cocoa beans. Netherlands, Germany, USA, Spain, and Canada are the leading cocoa bean importing countries from Nigeria (Table 5.5), whereas, Nigeria imports cocoa products largely from China, the Netherlands, the UK and Italy. Similarly, most of the key cocoa processing (chocolate) companies in the world are from these countries.

Cocoa as the largest non-oil foreign exchange earning crop in Nigeria contributes substantially to the GDP (FMARD, 2014). Table 5.5 presents a normalized trade balance in cocoa and other indicators, called merchandise trade specialization index (TSI). As shown, Nigeria has continued to record negative trade balance in processed cocoa products and overall food items. Arguably, just as in other African cocoa producing countries, Nigeria does not have the competitive advantage in processed products, largely due to lack of modern technology and capital. As a consequence, Nigeria has been largely exporting labour-intensive cocoa beans and importing capital intensive chocolate and other food preparations containing cocoa products.

In terms of export competitiveness, Nigeria's cocoa bean export as a percentage of world exports also drastically decreased from 22.6% in 1967 when cocoa was the largest source of foreign earnings in the country to 6.7% in 2013 (Figure 5.7) after crude oil took its place as the highest source of export revenues in the country. This might be attributed to the Nigeria's neglect in non-oil commodities that led to a decrease in domestic production and exports, also known as the 'Dutch disease.' As earlier noted, part of cocoa beans are locally processed before export, albeit in small quantity. Consequently, the share of the country in primary exports has reduced.

The global consumption of chocolate has doubled in the past 20 years, with about 14% increase in demand in the last five years. This has provided an opportunity to expand domestic cocoa production for exports. Nonetheless, rather than exporting primary cocoa beans, adding value before exports are necessary for more returns and benefits to farmers and national investors. The viability of Nigeria's integration into the global cocoa value chain heavily depends on the fact

that the international chocolate industries that spurs cocoa is a multi-billion dollar sector with sales of the top ten producers reaching $86.3 billion in 2013. Sadly, none of these parent companies is from African cocoa producing countries. Domestically processed cocoa export products, such as cocoa paste, butter, powder, cake, and beverages have persistently accounted for an insignificant percentage of the total output of cocoa beans (Appendix Table 5D). Notwithstanding, both local and neighbouring countries' markets for the processed cocoa products have been expanding in recent years. This development partly provides the impetus for production, processing, value chain development and competitiveness.

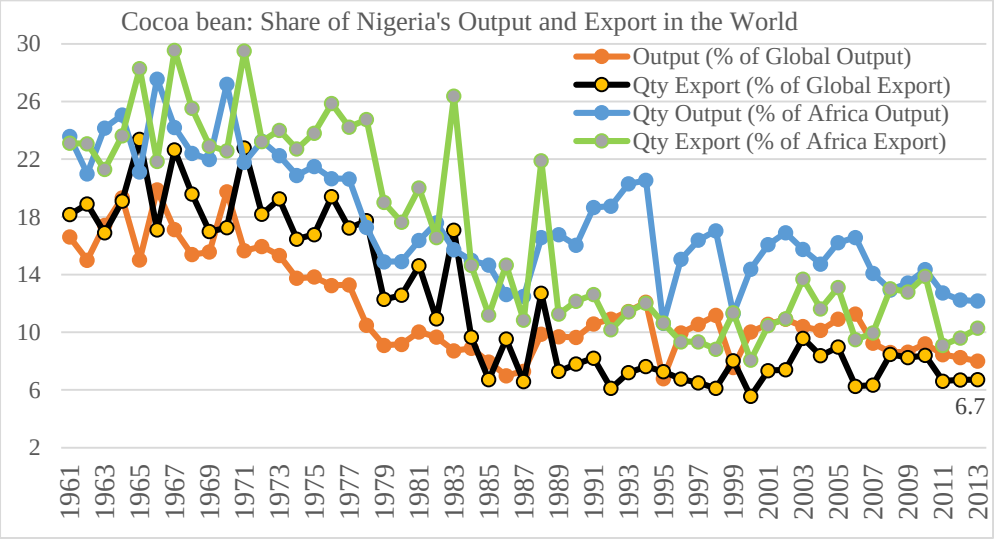


Figure 5-7: Nigeria: Cocoa bean production and export (% of world), 1961-2013
Source: Author's analysis based on FAOSTAT, 2016

External forces, such as inadequate capacity building in SPS- low quality that does not comply with international standards, volatility in the foreign exchange rate (Verter Bečvářová, 2014a) and world prices (Syrovátka, 2009; ICCO, 2014) trigger the demand and supply shocks in the global markets (Weymar, 1969; Gbetnkom and Khan, 2002). There is still a high tariff escalation in the major importing countries (i.e. USA, EU and Japan) in processed and semi-processed products, such as cocoa, coffee and pineapples (Appendix Table 3C). Historically, as compared to large scale primary products, world cocoa prices have been less prone to severe price shocks (Appendix Figure 3B). Arguably, this may *"be due to the difference in scale of global production and consumption, as well as differing degrees of speculative investment;"* thus, it is likely to exacerbate volatility in the primary commodity prices (World Cocoa Foundation, 2014, p. 9). Although world market prices have increased over the years, real farm gate prices in several

producing countries did not reflect this upward trend. The difference between world cocoa *"prices and producer prices in countries could be attributed to the factors above that affected producer price fluctuation"* (ICCO, 2012, p. 8).

5.3.2 Sesame

Sesame seed or benniseed (Sesamum indicum) is among the seeds that are cultivated in tropical and subtropical countries, such as Myanmar, Nigeria, Ethiopia, Tanzania, China, Uganda, Burkina Faso, India and Mozambique (Table 5.6). The seed is annually harvested, and has a long history, mainly due to its cooking oil yield, and currently, for pharmaceutical and cosmetic needs. The seed has a high oil content between 44% and 60% and lots of nutritional benefits. The crop is important to the areas where produced, traded and consumed. Although the crop is usually intercropped with other grains, farmers still witness the high cost of production and uncertainties Sesame is grown in Nigeria by smallholder farmers with low output or yield per hectare.

Global production of sesame seed increased from 1.42 million tonnes in 1961 to 5.47 million tonnes in 2014. In 2014, India was the largest producer of sesame seeds with 811 thousand tonnes, followed by China (612 thousand metric tons), Myanmar (519 thousand metric tons), while Nigeria (about 435 thousand metric tons) was the fifth largest producer of the crop in the world (Table 5.6).

Table 5-6: Top 10 global producers and exporters of sesame (quantity and US$)

Top ten producers of sesame seed				**Top ten exporters of sesame seed 2013**			
Rank	Country	Output (tonne) 2014	Value (US$ '000) 2013	Rank	Country	Qty (tonne)	Value (US$ '000)
1	India	810,000	591,498	1	India	279,727	634,966
2	China	612,208	427,463	2	Ethiopia	240,094	516,206
3	Myanmar	519,400	418,166	**3**	**Nigeria**	**153,400**	**181,000**
4	Tanzania	460,000	282,177	4	Burkina Faso	112,949	160,851
5	**Nigeria**	**434,990**	**125,518**	5	Tanzania	87,727	124,540
6	Burkina Faso	321,837	119,884	6	Ghana	74,633	33,451
7	Ethiopia	288,770	108,931	7	Somalia	36,419	50,901
8	South Sudan	175,000	91,872	8	China	34,594	86,049
9	Uganda	124,300	73,040	9	Guatemala	34,078	49,663
10	Somalia	90,550	61,025	10	Myanmar	33,300	32,000

Source: Author's analysis based on FAOSTAT, 2016

Similarly, the global exports of sesame seed also increased from 157 thousand tonnes in 1961 to 235 thousand tonnes in 1980, and steadily reached about 1.6 million tonnes in 2013. Nigeria was

the third largest exporter of the product, with Nigeria 153,400 tonnes (valued at $181 million), after India, with exports of about 280 thousand tonnes (valued at $635 million), and Ethiopia, 240 thousand metric tonnes (valued at $516 million) in 2013 (Table 5.6).

The production of sesame seed in Nigeria[42] has steadily increased over the years, from 36 thousand tonnes in 1975 to about 435 thousand tonnes in 2013 (Appendix Table 5E). Similarly, sesame seed production in Nigeria as a share of the Africa and global output has also increased from 7.2% and 2.1% in 1975 to 14.5% and 8% in 2014 respectively. It is important to point out that that, sesame as a smallholder crop; a substantial quantity of this product is harvested and consumed locally, without being recorded as domestic output.

In similar fashion, the volume of export also increased from 4,156 tonnes (or 11% of total domestic output) in 1975 to 153,400 (or 93% of total domestic production) in 2013. Similarly, sesame seed export in Nigeria as a share of the Africa and Global export also increased from 3.2% and 2.1% in 1975 to 15% and 10% in 2013 respectively. Global ranked in exports also improved from 15th position in 1994 to 3rd position in 2013. Interestingly, the percentage of sesame export in the share of production was below 15% before the introduction of agriculture to the GATT/WTO Rounds on the trade negotiating table. Nigeria's sesame export has drastically increased to over 40% in the total domestic production after the inclusion of agriculture on the trade negotiation in the Uruguay Round and rose to 93% in 2013 (Appendix Table 5E).

Given that Nigeria is the 5th largest producer, 3rd largest exporter of sesame seed (Table 5.6), and accounted for 10% of the global exports (Appendix Table 5E), it signifies that the country has a comparative advantage in producing and exporting the crop. Also, with the exportation of over 90% of domestic production suggests that there is free trade in this product, albeit only primary form. Japan, Turkey, China, India, and Vietnam are the top five Nigeria's export destinations (leading partners) of this product. Conversely, Nigeria imports oilseed and its equivalent from Argentina, United Arab Emirates, Canada, Thailand and Cyprus. Despite the significance of this product in the global market, it is merely recognized as a driving force for

[42] There are two kinds of sesame seed produced in Nigeria: firstly, White/raw, which is graded as food, mostly used in bakery industry; secondly, Brown/mixed, mainly used for oil.

foreign income generation and agricultural development that need urgent attention in Nigeria. Presently, sesame is mainly exported in its primary form. An improvement in cultivation and market access for the processed sesame crop may spur Nigeria's competitive position in the global markets.

5.4 The Structure of Agricultural Imports

The structure of Nigerian agricultural import trade has changed markedly over the years relative to other products. As earlier mentioned, this has made Nigeria become a net importer of food and agriculture. Nigeria's agricultural trade deficit has increased so drastically that, already by the beginning of the 1990s, imports were more than twice as high as exports (Figure 5.2). Sadly, this deficit continues to widen at an alarming rate. As presented in Figure 5.4, the share of agricultural imports in the share of total merchandise imports has fluctuated over the years. Notwithstanding, it is still huge relative to other SSA countries, such as Ghana and Cote d'Ivore.

Table 5-7: Nigeria: Top import commodities in quantity (tonnes, 1,000), 1965-2013

	2013		**2010**		**2000**		**1980**		**1970**		**1965**	
Commodity	Q ('000)	GR	Q ('000)	GR	Q ('000)	GR	Q ('000)	GR	Q ('000)	GR	Q ('000)	GR
Wheat	4,358.9	10	3,971.9	11	2,219.7	17	1,100.0	19	258.7	33	54.0	53
Rice	2,187.4	2	1,882.8	2	785.7	5	450.0	5	1.7	n.a	1.4	n.a
Sugar, Raw Centrifugal	1,391.4	9	953.2	14	70.0	30	n.a	n.a	n.a	n.a	n.a	n.a
Palm oil	1,195.3	8	780.0	10	102.6	30	54.3	15	n.a	n.a	n.a	n.a
Sugar, Refined	346.2	15	451.5	10	615.9	2	655.0	1	86.9	15	60.8	23
Paste of Tomatoes	166.6	2	85.9	8	16.1	18	5.	21	.616	33	1.0	14
Malt	117.4	13	96.4	14	16.5	46	118.0	6	18.8	16	10.4	17
Food Prep, Flour, Malt Ext	83.4	3	67.5	5	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Glucose and Dextrose	57.8	16	67.1	11	16.5	22	n.a	n.a	n.a	n.a	n.a	n.a
Food Prep Nes	81.5	43	62.3	42	7.1	92	n.a	n.a	n.a	n.a	n.a	n.a
Milk, Whole Dried	75.1	6	72.6	6	36.8	24	n.a	n.a	n.a	n.a	n.a	n.a
Tallow	57.7	5	101.2	4	47.6	15	42.4	16	.888	67	.960	60
Cereals	6,556.0	17	5,872.2	15	3,051.1	23	1,827.6	25	307.9	43	118.3	64

Source: Author's Analysis based on FAOSTAT, 2016

Notes: GR denotes global rank; n.a stands for not available; Q denotes quantity (tonnes)

The leading agricultural import products between 1965 and 2013 in Nigeria is presented in Table 5.7. Major food imports in tonnes were wheat, rice, sugar, palm oil, a paste of tomatoes and milk, whole dried and malt. On crop by crop basis, cereals, especially **wheat** constitute the most substantial food imports both in value ($1.5 billion) and quantity (4 million tonnes) within the period under review. In 2013, Nigeria recorded as the 10th largest importer of wheat flour in the world, out of which over 80% was from the USA. FMARD (2014) argues that the country has not started exploiting cassava as a value derived from the processing products, such as flour, starch,

and sweeteners. The importation of wheat on a large scale has meant a massive loss of jobs in those products that can be produced from cassava domestically.

Sadly, although Nigeria is the largest producer of rice, paddy in West Africa, ranked 14th producer in the world (Table 4.5), yet the country is the 2nd the biggest importer of rice in the world. Also, the country spent a substantial amount of money on fish imports even though Nigeria has waterways to produce enough fish to outweigh domestic consumption if given adequate attention to boot value added and exports. It is important to point out that, while Nigeria accounted for 57% of total tomato outputs in West Africa and ranked as the 14th largest producer in the world in 2013, regrettably, the country ranked second largest importer of tomato paste in the world after Germany in 2013.

Is the import of agricultural products a threat to domestic production or it is enhancing competition and encouraging production efficiency in Nigeria? Agricultural producers in the developed economies, such as the USA and EU have access to finance and modern technology, and are heavily supported and protected from external shocks and unfavourable competitions. As a result, they experience high value added chains and increasing economies of scale. On the other hand, agricultural production in Nigeria is largely disconnected, dominated by small-scale farmers, and with low government support. Smallholder farmers do not enjoy increasing economies of scale, and they still practice traditional or subsistence farming. As a consequence, the import of food products in bulk suggest having hampered domestic producers in Nigeria as they are vulnerable because they cannot favourably compete with producers and exporters from advanced and emerging economies regarding price, quality (standards) and quantity. Also, tax escalation in advanced economies in processed or semi-processed products from Nigeria is extremely outrageous, much higher than for primary commodities, making it almost impossible for exporters from Nigeria to benefit substantially from trade.

5.5 Trade in Farm Inputs

Historically, agrarian policy in Nigeria has supported the importation of farm inputs such as fertilizers, farm implements, agrochemicals, farm power, and agro-industrial inputs to boost agricultural production and export (UNEP, 2002). Agricultural input production and supply in Nigeria appears to be virtually moribund. Notwithstanding, the government of Nigerian is the major player in the inputs sector, overseeing the procurement (importation) and distribution of

inputs, whereas private sector is mostly used as agents to distribute or sell the inputs to the farmers in the country. Mostly state-owned enterprises used to engage in the supply of fertilizers, but owing to the high level of corruption, bureaucratic bottlenecks, biases in delivery and general defects, their operations were largely ineffective.

Table 5-8: Trade Performance HS: Nigeria: Fertilizers (3100 All industries in sector 31) (US$ millions, %), 2009-2013

Year/indicator	Exports (US$)	Imports (US$)	Net trade (US$)	Export (% of total export)	Import(% of total import)	Export (% of world export)	Import (% of world import)	Growth of exports (%)	Growth of import (%)	Net Trade (X-M)/(X+M) * 100
2009	4	201	-197	0.01	0.59	0.01	0.44	n.a	n.a	-95.9
2010	1	183	-182	0.0	0.41	0.0	0.31	-77	-9	-99.0
2011	35	147	-111	0.03	0.23	0.05	0.17	192	-15	-61.1
2012	50	273	-223	0.03	0.76	0.07	0.33	129	11	-69.0
2013	26	315	-289	0.03	0.66	0.04	0.43	58	12	-84.9
2014	20	222	-202	0.02	0.43	0.03	0.31	53	1	-83.3

Source: Author's analysis based on ITC, 2015

In many SSA countries, the use of agricultural machinery and modern technologies is inadequate as compared with advanced economies. Agricultural machinery, tractors per 100 sqm Km of arable land between 1965 and 2007 is presented in Table 5.9. The number of tractors per hundred square kilometres of arable land, which is globally recognized as an indicator of farm mechanization, was only 6.6 tractors per 100 sqm. km of arable land in Nigeria compared with Mexico (97.7), the Czech Republic (262.3) in 2007. Also, Ghana recorded only 4.5 in 2005, while Brazil (117) in 2006, the EU recorded 708.3 in 2005. This implies that farm mechanization is yet to take its full course in Nigeria, Ghana and Cote D'Ivoire just like in many SSA countries as subsistence farming is still largely practiced in these countries.

Table 5-9: Agricultural machinery, tractors per 100 sq. km of arable land, 1965-2007

Country Name	**1965**	**1970**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2006**	**2007**
Brazil	40.7	47.4	76.9	121.2	140.9	143.8	136.3	138	116.1	116.9	n.a
Cote d'Ivoire	4.2	8.3	11.8	18.9	18.1	19.9	17.8	30	n.a	n.a	n.a
Czech Republic	n.a	n.a	n.a	n.a	n.a	n.a	260.8	298.2	271.2	266.8	262.3
EU	376.1	481	584.6	675.5	744.7	793.6	763.2	773	708.3	n.a	n.a
Ghana	12.5	12.3	11.4	10.5	8.2	7.1	6.3	4.9	4.5	n.a	n.a
Mexico	32.6	42.1	44.2	50	76.6	123.5	118.6	108.8	99.5	99.5	97.7
Nigeria	**0.4**	**1.1**	**2.1**	**3**	**3.9**	**4.7**	**5.5**	**6.5**	**6.6**	**6.5**	**6.6**

Source: World Bank, 2016

Given that agricultural related activities in Nigeria are dominated by subsistence farming, the output is hardly sufficient to meet domestic demand. Therefore, the import of farm inputs, such as tractors and human-powered implements and tools, food processing and related technologies and equipment, cultivating and harvesting machines complement the limited available modern

inputs at home to stimulate production, which may well lead to economies of scale and meet domestic demand. Also, the import of farm inputs (Table 5.8, Table 5.9, Figure 5.8, Appendix Table 5G) is considered as an indicator of Nigeria's readiness to invest in farm mechanization to boost productivity, albeit at a slow pace.

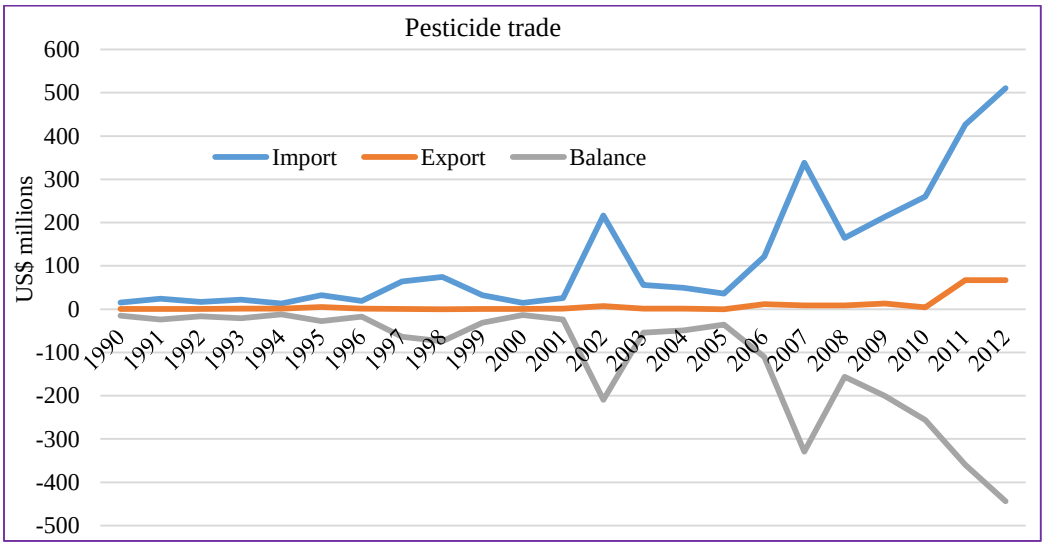


Figure 5-8: Trade in pesticides (US$, millions), 1990-2012
Source: Author's analysis based on FAOSTAT, 2016

In other words, it is important to reiterate that trade has made it possible for modern farm input to be imported, which are being used to boost production for domestic consumption and export. However, over-reliant virtually on foreign farm inputs may undermine agrarian development in the country in the long run. Arguably, imported inputs at exorbitant prices might pass to the cost of agricultural production and in turn reflect in domestic consumer prices. It might be difficult for the Nigerian producers to compete with producers from West who are largely supported by their governments. Nigeria must look inwards and start producing those inputs it has the capacity and factor endowments to produce.

5.6 Nigeria and Agricultural Trade within Africa and the EU

5.6.1 Nigeria's Trade within Africa

Nigeria is a member of some African and sub-regional bodies, such as the African Union (AU), and Economic Community of West African States (ECOWAS),[43] with the sole aim of integrating into African economic, political and trade for growth and development. The ECOWAS was established with the primary aim of promoting political and economic integration among member states. The community is considered as a bloc to achieve "collective self-sufficiency" within the sub-region by creating a single large trading bloc as being practiced in other continents such as the EU Common Market in Europe, and Free Trade Association of North America (NAFTA) in the North America. In cooperation with the AU, ECOWAS leads and coordinates implementation of the New Partnership for Africa's Development (NEPAD)[44] programs in West Africa, including the Comprehensive African Agriculture Development Program (CAADP).[45]

Nigeria is the largest markets for the regional agricultural producers in West Africa (Appendix Table 5A and Table 5C). Despite the commitments to intra-regional free trade within Africa and ECOWAS sub-region, partly due to inconsistency in agricultural trade policies has opened doors for a widespread smuggling of food and other agricultural products between countries. As compared to other continents such as Europe and Asia, intra-trade in Africa (Table 3.1), and Nigeria is below expectations (Figure 5.9). In other words, as compared to the advanced economies, Nigeria lags behind in realizing its full potential in intra-regional trade (Figure 5.9). Even though Nigeria's agrarian trade with the world has improved, trade between Nigeria and West Africa, in particular, and Africa, in general, remains low (Table 5.10). Nigeria trade partners in the major agricultural products are from the EU and Asia.

[43] ECOWAS was founded in 1975 by a regional group of 15 member countries: Benin, Burkina Faso, Cape Verde, Ivory Coast, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo.

[44] NEPAD is an AU strategic framework for pan-African socio-economic development, is both a vision and a policy framework for Africa in the twenty-first century. It is a radically new intervention, spearheaded by African leaders, to address critical challenges facing the continent: poverty, development and Africa's marginalisation internationally.

[45]CAADP is an Africa's policy framework for agricultural transformation, food security, wealth creation and development for all. The Programme brings together key players in agriculture to unleash its growth and sustainable development on the continent.

Product group code / description	Exports (US$ thousand)	What is the product's export potential in…?						Technology level	Price stability	Prominence of SMEs	Female labour participation
		Sub-Saharan Africa	Unrealized potential	non-OECD	Unrealized potential	OECD	Unrealized potential				
180100 Cocoa beans, whole or broken, raw or roasted	955,367		20%		51%		56%				
120740 Sesamum seeds, whether or not broken	334,515		96%		75%		29%				
400122 Technically specified natural rubber (TSNR)	1,165,470		42%		23%		17%				
41XXXf Hides and skins (in the dry state) and leather of goats or kids, without wo	502,231		98%		44%		26%				
080131 Cashew nuts, in shell, fresh or dried	103,371		100%		72%		26%				
0306Xa Frozen shrimps and prawns	146,877		61%		35%		75%				
890190 Cargo vessels nes&oth vessels for the transport of both persons&goods	94,608		4%		57%		85%				
180400 Cocoa butter, fat and oil	126,240		28%		56%		58%				
520100 Cotton, not carded or combed	100,866		97%		59%		83%				
6402XX Other footwear, outer soles/uppers of rubber or plastics	73,869		27%		66%		93%				
0910XX Ginger	31,817		71%		80%		75%				
41XXXc Raw hides and skins (other than furskins) and leather, of swine and othe	107,697		76%		67%		27%				
130120 Gum arabic	59,618		91%		53%		42%				
760120 Aluminium unwrought, alloyed	74,584		87%		61%		84%				
41XXXe Skins (in the dry state) and leather of sheep or lamb, without wool on	72,600		100%		27%		31%				
721041 Flat rolled prod,i/nas,pltd or ctd w zinc,corrugated,>/=600m wide,nes	5,465		88%		89%		98%				
760110 Aluminium unwrought, not alloyed	40,930		13%		60%		56%				
040229 Milk and cream powder sweetened exceeding 1.5% fat	19,190		58%		64%		59%				
4402 Wood charcoal (including shell or nut charcoal)	33,738		93%		91%		58%				
180320 Cocoa paste wholly or partly defatted	21,119		100%		57%		47%				

Figure 5-9: Nigeria: Exports (US$ '000) potential relative to average exports (%), 2009-2013
Source: ITC, 2015. Notes: Export potential to the world's market[46]

Against this background, the ECOWAS launched an Economic Trade Liberation Scheme (ETLS) among its member states in 1990. To stimulate intra-regional trade, the Customs Union established in 2008, aimed at abolishing of Customs duties and taxes of equivalent effect and the removal of non-tariff to protect some commodities (especially agricultural products) that are produced within the Member States. Despite advances in the regional integration, barriers to intra-regional trade remains a challenge for the ECOWAS Member countries, Nigeria inclusive.

[46] Note: Top twenty products listed in declining order of their export potential to the world markets. Development indicators are relative to the Nigeria's current situation, green indicating performance above her trade-weighted median and red otherwise. A blank cell indicates that data are not available. A blank cell in export potential means that the product was not consistently demanded over five years by any country in the respective region (ITC, 2014).

Table 5-10: Nigeria: Share of trade matrix by product groups (all food items (SITC 0 + 1 + 22 + 4), by regions, 1995-2014

	Africa (%)		**West Africa** (%)		**Europe** (%)		**Americas** (%)		**Asia** (%)	
Year	IM	**EX**	IM	**EX**	IM	**EX**	IM	**EX**	IM	**EX**
1995	8.7	9.8	6.8	3.8	43.9	72.7	43.3	7.1	4.7	6.9
1998	6.8	7.5	5.1	4.8	33.1	77.9	39.5	2.6	20.9	8.3
2000	9.8	7.7	7.1	2.5	44.6	70.9	28.8	4.5	15.7	13.6
2005	6.5	6.8	2.8	4.0	35.7	65.5	35.5	7.2	16.6	19.0
2007	4.7	6.6	2.8	3.8	39.8	49.0	39.3	3.8	12.6	14.9
2008	6.3	8.5	3.9	5.0	32.8	41.1	36.5	5.1	20.8	20.9
2009	9.4	8.5	5.9	5.8	34.1	45.1	33.1	4.3	20.4	16.2
2010	8.5	10.0	5.7	5.9	28.1	39.5	35.8	5.5	24.2	25.1
2011	3.9	13.6	2.3	9.4	20.5	42.6	52.9	6.9	20.7	26.8
2012	5.2	14.5	3.5	10.6	22.5	44.2	37.1	13.5	32.1	21.2
2013	14.8	20.3	11.5	17.1	26.2	51.0	35.7	3.8	18.5	23.3
2014	8.3	16.9	5.8	14.1	22.6	51.0	31.7	5.4	33.8	23.0

Source: Author's analysis based on UNCTAD, 2016. Notes: IM denotes imports; EX stands for exports

Regrettably, African countries, such as Nigeria complaint about market access to developed countries but do not trade among themselves. This is partly occasioned by trade barriers that exist within the continent, and lack of implementation of the existing trade agreements at the individual country's borders within the region. With the introduction of Free Trade Area (FTA) in recent years, and the gradual removal of tariffs (Appendix Table 5J) by adopting of Common External Tariff (CET) on commodities within the ECOWAS in February 2016, Nigeria's trade within the region will be improved despite the fact that the scheme's implementation faced enormous challenges.

5.6.2 Nigeria's Trade with the EU

The ECOWAS sub-region is the EU's largest trade partner in the African, Caribbean and Pacific (ACP) region. The EU signed trade and development agreement with ACP countries, called Economic Partnership Agreements (EPAs), date back to the signing of the Cotonou Agreement in 2000. The partnership was formed to help ACP countries integrate into the world economy and take advantage of the tremendous opportunities brought by globalisation for inclusive growth and economic diversification. The EU was expected to fully open its markets (unilaterally by the EU since 1st January 2008) but allowed ACP nations, 15 (and up to 25) years to open up to EU imports while providing restriction for the sensitive products up to 20% of imports. The pact is

also expected to help strengthen the rule of law in the economic field, thereby boosting FDI and assistance in all spheres of economic, agriculture included (European Commission, 2015). Nonetheless, the EU has failed to fully open its agricultural markets for the key products of interest to boost export growth and development in the ACP countries, such as Nigeria.

Table 5-11: Nigeria and the EU (28): Trade flows by HS section, 2011-2015

HS Sections	Export Value (€ million) to the EU				Import Value (€ million) from the EU			
	2011	2013	2014	2015	2011	2013	2014	2015
Total	**24,403**	**28,678**	**28,115**	**18,374**	**12,922**	**11,731**	**11,532**	**10,679**
I Live animals; animal products	39	40	40	48	458	479	581	463
II Vegetable products	26	51	57	59	100	161	171	183
III Animal or vegetable fats and oils	0	1	0	0	20	15	27	18
IV Foodstuffs, beverages, tobacco	567	395	449	371	489	578	654	588
V Mineral products	23,247	27,706	27,168	17,499	5,545	4,346	3,815	4,050
VIII Raw hides and skins, and saddlery	161	168	156	155	6	11	11	8
IX Wood, charcoal & cork and articles thereof	26	32	31	33	17	24	20	20
X Pulp of wood, paper and paperboard	0	0	0	0	223	185	159	176
AMA / NAMA Product Groups								
Total	24,403	28,678	28,115	18,374	12,922	11,731	11,532	10,679
Agricultural products (WTO AoA)	597	448	507	431	924	1,050	1,167	989
Fishery products	38	39	39	48	153	192	276	271
Industrial products	23,768	28,192	27,569	17,896	11,845	10,488	10,090	9,420
SITC Rev. 3 Product Groups								
Total	24,403	28,678	28,115	18,374	12,922	11,731	11,532	10,679
Primary products	24,146	28,391	27,865	18,115	6,657	5,684	5,343	5,397
- All Agric. Products	801	596	626	552	1,090	1,264	1,457	1,276
- - Food	628	480	542	475	1,057	1,218	1,412	1,231
- - - of which Fish	38	39	39	48	145	182	266	262

Source: European Commission, 2016

The ECOWAS accounts for 40% of all trades between the EU and the ACP region. Notably, Nigeria, Ghana and Cote d'Ivoire together account for about 80% of the ECOWAS exports to the EU market. Even though the value of Nigeria's export has drastically declined due to the crude oil glut, the country was the world's 26th largest exporter (0.6%) to the EU (28) markets in 2015. Also, Nigeria accounts about half of the EU exports to ECOWAS markets and nearly 70% of the imports. For instance, Ivory Coast, Ghana and Nigeria, the three largest world exporters' of cocoa beans go to the EU market. Similarly, primary products account for a substantial share of the country's export to the EU market. Trade between Nigeria and the EU is presented in Figure 5.10 and Table 5.11. Nigeria is a net exporter to the EU market (Table 5.11), albeit substantially dominated by raw mineral products, notably crude oil. The EU also attracts more than 50% of the Nigeria's non-oil exports, notably agricultural products. For instance, over 50% of Nigeria's food exports go the European market (Table 5.10).

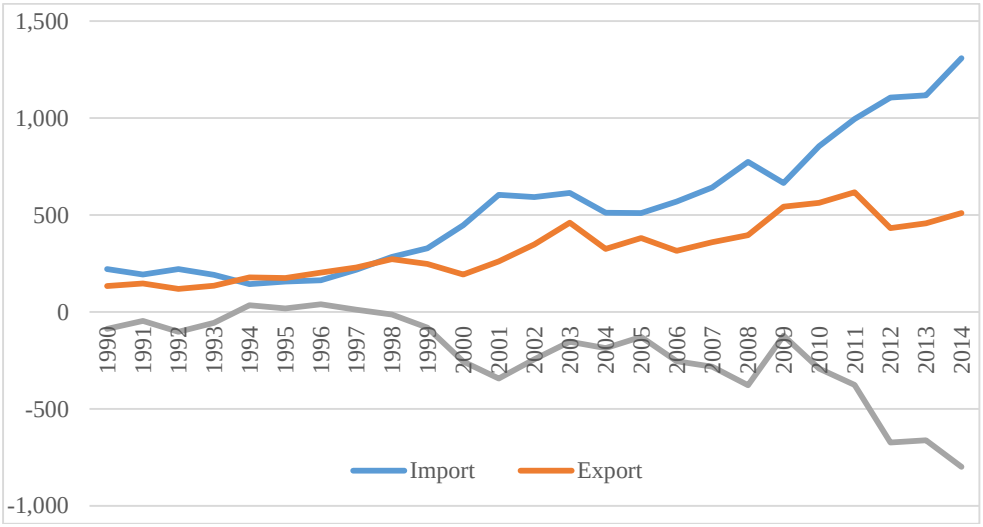


Figure 5-10: Nigeria: Trade with the EU (15) in agriculture (€ millions), 1990-2014
Source: Author's analysis based on EUROSTAT, 2015

Given that Nigeria has a comparative and competitive advantage in some primary products, coupled historical ties, the EU constitutes an excellent opportunity for developing Nigeria's agricultural export commodities, such as cocoa, palm kernels, sesame and groundnuts. However, Nigeria experienced positive trade balance to the EU market in food and agriculture only between 1994 and 1997; afterwards, the country has become a net importer of food and agricultural commodities since 1998. This negative trend is partly because of market access (Appendix Table 5H), export subsidies and domestic support given to the producers and exporters in the EU via its CAPs initiatives, which largely distort market signals as Nigeria does not have the capacity to respond accordingly.

5.7 Agriculture and Aid for Trade in Nigeria

Aid for Trade (AFT) is identified as among the initiatives to foster global partnerships for agricultural development in developing countries, such as Nigeria, Ghana and Cote d'Ivore. The AFT has so far helped the developing countries' trade in recent years (Table 3.11 and Appendix Figure 2D). In other words, the WTO-led AFT initiative encourages the governments of developing countries and donors to recognize the enormous role that trade, in general, and agricultural trade, in particular, could play in growth and development. AFT is necessary to take measures towards enhancing the quality and safety or standards of agricultural commodities in

Nigeria. Table 5.12 shows that the IDA, the UK, USA, Japan, AfDF France have contributed substantial finance to support Nigeria's efforts aimed at improving agricultural production, food security, and exports. Thus, strengthening the competitiveness of producers and exporters and further integrating into the global economy for growth and development.

Table 5-12: AFT disbursement to Nigeria: top donors (millions, current US$, percentage)

	2006/2008					2013				
Donor	**IDA**	**UK**	**USA**	**Japan**	**AfDF**	**IDA**	**AFDF**	**UK**	**France**	**USA**
Value (US$ Million)	126.0	81.6	8.4	7.5	6.0	247.3	142.8	62.0	38.6	26.7
Percentage	52	34	3	3	2	44	26	11	7	5

Source: OECD and WTO, 2015

Note: AfDF = African Development Fund; IDA = International Development Association

Table 5-13: AFT disbursements to Nigeria by sector (US$ millions, current)

	2006	**2007**	**2008**	**2006/08**	**2009**	**2010**	**2011**	**2012**	**2013**
Trade Policy and Regulations	**4.29**	**1.13**	**3.29**	**2.90**	**6.72**	**4.83**	**5.04**	**6.42**	**7.76**
Trade Facilitation	0.00	0.00	0.02	0.01	0.09	0.01	0.01	0.00	4.81
Transport and Storage	**35.29**	**39.22**	**41.49**	**38.66**	**57.66**	**63.86**	**54.43**	**124.59**	**193.22**
Communications	1.75	2.32	4.80	2.95	5.85	14.91	1.70	0.32	4.04
Energy Generation and Supply	43.75	58.11	61.39	54.42	72.70	29.81	50.36	110.17	172.28
Business and Other Services	16.22	18.38	13.57	16.06	12.29	14.07	44.35	12.32	17.13
Banking & Financial Services	3.20	171.99	44.70	73.30	28.16	181.46	71.63	21.25	17.68
Agriculture, forestry, fishing	**44.90**	**28.15**	**28.00**	**33.68**	**35.56**	**77.50**	**80.15**	**75.66**	**102.15**
Industry	3.61	10.08	10.67	8.12	11.51	19.45	24.60	10.84	12.19

Source: OECD and WTO, 2015

To further help Nigerian government improve her border procedures, reduce trade costs, reinvigorate trade flows and reap tremendous benefits from cross-border trade, the OECD has coined a broad range of trade facilitation indicators that identify areas for necessary action and open the potential effect of reforms and measures to be assessed. The areas include: information availability (publication of trade information); streamlining of procedures; appeal procedures (modalities and possibility to appeal administrative decisions); advanced rulings (prior statements by the authority to requesting traders about the classification, valuation method, origin, applied to individual products at the time of importation; the process and rules applied to such statements); automation (automated border procedures; use of risk management and electronic exchange of data); and governance and impartiality (customs structures and functions, ethics policy and

accountability). Nigeria's performance has remained below lower medium income countries (LMICs) in best practices.

In the same spirit, donor supports to Nigeria largely go to areas that are directly or indirectly relate to agricultural development, such as transport and storage, agriculture, forestry, fishing, trade policy and regulations, energy generation and supply, industry and trade facilitation (Table 5.13).Technical assistance efforts are also directed towards building vital capacity. Most time such initiatives often explicitly target SMEs in agricultural production and exports. Some examples exist of AFT programs working directly with firms in Nigeria to help them comply with NTMs and regulations. Some of these projects target the agricultural farming, value addition, and in these cases the projects may take place under the banner of Standards and Trade Development Facility (SDTF). With the NEPC, the ITC implemented an STDF project to expand Nigeria's agricultural exports of shea nut butter and sesame seeds through improved SPS capacity-building of public and private sector organisations and enhance quality control along the supply chain in the country.

5.8 Constraints to Agricultural Trade

The purpose of this subchapter is to pinpoint briefly some of the challenges faced by agricultural exporters in Nigeria. The constraints to agricultural trade in Nigeria are multidimensional (both internal and external dimensions). These factors partly have either directly or indirectly affected the growth and development of agriculture in Nigeria. External constraints, such as the market access, volatility of global commodity prices, domestic support, quality standards and competitiveness have been identified among the major factors that are partly militating agricultural development in Nigeria. Thus, some of these factors are briefly highlighted below.

Market access: high tariff and non-tariff measures (NTMs) are among the main trade restrictions and constraints to trade in agricultural commodities (See Subchapter 3.5). Generally, SSA countries increase tariffs to raise revenues, whereas advanced economies increase tariff to curtail trade so as to protect domestic industries that are vulnerable to global competition. *Tax escalation* means higher tariffs on processed commodities than on raw materials. This type of trade restriction in developed economies in semi-processed and processed agricultural products of Nigeria and other developing countries is extremely outrageous making it almost impossible for exporters to develop and benefit substantially from export trade.

With the increasing integration of markets as a result of globalization and liberalization, Nigeria faces a more fiercely competitive external agricultural trading environment. The bias trade restriction through tariff escalation against agricultural products in importing countries (Appendix Table 4I), partly has been impeding the development of agriculture in countries, such as Nigeria. This may have distorted export-led growth hypothesis and a robust diversification in agricultural value chains in Nigeria. It is more pronounced in agricultural products such as cocoa, tea, hides and skins, sugar, meat, coffee and fruit, which are among the main export commodities in Nigeria. In a nutshell, the developed countries' hidden agenda might be to ensure that countries, such as Nigeria remain suppliers of industrial raw (agricultural) materials to their established processing industries, and in return, import their manufactured commodities as postulated by the dependency theory.

Sadly, agricultural export products have consistently been implicitly or explicitly taxed in Nigeria, whereas, import-competing products have tremendously benefitted from PSE through tariff and NTMs to a lesser extent, budgetary payments (Table 3.8 and Figure 3.4). Even though countries reduced tariff escalation during the post-UR period, and has been declining since the beginning of the current DDA, it persists in many commodity chains, especially in processed or semi-processed products. This to some extent slows down the growth of processing commodities for exports. An average applied MFN tariff in the major Nigerian export destination is presented in Appendix Table 5H. Nigeria just like many SSA countries faced difficulties in trade in agricultural products, especially processed and non-tropical commodities.

Even though tariff rates are still high in the importing countries, it has reduced in recent years (Appendix Table 3C and Appendix Table 5H), albeit at a slow pace. This progress can be largely attributed to WTO AoA persistent efforts in reducing trade barriers for mutual benefits, growth and development in the countries involved. In other words, through the WTO AoA, success has been achieved in reducing trade barriers and NTMs; more still needs to be done in agriculture for mutual trade benefits to be experienced between Nigeria and its trading partners.

Sanitary and phytosanitary (SPS): SPS is a form of technical trade barriers also referred as NTMs. The quality of food and agricultural products, as well as technical regulations, [47] are identified as among the key constraints faced by Nigerian exporters when exporting to OECD markets, notably, the EU, Japan and the US. Implementing SPS measures, more than trade costs, present a specific challenge to the Nigerian producers and exporters. For instance, owing to Nigeria's inability to adhere to international food and feed safety and standards, in June 2015, the EU banned some food exports from Nigeria for a year period. The banned of these food commodities from the EU markets till June 2016 were beans, dried fish and meat, sesame seeds, melon seeds, palm oil and peanut chips. This is partly because producers and traders in Nigeria have poor awareness and understanding of the applicable international standards and their relevance. The specific reasons for the banned include a high level of chemicals, insufficient information on nutritional content, poor labelling and high levels of pesticide. Undoubtedly, this was a big blow for a country that desperately needs to boost its export baskets to stimulate producers for production, growth and development.

In other words, quality standards and enforcement at the border have influenced Nigeria's agricultural trade, especially in semi-processed and processed products. The country seems to lack expertise and equipment at the standard-setting and the enforcement stage, including the border. The country also lacks clearly defined mandates, catapulting in uncoordinated and overlapping technical regulations and other activities, which lead to confusion, delays, and duplicating costs. Arguably, lack of diverging specifications and standards and insufficient testing capacity have, to some extent impeded some economies in production and trade. Consequently, farmers, processors and traders are being marginalized and excluded from taking competitive advantage in the global markets, thus, partly impeding production, trade and development in the developing countries, such as Nigeria.

According to Moïsé and Le Bris (2013); Moïsé et al., (2013), even though attaining the standard requirements leads to additional production and trade costs, it might also facilitate trade as it

[47] ***Technical Barrier to Trade***: Trade restrictive effect arising from the application of technical regulations or standards, such as testing, certification, labelling, origin marking and packaging requirements, marketing standards, health and safety regulations, and sanitary and phytosanitary regulations.

enhances demand for a product as consumers get information on how to use, and quality of the products traded.

Domestic support and export subsidies: Because agricultural producers and exporters in the advanced economies are heavily protected and backed up by their States (Table 3.10 and Figure 3.4), they enjoy modern technology and increasing economies of scale, and value chains that are the case in Nigeria and other underdeveloped countries. Huge domestic support and export subsidies (trade- disturbing measures) provided by the developed economies have created unnecessary restrictions and unhealthy competitions. Because those countries' output and exports surpass SSA countries, such as Nigeria, the large scale import of food suggests having hampered domestic producers and exporters in the country as they cannot favourably compete with producers and exporters from advanced countries regarding price, quality, and quantity. Consequently, the persistent increases in the import of agricultural products at low prices to Nigeria seem to be at the expense of domestic producers and exporters.

Commodity price fluctuations in the world markets: Price volatility characterises most agricultural commodity markets. As seen in Appendix Figure 3B, the consistent price fluctuations of primary agricultural products in the global markets might have had adverse effects on export and earnings in Nigeria. Because world prices of agrarian commodities are notoriously volatile, its create bottlenecks for producers and exporters needing to take proactive investment decisions and for resource-constrained consumers. Arguably, the extreme world price volatility leads to insecurity for all the exporters involved, and thus the reduction of farm gate prices.

Also, Nigeria continues to export a broad range of primary agricultural products that are highly vulnerable to shocks in demand in the global commodity markets, which lead to disincentives to production and trade when the prices sharply shrink. The inability of Nigeria to favourably compete in the world markets has partially reflected in the persistent increase in the negative trade balance in food and agriculture. Undoubtedly, persistent movements in prices may have tremendous implications for the development of the agrarian sector as well as a producer and consumer welfare in Nigeria, especially the majority of the poor smallholder rural farmers who rely solely on agriculture as their source of income.

Poor infrastructure and productive capacity constraints: Nigerian producers and exporters faced with critical infrastructure (Table 4.6) and capacity constraints from the production,

processing to post-harvest levels. The ability of an economy to integrate efficiently into the world market to a great extent depends on the quality of both hard and soft infrastructure, ranging from transportation, customs practices and procedures, telecommunications and financial services to border processes, and regulatory environments (OECD and WTO, 2015). The ability of Nigeria to expand agricultural export is partially associated with its capacity to produce and exports. To determine the levels of countries' infrastructural development, World Bank (2015) develops Logistics Performance Index (LPI). It uses the LPI to carry out a survey in partnership with academic, global institutions, private companies, and individuals that engaged in international logistics. It evaluates eight markets on six core dimensions of trade (i.e. infrastructure quality, custom performance, logistics competence, tracking and tracing and timeliness of shipments) on a scale from 1 (worst) to 5 (best). Also, the markets are chosen based on the most relevant export and import markets of the respondent's nation.

The LPI results (quality of trade and transport infrastructure) in Nigeria and some selected countries for the period between 2007 and 2014 is presented in Table 5.14. The result shows that Nigeria has been consistently ranked below the global average in global overall LPI ranking. The country was ranked 100/155 countries in the overall global LPI. However, the status of the country has steadily improved over the years with a peak ranking of 75/160 countries in 2014. Despite this development, challenges remain prevalent in logistics infrastructure. Weak infrastructure partly delays production and trade in Nigeria just like in many SSA countries. Similarly, global competitiveness ranking for 2015-2016 shows infrastructure (ranked 133/140) as the most problematic factor for doing business (Table 4.6 and Table 4.7) in Nigeria (World Economic Forum, 2015)

Table 5-14: Logistics performance index (LPI): Quality of trade and transport infrastructure (1=low to 5=high), 2007-2014

Country	2007	2010	2012	2014	Country	2007	2010	2012	2014
Cote d'Ivoire	2.22	2.37	2.31	2.41	Malaysia	3.33	3.5	3.43	3.56
Colombia	2.28	2.59	2.72	2.44	North America	4.01	4.09	4.07	4.12
Czech Republic	3.00	3.25	2.96	3.29	Niger	1.4	2.28	2.45	2.08
Germany	4.19	4.34	4.26	4.32	**Nigeria**	**2.23**	**2.43**	**2.27**	**2.56**
Ethiopia	1.88	1.77	2.22	2.17	OECD	3.55	3.61	3.64	3.69
EU	3.34	3.34	3.44	3.5	SSA	2.11	2.05	2.30	2.27
Ghana	2.25	2.52	2.05	2.67	World	2.58	2.64	2.77	2.77

Source: World Bank, 2016

Trade costs have become a focal point of discussion in the WTO and academic circles in recent years, partly due to the increased visibility in reducing traditional trade restrictions (Moïsé and Le Bris, 2013; Moïsé et al., 2013). Arguably, '*high trade costs effectively nullify comparative advantage by rendering exports uncompetitive. High trade costs deny firms access to technology and intermediate inputs, preventing their entry into, or movement up, global value chains. High trade costs also erode consumer welfare narrowing the range of good and services on offer and pushing up prices. While trade costs do not alone explain the development pathways of economies, they are a major factor explaining why some countries are unable to grow and diversify'* (OECD and WTO, 2015, p. 35). Similarly, Atkin and Davidson (2015) estimate shows that the intra-national trade costs are approximately four to five times higher in some SSA countries, notably, Nigeria and Ethiopia, than in developed countries, such as the USA.

Table 5.15 shows that, average time takes exporters 23 days to export goods, while import takes an average of 34 days. This delay partly contributes to high costs of trade, which small scale traders cannot afford to trade across national borders. Trade costs as well as procedural or bureaucratic bottlenecks at home and the border, coupled with high transportation costs, appear among the factors that are constraining agricultural trade and development in Nigeria and elsewhere in SSA countries. High trade costs related to border procedure compliance, transportation, are likely to have a greater share of the impact on the price of most agricultural products, especially raw commodities which form a large proportion of Nigeria's exports.

Table 5-15: Time (days) and cost to trade (in US$) in Nigeria and LMICs

	Time to export		Time to import		Cost to export		Cost to import	
Year	2006	2014	2006	2014	2006	2014	2006	2014
Nigeria	26	23	46	34	1,026	1,564	1,047	1,960
LMICs	28	23	36	28	1,229	1,579	1,433	1,993

Source: OECD and WTO, 2015
Note: LMICs denotes lower middle-income countries

Neglect of agricultural production and export: the Nigerian government has neglected agricultural related activities after the advent of oil. The decline in agrarian exports in the country was occasioned by the oil boom in the 1970s that translated large inflows of foreign earnings and neglect of the agriculture *('Dutch disease')* in the period under review. Consequently, the country's share of agriculture in the global markets shrank. The state began to import bulkily some of food and agricultural commodities it formerly exported. Since 1975, Nigeria has

reversed her status from a net exporter to a net consumer. Following th**e** lifting of oil**,** the country's agricultural policies have become a victim policy discrimination, abandonment or somersault.

Inconsistency in agricultural policies: This issue appears at the centre of many regulatory constraints and by extension, an impediment to agricultural development in Nigeria (Mou, 2014). Historically, new administration has hardly continued with policies made by the previous administration (see subchapter 5.1). Thus, lack of policy continuity and clear direction for monitoring and evaluating agricultural policies might have impeded trade as some traders are afraid of what would happen shortly. These to some extent discouraged producers and exporters to increase production and exports. Arguably, the damaging impact of unpredictable and discretionary regulatory environments with export and import bans, variable tariffs and quotas, restrictive rules of origin, price controls, lack of transparency and inaccurate information, poor communication and coordination between official agencies have partly constrained agricultural export performance in Nigeria. Nonetheless, the new administration is willing to continue to implement sound policies made by the previous regime, albeit at a slow pace.

Although trade policies address a broad range of regulatory barriers, for instance, by prohibiting export licensing regimes, establishing a duty-free status for certain products, offering inter-state road transit insurance, and promoting harmonization and mutual recognition of standards in Nigeria, these policies are poorly implemented in reality. Also, national policies are mostly inconsistent, implemented unevenly and create an uncertainty agribusiness environment.

Akanni, Akinleye and Oyebanjo (2009) argue that the agricultural development in Nigeria has been constrained partially by inconsistencies in the trade policies. For instance, in 2003, tariffs paid on agricultural products were raised to over 70%. Also, persistent changes in the import regime and uneven duty collection have made imports to be complicated and expensive. As a result, some traders resorted to either under-invoicing or smuggling to avoid tariffs or bans.

Access to finance, marketing and exchange rates are among the major constraints to export trade in Nigeria. Sadly, only a few exporters have so far benefited from the export credit or loans. Presently, the gap between the official exchange rate and the parallel market is outrageous (more than 50%), and it has fluctuated over time. To curtail the over-dependence on food imports and pressure on the country's foreign reserves in the current oil price crises, only some selected

products are allowed to access the official exchange rates. However, this measure has further widened the gap between the official exchange rates and the rates in the parallel market.

Loans to agricultural exporters in Nigeria have been insignificant (Table 4.6). Even though **Nigeria Export–Import Bank (NEXIM)** in conjunction with the NEPC were established mainly to grant export credit insurance and affordable loans to exporters and identify and promote their products in the world markets, partly due to institutional corruption these institutions faced serious challenges in discharging their responsibilities. NEXIM confronted with external challenges, such as under-capitalisation and exchange rate volatility. The overview of successful export development relies on overcoming or addressing distortions in the general economy, such as detrimental bureaucracy, the weak rule of law, and fiscal and monetary policies.

6 EMPIRICAL ANALYSIS AND DISCUSSION

This chapter attempts to verify some external and internal determinants of agricultural performance in Nigeria. Specifically, the chapter assesses: internal determinants of crop production, the effect of agricultural trade on economic growth; determinants of trade on agricultural production; and finally, determinants of trade on cocoa production. The empirical findings are compared with the available statistical data (practical) as well as with the conclusions from the previous studies related to the current investigation.

6.1 Domestic Determinants of Crop Production in Nigeria

Given that time series data are prone to spurious regression results; a stationary test was carried out as recommended prior to estimating some econometric approaches (Granger and Newbold, 1974). Specifically, the ADF unit root test was run. All the variables in the model were not stationary at levels but have become stationary after the first difference (Appendix Table 6A). The ordinary least squares (OLS) regression (Table 6.1) and Granger causality (Table 6.2) tests were run after unit root test was carried out. Diagnostic checklist for the OLS regression was carried, and all the classical assumptions were fulfilled (Appendix Table 6B). Prior to Granger causality test, an unrestricted vector autoregression (VAR) was carried out. Based on the information criteria, the optimal lag length of two was chosen (Appendix Table 6C) to run both the VAR and Granger causality approaches.

The estimated results show that the Adjusted R^2 of 67% accounted for the variability in the response variable in the model. Also, *F. statistics* in the model suggests that all the explanatory variables jointly influence crop performance in Nigeria, statistically significant at the 0.01 level. Similarly, the OLS estimation result suggests a robust positive relationship between fertilizer consumption (FC) and crop production (QCP) in Nigeria, statistically significant at the 1% level (Table 6.1). This signifies that ceteris paribus, a 1% percent increase in the application of fertilizer on farms, crop outputs in the country may increase by 0.1%. This result also corresponds to the works by Ayinde, Adewumi and Omotosho (2009); Ammani, Alamu and Kudi (2010); Verter and Bečvářová (2014b) who also confirm a positive connection between fertiliser consumption and annual crop output in Nigeria.

Given that soil has lost its nutrient or manure for maximum yield or output, fertilizer is among the essential agricultural inputs and significant contributors to rising crop production. The application of fertilizer on farms may well improve yields and total overall output of agriculture in the country. Even though Nigeria has proven 180.5 trillion cubic feet of natural gas reserves in 2015, and 9th in the world, coupled with the large quantity of phosphate rock deposits, local fertilizer production is still insufficient. Consequently, the country is a net importer of fertilizer (Table 5.2). Smallholder farmers annually spend enormous amounts on fertilizer imports, which increase their costs of production. Nonetheless, it complements local production in Nigeria.

In the same fashion, the result further indicates that cultivated land (ACL) has a strong positive connection with crop production in Nigeria, statistically significant at the 0.01 level. This signifies that ceteris paribus, a 1% increase in farm expansion may well bring a corresponding agricultural output by 1.2% in the country (Table 6.1). This result corresponds to the works by Oyekale (2007) who also finds a positive relationship between crop production and land expansion in Nigeria. Agricultural cultivation as a share of the total agricultural area since the 1960s has remained below expectations. For instance, historically, the total agricultural area cultivated between 1960 and 2013 was below 57%. Following the current results, if the farm area is fully cultivated, the country is likely to experience an accelerated crop performance in Nigeria.

Table 6-1: Some determinants of crop production

Dependent variable: lnQAP				
Variable	*Coefficient*	*Std. Error*	*Test- statistic*	*p.value*
const	0.0420	0.0095	4.4375	0.0002***
lnFC	0.0859	0.0167	5.1562	0.0004***
lnACL	1.2105	0.2737	4.4226	0.0002***
lnAL	-0.0532	0.0204	-2.6056	0.0165**
lnPPI	0.0216	0.0118	1.8227	0.0826*
R-squared	0.7214	Adjusted R^2	0.6684	
F(4, 21)	13.5970	P-value (F)	0.0000	
Durbin-Watson	1.6560			

Notes: The asterisks (*, **, ***) denote statistical significance at 0.1, 0.05, and 0.01 levels respectively; OLS, using observations 1987-2012 (T = 26)

Contrary to the prior expectation, the results indicate an inverse relationship between commercial loans to agriculture (AL) and crop performance in Nigeria, statistically significant at the 5% level (Table 6.1). The result agrees with the works of Verter and Bečvářová (2015) who also find a negative connection between commercial loans and yam production in Nigeria. They argue that

the majority of the smallholder farmers in the country are poor, and they do not have collateral security to secure loans provided by those institutions. As a consequence, only a few farmers have access to loans to boost their farm-related activities. Consequently, commercial loans to producers seem not to induce crop productivity in the country. Migap and Audu (2012); Verter and Bečvářová (2014c) stress that lack of adequate provision for agricultural loans from the financial institutions to producers has constrained a sustainable cultivation and outputs in Nigeria. Sadly, there are only few commercial banks and other formal financial institutions in the rural areas. The majority of the farmers heavily rely on loans from their local cooperatives which is insufficient. The results, however, show a weak relationship between the producer price index (PPI) and crop production in Nigeria (Table 6.1). Arguably, the persistent fluctuations in producer prices (Figure 4.5) and global prices (Appendix Figure 2B) are likely to have implications on the farmers' incentive to expand farms.

Table 6-2: VAR Granger causality/ block exogeneity Wald tests, crop production

Equation	Excluded	$\chi 2$	df	Prob > $\chi 2$
lnQCP	LnFC	7.0413	2	0.0296**
	lnACL	15.1574	2	0.0005***
	lnAL	5.5821	2	0.0614*
	lnPPI	4.4169	2	0.1099
	ALL	20.4329	8	0.0088**
lnFC	lnQCP	12.1316	2	0.0023***
	lnACL	2.9671	2	0.2268
	lnAL	1.7062	2	0.4261
	lnPPI	6.6316	2	0.0363**
	ALL	36.5312	8	0.000***
lnACL	lnQCP	3.1536	2	0.2066
	lnFC	0.6546	2	0.7209
	lnAL	0.2755	2	0.8713
	lnPPI	1.8712	2	0.3924
	All	7.9316	8	0.4402
lnAL	lnQCP	0.5733	2	0.7508
	lnFC	3.5529	2	0.1692
	lnACL	0.4196	2	0.8107
	lnPPI	0.4556	2	0.7963
	ALL	8.6273	8	0.3747
lnPPI	lnQCP	0.9570	2	0.6197
	lnFC	1.2956	2	0.5232
	lnACL	0.9157	2	0.6327
	lnAL	2.5343	2	0.2816
	ALL	4.4775	8	0.8117

Notes: ***, ** and * indicate the rejection of the null hypothesis at 0.01, 0.05 and 0.10 significance level respectively; Sample: 1986 2012; Included observations: 24 after adjustments

Granger (1969) causality test is employed using a lag length of two in a VAR environment (Appendix Table 6C). Table 6.2 shows the results from the Granger causality technique. The result suggests there is a bidirectional causality running from fertilizer consumption to crop production in Nigeria. The findings further provide a unidirectional causality running from cultivated land to crop production in the country. A unidirectional causality is confirmed between commercial loans and crop performance in Nigeria. This result corresponds to the works by Kareem et al. (2013) who also confirm a unidirectional causality running from the cultivated land to crop production in Nigeria. In the same direction, the results also confirm a unidirectional relationship from producer price index to fertilizer consumption. The results further suggest that fertilizer use, farm size, loans and producer price index jointly Granger- cause crop performance in Nigeria. Similarly, the result signifies that crop production, cultivated land, commercial loans and the producer price index jointly Granger- cause fertilizer consumption in the country (Table 6.2) in the country.

6.2 Determinants of Agricultural Trade on Economic Growth in Nigeria

Does global trade in agriculture support the hypothesis that export- led economic growth in Nigeria? This subchapter presents the results of agricultural export- led economic growth hypothesis in Nigeria. Both ADF and PP unit root tests are run. The findings of the stationarity test are presented in Appendix Table 6D. The test results show that only RGDPG is stationary at level. The rest of the variables have become stationary after first difference. The OLS regression, Granger causality, Impulse Response Function (IRF) and Variance Decomposition Analysis (VDA) models were run after unit root tests were carried out. Also, a diagnostic checklist for the OLS regression was conducted, and all the classical assumptions were fulfilled (Appendix Table 6E). Prior to Granger causality, IRF and VDA tests, unrestricted VAR model was applied. Based on the information criteria, the optimal lag length of four was chosen (Appendix Table 6F) to run the models in a VAR environment. The VAR residual tests such as normality test and autocorrelation test were also run, and all the checklists were fulfilled.

The OLS estimation result suggests a positive relationship between agricultural exports (AX) and economic growth (RGDPG) in Nigeria, statistically significant at the 5% level. This implies that ceteris paribus, a 1% increase in agricultural export may lead economic growth by 10% (Table 6.3). This result is in line with the works of Shombe (2008); Bbaale and Mutenyo (2011); Ojo,

Awe and Ogunjobi (2014); Ojide, Ojide and Ogbodo (2014); Shirazi and Manap (2005); Henneberry and Curry (2010); Kang (2015) who also confirm a positive link between exports and economic growth in Nigeria and other countries. This finding, however, contradicts the results of Marshall, Schwart and Ziliak (1988), Faridi (2012) who do not support the hypothesis that agricultural exports-led growth in the developing countries.

In the same fashion, the result further indicates that lagged real effective exchange rate (REER) has a positive effect on economic growth in Nigeria, statistically significant at the 5% level. This signifies that ceteris paribus, a 1% increase in REER may well stimulate economic growth by 2% in the country (Table 6.3). This result contradicts with the works by Ojide, Ojide and Ogbodo (2014) who find an inverse relationship between exchange rate and economic growth in Nigeria.

Table 6-3: Some external determinants of economic growth

	Dependent Variable: RGDPG (economic growth)			
	Coefficient	*Std. Error*	*t-ratio*	*p-value*
constant	4.1280	1.1734	3.5179	0.0016
D(AX)	0.1046	0.0493	2.1236	0.0430**
D(ADO)	-0.5430	0.1790	-3.0340	0.0053***
D(REER-1)	0.0262	0.0122	2.1570	0.0401**
R-squared	0.3550		Adjusted R^2	0.2833
F(3, 27)	3.4890		P-value(F)	0.0293

Note: The asterisks (**, ***) denote statistical significance at 0.05 and 0.01 levels respectively; using obs. 1982-2012 (T = 31)

Contrary to the prior expectation, the results show an inverse relationship between the agricultural degree of openness and economic growth in Nigeria, statistically significant at the 5% level (Table 6.3). This result is in line with the works of Anowor, Ukweni and Martins (2013) who also find an inverse relationship between agricultural openness and economic growth in Nigeria. Arguably, the result is not surprising as the country has been recording negative trade balance in agriculture since 1975 (Figure 5.2). As a consequence, the massive import of food products appears to have been negatively influencing economic growth in the country.

Granger causality test is employed using a lag length of four in a VAR environment (Appendix Table 6F). The results from the Granger causality suggests there is a bidirectional causality running from agricultural export to economic growth in Nigeria (Table 6.4). This result corresponds to the works by Sanjuán-López and Dawson (2010), Kang (2015), Ijirshar (2015) who also confirm that agricultural exports granger- cause economic growth in some producing countries. Feedback causality is also confirmed to be running from REER to economic growth in

the country. Similarly, the result further signifies that agricultural exports, the agricultural degree of openness and REER jointly Granger-cause economic growth in Nigeria (Table 6.4).

A unidirectional causality is confirmed between REER and agricultural degree of openness. This result corresponds to the works of Tarawalie (2010), Verter and Osakwe (2015b) who also confirm that REER Granger- cause economic growth in Sierra Leon and the Czech Republic respectively. In the same direction, the results also establish a unidirectional relationship from agricultural exports to REER. The results further suggest that economic growth, exports and degree of openness jointly Granger-cause REER in Nigeria (Table 6.4).

Table 6-4: VAR Granger causality/ block exogeneity Wald tests, economic growth

Equation	Excluded	$\chi 2$- statistic	df	Prob > $\chi 2$
RGDPG	AX	9.44108	4	0.0510*
	ADO	2.26972	4	0.6863
	REER	24.1282	4	0.0001***
	All	62.2137	12	0.0000***
AX	RGDPG	8.60847	4	0.0717*
	ADO	4.61535	4	0.3291
	REER	4.23225	4	0.3755
	All	13.3412	12	0.3447
ADO	RGDPG	2.26449	4	0.6872
	AX	2.22755	4	0.6940
	REER	12.2701	4	0.0155**
	All	14.4786	12	0.2712
REER	RGDPG	9.40868	4	0.0517*
	AX	10.2885	4	0.0358**
	ADO	2.71768	4	0.6061
	All	18.8357	12	0.0926*

Note: ***, ** and * indicate the rejection of the null hypothesis at 0.01, 0.05 and 0.10 significance level respectively; Sample: 1980 2012; Included observations: 28 after adjustments

Because Granger-causality may not reveal the complete story about the connection between the variables in the model; IRF test tries to bridge the gap. The IRF model may show the response of one variable to a shock or an impulse in another variable in a system that involves some other variables as well. In other words, the IRF quantifies the reaction of every variable in an exogenous response in the model. The result of the impulse response function is presented in Figure 6.1. The initial response of agricultural export to economic growth is positive, and then diminishes below the equilibrium in the second year, swiftly increases to reach the plausible direction in the third year. The response fluctuates over the years as it records adverse shocks in the second, fourth and eighth year.

A cursory examination of the impulse response of agricultural degree of openness to economic growth records negative only in 5th and 7th year, all other years are positive but move up and down as time passes on. Likewise, the response from REER to economic growth also witnesses negative and positive shocks as years passes on. The REER positively influences economic growth rates for the second year, but also fluctuate reaching below and above equilibrium levels over the periods (Figure 6.1).

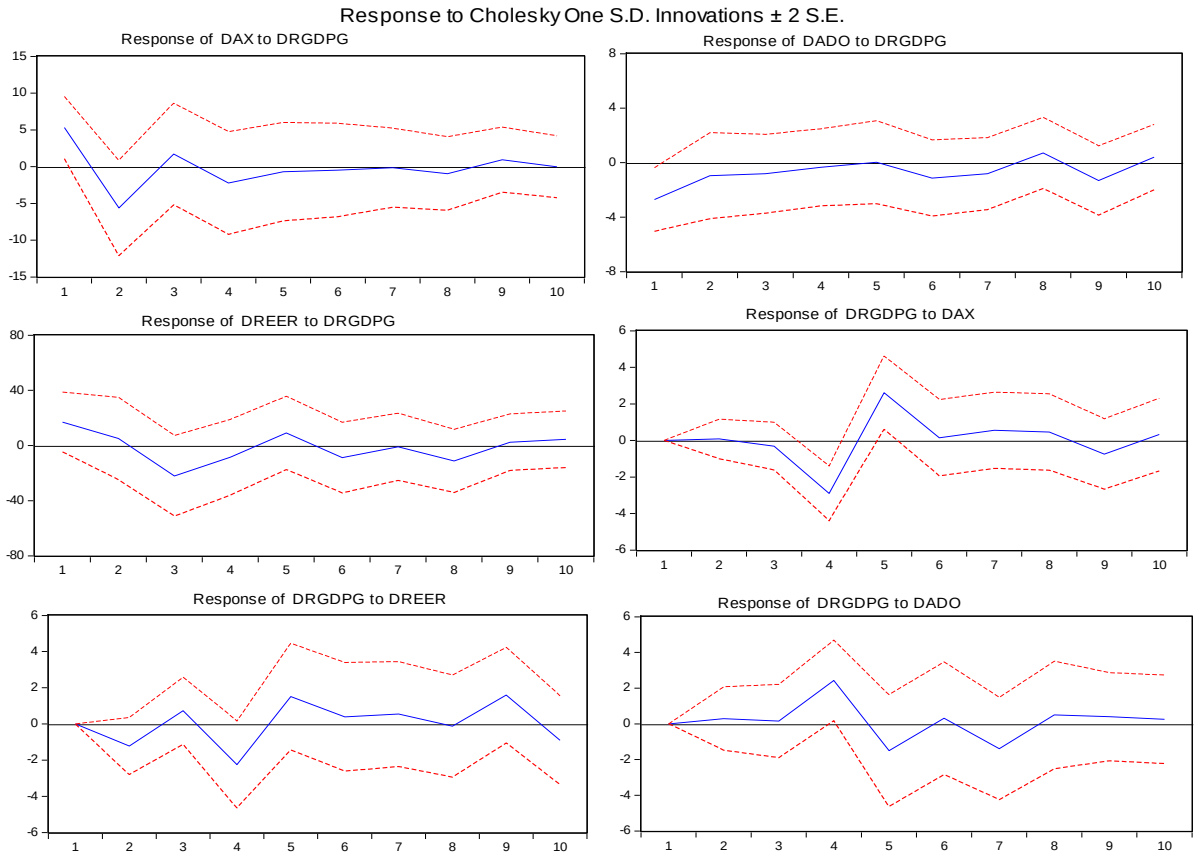


Figure 6-1: Response to Cholesky one SD (± 2 S.E. innovations), economic growth

Statistically speaking, while IRF traces the effects of a change to another endogenous variable on to other variables in the VAR environment, VDA separates the variation in an endogenous variable into the component shocks in the model. Consequently, the VDA provides information about the relative relevance of each random innovation that affects variables in the VAR model.

The VDA results for the selected variables over a 10-year horizon is presented in Appendix Table 6G. The results reveal that economic growth variable was 100% explained by its shock in the first year, but it steadily reduces to 38% in the long run (10th year). The shocks further show that

agricultural exports (20%), the agricultural degree of openness (17%), and REER (25%) account for the fluctuations in the economic growth in the long- run. Moreover, the findings confirm that agricultural degree openness (58), followed by agricultural exports (57%) and REER (32) account for its own shock in the long term (10th-year horizon).

To conclude this subchapter, this research does support the hypothesis that agricultural export-led economic growth in Nigeria. The negative relationship between the agricultural degree of openness and economic growth (Table 6.3) is an indication that the country is importing more than it is exporting (Table 5.2, Appendix Table 5H and Figure 5.2). Over-reliant on agricultural imports suggests hurting the Nigeria's economy as it has drastically reduced the country's overall trade balance.

6.3 Determinants of Trade on Agricultural Production in Nigeria

The findings of the unit root test are presented in Appendix Table 6H. The results show that only FDI growth and the growth rate of agricultural ODA are stationary at level. The rest of the variables have become stationary after first difference. Similarly, Granger causality, IRF and VDA tests were run after the test for stationarity. Prior to Granger causality, IRF and VDA tests, in VAR environment were applied. Based on the information lag selection criteria, the optimal lag length of four was chosen (Appendix Table 6I). The VAR residual tests, such as normality test and autocorrelation tests were run, and all the checklists were fulfilled.

The results from the Granger causality technique approach is presented in Table 6.5. The result suggests there is a unidirectional causality running from agricultural imports, the agricultural degree of openness, FDI growth and growth rate of agricultural ODA to agricultural performance in Nigeria. The result further suggests that all the variables in the model jointly Granger cause agricultural performance in the country. Agricultural production and the degree of openness Granger- cause exports to Nigeria. The result further signifies that all the variables in the model jointly Granger cause agricultural exports. Also, a unidirectional causality is confirmed to be running from export, world price, and agricultural ODA to imports. Bidirectional Causality is emanating from openness to imports in the country. The result further indicates that all the variables in the model jointly Granger cause imports in Nigeria (Table 6.5).

Table 6-5: VAR Granger causality/ block exogeneity Wald tests, agricultural production

Equation	*Excluded*	*χ2- statistic*	*df*	*Prob.*
DAP	DLAX	6.398694	4	0.1713
	DLAM	9.065339	4	0.0595*
	DLWP	12.15624	4	0.0162**
	DLADO	10.88287	4	0.0279**
	FDI	12.09081	4	0.0167**
	ODAA	19.01403	4	0.0008***
	All	39.94958	24	0.0217**
DLAX	DAP	8.101957	4	0.0879*
	DLAM	0.837694	4	0.9333
	DLWP	3.783974	4	0.4360
	DLADO	11.56742	4	0.0209**
	FDI	3.200623	4	0.5248
	ODAA	2.277907	4	0.6848
	All	34.38124	24	0.0781*
DLAM	DAP	6.348964	4	0.1746
	DLAX	8.512259	4	0.0745*
	DLWP	12.81770	4	0.0122**
	DLADO	9.461531	4	0.0505*
	FDI	8.654506	4	0.0703*
	ODAA	8.345245	4	0.0797*
	All	59.42391	24	0.0001***
DLWP	DAP	5.729307	4	0.2203
	DLAX	5.476450	4	0.2418
	DLAM	5.469774	4	0.2424
	DLADO	8.988484	4	0.0614*
	FDI	15.22819	4	0.0043**
	ODAA	7.838231	4	0.0977*
	All	60.36531	24	0.0001***
DLADO	DAP	2.394871	4	0.6636
	DLAX	0.879981	4	0.9274
	DLAM	2.331845	4	0.6750
	DLWP	2.158164	4	0.7067
	FDI	0.474961	4	0.9759
	ODAA	0.809243	4	0.9372
	All	9.360234	24	0.9967
FDI	DAP	1.419363	4	0.8408
	DLAX	3.388265	4	0.4951
	DLAM	1.254810	4	0.8690
	DLWP	1.803646	4	0.7718
	DLADO	2.199391	4	0.6991
	ODAA	3.814633	4	0.4317
	All	14.41316	24	0.9368
ODAA	DAP	2.944105	4	0.5672
	DLAX	0.580823	4	0.9652
	DLAM	3.372070	4	0.4976
	DLWP	2.294215	4	0.6818
	DLADO	3.430056	4	0.4886
	FDI	1.148646	4	0.8865
	All	10.00006	24	0.9945

Notes: ***, **, * indicate the rejection of the null hypothesis at 0.01, 0.05 and 0.10 significance level respectively
Original sample size: 1973-2013. Included observations: 36 after adjustments

The result of the *IRF* is shown in Figure 6.2. The initial response of agricultural exports to production is positive, and then diminishes below the equilibrium in the third year, swiftly increases to reach the plausible direction in the fourth year. The response fluctuates above and below the equilibrium line over the years as it records adverse shocks in the fifth, seventh and tenth periods. A cursory examination of the IRF of the response of agricultural import to production records positive only in the eighth and tenth year, all other years are negative. This implies that the substantial imports of food and agricultural products might have adverse effects on production. Just as in Africa (Table 3.4), the drastically increased in agricultural imports in Nigeria suggest to have impeded production, and trade balance (Table 5.1 and Figure 5.2), in various commodities. This might have compounded the situation, especially in Nigeria, where food and agricultural related activities are largely carried out by smallholder and family farmers who could not compete favourably with the foreign products regarding quality, quantity and price. Also, a further examination of the IRF of the agricultural degree of openness to agricultural performance records positive only in fourth and sixth and ninth year, all other years are negative but move up and down as time passes on. Likewise, the response from world price, FDI growth and agricultural ODA to agricultural performance have also witnessed negative and positive shocks as years pass on (Figure 6.2).

The VDA result for the selected variables over a 10-year horizon is presented in Appendix Figure 6A. The results reveal that in the fourth period, the impulse to agricultural production accounts 53.3% variation in the fluctuations to its own shock. Similarly, innovation to exports (4.9%), imports (24.6%), world price (3%), the degree of agricultural openness (2.5%), FDI growth (11.2%), and agricultural ODA (0.2%) can cause fluctuation in agricultural performance in the fourth period. In the 10 period, the results further suggest that innovation to agricultural production steadily reduces to 41.7% in the long run, while shock to exports (4.8%), imports (32.6%), world price (4%), degree of agricultural openness (7.1%), and FDI growth (9.7%), and agricultural ODA (0.3%) account for the fluctuations in the agricultural production in the long-run (Appendix Figure 6A). The IRF results suggest that agricultural imports might have hurt production in the country (Figure 6.2).

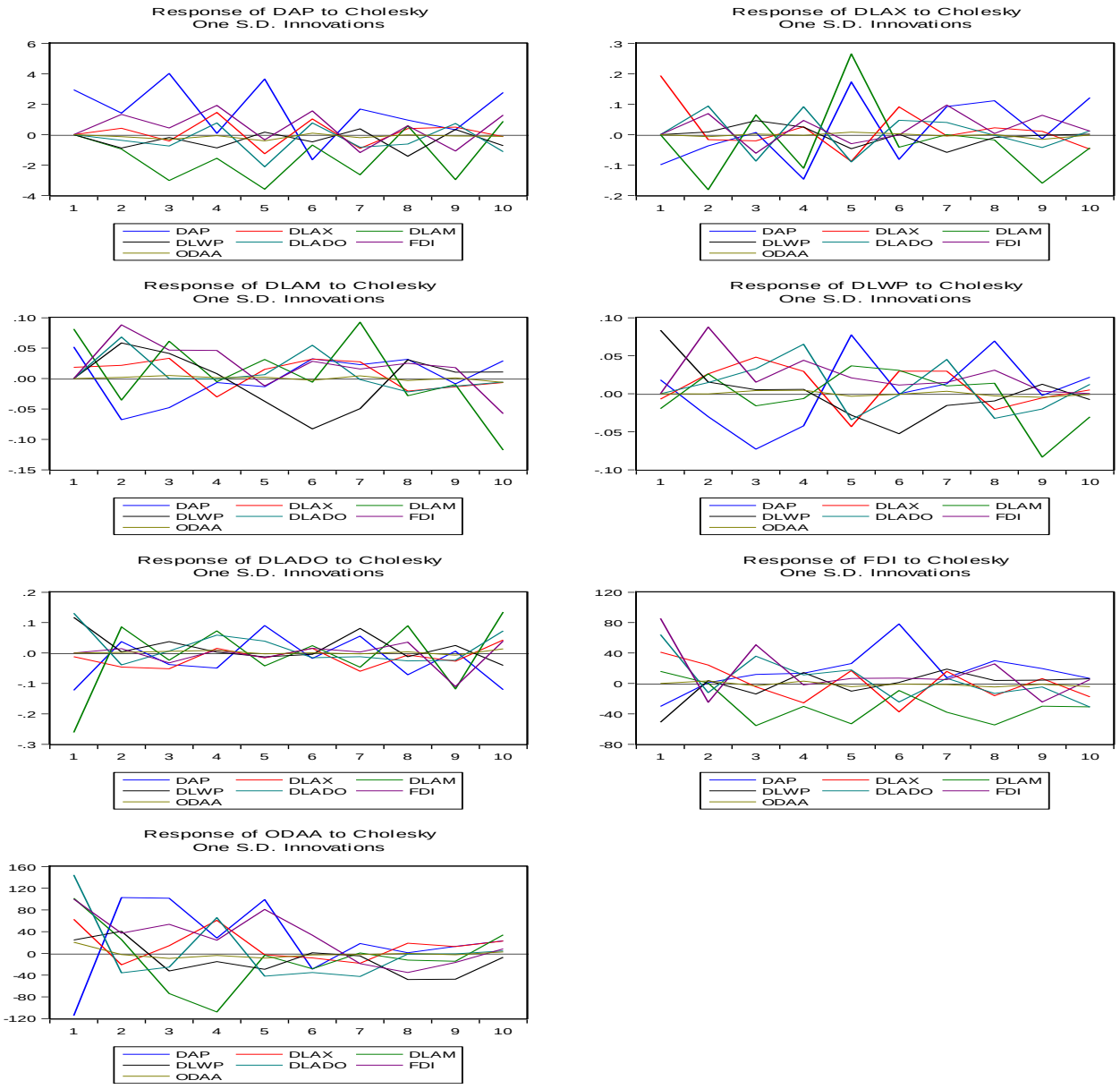


Figure 6-2: Response to Cholesky one SD (± 2 S.E. innovations), agricultural production

The results from the VDA also reveal that in the fourth period, the impulse to agricultural export accounts 24.5% variation in the fluctuations to its own shock. Similarly, the impulse to production (4.9%), imports (30.9%), world price (1.8%), agricultural openness (15.6%), and FDI growth (6.7%) cause the fluctuation in agricultural exports in the short run (4th year). In the 10th year, the results further signify that innovation to agricultural export drastically decreases to 15.1% in its own shock. Also, a shock to production (27.3%), imports (37.7%), world price (2.2%), agricultural openness (10.0%), and FDI growth (6.6%) account for the fluctuations in the

agricultural exports in the long- run (Appendix Figure 6A). This VDA result suggests that imports, production, openness are the major determinants of agricultural exports in Nigeria.

The results also show that in the short run (4th year), the impulse to agricultural import accounts for 25.3% fluctuations to its own shock. Similarly, innovation to production (21.1%), exports (6.1%), world price (11.3%), agricultural openness (11.1%), and FDI growth (26.3%) suggest having caused the fluctuation in agricultural imports in the short run. In the long run (10th year), the results further signifies that, shock to production (13.6%), exports (5.6%), world price (17.5%), agricultural openness (8.5%), and FDI growth (18.0%) account for the fluctuations in the agricultural imports in Nigeria (Appendix Figure 6A).

The results also reveal that impulse to production (19.7%), exports (4.5%), imports (48.2%), world price (9.3%), the degree of agricultural openness (11.7%), and FDI (6.5%) cause the fluctuation in the agricultural degree of openness in the long run. This implies that agricultural degree of openness is largely accounted by imports in Nigeria. By and large, a shock to imports largely causes the variation in the fluctuation in export (36%), world price (16%), the degree of openness (48%), and FDI growth (26%), and agricultural ODA (20%) in the long run (Appendix Figure 6A). This further implies that agricultural import is a major variable in explaining the variation of production, exports, degree of agricultural openness, FDI growth and growth rate of agricultural ODA in Nigeria.

6.4 Determinants of Trade on Cocoa Production in Nigeria

Both ADF and PP unit root tests are carried out (Appendix Table 6J) before the regression approaches. All the variables have become stationary after first difference. As stated above, both OLS regression and Granger causality tests were run after unit root tests. Similarly, diagnostic checklist tests for the OLS regression was done, and all the classical assumptions were fulfilled (Appendix Table 6K). Also, based on the information criteria (Appendix Table 6L), an unrestricted VAR model was applied prior to the Granger causality estimation.

The OLS results are presented in Table 6.6. The results indicate that all the regressors in the model jointly influence cocoa production in Nigeria. The results further suggest that the lagged quantity of cocoa export (QCX) has a positive impact on cocoa production in Nigeria. This implies that the more cocoa is exported, the more farmers will be stimulated to produce the

product. The result is in line with the works by Ndubuto et al. (2010); Daramola (2011); Boansi (2013); Darkwah and Verter (2014) who also find a robust positive relationship between cocoa export and production in Nigeria and Ghana respectively.

Practically, as presented in Figure 5.6, an average of over 55% of the quantity of cocoa beans produced was exported between 1987 and 2013. Also, the upward and downward export appears to have moved corresponding to its annual output. Arguably, development of cocoa production in Nigeria is likely to be encouraged by export trade. Cocoa is not just an important cash crop and principal export commodity in producing economies, but also a critical import in consuming countries, which typically do not have favourable climatic conditions for cocoa production. Consequently, consuming and processing countries have to import the product as posited by the Ricardian and H-O models. Contrary to the prior expectation, the coefficient of world price is negative and merely significant at the 10 % level, implying that to some extent it is not capable of convincingly explaining the variation of cocoa production in Nigeria during the period analysed.

Table 6-6: Some determinants of cocoa production in Nigeria

Variables	*Coefficient*	*Std. Error*	*t-statistics*
Cons	−0.0047	0.0164	−0.2884
LQCX_1	0.1027	0.0518	1.9825**
LCWP	−0.1410	0.0819	−1.7213*
LOPEN_1	0.2967	0.1233	2.4057**
LACH_1	0.8229	0.2904	2.8333***
LCYIELD_1	0.0351	0.0965	0.3637
LDCC	0.1015	0.0262	3.881***
R-squared		0.509741	
Adjusted R^2		0.436202	
F(6, 40)		10.15726	
P-value(F)		8.17E-07	
Durbin-Watson stat		2.239479	

Notes: *, ** and *** denote statistical significance at 1%, 5%, and 1% levels. OLS, using observations 1967-2013 (T = 47)

The results in Table 6.6 further shows that lagged trade openness (OPEN) have a positive relationship with cocoa production in Nigeria. Holding other factors constant, a 1% increase in trade openness proxied for free trade; it may spur cocoa farmers to increase production/output by 0.30%. Trade openness partly indicates the size of the Nigerian economy in the world market or the integration of the country into the global economy. Even though agricultural commodities from developing countries, such as Nigeria face trade restriction, partly regarding tariff escalation and quotas in the importing advanced economies, they have been experiencing zero or lower tariff regimes in primary tropical commodities, such as cocoa beans.

The results also show a positive connection between lagged cocoa harvested area (ACH) and annual production. This signifies that all things being equal, a 1% increase in the cocoa harvested area will bring a corresponding total output by 0.82% in the country (Table 6.6). All other farming determinants constant, the more farmers expand their farm size, the more the total production of cocoa beans. This result in consonance with the works Darkwah and Verter (2014) who also find a positive relationship between cocoa farm size and annual output in Ghana. In Nigeria, just as in Ghana, Cote d'Ivoire, Cameroon and Togo, cocoa farming is predominantly done by smallholder and subsistence farmers. Most of these farmers do not have the means to expand their farms for economies of scale. Finally, the OLS results further show that domestic cocoa consumption (DCC) has a positive impact on cocoa production in Nigeria (Table 6.6). Arguably, consumption is an indicator of demand for cocoa products in the country. This to some extent would stimulate farmers to increase the plantation and the supply of the product in the market. Parts of the local cocoa beans produced are domestically processed before final consumption and export.

Granger causality test is employed using a lag length of four in a VAR environment (Appendix Table 6L). The results from the Granger causality technique is presented in Table 6.7. The result suggests there is a bidirectional causality running from world price to cocoa bean output in Nigeria. Cocoa bean prices fluctuate at the world exchange markets, partly due to the difference in the level of global output and consumption, as well as differing degrees of speculations, which sometimes exacerbate supply, demand and price volatility. An increase in the world price of cocoa beans would stimulate farmers to produce more for export, albeit only when they are compensated comparably with the world price, which is always the case in African producing countries. Governments and traders from these countries are inelastic at increasing farm gate prices when world price increases. Even though Nigerian Marketing Board, which used to fixed producer price was abolished in 1986, few major exporters that control the market still determine farm gate prices.

The result also confirms a bidirectional causality running from trade openness and yield per hectare to cocoa production in the country. A unidirectional relationship is running from area harvested to cocoa production in the country (Table 6.7). Cocoa yield per hectare has been low in Nigeria relative to the other major producing countries, such as Cote d'Ivoire, Ghana, Indonesia,

Mexico and Brazil (Appendix Figure 4C). Regular weeding, timely fertilizer application, diseases and pests control, favourable weather, pruning and improved seeds are likely to increase yield per hectare in the country and elsewhere the crop is grown. A unidirectional is also observed from the quantity of cocoa bean produced, the area harvested and yield per hectare to the volume cocoa exports in Nigeria (Table 6.7). This signifies that cocoa exports are triggered by the size of farms harvested, the level of yields and the overall output in the country.

Table 6-7: VAR Granger causality/ block exogeneity Wald tests, cocoa production

Equation	Excluded	χ2- statistic	df	Prob.
DLQCP	DLQCX	1.698018	4	0.7911
	DLCWP	9.987526	4	0.0406**
	DLOPEN	7.954088	4	0.0933*
	DLACH	10.9576	4	0.027**
	DLCYIELD	10.96117	4	0.027**
	DLDCC	2.431803	4	0.6569
	All	28.90503	24	0.2237
DLQCX	DLQCP	9.911897	4	0.0419**
	DLCWP	2.496004	4	0.6454
	DLOPEN	4.462621	4	0.347
	DLACH	9.928397	4	0.0417**
	DLCYIELD	9.916846	4	0.0419**
	DLDCC	6.531976	4	0.1628
	All	32.36048	24	0.1183
DLCWP	DLQCP	10.56488	4	0.0319**
	DLQCX	3.072781	4	0.5457
	DLOPEN	10.20693	4	0.0371**
	DLACH	10.55588	4	0.032**
	DLCYIELD	10.55564	4	0.032**
	DLDCC	2.515136	4	0.6419
	All	32.57844	24	0.1133
DLOPEN	DLQCP	14.58801	4	0.0056**
	DLQCX	6.218209	4	0.1834
	DLCWP	2.04153	4	0.7281
	DLACH	14.58791	4	0.0056**
	DLCYIELD	14.59344	4	0.0056**
	DLDCC	6.530675	4	0.1629
	All	47.61504	24	0.0028***
DLACH	DLQCP	5.335581	4	0.2546
	DLQCX	1.96009	4	0.7431
	DLCWP	4.598979	4	0.331

	DLOPEN	7.495588	4	0.1119
	DLCYIELD	5.336074	4	0.2545
	DLDCC	4.576138	4	0.3336
	All	27.80186	24	0.2685
DLCYIELD	DLQCP	9.091274	4	0.0589*
	DLQCX	1.536527	4	0.8202
	DLCWP	7.860773	4	0.0968*
	DLOPEN	5.584648	4	0.2324
	DLACH	9.108248	4	0.0585*
	DLDCC	2.182378	4	0.7023
	All	24.2663	24	0.4465
DLDCC	DLQCP	3.852333	4	0.4264
	DLQCX	1.155691	4	0.8853
	DLCWP	3.619356	4	0.46
	DLOPEN	4.534969	4	0.3384
	DLACH	3.844922	4	0.4274
	DLCYIELD	3.856619	4	0.4258
	All	20.84623	24	0.6478

Notes: ***, ** and * indicate the rejection of the null hypothesis at 0.01, 0.05 and 0.10 significance level respectively. Original sample size: 1965-2013. Sample (adjusted): 1970- 2013. Included observations: 44 after adjustments

The result confirms a bidirectional causality running from yield per hectare to the world price. Furthermore, a unidirectional relationship is observed from trade openness and area harvested to the world price. Unidirectional relationships are also running from area harvested and yield per hectare to trade openness. Similarly, the results suggest that all the variables in the model jointly Granger- cause trade openness in Nigeria (Table 6.7). Given that cocoa is widely consumed, especially in non-cultivating countries in Europe, North America and some parts of Asia, the more the product is harvested in Nigeria and supplied to the global market, the more the country will be integrated into the global economy. All things being equal, it will pave the way for a sustainable cocoa production, and by extension, agrarian development in Nigeria.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Summary and Conclusions

Prior to the advent of crude oil in Nigeria, agriculture was the largest source of exports and foreign earnings, but has changed upon the discovery of oil in the country since the ends of the 1960s. Many economies across the globe have moved from agriculture as a primary source of export to other sectors of their economies. However, it becomes a source of worry when highly concentrated in a single product for export and government earnings, especially volatile commodities, such as petroleum as it has been practiced in Nigeria. The persistence in crude oil price volatility on the world market could have implications on revenues, currencies, and the overall growth and development of countries, such as Nigeria that are heavily dependent on petroleum as a source of government revenues and budget financing. Therefore, it is imperative for the government to look beyond oil, notably agriculture to survive the present oil price shocks.

Even though crude oil accounts for the substantial source of foreign earnings and government revenues, agriculture is still the backbone of Nigeria's economy. For instance, agriculture serves as a catalyst for employment, poverty reduction, food security, largest non-oil foreign exchange earner, and the major contributor to the real GDP. Thus, the importance of agriculture in the country cannot be overemphasised. Against this background, this present study determines both domestic and external drivers of agricultural development in Nigeria, using OLS regression, Granger Causality, IRF and VDA approaches as well as descriptive techniques. The conclusion is drawn based on the findings as follows:

What are the domestic drivers of agricultural (crop) production in Nigeria? The results suggest that fertilizer, cultivated land, and producer price have a robust positive relationship with crop production in Nigeria. On the contrary, the result shows an inverse relationship between loans and crop production. Arguably, the majority of the smallholder farmers in the country are poor, and they do not have collateral security to secure loans provided by those institutions. As a result, only a few farmers have access to loans to boost farm-related activities. Therefore, these loans seem not to induce crop production in the country.

Does agricultural export-led growth in Nigeria? The OLS results show that agricultural exports-led economic growth in Nigeria. On the contrary, the results reveal an inverse connection

between the agricultural openness and economic performance in the country. The unfavourable balance of trade in agriculture may well be the reason for the negative result. In other words, over-reliance on agricultural imports may well hurt economic growth in the country. Results from the Granger test further confirms a bidirectional causality emanating from agricultural exports to economic growth in the country. The VDA result implies that the volatility of GDP growth is occasioned by the exogenous variables in the model.

What are the determinants of trade on agricultural production in Nigeria? Using Granger causality, IRF, and VDA, the results reveal a unidirectional causality running from imports, openness, raw commodity world price, and ODA in agriculture to agricultural performance in Nigeria. The VDA result also shows that a shock to agricultural exports, imports and openness can contribute to the fluctuation in the variance of agricultural performance in the long run. By and large, the results suggest that agricultural performance in Nigeria is vulnerable to food import in the country, especially processed commodities.

What are the determinants of trade and other factors on cocoa production? Using OLS and Granger causality, the OLS regression results reveal that exports, trade openness, area harvested and domestic consumption have positive impacts on cocoa production in Nigeria. The Granger test shows that there exists bidirectional causality between the world price, trade openness and yield per hectare to cocoa production in the country. A unidirectional is observed from cocoa bean production to export in Nigeria.

Answers to some research questions without empirical evidence (mainly intuitively) are presented below**:** *What are the agreements, achievements and challenges of MTN on agriculture within the framework of GATT/WTO?* Following the Uruguay Round and the current Doha Round, WTO members have reduced agricultural trade distorting measures, such as tariff, domestic support and subsidies, albeit at a slow pace. As compared to other merchandise trade, despite the efforts and achievements made by the WTO, agriculture is still the most protected and closed sector in the global market. Although WTO AoA has been difficult in achieving the expected results for mutual benefits, WTO members are aware that their actions or inactions have had either positive or adverse effects on other countries.

What are the constraints to agricultural production and exports in Nigeria? Despite the favourable climate, abundant natural water supply, and broad areas of arable land for production,

Nigeria faces constraints that limit its ability to respond favourably to opportunities brought by the global trade in agricultural products, at least, tropical commodities. Internal constraints include limited access to finance and modern inputs or technologies, low yields, poor infrastructure, post-harvest issues, small-scale farms, underdevelopment of value addition; and import dependency. Trade constraints include finance and market access; lack of sanitary and phytosanitary (SPS) measures or standards, other trade-distorting measures in importing nations; price fluctuations; poor infrastructure; and trade-related costs; and inconsistent trade policies.

Is the import of agricultural products a threat to domestic production or enhancing competition and encouraging production efficiency in Nigeria? Import dependency brings unfavourable competition to local producers and traders. Given that smallholder producers characterize agricultural production in Nigeria, their costs of production are always high as they cannot produce in large quantities to enjoy economies of scale. An increase in imports may hurt their production as they are not likely to favourably compete with their foreign competitors in terms of price, quantity and quality. Given those agricultural competitors in advanced economies are heavily supported (distorted market signals), which is always the case in Nigeria. Arguably, competing with Western producers or exporters mean competing with Western treasuries which the reverse is the case in Nigeria. Sadly, the exporting raw agricultural products mean exporting wealth and jobs, while the importing finished products mean importing poverty and dependency.

Why is Nigeria the net importer of food and agricultural products? Despite the fact that the majority of the Nigerian working populations engaged in agriculture (regarded as an agrarian state), the country has become a net importer of food since 1975. This is partly because agriculture was neglected after the advent of oil in the 1960s, the civil war between 1967 and 1970, and the oil boom in 1970s. As a consequence, the import of food has substantially increased. Arguably, this is also attributed to lack of market access, trade distorting measures by importing countries, and price volatility in the global primary agricultural markets, which form substantial exports in Nigeria. Domestically, Nigeria records adverse trade balance due to low productivity (Nigeria is no longer producing enough food to meet domestic consumption) fuelled by inadequate modern farm inputs and limited finance. *Any implication for trade balance in Nigeria?* Yes, the inability of the country to favourably compete in the global agricultural markets has partially reflected in the persistent increase in the negative trade balance in food.

Undoubtedly, persistent movements of the trade balance in the opposite direction may have tremendous implications for the development of the agrarian sector, consumer welfare, and economy as a whole in Nigeria.

Is trade liberalization included trade in agricultural commodities? As postulated by the dependency theory, Nigeria being a peripheral and trade restrictions, is still exporting mainly raw agricultural commodities, such as cocoa beans, sesame seeds, and rubber at low prices. On the other hand, the country imports processed food, such as wheat flour and paste of tomatoes at exorbitant prices. As a result, the country has depended heavily on both advanced and emerging economies for the processed food and modern farm inputs at the expense of local producers.

7.2 Policy Recommendations

The current global oil crunch is a wake-up call for economic diversification in Nigeria. For the country to experience financial stability in the current crude oil price crash and the future, it must look beyond oil production and exports, notably, agriculture. Therefore, progress is paramount on three fronts: improving and sustaining agricultural productivity and global competitiveness; diversification of production and trade; and improving access to the world markets. Agriculture can no longer stand alone, but ought to be integrated into other sectors of the economy for its speedy development to be ensured. The government of Nigeria should as a matter of priority, invest heavily in agricultural production and trade. Recommendations for necessary measures to stimulate agricultural development in Nigeria in the present era of free trade and negotiations at the WTO and other regional bodies are summarized here as follows:

- The Nigerian government should create a friendly environment and provide or guarantee affordable or soft loans, inputs to producers and traders to support their services and productive initiatives, continue to subsidize fertilizer and other farm inputs, and ensure that it is distributed to producers at the right time.
- Producer prices in major food and agricultural products in the country should be guaranteed (price incentives) to encourage producers for a sustainable production and market supply.
- Setting standards through sister agencies to make sure agricultural production and quality control standards met the international standards and best practices, and provides sound legal and regulatory frameworks. Launching resilient institutional environment that

increases access to markets, upgrades marketing, communication to ensure fast information dissemination about agrarian production standards and market requirements.

- The Nigerian government should as a matter of urgency, provide transport and other critical infrastructural facilities to ease movement of farm inputs to the farms and produce to the markets for a domestic and global competitive supply chains to be ensured.
- For Nigeria to protect and encourage small-scale producers and traders, experience self-sufficiency and favourable trade balance in agriculture, domestic agro-processing sector should be encouraged while imports of agrarian commodities that Nigeria could cheaply process at home should be discouraged. This could be done by raising tariffs, quotas and other stringent policy measures to curtail import of commodities that can be produced cheaply at home. This could also be done by maintaining a sound and stable fiscal and trade policies that encourage stable foreign and domestic investment climate in agriculture; educating producers and traders, and enabling research and extension services and providing modern farm technologies to enhance production, food security and export.
- In the spirit of global partnership for agricultural development, world organizations, emerging and advanced economies should continue to provide technical know-how and financial support to Nigeria. Globally, WTO seems to be at the crossroad at the moment in ensuring that all the AoA and other side agreements are implemented for mutual trade benefits. The WTO have to ensure that defensive trade remedies, such as standards (SPS) should not be the next frontier of protectionism as these measures to some extent curtail trade from SSA countries like Nigeria. The WTO should continue to facilitate market access of Nigeria's agricultural products in importing countries by further opening their markets and reducing agricultural trade- distorting signals.
- The persistent increased in the inflows of FDI, ODA and other forms of financial inflows should be promoted and channelled to the agricultural sector to improve productivity, trade and competitiveness in Nigeria.
- Finally, SSA countries complain about market access in developed countries without fully opening their markets to trade within the region. Nigeria and other SSA countries should urgently open their markets to boost agricultural production and trade for growth and development within the regions, in general, and Nigeria, in particular.

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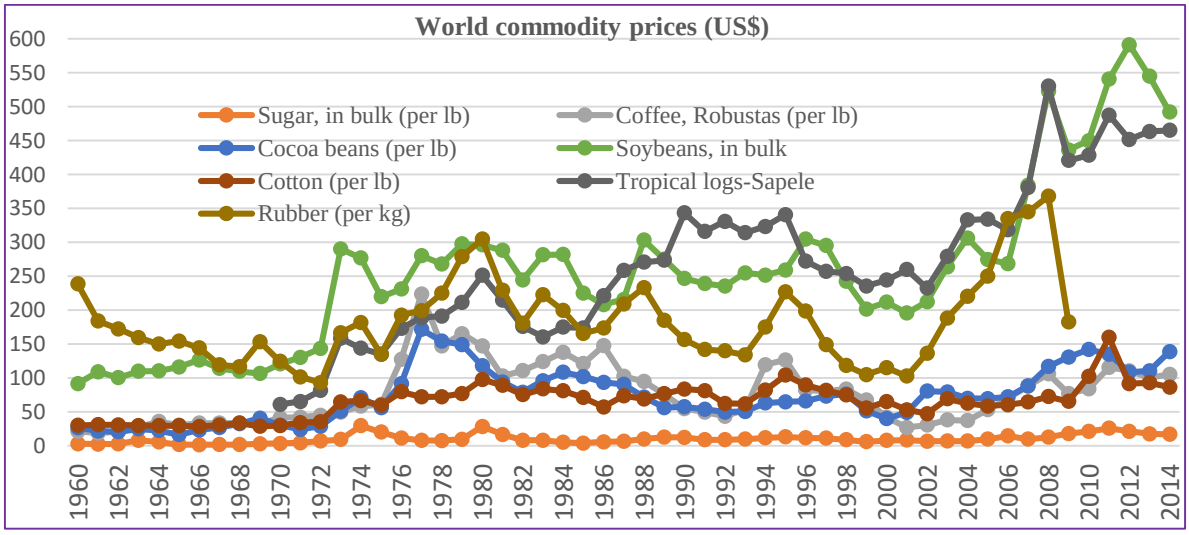
9 APPENDICES

Appendix Table 3A: Trade flows between developing and developed countries

	Net trade of developing countries (- denotes net imports)					Cum. increase	OECD support
	Billion US$ (current)			Billion US$ (1997/99)		%	Billion US$
Commodity category	1961/63	1979/81	1997/99	2015	2030	1997/99-2030	PSE 1998/00
Total agriculture	6.68	3.87	-0.23	-17.6	-34.6	n.a-	258.57
Total food	1.14	-11.52	-11.25	-30.7	-50.1	+345	n.a
1. Temperate-zone	-1.72	-18.17	-24.23	-43.8	-61.5	+154	134.22
Cereals (excluding rice)	-1.57	-14.25	-17.40	-31.9	-44.6	+156	40.09
Wheat	-1.53	-10.45	-10.30	-17.3	-23.5	+128	18.13
Coarse grains	-0.04	-3.80	-7.10	-14.7	-21.1	+195	21.97
Milk	-0.37	-3.36	-5.65	-8.4	-11.1	+97	44.97
2. Competing	3.13	4.29	6.20	6.3	5.9	-4	111.28
Rice	-0.07	-1.44	-0.39	-0.5	-0.7	+82	26.38
Vegetable oils and oilseeds	0.81	0.52	-0.57	-0.6	-0.6	+17	5.47
Fruit, vegetables and citrus	0.24	1.67	8.40	9.7	11.2	+33	57.44
Sugar	1.02	3.83	1.30	1.3	0.9	-30	6.73
Tobacco	0.20	0.07	1.26	0.9	0.6	-55	1.92
Cotton lint	0.91	-0.13	-3.46	-4.2	-5.0	+46	6.81
Pulses	0.02	-0.23	-0.34	-0.3	-0.4	+14	6.53
3. Tropical	**3.83**	**17.55**	**19.16**	**22.8**	**26.0**	**+36**	**0.92**
Bananas	**0.28**	**1.00**	**2.64**	**3.5**	**4.0**	**+53**	**0.32**
Coffee	**1.78**	**9.49**	**9.77**	**11.1**	**12.4**	**+27**	**0.28**
Cocoa	**0.48**	**3.30**	**2.82**	**3.6**	**4.2**	**+49**	**0.03**
Tea	**0.48**	**0.85**	**1.39**	**1.5**	**1.7**	**+20**	**0.29**
Rubber	**0.89**	**2.91**	**2.54**	**3.1**	**3.7**	**+45**	**0.01**
4. All other commodities	1.46	0.20	-1.36	-3.0	-5.0	+267	11.15

Source: FAO, 2003a

Appendix Figure 3B: World prices of some selected agricultural products, 1960-2014



Source: Author's analysis based on UNCTAD, 2016

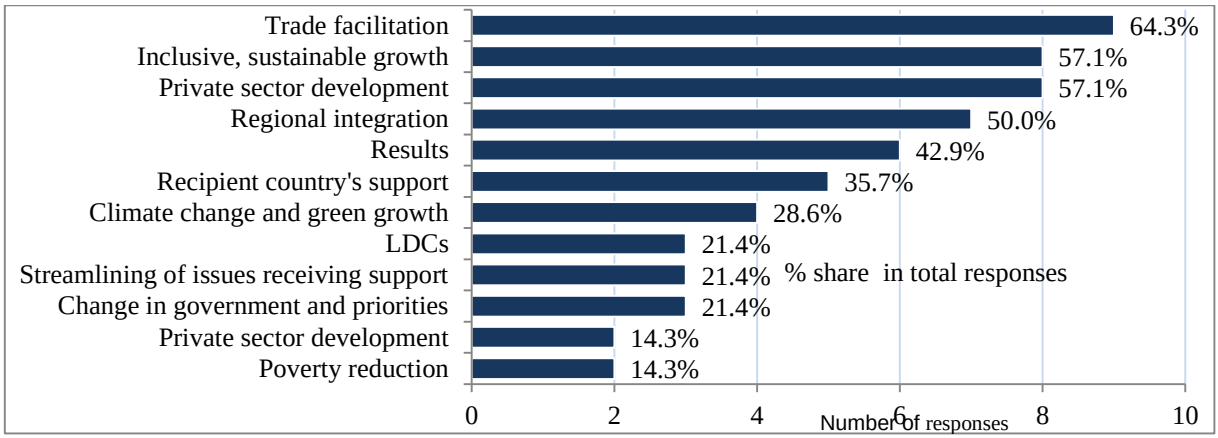
Appendix Table 3C: Tax escalation in major importing countries: selected raw and processed products

Product	Average final bound MFN tariffs[48]					Average applied MFN tariffs				
	US	EU	Japan	Canada	Major 4-5 importing developing countries	US 1999	EU 2000	Japan 1999	Canada 1998	Major 4-5 importing developing countries
Cocoa										
Beans	0	0	0	0	32	0	0	0	0	9.5
Paste	0.1	9.6	7.5	0	33.3	0.1	10.0	9.0	0	10.6
- TW*	0.1	9.6	7.5	0	1.3	0.1	10.0	9.0	0	1.1
Chocolate	14.7	21.1	21.3	52.8	44.3	17.7	21.1	23.6	54.2	16.6
- TW*	14.6	11.5	13.8	52.8	11	17.6	11.1	14.6	54.2	6
Coffee										
Green	0	0	0	0	39.8	0	0	0	0	24.8
Roasted	0	9	12	0.4	32.7	0	9	13	0	29.3
- TW*	0	9	12	0.4	-7.1	0	9	13	0	4.5
Hides & skins										
Raw	0	0	0	0	20.9	0	0	0	0	4.1
Tanned	3.0	5.4	23.5	6.3	30.3	2.9	5.4	14.9	0	6.7
-TW*	3.0	5.4	23.5	6.3	9.4	2.9	5.4	14.9	0	2.6
Cotton										
Lint	11.3	0	0	0	41.0	8.7	0	0	0	4.3
Yarn	8.3	4.0	4.7	8.0	52.7	6.8	4.8	4.1	5.3	12.9
-TW*	-3.0	4.0	4.7	8.0	11.7	-1.9	4.8	4.1	5.3	8.6
Oranges										
Fresh	3.5	16.7	24	0	41	3.7	16.7	25	0	23.7
Juice	6.8	44.1	28.1	1	41	6.9	44.1	31.9	1	25.7
- TW*	3.3	27.4	4.1	1	0	3.2	27.4	6.9	1	2
Sugar										
Raw	32.8	134.7	224.9	6.5	62.1	33.8	134.7	231.5	5.9	24.7
Refined	42.5	161.1	238.1	8.6	66.0	43.8	161.1	242.5	7.5	29.5
-TW*	9.7	26.4	103.2	2.1	3.9	10.0	26.4	11.0	1.6	4.8
Pineapple										
Fresh	1.2	5.8	12.1	0	38.2	1.3	5.8	13	0	19.8
Juice	4.1	33	32.3	0	42.2	4.4	33	32.3	0	25.4
- TW	2.9	27.2	20.2	0	4	3.1	27.2	20.2	0	5.6

Source: FAO, 2003b. Notes: TW denotes Nominal tariff wedges. It measures the difference between tariffs in primary and processed stages, calculated as T-t, where t stands for tariff at the primary stage and T for tariff at the processed stage.

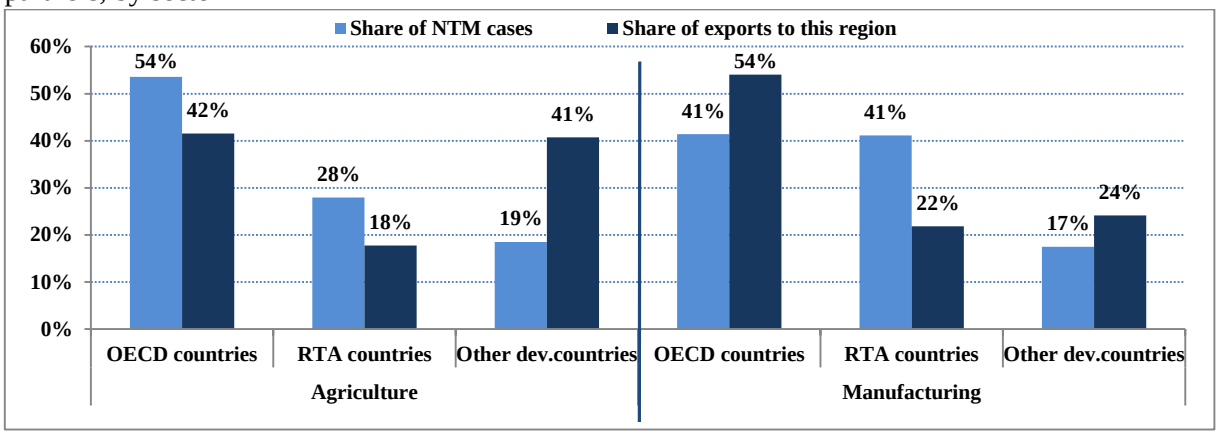
[48] According FAO (2003b), *'the bound and applied rates are simple averages, mostly at the 6-digit of the Harmonized System (HS), after excluding tariff lines that are not corresponding between bound and applied schedules. Specific rates are converted to ad valorem rates using AMAD's data on world unit values and exchange rates. The world import unit values were defined at the 6-digit HS level.'* MFN denotes most-favoured-nation tariff: Normal non-discriminatory tariff imposed *'on imports (excludes preferential tariffs under free trade agreements and other schemes or tariffs charged inside quotas)*' (p. 116).

Appendix Figure 3D: Donor's aid for trade priorities



Source: OECD and WTO, 2015

Appendix Figure 3E: Share of cases of burdensome NTMs versus share of exports across trading partners, by sector



Source: ITC, 2015

Appendix Table 4A: Nigeria: Top twenty agricultural production (US$ '000) and global rank, 1961-2013

Indicator/year		2013		2010		2000		1980		1961	
NRank	Commodity	('000 US$)	GRank	('000 US$)	GRank	('000 US$)	GRank	('000 US$)	GRank	('000 US$)	GRank
1	Yams	9,296,354	1	7,616,263	1	5,345,926	1	1,070,777	1	714,123	1
2	Cassava	5,536,539	4	4,443,144	5	3 343 861	1	1,201,325	1	771,355	1
3	Fruit, citrus nes	1,717,805	2	1,717,805	2	1,469,176	1	813,697	1	452,054	1
4	Groundnuts, with shell	1,278,900	2	1,639,671	4	1,254,101	3	191,961	3	658,637	3
5	Rice, paddy	1,273,476	15	1,214,693	16	889,525	17	295,380	23	34,024	n.a
6	Vegetables, fresh nes	1,164,565	4	1,120,395	4	743,400	4	183,165	12	155,652	11
7	Maize	1,012,854	11	735,555	10	395,646	9	51,998	31	105,805	12
8	Meat indigenous, cattle	913,065	n.a	719,917	n.a	641,043	n.a	783,428	n.a	310,109	n.a
9	Sorghum	910,304	2	970,862	3	985,747	3	475,991	2	502,761	2
10	Millet	850,265	2	751,128	2	929,229	2	357,284	3	393,530	3
11	Cashew nuts,	831,547	1	726,510	1	407,896	2	21,883	5	6,127	6
12	Taro (cocoyam)	827,139	1	627,160	1	824,170	1	44,114	6	243,264	1
13	Cow peas, dry	754,838	1	756,192	1	46,808	1	106,089	1	83,994	1

14	Okra	703,442	2	692,967	2	468,949	2	268,587	2	150,281	2
15	Meat indigenous, goat	701,214	n.a	680,841	n.a	517,315	n.a	136,936	n.a	7,303	n.a
16	Tomatoes	578,368	13	665,200	11	465,944	12	120,108	27	65,043	25
17	Plantains	573,953	6	552,385	6	406,516	4	215,129	4	164,753	4
18	Eggs, hen, in shell	539,103	18	517,041	18	331,756	20	165,878	21	62,204	26
19	Mangoes, guavas	509,292	9	509,292	8	437,392	8	239,667	7	119,833	6
20	Meat indigenous, sheep	469,704	12	443,009	11	303,701	16	71,882	32	9,135	n.a
	Agriculture, total	36,377,050	10	33,243,821	12	25,707,368	14	9,380,026	21	7,211,538	17
	Crops	34,441,935	5	32,579,708	5	25,164,893	5	8,225,230	16	6,966,942	10
	Livestock	3,792,959	39	3,561,448	41	2,644,619	41	1,671,010	35	683,639	41

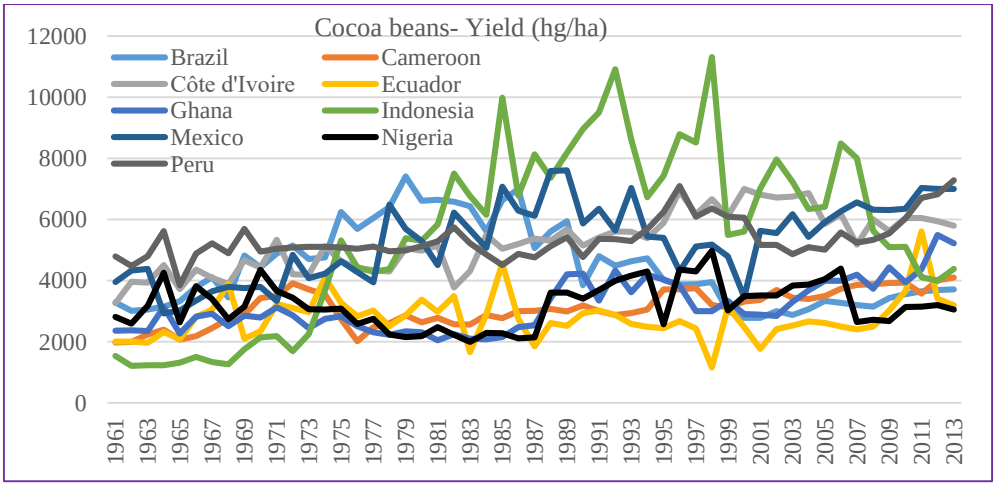
Source: Author's analysis based on FAOSTAT, 2016. Notes: * indicates data in 2013; GRank stands for national rank; Grank denotes global rank of individual products; n.a denotes not available

Appendix Table 4B: Global share of Nigeria's agricultural products, by quantity (in percentages)

Product	1961	1970	1980	1990	2000	2010	2014
Cassava							
World	10.36	10.35	9.26	12.50	18.17	17.50	20.29
Africa	23.45	25.18	23.79	27.08	33.55	31.65	37.34
West Africa	69.56	70.16	69.87	73.03	67.78	62.59	62.92
Yams							
World	42.05	69.04	43.71	62.57	66.25	65.81	66.02
Africa	46.13	72.78	48.20	66.14	69.00	68.56	68.46
West Africa	51.79	78.07	54.42	70.73	71.76	71.44	72.42
Maize							
West Africa	54.74	51.35	28.68	69.88	50.87	50.14	55.26
Africa	6.86	7.26	2.18	15.31	9.27	11.58	13.90
Africa	43.00	67.00	76.00	14.00	14.00	62.00	5.00
Tomatoes							
World	0.73	0.61	0.71	0.49	1.14	1.18	0.96
Africa	8.94	6.83	6.64	4.51	9.17	9.87	8.64
West Africa	79.26	59.61	63.65	48.25	66.90	67.76	57.01

Source: Author's analysis based on FAOSTAT, 2016

Appendix Figure 4C: Cocoa yield (hg/ha) in Nigeria and some selected countries, 1961-2013



Source: Author's analysis based on FAOSTAT, 2016

Appendix Table 4D: Annual agricultural sector's contribution to real GDP (%), 1960-2014

Indicator	1960	1970	1985	1990	1995	2000	2005	2010	2013	2014	2015
Agriculture	64.3	44.7	32.7	37.2	40.8	42.7	41.2	40.9	38.4	22.9	23.1
Crop Production	51.6	34.1	26.2	32.5	36.3	37.9	36.7	36.4	34.1	20.5	20.7
Livestock	5.6	3.4	4.4	2.9	2.9	2.8	2.6	2.6	2.5	1.6	1.7
Forestry	5.3	3.1	1.1	0.6	0.7	0.6	0.5	0.5	0.5	0.2	0.2
Fishing	1.8	4.2	0.9	1.2	0.9	1.4	1.4	1.3	1.3	0.5	0.5

Source: Author's analysis based on CBN, 2015; NBS, 2016b

Appendix Table 4E: Irrigated land (% of agricultural land, arable land and permanent crops) in Nigeria and some selected economies, 2010-2013

Economy	Indicator	2010	2011	2012	2013
	Irrigated land (% of total agricultural land)	0.42	0.41	0.41	0.41
Nigeria	Irrigated land (% of arable land and permanent crops)	0.74	0.72	0.70	0.72
	Irrigated land (% of total agricultural land)	0.22	0.22	0.22	0.22
Ghana	Irrigated land (% of arable land and permanent crops)	0.46	0.46	0.46	0.46
	Irrigated land (% of total agricultural land)	0.35	0.35	0.35	0.35
Cote d'Ivore	Irrigated land (% of arable land and permanent crops)	0.99	0.99	0.99	0.99
	Irrigated land (% of total agricultural land)	0.44	0.45	0.45	0.45
West Africa	Irrigated land (% of arable land and permanent crops)	1.26	1.27	1.26	1.28
	Irrigated land (% of total agricultural land)	1.26	1.27	1.27	1.28
Africa	Irrigated land (% of arable land and permanent crops)	5.69	5.60	5.48	5.61
	Irrigated land (% of total agricultural land)	9.60	9.67	9.85	9.88
EU	Irrigated land (% of arable land and permanent crops)	15.04	15.11	15.23	15.31
	Irrigated land (% of total agricultural land)	13.72	13.82	13.84	13.89
Asia	Irrigated land (% of arable land and permanent crops)	40.19	40.36	40.32	40.35
	Irrigated land (% of total agricultural land)	6.54	6.56	6.56	6.60
WORLD	Irrigated land (% of arable land and permanent crops)	20.74	20.72	20.54	20.64

Source: Author's analysis based on FAOSTAT, 2016

Appendix Table 5A: Nigeria: Trade and share of agricultural trade in Africa and the world, 1961-2013

	Côte d'Ivoire import and export		Ghana import and export		Nigeria import and export		Share of Nigeria's Trade in Africa and the world					
Year	Import ($ million)	Export ($ million)	Import ($ million)	Export ($ million)	Import ($ million)	Export ($ million)	Export (% world)	Import (% of world)	Export (% of Africa)	Import (% of Africa)	Export (% of W. Africa)	Import (% of W. Africa)
1961	38.9	134.4	64.4	199.1	70.0	388.6	1.21	0.2	10.36	4.54	38.7	21.53
1962	45.5	135.7	75.5	203.2	86.1	356.3	1.07	0.24	9.39	5.4	36.84	22.89
1965	61.7	186.5	54,.2	208.2	88.2	460.8	1.13	0.2	10.57	4.7	39.7	22.35
1970	82.2	330.3	77.2	331.1	125.0	437.7	0.84	0.22	8.09	5.61	29.44	22.97
1975	172.4	756.3	93.4	567.7	579.2	445.7	0.36	0.42	4.77	7.31	18.92	40.52
1980	486.4	1,980.9	134.3	743.6	2,099.2	445.5	0.19	0.82	3.19	14.08	10.9	54.86
1985	341.1	2,138.6	81.1	405,.1	1,245.2	309.5	0.15	0.54	2.9	8.41	8.55	44.38
1990	423.3	1,613.4	187.2	412.7	561.0	228.2	0.07	0.16	1.92	3.6	7.03	20.51
1995	444.1	2,178.7	211.8	393.6	1,130.9	408.4	0.09	0.25	2.74	5.35	10.26	30.85
2000	360.5	1,911.2	327.1	542.2	1,130.8	339.4	0.08	0.26	2.51	5.63	8.83	31.76
2005	714.5	3,024.3	996.2	1,145.7	2,625.5	654.2	0.1	0.39	3.08	8.28	10.37	35.39
2006	840.4	3,162.0	958.1	1,544.4	2,885.5	591.2	0.08	0.38	2.55	7.91	8.39	33.29
2007	928.7	3,475.7	1,029.3	1,406.2	4,650.2	602.6	0.07	0.51	2.37	9.83	8	42.46
2008	1,219.1	4,361.0	1,301.8	1,511.1	4,569.5	859.6	0.08	0.41	2.78	7.43	9.84	36.92
2009	1,338.5	5,101.1	1,047.6	1,414.3	4,860.4	991.0	0.1	0.49	2.92	8.78	10.2	41.11
2010	1,284.0	5,638.3	1,214.9	1,220.5	5,633.7	1,144.0	0.11	0.51	3.2	9.04	10.98	44.05
2011	1,717.0	6,610.4	1,758.3	2,979.6	6,953.5	1,399.4	0.11	0.51	3.11	8.49	9.79	42.06
2012	2,130.7	5,757.0	1,555.3	2,699.1	7,163.1	1,587.0	0.12	0.52	3.67	8.51	12.36	41.48
2013	1,471.5	5,440.9	1,905.4	2,182.9	8,324.4	1,219.7	0.09	0.58	2.46	9.4	9.9	44.21

Source: Author's analysis based on FAOSTAT, 2016

Appendix Table 5B: Nigeria: Leading agricultural export products in value (US$ '000), 1965- 2013

		2013		2010		2000		1980		1970		1965	
Rank	Commodity	Value	GR	Value	GR	Value	GR	Value	GR	Value	GR	Value	GR
1	Cocoa beans	420,000	4	659,886	4	210,000	4	243,390	4	186,305	3	119,534	2
2	Rubber Nat Dry	129,109	11	113,228	13	55,000	7	18,000	9	24,596	5	30,769	4
3	Sesame seed	181,000	4	119,000	4	13,000	11	n.a	n.a	3,188	4	3,700	3
4	Cocoa Butter	92,191	7	46,249	13	62	n.a	48,000	6	18,573	-	n.a	n.a
5	Cigarettes	63,117	-	17,987	-	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
6	Cocoa powder & Cake	45,000	11	22,474	15	2,870	24	17,000	6	3,183	5	n.a	n.a
7	Cotton lint	59,188	-	27,056	-	92	-	n.a	n.a	18,385	-	16,750	-
8	Natural rubber	17,800	-	17,581	-	150	-	n.a	n.a	n.a	n.a	n.a	n.a
9	Bran of Wheat	19,693	-	18,738	-	8,000	-	20,000		n.a	n.a	n.a	n.a
10	Ginger	19,449	-	11,275	-	3,316	-	n.a	n.a	n.a	n.a	n.a	n.a
11	Cashew nuts, shell	57,800	6	4,804	10	2,403	9	350	7	250	4	200	4
12	Palm oil	16,200	-	12,000	-	5,000	-	n.a	n.a	1,590	-	38,055	-
13	Veg.Prod.Fresh/Dried	8,507	-	10,831	-	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
14	Cake of Palm Kernel	11,500	-	10,000	-	9,000	-	14,000	-	2,359	-	308	-
15	Groundnut oil	4,050	10	4,200	12	90	n.a	n.a	n.a	32,611	2	28,035	2

Source: Author's analysis based on FAOSTAT, 2016. Notes: Rank denotes national rank; GR stands for global rank

Appendix Table 5C: Share of Nigeria's export in the world (%) in some selected agrarian products

Indicator/economy	1965	1970	1980	2000	2010	2013
Share of export in quantity						
Cocoa, beans						
World	23.39	17.25	12.57	5.55	8.4	6.71
Africa	28.29	22.58	17.64	8.07	13.89	10.29
Western Africa	31.94	25.98	20.61	8.56	16.15	11.82
Cake, palm kernel						
World	1.67	11.13	12.95	5.73	1.23	1.14
Africa	7.33	28.77	49.26	86.37	69.78	69.24
Western Africa	17.93	59.46	62.6	87.51	69.83	69.55
Rubber natural dry						
World	3.08	2.23	0.46	0.71	0.62	0.67
Africa	43.75	29.52	10.59	12.18	10.24	11.19
Western Africa	55.32	38.6	12.97	13.4	11.59	13.11
Cashew nuts, with shell						
World	0.52	0.55	3.34	0.9	0.97	5.63
Africa	0.52	0.55	4.34	1.01	1.04	5.91
Western Africa	64.52	33.72	37.33	1.56	1.25	6.8
Cotton lint						
World	0.66	0.71	n.a	n.a	0.24	0.39
Africa	3.43	2.92	n.a	0.02	2.42	2.95
Western Africa	58.48	33.83	n.a	0.03	4.52	4.52
Oil, palm						
World	24.66	0.84	n.a	0.06	0.04	0.04
Africa	54.17	4.29	n.a	4.94	2.07	3.74
Western Africa	91.32	21.57	n.a	5.72	2.66	5.27
Soybeans						
World	0.22	0.08	n.a	0.02	0.01	0.01
Africa	93.16	55.55	n.a	13.71	6.73	8.67
Western Africa	100	100		98.9	91.23	49.38
Cottonseed						
World	15.42	19.39	0.79	0.34	1.06	0.61

Africa	38.16	28.75	5.08	1.76	5.9	2.7
Western Africa	76.53	60.32	6.68	2.21	13.19	5.54
Oil, Groundnut						
World	21.47	21.01	n.a	0.06	1.77	1.99
Africa	33.22	31.42	n.a	0.13	6.08	15.81
Western Africa	36.02	34.05	n.a	0.14	6.23	18.12
Ginger						
World	n.a	n.a	n.a	1.78	1.22	2.38
Africa	n.a	n.a	n.a	68.54	33.38	49.14
Western Africa	n.a	n.a	n.a	97.87	92.63	87.47

Source: Author's analysis based on FAOSTAT, 2016

Appendix Table 5D: Exports of processed cocoa beans in Nigeria (US$ and tonnes), 1970-2013

Year/indicator	Cocoa, butter (MT)	Cocoa, butter (1,000 US$)	Cocoa, paste (MT)	Cocoa, paste (1,000 US$)	Cocoa, powder and cake (MT)	Cocoa, powder and cake (1,000 US$)
1970	9,372	18,573	0	0	9,592	3,183
1980	8,125	48,000	0	0	8,800	17,000
1990	3,072	6,675	135	428	2,398	956
2005	9,010	35,500	1,530	2,950	3,580	3,975
2007	10,370	39,400	880	1,900	5,730	4,700
2008	8,980	50,257	233	623	8,176	5,885
2009	9,150	57,400	233	623	7,362	8,373
2010	9,336	46,249	38	35	8,098	22,474
2012	13,891	39,255	1,938	7,196	9,273	31,481
2013	24,233	92,191	2,000	7,250	13,706	45,000

Source: FAOSTAT, 2016. Note: MT denotes metric tonne

Appendix Table 5E: Sesame seed production and export in Nigeria, 1975-2013

	Domestic production and export			**Nigeria export**			**Nigeria output and the world**	
Year	Output	Export	Export (% of output)	(% of global export)	(% of Africa export)	World rank	(% global output)	(% Africa output)
1975	36,000	4,156	11.5	2.1	3.2	10	2.1	7.2
1977	38,000	4,211	11.1	2.3	3.6	9	2.1	7.3
1978	38,000	3,331	8.8	1.5	3.4	13	2.0	8.4
1990	44,000	1,055	2.4	0.2	1.5	n.a	1.8	11.0
1991	46,000	4,463	9.7	0.9	6.5	18	2.1	11.0
1994	56,000	7,500	13.4	1.3	4.5	15	2.5	11.3
1995	60,000	1,044	1.7	0.2	0.8	n.a	2.4	9.1
1996	64,000	33,927	53.0	5.1	14.2	5	2.3	8.2
1997	66,000	27,000	40.9	4.1	10.7	6	2.6	10.1
1998	66,000	30,000	45.5	5.6	13.6	5	2.6	10.2
1999	69,000	35,000	50.7	5.9	14.6	4	2.7	9.4
2000	72,000	30,200	41.9	4.0	10.3	5	2.6	10.0
2001	74,000	43,300	58.5	5.8	16.1	5	2.4	9.6
2007	117,700	82,100	69.8	8.0	19.9	4	3.1	10.0
2008	121,610	91,400	75.2	9.5	20.9	5	3.2	9.6

2009	119,710	102,400	85.5	8.3	15.0	4	3.0	8.5
2010	149,410	120,000	80.3	9.2	17.5	4	3.4	9.7
2013	584 980	153,400	93.0	9.6	14.8	3	14.1	31.2
2014	434 990	n.a	n.a	n.a	n.a	n.a	8.0	14.5

Source: Author's analysis based on FAOSTAT, 2016

Appendix Table 5F: Share of Nigeria's import in the world (in %) in some selected agrarian products

Indicator/economy	1965	1970	1980	2000	2010	2013
Wheat						
World	0.11	0.53	1.24	1.90	2.71	2.70
Africa	2.22	7.82	9.36	9.21	10.40	10.80
Western Africa	30.12	46.95	66.90	66.52	67.49	66.83
Sugar Raw Centrifugal						
World	n.a	n.a	3.84	0.32	3.07	3.84
Africa	n.a	n.a	21.48	4.28	18.79	21.48
Western Africa	n.a	n.a	98.02	32.20	95.35	98.02
Sugar refined						
World	1.33	1.84	7.96	4.40	2.05	1.56
Africa	7.37	9.14	28.42	18.96	11.35	5.97
Western Africa	17.92	18.40	81.63	50.14	25.19	19.70
Malt						
World	1.38	1.49	4.51	0.32	1.46	1.67
Africa	11.63	11.36	29.28	4.02	13.50	13.87
Western Africa	49.82	51.16	71.93	26.23	58.65	55.02
Tomatoes, paste						
World	0.66	0.20	0.96	1.12	3.39	5.67
Africa	9.02	2.90	5.31	8.70	18.79	26.07
Western Africa	9.02	5.34	25.66	22.38	35.86	41.68
Oil, palm						
World	n.a	n.a	1.59	0.77	2.27	2.73
Africa	n.a	n.a	31.30	8.42	15.14	20.91
Western Africa	n.a	n.a	84.18	48.08	52.50	61.27
Rice– total (Rice milled eq.)						
World	0.02	0.02	3.58	3.49	5.91	5.78
Africa	0.18	0.23	18.45	15.75	20.76	15.47
Western Africa	0.33	0.39	27.90	27.07	32.05	25.83
Cereals						
World	0.11	0.27	0.83	1.13	1.72	1.73
Africa	2.08	4.72	8.49	6.76	8.85	8.74
Western Africa	13.13	22.91	45.59	43.21	46.33	40.60
Wheat+ Flour, Wheat Eq.						
World	0.10	0.48	1.20	1.73	2.44	2.45
Africa	1.38	5.68	7.60	8.05	9.75	10.11
Western Africa	16.26	36.43	62.15	57.48	60.88	59.27

Source: Author's analysis based on FAOSTAT, 2016

Appendix Table 5G: Nigeria: Trade in agricultural machinery

	Agric. Machinery (import)	Agric. tractors	Imports- Agric. tractors, total		Harvester/threshers (import)	Manure spreaders/fertiliser distri. (import)		Milking machines	Milking machinery (imp.)	Ploughs	Soil equip. (import)
Element	(1000 US$)	In Use (No)	Quantity (No)	(1000 US$)	(1000 US$)	In Use (No)	(1000 US$)	In Use (No)	(1000 US$)	In Use (No)	(1000 US$)
1970	330	2,900	1,223	6,683	341	n.a	n.a	n.a	62	n.a	1,120
1980	34,468	8,400	8,708	159,629	29,503	n.a	n.a	n.a	7,691	n.a	66,736
1990	17,000	13,900	160	3,212	8,000	n.a	n.a	n.a	1,800	n.a	20,000
2000	1,687	19,400	586	14,992	12,084	n.a	140	n.a	2,482	n.a	7,036
2005	10,671	23,000	1,092	17,843	10,584	3,000	447	25	1,039	23,000	9,687
2006	62,635	23,999	6,768	450,643	33,596	3,000	n.a	30	4,470	23,999	12,377
2007	70,808	24,800	2,461	68,120	42,534	3,000	447	35	4,425	24,990	103,143

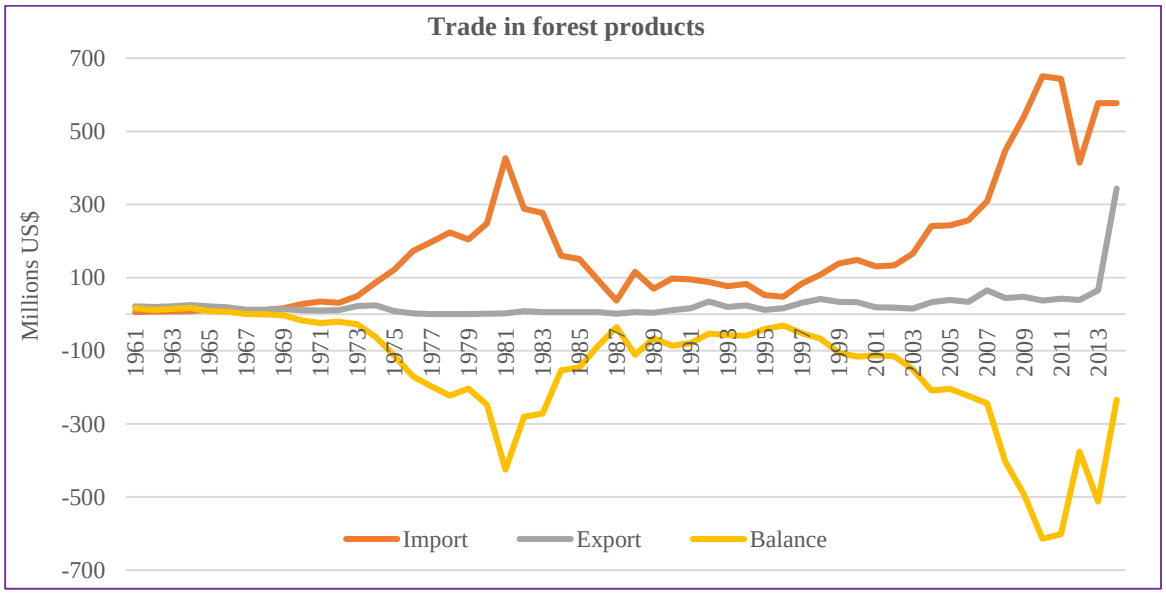
Source: FAOSTAT, 2016

Appendix Table 5H: Nigeria: Tax escalation in major products in main importing partners

	Average applied MFN tariffs							
Indicators	US 2010	EU 2010	Japan 2007	Canada 2010	US 2014	EU 2015	Japan 2014	Canada 2015
Cocoa								
Beans	0	0	0	0	0	0	0	0
Butter	0	7.7	0	0	0	7.7	0	0
paste	0.2	9.6	10	0	0.1	9.6	10	0
Powder	10	8	29.8	6	0.1	8	29.8	6
Chocolate	10	43	21.3	6	5.6	40.5	29.8	6
Sesame								
Raw Seed	0	0	0	0	0	0	0	0
Crude sesame oil	n.a	4.8	2.9	6	n.a	4.8	1.7	6
Sesame oil & its fraction	0.3	7.4	3.1	11	0.2	7.4	1.9	11
Coffee								
Husks & skins	0	0	0	0	0	0	0	0
Not roasted	0	0	0	0	0	0	0	0
Roasted	0	7.5	12	0	0	7.5	12	0
Subs. containing coffee	0.3	11.5	12	0	0.3	11.5	12	0
Cotton								
Lint	0	0	0	0	0	0	0	0
Yarn	5.9	4	5.6	6	5.9	4	5.6	0
Oranges								
Fresh	1.8	12	24	0	1.5	16.7	24	0
Juice	22.5	33.4	25.5	0	13.2	31.7	25.5	n.a
Sugar								
Raw	46.3	60.5	37.6	5.6	18.1	36.7	30.7	20.3
Refined	47.6	70	29.5	n.a	27.5	50.1	56.1	n.a
Pineapple								
Fresh	0.5	5.8	12.1	0	0.8	5.8	12.1	0
Juice	5.4	15.2	30	0	5.4	15.2	24.4	0

Source: Author's analysis based on ITC Market access map, 2016

Appendix Figure 5I: Nigeria: Trade in forest products, 1962-2014



Source: Author's analysis based on FAOATAT, 2016

Appendix Table 5J: Nigeria: Tariff profiles

Part A.1		**Tariffs and imports: Summary and duty ranges**								
Summary			Total	Ag	Non-Ag	WTO member since				1995
Simple average final bound			118.3	150.0	49.2	Binding coverage:			Total	19.1
Simple average MFN applied		2014	11.9	15.6	11.4				Non-Ag	7.0
Trade weighted average		2013	10.3	15.9	9.2	Ag: Tariff quotas (in %)				0
Imports in billion US$		2013	42.1	6.9	35.2	Ag: Special safeguards (in %)				0
Frequency distribution		Duty-free	0 <= 5	5 <= 10	10 <= 15	15 <= 25	25 <= 50	50 <= 100	> 100	NAV
		Tariff lines and import values (in %)								in %
Agricultural products										
Final bound		0	0	0	0	0	0	0	99.8	0
MFN applied	2014	0	26.8	14.2	0	52.0	7.0	0	0	0
Imports	2013	0	34.1	16.9	0	26.2	22.8	0	0	0
Non-agricultural products										
Final bound		0	0	0	0	0	5.4	1.4	0.1	0
MFN applied	2014	3.2	49.1	11.3	0	32.9	3.5	0	0	0.0
Imports	2013	4.0	45.9	31.4	0	16.5	2.2	0	0	0
Part A.2		**Tariffs and imports by product groups**								
		Final bound duties				MFN applied duties			Imports	
Product groups		AVG	Duty-free	Max	Binding	AVG	Duty-free	Max	Share	Duty-free
			in %		in %		in %		in %	in %
Animal products		150	0	150	100	18.8	0	20	0.0	0
Dairy products		150	0	150	100	14.6	0	20	1.0	0
Fruit, vegetables, plants		150	0	150	100	17.5	0	35	1.0	0
Coffee, tea		150	0	150	100	15.6	0	20	0.2	0
Cereals & preparations		150	0	150	100	14.4	0	35	6.3	0
Oilseeds, fats & oils		150	0	150	98.6	17.4	0	35	0.9	0
Sugars and confectionery		150	0	150	100	14.1	0	35	2.3	0
Beverages & tobacco		150	0	150	100	20.9	0	35	4.1	0
Cotton		150	0	150	100	5.0	0	5	0.0	0
Other agricultural products		150	0	150	100	9.0	0	20	0.4	0
Fish & fish products		100	0	150	3.2	14.4	0	20	2.9	0
Wood, paper, etc.		80	0	80	1.6	13.2	4.7	35	2.4	12.4

Textiles	60	0	60	1.4	14.3	0.5	35	3.1	0.9
Part B	**Exports to major trading partners and duties faced**								
Major markets	Bilateral imports		Diversification		MFN AVG of		Pref.	Duty-free imports	
		in million	95% trade in no. of		traded TL		margin	TL	Value
		US$	HS 2-digit	HS 6-digit	Simple	Weighted	Weighted	in %	in %
Agricultural products									
1. EU	2013	537	4	7	11.2	1.0	0.4	33.2	87.7
2.Turkey	2013	90	1	1	18.4	22.7	0.1	25.0	0.4
3.Japan	2013	70	1	1	0.0	0.0	0.0	100.0	100.0
4.VietNam	2013	61	3	3	8.4	3.7	0.0	22.2	5.6
5. India	2013	52	9	13	26.3	21.7	1.3	23.8	29.3

Source: WTO, ITC and UNCTAD, 2016. Note: TL = tariff line, Non-AG = Non-agricultural products, SSG= Special safeguards

Appendix Table 6A: ADF test for unit root (constant only)

Variables	ADF at level	ADF at first difference
lnQCP	-2.8546	-6.3450***
lnFC	-2.1476	-5.3003***
lnACL	-1.5957	-4.3555***
lnAL	-0.1755	-5.1973***
lnPPI	-2.8389	-4.6864***

Appendix Table 6B: Diagnostic test

Test	**Test- statistic**	**P. value**
Ramsey's RESET	3.2833	0.0596
White's test for heteroskedasticity	14.0556	0.4456
Breusch-Pagan test for heteroskedasticity	1.7622	0.7794
Test for normality of residual	1.3390	0.5120
Breusch-Godfrey test for first-order autocorrelation	0.6306	0.4364
Ljung-Box Q' test for first-order autocorrelation	0.8210	0.336
Test for ARCH of order 1	0.8441	0.3582

Appendix Table 6C: VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	42.6134	NA	3.00e-08*	-3.1344	-2.8890*	-3.0693*
1	54.8257	18.3185	9.18e-08	-2.0688	-0.5962	-1.6781
2	92.6794	41.0082*	4.31e-08	-3.1399*	-0.4402	-2.4237

Note: * indicates lag order selected by the criterion**.** LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion**,** SC: Schwarz information criterion**,** and HQ: Hannan-Quinn information criterion

Appendix Table 6D: ADF and PP unit root tests

Variable	**Levels**	**ADF test Statistics**	**PP test Statistics**
RGDPG	Level	-3.6842	-3.6896
QAX	Level	-0.6252	-1.1780
	First difference	-7.9779	-7.9926
ADO	Level	-1.3931	-1.4028
	First difference	-7.9779	-5.6977
REER	Level	-2.6088	-1.8880
	First difference	-3.8417	-3.8290

Note: McKinnon (1991) critical values are: -2.619 for 10%, -2.940 for 5% and -3.661 for 1% level

Appendix Table 6E: Diagnostic test

Test	*Test- statistic*	*P. value*
Ramsey's RESET	1.1158	0.3430
White's test for heteroskedasticity	12.5188	0.1856
Breusch-Pagan test for heteroskedasticity	1.3175	0.7250
Test for normality of residual	2.3567	0.3078
Breusch-Godfrey test for first-order autocorrelation	2.0867	0.0984
Ljung-Box Q' test for first-order autocorrelation	10.7803	0.0954
Test for ARCH of order 1	1.0880	0.2970

Appendix Table 6F: VAR lag order selection criteria: Endogenous variables

Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	-450.6006	NA	1.49e+09	32.47147	32.66178*	32.52965
1	-436.0570	23.89303	1.68e+09	32.57550	33.52707	32.86641
2	-420.1834	21.54276	1.83e+09	32.58453	34.29736	33.10816
3	-406.8294	14.30780	2.74e+09	32.77353	35.24763	33.52989
4	-363.9420	33.69726*	6.42e+08*	30.85300*	34.08835	31.84208*

Note: * indicates lag order selected by the criterion**.** LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion**,** SC: Schwarz information criterion**,** and HQ: Hannan-Quinn information criterion

Appendix Table 6G: Estimates of variance decomposition analysis (economic growth)

Variance Decomposition of D(RGDPG):

Period	S.E.	D(RGDPG)	D(AX)	D(ADO)	D(REER)
1	3.464711	100.0000	0.000000	0.000000	0.000000
2	4.233464	91.19058	8.286669	0.488066	0.034684
3	4.309712	87.99534	10.86150	0.591559	0.551599
4	6.280574	45.21125	17.86044	15.33061	21.59770
5	7.180807	36.09913	18.07264	16.08761	29.74062
6	7.348493	38.48100	17.53943	15.54273	28.43685
7	7.615761	38.36927	16.83894	17.78939	27.00240
8	7.681102	38.61269	16.58016	17.90731	26.89984
9	7.948299	37.51149	19.50500	16.97444	26.00907
10	8.084822	38.08449	20.11659	16.50104	25.29788

Variance Decomposition of D(AX):

Period	S.E.	D(RGDPG)	D(AX)	D(ADO)	D(REER)
1	11.82768	20.13277	79.86723	0.000000	0.000000
2	15.28591	25.54930	64.67943	7.424684	2.346588
3	16.67532	22.52800	61.19142	11.64819	4.632396
4	17.04739	23.27015	58.77316	13.47645	4.480245
5	17.28928	22.78390	58.31064	13.93177	4.973690
6	17.41006	22.54460	57.96894	14.00423	5.482229
7	17.55206	22.18906	57.34473	14.15991	6.306302
8	17.66882	22.18527	56.86815	14.32244	6.624140
9	17.75013	22.26334	56.87816	14.20177	6.656727
10	17.90132	21.88917	56.60059	14.28849	7.221753

Variance Decomposition of D(ADO):

Period	S.E.	D(RGDPG)	D(AX)	D(ADO)	D(REER)
1	6.480103	17.47249	0.210526	82.31698	0.000000
2	6.928427	17.19057	2.204593	78.05839	2.546442
3	7.061734	17.88358	2.635062	75.18982	4.291529
4	7.805187	14.83811	5.885270	63.53172	15.74490
5	8.309613	13.09299	6.097706	66.89265	13.91666
6	8.561322	14.07098	8.781212	63.54271	13.60510
7	8.760976	14.29887	10.74110	61.52406	13.43597
8	8.987642	14.22310	14.09943	58.73618	12.94129
9	9.312018	15.24721	14.60240	57.97081	12.17958
10	9.342940	15.33041	14.77631	57.59350	12.29978

Variance Decomposition of D(REER):

Period	S.E.	D(RGDPG)	D(AX)	D(ADO)	D(REER)
1	58.66479	8.439736	22.66975	8.619066	60.27144
2	66.40843	7.176645	34.68950	7.064996	51.06886
3	71.87829	15.52181	33.35472	7.448655	43.67482
4	74.01294	15.97925	31.47900	9.830710	42.71103
5	76.42417	16.41112	33.71043	9.815349	40.06310
6	80.62856	15.92007	37.80097	10.28499	35.99398
7	82.08486	15.37405	39.64308	10.16539	34.81749
8	84.26959	16.34629	39.57730	10.84699	33.22943
9	86.48636	15.59856	39.15687	13.22357	32.02099
10	86.69332	15.79004	39.02398	13.23259	31.95339

Cholesky Ordering: D(RGDPG) D(AX) D(ADO) D(REER)

Appendix Table 6H: ADF and PP unit root tests

Variable	*Levels*	*ADF test Statistics*	*PP test Statistics*
AP	Level	- 0.928558	0.971240
	First difference	-3.849659	-9.433251
LAX	Level	-0.490928	-1.075830
	First difference	-7.886812	-7.886812
LAM	Level	-1.792710	-1.792710
	First difference	-5.892078	-5.978616
LADO	Level	-0.174583	-0.057245
	First difference	-6.197811	-6.213358
LWP	Level	-1.003386	-1.085770
	First difference	-6.447240	-6.414151
FDI	Level	-6.932037	-6.921605
ODAA	Level	-5.509268	-6.921605

Note: McKinnon (1991) critical values are: -2.619 for 10%, -2.960 for 5% and -3.661 for 1% level

Appendix Table 6I: VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
1	-470.228	NA	8233.318	28.84598	31.00132	29.59825
2	-424.838	55.47596	13145.62	29.04656	33.35725	30.55111
3	-368.912	46.60477	21482.69	28.66180	35.12784	30.91862
4	-164.264	90.95488*	45.45516*	20.01466*	28.63604*	23.02376*

Note: * indicates lag order selected by the criterion**.** LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion**,** SC: Schwarz information criterion**,** and HQ: Hannan-Quinn information criterion

Appendix Table 6J: ADF and PP unit root tests

Variable	*Levels*	*ADF test Statistics*	*PP test Statistics*
LQCP	Level	-1.108590	-1.847257
	First difference	-9.902266	-10.88054
LQCX	Level	-1.218845	-4.695051
	First difference	-6.467914	-17.17496
LCWP	Level	-2.601160	-2.722836
	First difference	-5.948366	-4.837318
LOPEN	Level	-1.656502	-1.656502
	First difference	-8.099449	-8.112291
LACH	Level	0.002422	0.002422
	First difference	-6.992115	-6.992115
LCYIELD	Level	-1.459474	-3.156812
	First difference	-8.974311	-16.59412
LDCC	Level	-1.459474	-1.367182
	First difference	-8.974311	-8.974571

Note: McKinnon (1991) critical values are: -2.619 for 10%, -2.960 for 5% and -3.661 for 1% level

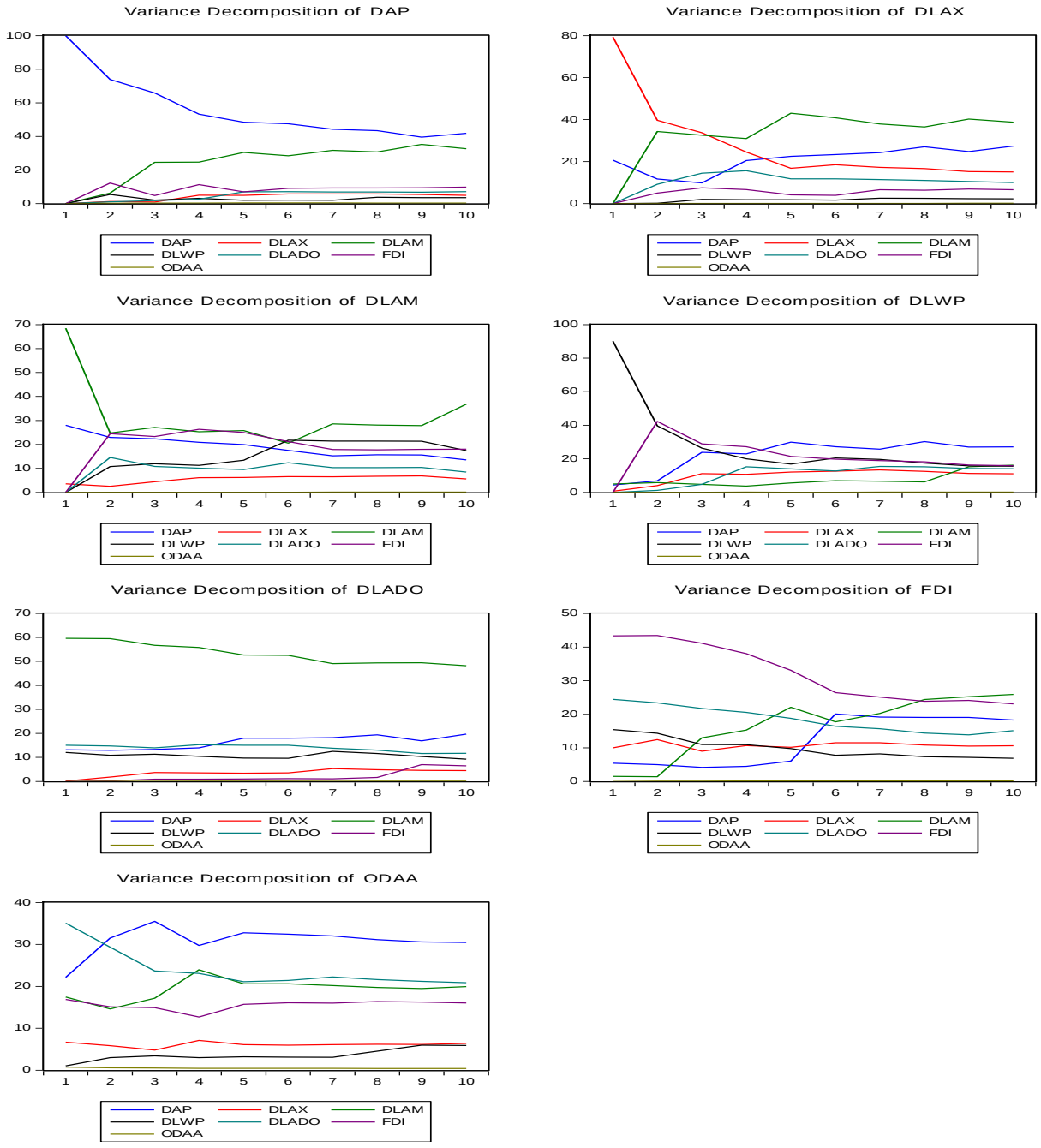
Appendix Table 6K: Diagnostic test

Test	***Test- statistic***	***P. value***
Ramsey's RESET (squares and cubes)	0.8596	0.4310
Heteroskedasticity Test: White	36.7255	0.1003
LM test for autocorrelation up to order 1	1.54577	0.2212
Heteroskedasticity Test: Breusch-Pagan-Godfrey	5.65213	0.4633
Test for normality of residual	3.0232	0.2206
Non-linearity test (squares)	9.87435	0.1300
Heteroskedasticity Test: ARCH	0.1546	0.6941

Appendix Table 6L: VAR lag order selection criteria

Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	390.5464	NA	6.33e-17	-17.43393	-17.15008*	-17.32866*
1	438.6003	78.63373	6.80e-17	-17.39092	-15.12014	-16.54881
2	467.4793	38.06773	2.01e-16	-16.47633	-12.21861	-14.89736
3	529.6056	62.12629	1.81e-16	-17.07298	-10.82832	-14.75716
4	643.6782	77.77680*	3.00e-17*	-20.03083*	-11.79923	-16.97815

Appendix Figure 6A: Estimates of variance decomposition analysis, agricultural production



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