IMPACT OF TRADE LIBERALIZATION ON NIGERIA'S AGRICULTURAL OUTPUT: 1986-2010

A THESIS SUBMITTED TO SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY ZARIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF M.Sc IN ECONOMICS IN THE DEPARTMENT OF ECONOMICS.

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DECLARATION

I hereby declare that this thesis is a product of my own research. It has not been accepted anywhere for the purpose of awarding a higher degrees. All references have been acknowledged by way of references at the end of the thesis.

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CERTIFICATION

This thesis titled " Impact of Trade Liberalization on Nigeria Agricultural Output'' 1986-2010 by Ugagu, Angela meets the regulations governing the award of Degree of Masters of Science of Ahmadu Bello University, Zaria and is approved for its contributions to scientific knowledge and literary presentation.

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DEDICATION

This thesis is dedicated to God Almighty for his mercy and protection throughout my course of study.

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No one is a repository of knowledge I have incurred many intellectual debts while writing this thesis from various individuals to make the whole gamut of this research feasible

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ABSTARCT

This thesis examines the impact of trade liberalization on Nigeria agricultural output from 1986 - 2009. The choice of this period is because it is within this period that Nigeria began the systematic process of deregulation of its economy and adopted more liberal trade and exchange rate regimes. Given the objectives of the study and it uniqueness ordinary least square (OLS) regression was found to be more appropriate. Justification for using OLS as method is because of it un-biased properties, efficiency and completeness. The study found that trade liberalization on an aggregate exact a significant positive impact on agricultural output in Nigeria. It impact on an average is about 14 percent in increase on agriculture output. In the disaggregated model the study found significant impact differences. For example, the positive effects of trade liberalization on agricultural sub-sector such as crop production, livestock and forestry are slightly significant., but the impact of trade liberalization on fish production output is highly significant. It exact about 28 percent on the output of fish production.

We therefore concludethat trade liberalization has fairly significant positive impact on agricultural output in Nigeria. The study proffered the following recommendations. First,

Making deliberate efforts by government to increase small scale enterprises in Nigeria. This is because most enterprises in Nigeria are likely to agro-allied that may require raw materials from agriculture and also increase in per-capita productivity of the people through improved technological innovation.

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CHAPTER ONE

1.1 General Introduction

Agricultural sector was the main stay of the Nigeria economy before independence and immediately after it. The Evidence reveals that agriculture provided the needed food for the population as well as serving as major foreign exchange earnings for the country. It provides the means of livelihood for over 70 percent of the population, andmajor sources of raw-materials for the agro-allied industries (Alabi*et a*l, 2004). The agricultural sector in periods immediately after independence (1965-1969) performed creditably, the roles highlighted above, to such an extent that the regional development witnessed during the period were linked directly to agricultural development (Olaloku*et al* 2010, Abolagba,2010).

Agricultural revolution is a fundamental pre-condition for economic development (Eicher and Witt, 1998, Oluwasanmi 1996, Jones and woolf, 1969). The proponent thus suggests that agricultural sector has the potential to be the industrial and economic springboard from which a country's development can take off. Indeed, more often than not, agricultural activities are usually concentrated in the less-developed rural areas where there is a critical need for rural transformation, re-distribution, poverty alleviation and the socio-economic development (Steward, 2000).

The agricultural sector is strategically positioned to have a high multiplier effects on any nation's quest for socio-economic and industrial development. The Nigerian economy, like that of Brazil during the first decade after independence, could reasonably be described as an agricultural economy because agriculture served as the engine of growth of the overall economy (Ogen, 2003 Imahe and Alabi 2005). Considering the occupational distribution and contribution to the GDP, agriculture was the leading sector. During this period, Nigeria was the world second largest producer of Cocoa, largest exporter of palm kernel and largest producer and exporter ofpalm oil.

Nigeria was also a leading exporter of other major commodities such as cotton, groundnut, rubber, hides and skin (Alkali, 1997).

The agricultural sector contributed over 60% of the GDP in the 1960s and despites the reliance of Nigerian peasant farmers on traditional tools and indigenous farming methods, these farmers produced 70% of Nigerian exports and 95% of its food needs (Lawal, 1997). However, the agricultural sector suffered neglect during the hey-days of the oil boom in the 1970s. Ever since then, Nigeria has been witnessing extreme poverty and the insufficiency of basic food items. Historically the root of the crisis in the Nigerian economy lies in the neglect of agriculture and the increased dependency on a mono-cultural economy based on oil. The agricultural sector now accounts for less than 15% of Nigerian GDP (Mesike, 2007).

The dismal performance of the agricultural sector in terms of its contribution to Nigeria's yearly total revenue in the last three decades prompted the government to initiate several agricultural schemes and programs to enhance agricultural productivity in Nigeria, which include the following: the River Basin Development Authorities, the National Accelerated Food Production Project, the Agricultural Development Project, Operation Feed the Nation, the Green Revolution, the National Directorate of Food, Roads and Rural Infrastructure, the Agricultural Credit Guarantee Scheme Fund, the National Special Programme for Food Security, Root and Tuber Expansion Project, and the National Fadama I and II program, and the Land Use Decree (1978), another program is National Rice Production.

According to Ukpong (1973), Ajibefun and Daramola (2003), Amaza (2000), Awotide (2004), Ogundele (2003), Okoruwa (2006), Okike (2000), Oredipe (1998), Rahji (2003), and Udoh (2000) the successes of all the various agricultural programs have been minimal, hence the country has not been able to achieve a sustained rate of growth in the agricultural sector. The world oil glut of the 1980s affected Nigeria revenue base adversely. The foreign exchange base was punctured, hence

Nigeria government are unable to service its foreign financial obligation on schedule. In 1986, Nigeria domestic as well as international credit worthiness became questionable. This led to the introduction of Structural Adjustment Program (SAP) in July 1986. Generally, some of the policies of structural adjustment programs in Nigeria were market liberalization policies that were designed to give the free interplay of market forces a greater role in the economy.

The introduction of SAP has been described as the boldest step ever adopted by government to revamp the Nigeria economy. SAP also represents the concrete policy enacted by the government aimed at thoroughly moving the Nation towards a liberalized economy (Ahmed, 1987). Among the numerous policies, trade liberalization is one of the policies embraced by SAP. Economists in particular have debated the advantages and disadvantages of trade liberalization for centuries.

Classical economists such as David Ricardo (1886) and Adam Smith (1776) were strongly in favour of free trade, believing that it leads to the economic prosperity of civilization. This made the debate over trade liberalization the most important question in economics for many years to come. Modern economists who favour trade liberalization cited evidence that it creates jobs, fosters economic growth and improves the standard of living because of increased consumer choice in market place. (Taljaard, 2007, Das, 2002; Dollar, 1992; Goldar and Kumari, 2003)

The policy of trade liberalization was first observed and documented by an economist called Adam Smith (1776). He considered this policy to be the best for economic development. It is always safe to leave the economy to be propelled by and "invisible hands" i.e. the forces of competition motivated by individual self-interest. He builds his case for trade liberalization on the role which division of labour plays in economic progress. Expansion of international trade is an important method of widening the market and promoting the division of labour. He advocatedthat restriction on international trade limit the size of the market. Trade restriction diminish the scope for international specialization and there by lower domestic productivity.

This view has severally been supported by other classists like David Ricardo (1886) and J.S Mill, who emphasized the role of "market mechanism" and competition" in functioning and growth of the economy. However liberalization of trade was proposed by the IMF as part of the Structural Adjustment Program (SAP) in order to help in adjusting increasing Balance Of Payments (BOP) deficit of the developing country.

Some scholars held different opinion on Trade Liberalization. Rugumamu (1999) argued that trade liberalization will cripple economic activities of Nigerian economy if the door of the fragile economies are open to tough competition in the International market. The under developed and unequal exchange school also argued that because of the skewed nature of the international system, free trade tends to promote the exploitation of poor nations and the development of the centre at the expense of the periphery, possible because of unequal exchange and economic dependence (Inang, 1998,Teweldemedhin M, 2010.) However, it is arguable that trade liberalization benefit accrue only to the rich and developed countries to the detriment of poor underdeveloped ones (Keller, 2004, Wang, 2007). This study therefore examines the impact of trade liberalization on Nigeria agricultural output.

1.2 PROBLEM STATEMENT

Trade liberalization is proposed by the World Bank to correct the ongoing balance of payment deficit of the third world countries and as well promote trade. It was expected that a liberalized trade regime would stimulate agricultural output expansion and enhance a better performance of the economy. But the sector suffers severe problems due to persistent constraints inhibiting the performance of the sector such as poor growth in the sector, the productivity is low, un-competitiveness in the sector, inefficiency and the poverty situation deepens. The deepening economic problems precipitated the adoption of structural Adjustment program (SAP) July 1986,

of which trade liberalization was a major element. It was expected that introduction of SAP will restore agricultural sector to it production efficiency but evidence have shown that the inability of the sector can be attributed to structural rigidities in the sector since inception of SAP.

According to static and dynamic traditional trade theory (Ricardian, 1886, Adam Smith 1776), which argued that free trade promotes efficiency and the more countries embrace open trade, the higher the growth rate and their national income increases and promoters of free trade (2009) International policy network ,Atlas Economic Research Foundation, comprising over 76 civil society organization from 48 countries launched an open letter calling on all government to eliminate trade barriers they observed that protectionism creates poverty while free trade encourage growth but statistical and empirical evidence reveals that there is a constant fluctuation in the AGDP growth rate (Akanji 2002, Meyer 2000,IMF , World Bank 2004).

The revealing statistic and empirical evidence (see for example Oyejide 2001, Adubi 1999, okunmadewa 1999, Awotide 2004, and Okoruwa 2006) suggest that despite the demonstrated and the potential gain from free trade by classical, the Nigeria Agricultural term of trade with other countries have not been too favourable, the domestic supply is very poor, the balance of payment is negative, export performance is very poor and negatively affected the level of food production, employment opportunities for the growing population and the provision of raw material for industrial sector and general food insecurity in Nigeria economy (see Akinyosoye 2000 , Lawal 2000).

Also, given Nigeria's openness and increased integration into the global economy, the Nigerian economy still presents a typical picture of a less developed country in spite of the adoption of the policy of trade liberalization (Okorie 1998, Odusola 2004 and Yusuf 2000).

However, given the condition of the economy since 1986, and the episodes of trade liberalization and agricultural sector in Nigeria it is not clear if:

1. Progressively that trade liberalization has generated growth in agricultural sector.
2. What is the trend and pattern of agricultural sector in Nigeria?
3. What is the impact of trade liberalization on agricultural output in Nigeria

Against this background this study attempts to examine the impacts of trade liberalization on Nigeria agricultural Sector.

1.3 OBJECTIVE OF THE STUDY

The major objective of this study is to analyze the impact of trade liberalization on the Nigeria agricultural sector. The specific objectives are

1. To examine the trend and pattern of agricultural sector in Nigeria.
2. To examine the impact of trade liberalization on agricultural output in Nigeria.
3. To recommend policy options to the government base on the findings.

1.4 HYPOTHESIS

This research work will test the hypotheses that trade liberalization (i.e. openness of the economy) has no impact on agricultural output in Nigeria.

i. Null hypothesis (H_0): $b_i = 0$ (Trade liberalization has no significant impact on the agricultural output in Nigeria)

ii. Alternative hypothesis (H_1): $b_i \neq 0$ (i.e. trade liberalization has significant impact on agricultural output in Nigeria).

1.5 JUSTIFICATION OF THE STUDY

It is obvious that agricultural sector is the back bone of every economy. The agricultural sector plays a vital role toward the development of the Nigerian economy since 70% of people depended heavily on agriculture for their food consumption, life sustenance and employment. (Alabi*et al* 2004). As a result of these, agricultural sector does not only make goods produce available to people but also facilitate or foster growth in other sectors of the economy. Despite these immense contributions of agriculture towards economic growth, the sector has not been given adequate attention. The Nigerian agricultural sector is on the verge of collapse that will result in so many implications and consequences; this has called for greater reposition of agricultural sector.

The focal point of this research work is to add value to the existing studies, the study provides empirical evidence on the impact of trade liberalization on the indicators of the key sectors of the economy with a particular interest on agriculture as well as the overall growth rate of the Nigeria economy. The result of this study would give the policy makers the insight and clear picture on how well the country has been in relation to globalization, determine the extent of further pursuit of trade liberalization and appropriately rework measures and policies to better make trade liberalization promote economic growth in Nigeria and to enhances of Nigeria gaining desired advantages of globalization. It will also help the government to see the effectiveness of trade liberalization policy on the economic growth of the nation over the years with respect to agricultural sector.

1.6 SCOPE AND THE LIMITATIONS OF THE STUDY

The sample of the study covers the period 1986-2009. This is because; it is within this period that Nigeria began the systematic process of deregulation of its economy and adopted more liberal trade and exchange rate regimes. The main limitation of the study was the difficulty in obtaining accurate data. The data used for the study are the publications of central bank of Nigeria (CBN) and which in most cases usually run conflict with data obtained from other source.

1.7 ORGANIZATION OF THE STUDY.

This study is organized in five chapters. Chapter one consist of the general introduction of the study. Chapter two contains related theories and literatures .Chapter three covers the research methodology which contains the model specifications. The focus of Chapter four is presentation and analysis of the results based on econometric techniques that were adopted in the study. The last Chapter contains the summary, conclusion and recommendations base on the findings.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter is divided into three parts. The first part deals with conceptual definition, the second aspect deals with theoretical literature and reviews of related theories and the third section tackled the empirical literature review

2.1 CONCEPTUAL DEFINITION

Liberalization, Openness and International Trade

The concept of trade liberalization, openness and international trade has generated different kinds of argument; definition and conceptual conflict in economics (see Krueger 2006, Soyibo 2005, Ricardo, J.S mill 1886, Adam smith 1776,). Theoretically, consensus in the literature suggest that trade liberalization is a policy and strategy that involves the relaxation of restriction on tradable goods and services between countries (Kume et al 2003, Topolova 2007).

This can be extend in a broader sense to mean a reduction in all the trade barriers such as tariff and increasing openness of import restriction in each economy in order to create and foster competence in the global economy, efficiency in resource allocation and specialization in production through increase in competition of world market force, and tolerance of diverse culture, law and institutional frame work of participating countries. Others, see trade liberalization as a removal of government incentive and restriction from trade between nations (see Ogunlana 2002, World Bank, 2000 etc.).

According to Ogunlana, (2002) trade liberalization is a removal of all forms of restriction that could hamper free trade especially in export and adoption of several export incentive and a more realistic exchange rate policy. In developing this general concept, Ajakaiye et al (2005) added that the beginning of trade liberalization episode coincided with the reduction or elimination of quota restriction on trade. Fisher (2004) sees trade liberalization policies as the core of the adjustment package which is expected to enlarge the elasticity's of export supply, import demand, and import substituting supply with respect to devaluation as well as more directly shift resources into tradable goods sectors, that many factors have been advanced for the incorporation of liberalization in the adjustment package.

The economic case of liberalization is premised on the proposition that govern certain conditions such as perfect competition and free flow of information, free market equilibrium entails the maximization of efficiency in the pare to optimum sense. Helleiner (1993) advocated that openness in economic relations with the rest of the whole world in trade promotes welfare and trade. Owolabi (1998) defined trade liberalization as the concept that has set in as proves (evidence) whereby producers and investors increasingly behave as if the world economy consisted of a single market. Owolabi further stressed that Nations that grows most rapidly today are those that have successfully increases their participation in global economic activities.

In 1980s, for example, when majority of the whole world introduced stringent economic conditions, nations like United States and United Kingdom were at a better advantage because they were enjoying boom in capital investment and increased industrial output. Today, they are more exposed to new ideas, technologies and products as well as characterized by improve resource allocation and efficient production. Their products compete favourably in international market and their consumer benefits from wider options of product and enjoy increased welfare. Thus, from the

above example Owolabi (1998), Goldar (2003) and Kumara (2003) concluded that trade is an important issue in the economic relation of countries because of its fundamental contribution to economic growth and development.

However, despite the praises and appraisal given to trade liberalization as being important in economic growth, Andrew Berg and Anne Krueger (2002) brought to light certain negative impacts of trade liberalization. They stated "one of the most common criticisms of trade liberalization and globalization in developed countries is that it drives down wages and jobs to low wage economies". Earlier researchers like Langley (1968), Onitiri (1971) and Ojo (1977) concluded that export had been an instrument of economic welfare in Nigeria. However Oyejide (1986) describes exports to be one of the significant variables that have influence on output for the period that cover (1960-1986).

Yet Berg and Kruger (2002) argued that trade liberalization improves terms of trade of developing economies. Parikh et *al* (2004) pointed out that previous research in this field tend to give conflicting results, some studies shows that countries which went for trade liberalization programmes have improved their export performance. They further stressed and provide a strong support for the efficiency gains to be derived from trade liberalization, concluding that periods of greater liberality have coincided with period of faster growth in the total factor productivity (TFP).

2.2 THEORTICAL LITERATURE REVIEW

2.2.1 NEO LIBERALISM AND THE IMPACT ON TRADE

Neo-liberalism is a market driven approach and social policy based on neo classical theories of economics that stresses the efficiency of private enterprises, liberalize trade and relatively open markets and therefore seeks to maximize the role of the private sector in determining the political

and economic priorities of the country. (Williamson 2002, Robinson 2004, Babb 2001, Blyth 2002, Bockman and Eyal 2002).Neoliberal analysis claims that development will be driven by the successful establishment of preferred specializations which arise via market forces in the context of open international trade. Neoliberal analysis pivots on key implicit assumptions behind the Ricardian 'law". First is the assumption of trade balance ((Sutherland *et al* 2005, Kelsey 2004, Standish 2001, and Oxfam 2005).

The general characteristic of neo liberalism is the desire to intensify and expand the market, by increasing the number, frequency, and formalization of transaction (trade). History writes that the "essential components of neo-liberalism are trade liberalization, privatization, deregulation, and austerity (Robert 2001, Drusilla Brown *et al* 2001).

Trade liberalization entails the removal of any trade barriers, such as tariffs and quotas. Privatization requires the sale of public enterprises and assets to private owners through the removal of government restrictions and interventions on capital.Deregulation allows market forces to act as a self-regulating mechanism. Austerity requires the drastic reduction or elimination of expenditures for social programs and services. "Neo liberal claims that liberalization, deregulation, and privatization produce unrivaled benefits (Rupert 2000, Williamson 1993, Garth 2002, Sheppard 2005, Teichman 2004).

2.2.1.1. TRADITIONAL THEORY OF TRADE LIBERALIZATION

In the mid-1920s, liberalization was actually recommended to developed countries in order totake certain actions to reform some of their industries that would enable greater market access for developing countries producers. The major event that brought liberalization policy reforms to many developing countries was the oil crisis and adverse consequences such as stagflation. Liberalization of trade has its roots in the classical trade theory. It goes back to Adam Smith (1776) in his book

titled “wealth of the nation” where he advocated for laissez-faire principle in trade. In his theory, he stipulated that government should only be interested in the institutions and leave the invisible hand of the free market mechanism to determine the rest i.e. free trade should be a guiding principle for all countries.

Henry George (1886) referred free trade to mean free production. He pointed out features of free trade such as trade of goods without taxes including tariff or other trade barriers, example Quotas. Therefore Trade Liberalization has its roots in classical trade theory, which argues that free trade promotes economic efficiency, and facilitates economic growth through its dynamic effects.

The classical and neoclassical theories explain and argued that because of factor endowments and differences in technology, developing countries should specialize in the production and export of primary commodities to advanced nations in exchange for manufactured or finished products, Salvatore (1995). Such an exchange will support capacity utilization and as well as exploitation of production factors thereby increasing national product which equally supports or leads to welfare maximization Balassal (1987). Trade Liberalization involving nations became possible under the auspices of GATT (General Agreement on Trade and Tariff). GATT was initiated by the United States following a series of bilateral agreement with a number of countries to lower trade barriers between 1934 and 1946.

The reason for GATT established was to reverse protectionist and discriminative trade policies that was characterized in the Second World War. On this background Trade Liberalization became an official policy in the structural adjustment program (SAP) of the International Financial Institutions (IFI) which involve International Monetary Fund (IMF), the World Bank, which was designed to

help countries achieve complex objectives of full employment, expanding trade among others and stable exchange rate.

Therefore, many scholars have tried to provide theoretical explanation for trade openness or trade liberalization, which is traceable to the principle of Laissez Faire (Erik, 2004, Edwards (1998, Kraay et al, 2004) Adam smith (1776) was a great proponent of this principle and he advocated a policy of free trade so that the "invisible hand" of competition could act as an economic regulator, other scholars have thus provided some theories which explain the concept of trade liberalization. This section will however look into the views of various schools of trade thoughts and their perceptions towards international trade in general and trade liberalization in particular (Harrison 1996, Welch *et al*, 2003, Mattoo, 2006).

2.2.1.2 DAVID RICARDO THEORY OF COMPERATIVE ADVANTAGE (1886).

Ricardo's model demonstrated the benefit of trading via specialization this basic model led to the formation of one of the fundamental law of economics, the law of comparative advantage which states that each member in a group of trading partner should specialize in production of goods in which they possess lowest opportunity cost relative to other trading partner (Ben *et al* 1998, Baker, 2002). This argument suggest that so long as country have comparative advantage in the production of commodities trade between these countries would always be possible and of great benefit to all of them. Ricardo demonstrated that for the two nations without input factor mobility, specialization and trade could result in increased total output and lower costs than if each nation tried to produce in isolation (Edwards 1992, Prasad *et al 2006,* Rutherford *et al*. (2006).

Since Ricardo's exposition, the distinction between absolute and comparative advantage has been taught as one of the field's most brilliant insights. Nations will export not only what they have as

absolute advantage in producing, but also what they have comparative edge in producing (Taylor, 1991 Winters *et al* 2004, Ferriera*et a*l 2007).

2.2.1.3 ADAM SMITH THEORY OF ABSOLUTE ADVANTAGE (1776).

Adam Smith (1776) believed that it might be possible for all countries to produce all the commodities they need, despite of their resource constraints, he further stressed that the cost of production of goods for which a country seem to be deficient in its resource endowment would be very high as a result of this, it is therefore advantageous for a country to specialized in the production of commodities that it can produce most efficiently at lower cost of production. Therefore a country expects to specialize in the production of commodities in which it has absolute advantage in the cost of production (Cirera, 2001, Rehim 2002).

Assumptions and conditions of Smith's theory

i. Factors of production cannot move between countries. This assumption excludes the possibility of migration between countries, as well as presence of multinational companies. It also implies that the PPF of each country will not change after the trade.

ii. No barriers to trade in goods.

iii. Exports must be equal to imports. This assumption means that we exclude trade imbalances, trade deficits or surpluses.

iv. Labor is the only relevant factor of production.

v. Production exhibits constant returns to scale.

2.2.1.4 FACTOR ENDOWMENTS THEORY

David Ricardo Theory argued that the basis of international trade is the comparative advantage in production cost. His model does not provide an answer to the question why countries have

comparative advantage and comparative disadvantage in the production of other goods. Ricardo model does not established why there are differences in production possibility curve of two countries. The Heckcher-Ohlin model of trade states that comparative advantage in the cost of production is explained exclusively by the differences in the factor endowment of the Nations. Factor endowment such as availability of resources include gift of nature and as well as man-made means of production.

He argued that the factor endowments of countries are different; there are nations that have abundance of capital while others have abundance of labour. Therefore, a labour intensive nation have comparative cost advantage in the production of goods that are labour intensive, while capital abundant countries have comparative cost advantage in the production of goods that require capital-intensive technology. One implication of this frame work is that trade increases the real return to the factor that is relatively abundant in each country and lowers the real return to the other factors. Below is a graph to illustrate Heckcher-Ohlin model.

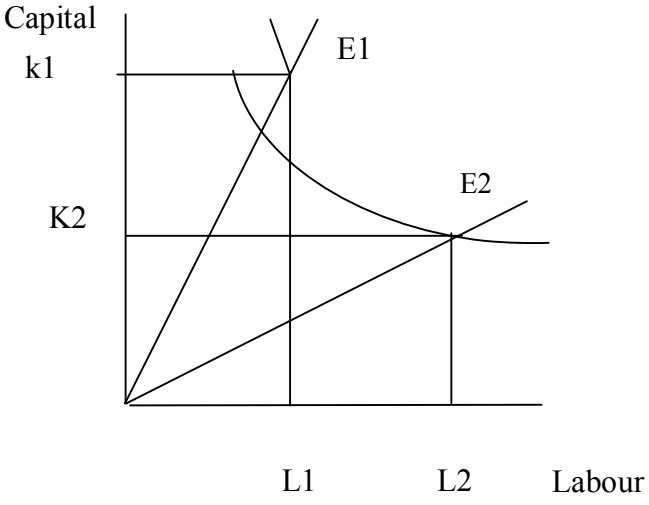


Figure 2.2.1.4.2: Isoquant curve showing the differences in the factor endowment of countries

From the above diagram, country with abundant capital should produce at E1 which is capital intensive especially developed countries. While countries with abundant of labour should produce at E2 which is labour intensive especially less-developed countries.

2.2.1.5. INNOVATION THEORY

This theory suggests that economic growth can be achieved by increasing input in productive process. Specialization justified more resources to that particular production process thus leading to more innovation. The new trade theory argues that international trade can actually increase the rate of innovation and technological change. They summarized the argument with the following criteria.

- International trade (trade liberalization) leads to greater competition.
- Competition induces greater innovation
- Innovation (i.e. technological change) drives economic growth.

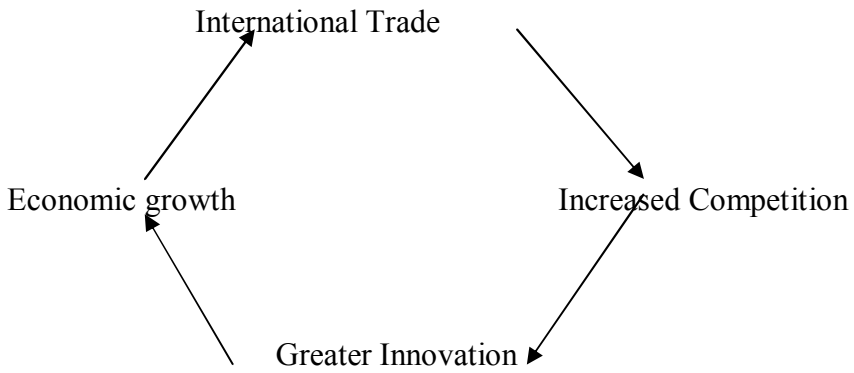


Figure 2.2.1.5.2: Transmission mechanism of general innovation theory

New Theory- general innovation theory concept which stipulated that increased in innovation as a catalyst for economic growth. Applying these theories to Nigerian economy, Nigeria should use

production process that is labour intensive. However Nigeria should produce and export goods they have more efficiency in producing and export such goods for more revenue which brings about increase in innovation in Nigeria economy.

2.2.1.6 THE VENT –FOR SURPLUS THEORY OF INTERNATIONAL TRADE

The theory of vent-for-surplus was developed by Adam Smith (1937) to extending domestic market. It was expanded in the context of developing nations. This theory assumed positive correlation between international trade and economic growth. According to this theory, the opening of world markets to remote agrarian societies creates opportunities not to relocate fully employed resources as in the traditional models but rather to make use of formerly underemployed land and labour resources to produce greater output for export to foreign markets. Also the idle resources would be adequately utilized with liberalization of trade and it will increase the production of primary products for export thereby moving the domestic economy towards its production possibility frontier. The vent for surplus argument can be represented in a graphical form. See vent for Surplus Theory of International Trade below.

A shift in production from point V to point B with trade enlarging final domestic consumption from V to C. production was occurring at point V, within the confines of the production possibility frontier, and OX stand for primary product and OY represent manufactures which is being produced and consumed. However, the opening up of the nation to foreign markets provides the economic impetus to utilize these idle resources and expand primary-product exportable production from OX to Ox^1 at point B on the production frontier.

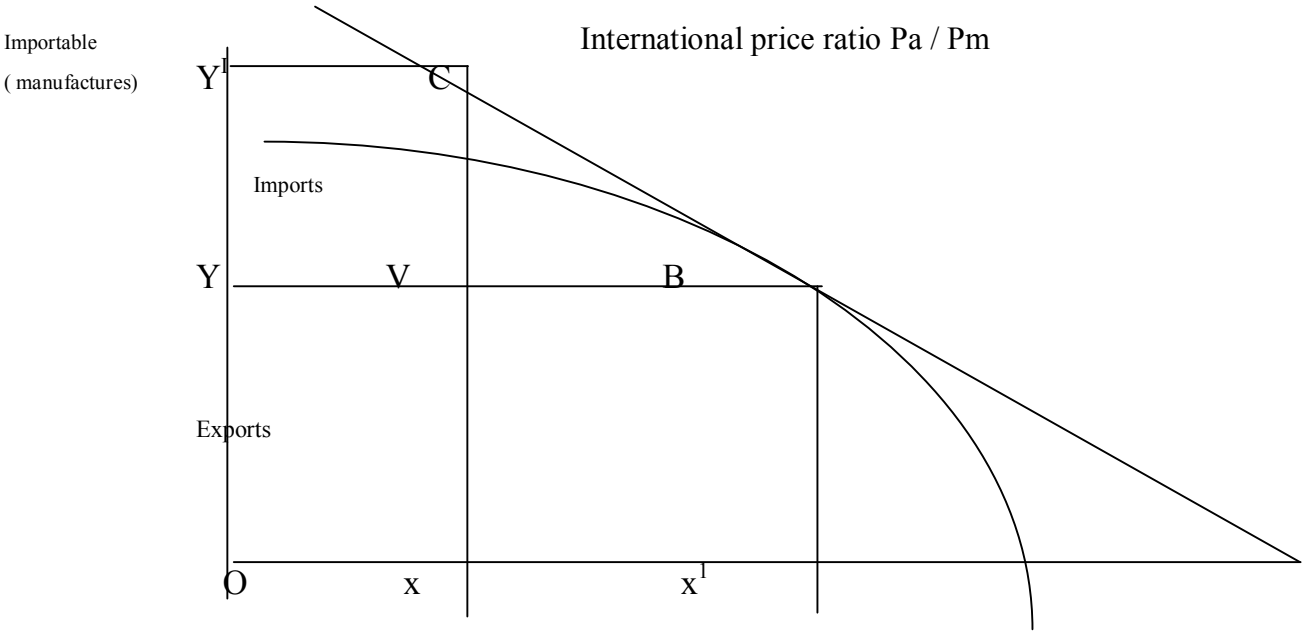


Figure 2.2.1.6.2: Diagram of vent for surplus argument

The below diagrams intend to use trade as a tool for development in order to foster growth, reduce poverty and increases output (WTO, 2006). The causality chain above constitutes the transmission channels for trade expansion which leads to economic growth, poverty alleviation and development in developing countries.

2.2.1.7. CAUSAULITY CHAIN IN AID FOR TRADE.

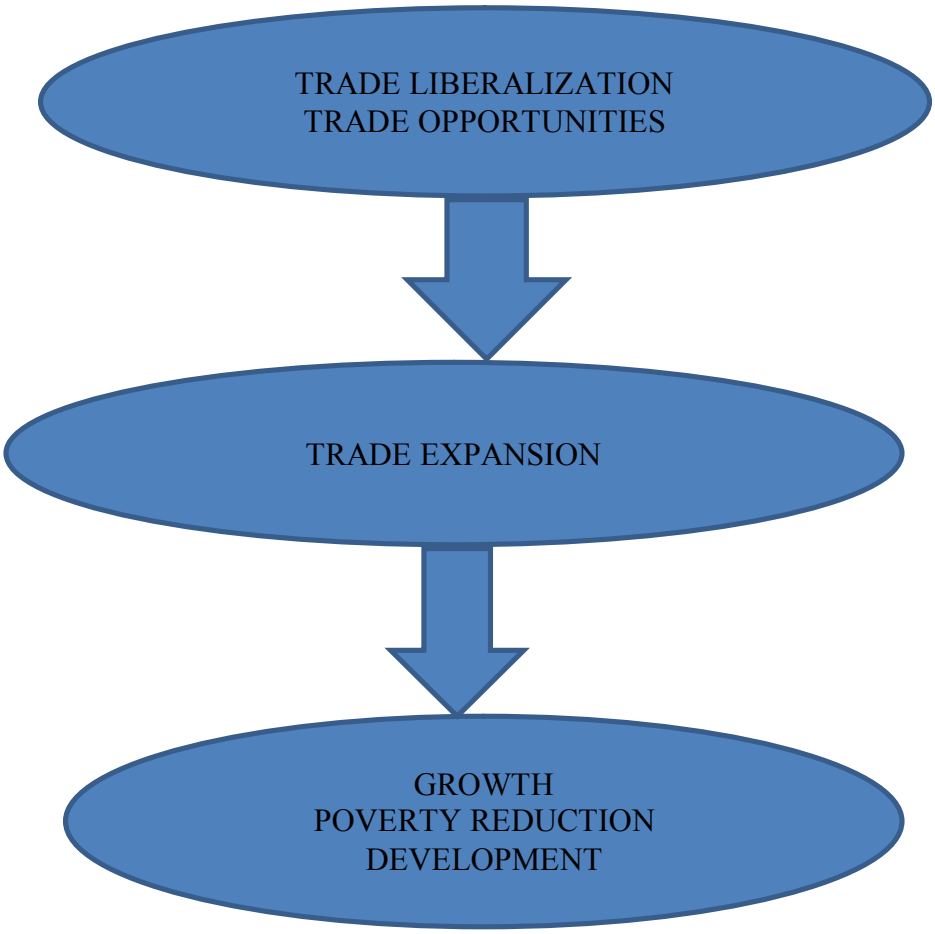


Figure 2.2.1.7.2**:** Transmission channel for trade expansion

2.3. EFFECT OF FREE TRADE ON GROWTH

The gains developing countries can obtain from free trade are elaborated in the traditional trade theory. It stands as a vent for surplus because it leads to a full utilization of domestic resources and expansion of international market. Free trade creates an avenue for transmission of new technology, new ideas and managerial skill that is, it brings about innovation and inventions and efficiency by domestic producers in order to meet foreign competition. However, these factors stimulate productive domestic investment and these go a long way in maximizing welfare of the people and create productivity expansion as well as increase in export revenues Balassa (1978). The new investment also generates forward linkages that are diverted into other sectors Adams and Behram (1982).

The income generated from exporting primary commodities is also used to finance import especially capital goods. Obviously most of the assumptions which the proponents of trade liberalization based their argument were unrealistic. All things being equal, it is obvious that developing countries like Nigeria are bound to reap the benefit emanated from trade if they implement liberal trade policies.

2.3.1. Measuring Welfare Effect of Trade

Welfare effect is an approach or method develop by Anderson and Neary (1996) which provide useful information about the term of trade effects for a wide number of countries. Welfare effects comprises of term of trade effects and distortion effects and how they can be estimated. However, this model measures welfare changes as a result of changes in the overall world import and export prices.

Anderson and Martin (1998) used this approach to analyses and provide further evidence about the importance of distortion effects in the overall welfare change which work in opposition to the term of trade effects, and in a number of cases, sufficiently large to offset the terms of trade loss. Given a vector of goods traded in world market external prices P^* and sold domestically at prices p, the balance of Trade function for a representative agent economy (country) is defined as follows

$$B(P,P^*,U) = e(P,U) - (P_P^*)^1 Zp(P,U) \quad \text{.....(2.1)}$$

Where B indicates the welfare measures with utility fixed exogenously at initial level U; e is the trade expenditure function and ZP is the trade vector, a subscript denotes differentiation in other words, ZP is a vector of net imports/exports and the subscript P denotes the first derivative with respect to domestic prices. The term $(P-P^*)$ is interpreted as the tariff equivalent of the prevailing trade distortion in the economy. The trade vector has positive element for import and negative element for exports. Given P^* and a fixed policy $(p-p^*)$, the equilibrium level of utility, u, is determined by the balance of trade requirement specified by setting B equal to Zero. The welfare effect of changes in external prices of traded goods $P^*$is derived by estimating the change in the foreign exchange required to maintain the same level of utility U with the new price P^*. Assuming no change in the policy vector $(P-P^*)$, the change is estimated as follows

$$B^1P^* = Z^1{}_{p-}(p-p^*)^1 Zp \quad \text{.....(2.2)}$$

The ith element of the row vector $B^1{}_{p^*}$ is specified as

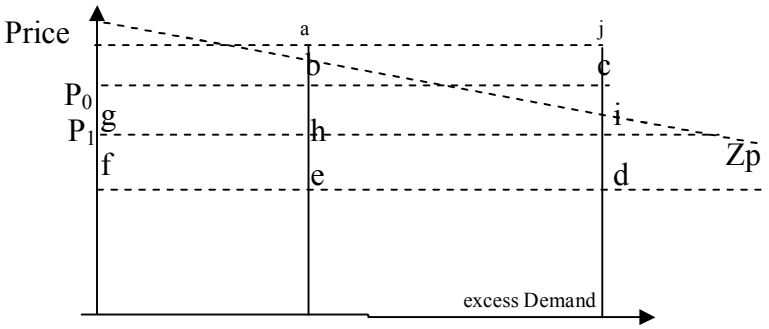
$$Bi = Zi - (p-p^*)^1 - Zi/-p \quad \text{.....(2.3)}$$

Based on the above equation (3) an approximation to the welfare change of a set of price changes as a proportion of GDP (y) is derived by Anderson using Taylor series expansion as follows:

$$\sum I\ B_i P_i = \sum\ \underline{Z_i p_i Z_i}\ P_1 + \sum (P_j - P_j^*)\ \ \underline{Z_i P_i \eth Z_i}\ P_i \quad \text{.....(2.4)}$$

$$\sum I\ \underline{ZiPi\ P_i} + \sum \check{T}_j \underline{P_j Z_j}\ (\sum_{ij})\ P_i \underline{Z_i \eth P_i} \quad \text{.....(2.5)}$$

Where T_j denotes the ad-valorem tax on good j, $(P_j - p^*)\ P_j$ and $\sum_{ij}$ denotes the elasticity of input demands with respect to price i. The equation says that the percentage change in real income due to the external price changes is equal to the term of trade effects. To further aid understanding, a graphical measure of the welfare effect is given as



Source: Martin (1998)

Figure 2.3.1.1**:** Welfare Effect of an increase in world prices

The welfare effects are identified to include the areas abc, bcde, and gidf. The area abc represents the welfare triangle associated with replacement of imported commodities with cheaper domestically produced goods and correspond to the quadratic term in equation (2). The area ajih (=bcde) which represent the loss of tarrif revenues resulting from reduced import volume the term $(p-p^*)$ in equation (2) As pointed out by Anderson and Martin, the component is important for distorted economies. The area gidf is the income loss resulting from the term of trade decline brought about by the rise in world prices, defined by ZP $(P_1{*}-P_0^*)$ the areas ajih and gidf both reflect welfare losses while the area abc reflects on efficiency gain .

2.3.2 LOSSERS AND GAINERS OF FREE TRADE (Economic Models)

Free trade creates winners and losers, but theory and empirical evidence show that the size of the winnings from free trade is larger than the losses**.** Two simple ways to understand the potential benefits of free trade are through David Ricardo's theory of comparative advantage and by analyzing the effect of a tariff or import quota. The lost and gain from free trade can be shown graphically.

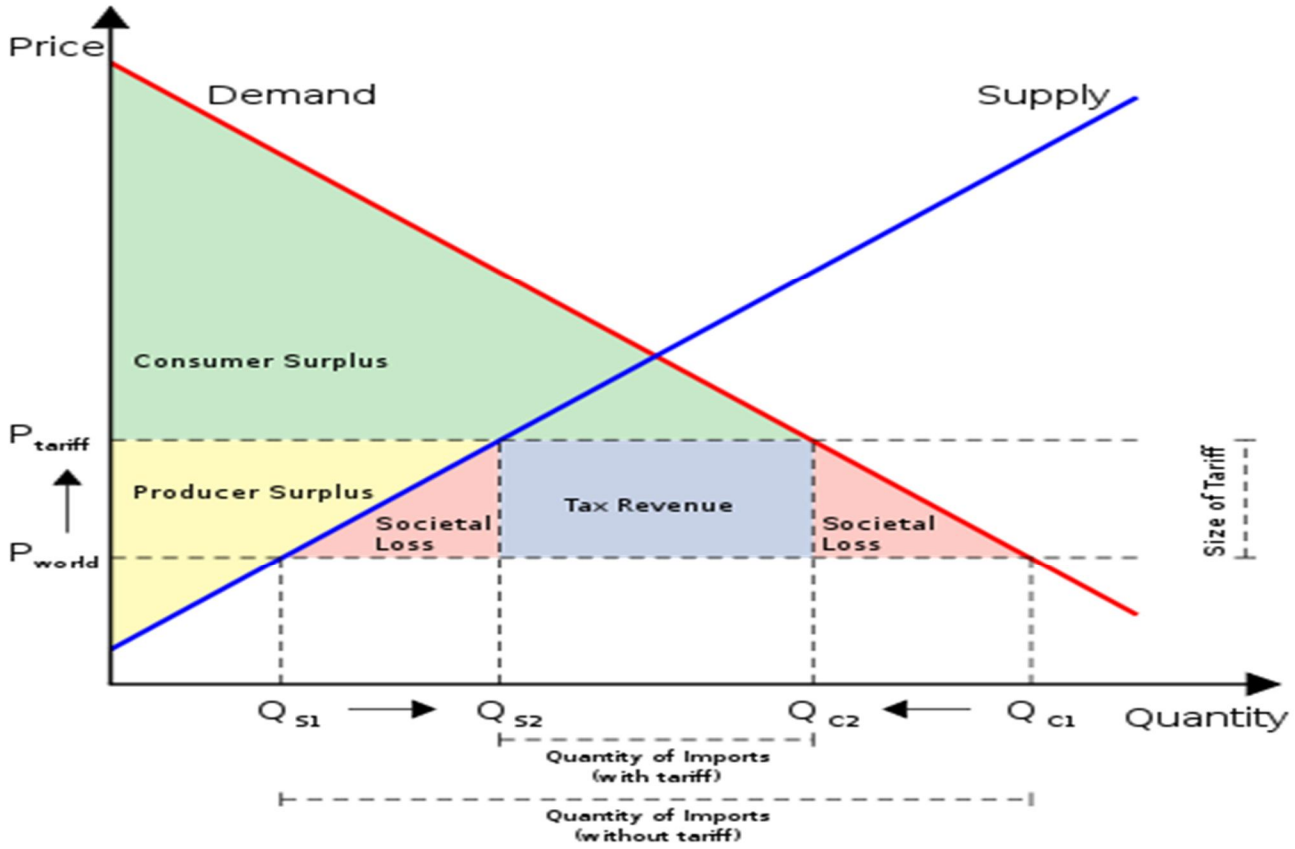


Figure 2.3.2.1: Losers and gainers of free trade curve

The pink regions are the net loss to society caused by the existence of the tariff. A simple economic analysis using the law of supply and demand and the economic effects of a tax can be used to show the theoretical benefits of free trade.

The chart at the right analyzes the effect of the imposition of an import tariff on some imaginary good. Prior to the tariff, the price of the good in the world market (and hence in the domestic market) is P^{world}. The tariff increases the domestic price to P^{tariff}. The higher price causes domestic production to increase from Q^{S1} to Q^{S2} and causes domestic consumption to decline from Q^{C1} to Q^{C2}. This has three main effects on societal welfare. Consumers are made worse off because the consumer surplus (green region) becomes smaller. Producers are better off because the producer surplus (yellow region) is made larger. The government also has additional tax revenue (blue region). However, the loss to consumers is greater than the gains by producers and the government. The magnitude of this societal loss is shown by the two pink triangles. Removing the tariff and having free trade would be a net gain for society.

From the above illustration, tariff leaves producers worse off and consumers better off, but the net loss to producers is larger than the benefit to consumers Sometimes consumers are better off and producers worse off, and sometimes consumers are worse off and producers are better off, but the imposition of trade restrictions causes a net loss to society because the losses from trade restrictions are larger than the gains from trade restrictions. Free trade creates winners and losers, but theory and empirical evidence show that the size of the winnings from free trade is larger than the losses.

2.3.3. The Static and Dynamic Gains from Trade

Economic historians have always believed that free trade acts as an engine of growth. In addition, it contributes to the optimal allocation of resources within countries, and the transmission of growth from one part of the world to another (Muhammad *et al* 2006, Uniamikogbo1996). The static gains from trade stem from the basic fact that countries are differently endowed with

resources (natural and acquired) and because of this the opportunity cost of producing products varies from country to country. Opportunity cost is measured by the marginal rate of transformation between one good and another, as given by the slope of the production possibility curve; that is, by how much one good has to be sacrificed in order to produce another. If, for example, a country has to sacrifice the production of 1000 tons of wheat to produce 100 tons of steel, the opportunity cost ratio between wheat and steel is 10:1.

The law of comparative advantages that countries will benefit if they specialize in the production of those goods for which the opportunity cost is low and exchange those goods for other goods, the opportunity cost of which is higher. In other words, the static gains from trade are measured to be obtained by exporting to obtain imports more cheaply in terms of resources given up, compared to producing the goods oneself. Or, to put it another way, the static gains from trade are measured by the excess cost of import substitution; by what is saved by not producing the imported good domestically. The resource gains can then be used in a variety of ways including increased domestic consumption of both goods (Anthony 2000).

2.3.4. MULTILATERAL AND BILATERAL AGENTS BEHIND TRADE LIBERALIZATION

Many multilateral and bilateral agents have made trade liberalization so wide spread and popular, notable among them are the International Monetary Fund (IMF) and the World Trade Organization (WTO) who basically oil the wheels of liberalization of trade. The IMF has helped feather the nest of liberalization by selling the Structural adjustment programme (SAP) to the third world countries. The intervention of the IMF according to Budha (1984) and Harrison (2002) were aimed at imposing from outside, fundamental changes in the economic character of the third world countries. Liberalization was incorporated into the Structural Adjustments Programme (SAP) and

was made one of the major conditionality for loan facility to LDCs, as it was case of Nigeria in 1986. As notable was the global multilateral trade negotiations which started in 1947 and ended with the adoption of the final act of the Uruguay Round arrangement establishing the world trade organization (WTO) which was charged with the responsibility of compliance with the administration of the agreements signed by its members. Another major organization that has helped in spreading the concept of trade liberalization is the General Agreement on Trade and Tariffs (GATT). The GATT was initiated in 1947, principally to begin the process that would eventually lead to full liberalization of world trade. The basic principle of GATT essentially focused on gradual trade liberalization, non – discrimination, reciprocity, transparency of regulations, fair trade and the use of quantitative import restrictions under very serious and difficult economic situations.

2.3.5 ECONOMIC CONDITIONS PRIOR TO LIBERALIZATION IN NIGERIA ECONOMY

Prior to liberalization in Nigeria, administrative fiat rather than market forces determined product and input prices in the economy. The commodity boards were responsible for determining producer's prices for some agricultural commodities. Those prices were invariably, lower than world market price (Philips, 1987). There were internal and external imbalances, resulting from price distortions, thus constraining output levels and general economic developments. Farmers who received lower prices were discouraged from producing more. Distortions were in the form of fixed exchange rate system, which led to currency over-valuation and the necessitated foreign exchange rationing, restrictive trade and pricing policies, which offer considerable protection to domestic industries, fostering import dependence and imposition of heavy implicit taxation on farmers.

Nigeria adopted the more market based policy measure in July, 1986. The policy instrument measure aimed at institutional reform in entailing the abortion of commodity boards and the adjustment of the exchange rate. Thus, a market determined exchange rate was adopted from September, 1986 and the interest rate from July, 1987. The desired structural change and growth of the Nigerian economy was anchored on the development of agricultural sector. Despite their developmental planning, Nigeria economy still exhibit high rate of unemployment, low productivity, and low per capita and mono-cultural dependence on oil. However, these constitute distortions in the economy which has made natural economic liberalization imperative while liberalization took the form of structural adjustment program (SAP) in order to tackle the problem of economic imbalances in the economy.

2.3.6 RATIONALE FOR TRADE LIBERALIZATION IN NIGERIA.

The reasons for trade liberalization in Nigeria are mainly to diversity of production possibilities among countries with different efficiency in form of production cost and difference in resources. It is obvious that when borders are open to international trade, the national income of every trading country will rise and people will be better off. However, the benefits derived from international trade based on Richardian model stands as a rationale and motivation for Nigeria involvement in open trade, since their arguments are channel towards opening up of boarder whichstimulate and enhance growth in all sectors of the economy. The second reason for the adoption of trade liberalization policy in Nigeria could be based on the fact that the country is also a producer of certain goods and services which it can sale abroad at high prices in order to gain and accumulate foreign reserves. These goods include cocoa, coffee, rubber and oil.

2.3.7 OVERVIEW OF NIGERIANS MAJOR TRADE POLICIES.

This section provide a general insight of the link between the major trade policies implemented at various times in Nigeria and the overall performances of Nigeria agricultural sector (i.e. the major trade policies, main features of the policy and the instruments used). Prior to 1986, Nigeria as under developed nation pursued and struggle for economic development via inward looking import substitution industrialization (ISI) strategy however using various trade policy instruments, under the import substitution strategy, infant manufacturing industries were protected using high tariff, import quotas, and other trade restrictions like import licensing.

During this period, trade policy was adjusted in response to the exigencies of the balance of payment. Historically high protective trade regime was introduced and maintained in order to support the trade policy. However complex problem and defects characterized the adoption of Import substitution (IS) policy which has called for outward-looking Export promotion (EP) strategy, trade liberalization as a rich and veritable development channel and this was a major component of SAP introduced in 1986 as an economic reform program. Research showed that since 1986 Nigeria's trade policy has been liberal at different degrees showing a shift from inward-looking (IS) strategy.

The trade policy reforms that have been adopted by government in pursuit of these objectives comprise of the following (Ekpo, 1995):

(i) Partial abolition of import license scheme.

(ii) Granting of special tax incentives and tax holidays to enable local industries build up enough funds for expansion purposes and to encourage firms invest in economically disadvantaged areas.

(iii) Reduction of corporate income tax rate and introduction of tax-free dividends, for foreign persons and to encourage local research and development (R&D).

(iv) The Export Incentives Decree was promulgated in which various incentives to enhance export promotion were stipulated.

(v) The Export Credit Guarantee and Insurance Scheme was established to assist Nigerian Companies compete effectively in the international market.

(vi) Government granted up to 140% tax relief to firms in respect of research and development (R&D) expenses in the development of raw materials.

(vii) The Export Stimulation Loan (ESL) Scheme was put in place to provide foreign exchange producers that require imported inputs essential to the production of export products.

(viii) Firms were allowed to open and maintain domiciliary accounts to keep their export earnings in foreign currencies.

(ix) Several institutional support were put in place by the government through the establishment of Industrial Development Coordinating Committee, (IDCC), Industrial Data Bank, Raw Materials Research and Development Council, (RMRDC), Project Development Agency (PRODA), Federal Institute of Industrial Research (FIIRO), Export Processing Zone (EPZ), Nigerian Investment Promotion Council.

(x) Simplification of industrial licensing.

(xi) The exchange market was deregulated to enhance access of firms to foreign exchange.

(xii) Devaluation and full convertibility of the Naira on trade account were embarked upon to bring it nearer to acceptable parity and make Nigerian products enhance greater profitability of Nigerian manufactured export.

Assessing the Agricultural response to trade liberalization policy initiatives the trends in agricultural production performance, the structure and performance of the Nigerian Agricultural

sub sector will be analyzed over the six trade policy regimes in Nigeria. Following Okuneye*et al* (2001) the trade policy regimes were aptly classified thus:

i. 1970 – 73: This was the post-civil war reconstruction period;

ii. 1974 – 79: A 6-year period of oil boom, and covering the Second National Development Plan period. The oil sector became increasingly the major foreign exchange earner for Nigeria, the role of agriculture having diminished considerably. Active restriction policies began during this period as agriculture started to nose-dive in foreign exchange relevance;

iii. 1980 – 85: This was the period of the Third National Development Plan and Further intensification of trade restriction policies in Nigeria;

iv. 1986 – 93: This was a seven-year period of structural adjustment program (SAP) in Nigeria. This was the period when trade liberalization policies came into force in Nigeria;

v. 1994 – 99: A five-year period, post-SAP. A period of consolidation on the Gains of SAP and alleviation of the losses from SAP;

vi. 2002 – 2009: This was the period of democratic governance. A period of implementation of "Nigeria Economic Policy".Reformpackageswere introduced to make the economy market – friendly and outward looking.

2.3.8 TRADE POLICY INSTRUMENTS UNDER IMPORT SUBSTITUTION STRATEGY (ISS)

Tariff Policy

Nigeria's tariff policy under the import substitution (IS) policy regime served as an instrument that served two objectives of controlling balance of payment problems, providing and creating an avenue for the growth of domestic industry. Tariff has been used to stimulate the expansion of agricultural production and promote rapid industrial growth in the context of import substitution. However the reduction in the level of price inflation was also a target of tariff policy. To achieved

tariff objectives require an upward or downward adjustment of tariff rate, in 1983 and 1984 the imposition of customs and exercise tariff were purposely to protect local industries, to reduce the level of unemployment and generate more revenue from the non-oil sector.

Export Promotion Strategy (EP) Outward-Looking

This policy emerge as a result of complex problems and defect of "IS" process this has caused under-developed countries like Nigeria to drift or shift to outwards Looking policies of export promotion (EP) and the essence of EP is to diversify the economy, generate employment, increase foreign exchange earnings and accelerate economic growth, Olurushola (1996). An "EP" strategy is a trade strategy which encourages Agricultural production for export. Export-oriented strategies are based on concept of economic efficiency and competitiveness in the world market while the policies mostly associated with an export-orientation are basically structural adjustment process which has been implemented in Nigeria.

However since 1986, there have been a shift in trade policy from inward towards a more outward orientation, the essence of this shift was as a result of prolonged stagnation of the previous policy that is characterize by high level of protection, with perpetrated massive inefficiency. A trade liberalization scheme was embarked as a major component of the structural adjustment program in 1986 which Nigeria, through a gradual process embrace trade liberalization measures which including the abolition of import and export licensing systems.

Exchange Rate Policy

Exchange rate policy objective during the period were pursued within the institutional framework of the second Tier foreign exchange market (STFM) which was established in September 1986. The objectives of the policy under SAP would lead to an improvement in the balance of payments position as well as eliminate the prevailing distortions in the economy and stimulate non-oil exports.

2.3.9. HISTORICAL BACKGROUND OF NIGERIAN AGRICULTURE

The purpose here is to provide a background to our understanding of the present structure and performance of the agricultural sector in the economic development of Nigeria. Before the colonial period, our rural Nigeria had fairly complex organization. These organizations were predominantly peasant communities producing a variety of commodities mostly to satisfy their needs. Trading among the various commodities was broadly based on batter system. The advent or coming of the colonialist introduced a money economy among the peasant farmers to produce more cash crops for sale and for export to Western Europe.

Agricultural sector in Nigerian context embraced all the sub-sectors of the primary industry. They include farming, live-stocks rearing, and forestry and others. Productivity is still very low due to the inadequate application of modern implement like tractors and chemicals. Shifting cultivation which has perhaps disappeared in most parts of the world is still widely practiced by peasant farmers. This is due to land fragmentation or land tenure system problem. Fishing is carried on along the coast by many fishermen who use canoes and throw-nets. Therefore this structure of agriculture makes it laborious, tedious and poorly remunerative. While fragmentation of farm land make it difficult for the farmers to have any strong case to support their application or their request for bank loans

2.4 NATURE AND IMPORTANCE OF AGRICULTURE

Agriculture involves the cultivation of land, raising and rearing of animals for the purpose of production of food for man, feed for animals and raw materials for agro-based industries. It equally involves livestock, forestry,fishing, processing and marketing of agricultural products. The role of agriculture in transforming both the social and economic framework of an economy cannot be over-emphasizing. it is a source of food and raw material essential for expansion of employment opportunity, for reduction of poverty and improvement of income distribution for speeding up

industrialization and easing the pressure of balance of payment in effect, it has been the main source of gainful employment, from which the nation can be feed it's teeming population, providing the nation's industries with local raw materials and as well reliable source of government revenue.

Agriculture has been the mainstay of the economy, statistical evidence reveals that it accounted for more than 70 percent of Nigeria revenue before independence in 1960 (NBS). This was due to the fact that virtually all part of the vast 231 million acres of land in Nigeria can be used to produce almost all tropical crops on account of the varies climatic condition.

The position occupied by the agricultural sector in Nigeria economy before the advent of the petroleum industry when compared to the present day attracts, a lot of interest. Many writers, observers, analyses both in the field of economics and other related social sciences have attempt volumes of write-up on this issue. A review of vast and growing Literature on the major trends in agricultural growth in Nigeria is imperative at this point. The Nigerian economy just like the African countries was mainly agrarian, there is also a general opinion that the coming of the petroleum industry has drastically led to a neglect of the agricultural sector.

2.4.1. AN OVERVIEW OF AGRICULTURAL SECTOR PERFORMANCE IN NIGERIA

Agricultural goods are considered export commodities before the advent of oil in Nigeria. Apart from being the major export earning in Nigeria before oil discovery, their importance can be measured in terms of their contribution to total export and total non-oil exports earning. Table 2.3.1.1.below showed an overview of the performance of agriculture given the selected indicators of performance. From the table, the average annual growth of agricultural output in Nigeria fell continuously during and after the pre-SAP period. Despite this fall in the output, agriculture still contributes up to 41% of the aggregate Real Gross Domestic Product (RGDP) in Nigeria between 2001-2007 (NBS) Figure 2.3.1.1.Shows that agricultural output growth has not been consistent in

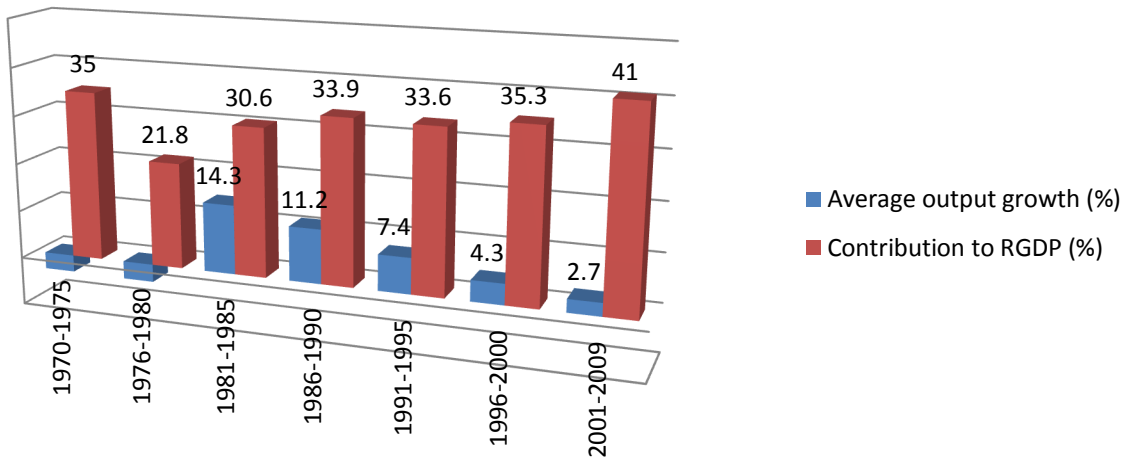
Nigeria, reaching its pick in 1984 and fall drastically only to pick up again during the SAP and becomes inconsistent since then.

The sector does not show any significant increase in its contribution to RGDP during the SAP period. This indicates that the sectors have not witnessed any significant improvement which is a clear indication that the structure of agriculture under trade liberalization was still tied as in the pre trade liberalization. However, contribution of agricultural sector to both total export and non-oil export earning has been decreasing continuously after the SAP period with its contribution to total export earning not significant before and after SAP. Agricultural sector as the major employer of labour in Nigeria has been showing a declining trend in its contribution to total employment generation in Nigeria (Daramola*et al*, 2007).

Table 2.4.1.1: Agricultural Output Performance in Nigeria (1970 - 2009)							
Period	*Average output growth (%)*	*Contribution to RGDP (%)*	*Average exports (N-Mill)*	*Average exports growth (%)*	*Contribution to Total Export (%) (CTE)*	*Contribution to Non-oil Export (%) (CNE)*	*Contribution of Agricultural Sector to Total Employment (%) (CAEE)*
1970-1975	*-3.5*	*35*	*239.5*	*0.3*	*13.5*	*64.9*	*57.8*
1976-1980	*-3.7*	*21.8*	*374.1*	*10.4*	*4.5*	*66.6*	*68*
1981-1985	*14.3*	*30.6*	*226.7*	*1.1*	*2.5*	*78.3*	*64.1*
1986-1990	*11.2*	*33.9*	*1667.3*	*78.5*	*4.2*	*69.9*	*60.8*
1991-1995	*7.4*	*33.6*	*5849.7*	*72.5*	*1.7*	*64.1*	*59.7*
1996-2000	*4.3*	*35.3*	*14978*	*-8.1*	*1.1*	*45.4*	*55.2*
2001-2009	*2.7*	*41*	*36443.5*	*49.1*	*0.6*	*25.6*	*53*

Computed from C.B. N Annual report and statistical bulletin (2009), various issues; National Bureau of Statistics, (NBS)

Fig: 2.4.1.1: Agricultural Output Performance in Nigeria (1970 - 2009)



2.5 TRADE LIBERALISATION AND MACROECONOMICS PERFORMANCE AN EMPIRICAL REVIEW

Usman, (2008) adopted simulation analysis to assess the impact of trade liberalization on economic growth in Nigeria for the period 1986-2006 and the result of his study did not support the proposition that trade liberalization has positive effect on Nigerian economy rather the impact weighed more strongly on negative macroeconomic and policy effect.

Aliyu, R. (2008) studied the link between openness and growth in the context of sub Saharan African he estimated cross country growth regression with OLS using a sample of 36 sub Saharan African countries during two sub periods (1990-2000) and (1995-2000) from the cross country study he found out that open countries in the region tend to grow faster than those that are closed. Evidence reveals that while in some countries such as (Botswana, Ghana and Cameroon) open regimes are associated with faster growth rates, while others such as (South Africa and Zambia) open regimes had slower growth rates of output. Therefore he concludes that the relationship between openness and growth is a contingent one.

Peter, (2003) carried out a research for five African countries (Malawi, Mozambique, Zambia, Tanzania and Zimbabwe) using a 12 sector standardized social Account matrices (SAM) and found out that trade liberalization policies such as devaluation of currency, tariff cut with increased cost-efficiency of the domestic economies has some implications and the results of Peter Wobst (2003) imply that reduction in trade margins would improve considerably the export performances.

Dollar and Kraay (2004) supported the claim that trade openness leads to more rapid growth arguing that countries that have had the largest ratios of trade to GDP have also had the largestincreases in GDP among developing countries, throughout the 1980s and 1990s. The authors used decade-over-decade changes in the volume of trade to reflect changes in trade policy, in order

to eliminate the effect of any correlation of trade- to-GDP ratios with indicators like country size or proximity to markets.

Study by Harrison (1996) showed that there is a positive linkage between economic growth and trade openness. In his study, the strength of the linkage depends on cross-section or Panel data used. Harrison used several measures of trade openness, including indices based on Exchange rate and commercial policies, tariff and nontariff barriers, share of trade in GDP. Correlations with cross Sectional data were generally not significant, while panel data showed a significant positive relationship between openness and growth.

Rodriguez (2007) reviewed the studies of openness and growth performed by Warner (2003), Dollar and Kraay (2002), and Wacziarg and Welch (2003), to find that the relationship between openness and growth remains inconclusive. Using a policy measure of trade openness, Mattoo, Rathindran and Subramanian (2006) found a similar result.

Lucas (1988) examines the link between trade liberalization and overall growth using an aggregate production function framework. Following Lucas (1988) Lucas specify an industrial production function for Nigeria in the following way

Y=F (K, L, H, TL) ___ _ _ _ _ __ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ (1)

Y is the industrial growth. K, L, H, TL represent capital and labour input, human capital and index of trade liberalization. He uses two measures of trade liberalization real export (RXT) and degree of openness (DOP) his study were based on the availability of time series data. The implication of his study shows that real exports would rise and results shows that acountry with high degree of openness tends to enjoy greater overall growth in the sectors like agriculture and industries.

Adebiyi (2002), studies the relation between trade liberalization policy and overall growth in Nigeria using quarterly time series data spanning 1970 and 2002. In his empirical investigation of the aggregate growth function of index of industrial production in Nigeria, co-integration and error modeling approaches were applied in order to determine the short-term dynamics around the equilibrium relationship, the study estimates an error correction model (ECM) and index of industrial production lagged one period , the degree of openness , trade liberalization, dummy variable and real exports emerged as significant determinant of index of key sectors in Nigeria such as agriculture and industries. The results of his study seems to suggest the importance as well as the imperative for Nigeria to embark on comprehensive trade liberalization policies in order to accelerate and sustain growth in agriculture and industrial sectors.

Michael et al (1991) critically analyzed the effects of Trade Liberalization in the economy of third world using aggregate production function and he arrived at a conclusion that in the long run, countries that have stuck to strong trade liberalization should not encounter problem regards to employment opportunity and growth acceleration. Their economic balance of trade implications will be highly positive because, exports react favourably to a significant degree when trade liberalization is applied. Klein et al (1987) concluded that by applying the link system, that is imposition of tariffs and other trade barriers harm trade and the implication of these is that it affects dynamic growth in production and overall welfare for the entire participant. Krueger and Tuncer's (1982) study for Turkey also using sector level data, they provided stronger support for the efficiency gains to be derived from Liberalization, concluding that period of greater liberality has coincided with periods of faster growth in total factor productivity (TFP).On the empirical side, the available cross-sector evidence suggests that international trade favours technical efficiency.

Swedish case, Carlsson (1972) showed that tariff protection to reduce import competition could expand the number of inefficient Producers. Similarly, Bloch (1974) suggested that the effect of tariff protection in Canada Resulted in inefficient industrial structures; other things being equal, cost appears to be highest in the high tariff industries, which also have higher prices.

Ghatak *et al* (1995) employed co- integration analysis to studied the relationship between growth and index of trade liberalization using time series for the period 1950-1995 the study reveal a stable long –run relationship among real GDP per capital and index of trade liberalization.

Doller et al (2003) studied about the importance of trade liberalization for twenty four (24) developing economies that opened up boarders including Indonesia and Malaysia. These 24 countries recorded GDP growth of 1.4% in 1980s and 5.0% in 1990s and this was as a result of openness to trade. Their result shows that trade liberalization does not leads to increase in inequality rather trade liberalization reduce poverty and improve income distribution. Empirically, the available cross nation's evidence suggests that international trade favours technical efficiency.

According to Bloch (1974) he says that the effects of tariff protection in Canada resulted in inefficient industrial structure and performance. Forountan (1991) found that greater exposure to international competition had a beneficial effect on the Turkish industry during the 1980s.

Romer (1989) applied regression analysis in other to determine the link between openness and economic growth the study finds that economic openness by taking advantage of a wider range of innovation, increases the growth rate and facilitate trade.

Dow (1994) tests whether trade openness affects output growth and investment. He considers a sample of 74 countries over the period 1960-1990. As openness indicator, the author considers the residuals of an OLS cross-country regression of the average trade intensity upon a constant and average population. In a second stage, the author runs cross-country OLS regressions of average

per capita GDP growth upon the average investment rate, the initial GDP level and its openness indicator. The coefficient of openness is significant and positive. Moreover, dropping the investment rate considerably lowers the overall fit of the model but enhance the coefficient on openness, which according to the author "suggests that openness works partly through increased investment rates. In a third stage, the author computes decade averages for his variables and turns to panel data techniques. The author uses labour productivity growth as dependent variable and estimates both fixed-effects and random-effects models. His reports showed that the coefficient of openness is still significant and positive, but its point estimate is much lower than in the OLS specification. In a fourth set of regressions, the author also considers growth in openness instead of openness itself.

The author interprets this as reflecting the fact that "static efficiency effects of trade liberalization are negligible for countries with well-developed markets". Finally, in his conclusions, the author showed the beneficial effects of increased openness, in particular, he stresses that "trade liberalization can indeed stimulate growth in the aggregate world economy. While trade may have such positive effects for some countries, it may conversely lock for other.

Teweldemedhin et al (2010), attempts to examine the empirical relationship between trade liberalization and Total Factor Productivity (TFP) in the agricultural sector using both cross - sectional and time -series analysis of the developing countries. The Error Correction Model of Ordinary Least Square (OLS) results from the cross-sectional analysis confirm that export shares and capital formation were significant and positively related; whereas, import shares and real exchange rate were found to be negatively related. However, the net effect of export and import shares was positive implies that trade liberalization causes productivity gains, The findings from

the time -series analysis followed in the same direction as the cross -sectional results, indicating a robust relationship between TFP, degree of openness, and capital formation.

Madeley (2001) conducted an empirical study on effects of agricultural trade liberalization on the economy of Mexico and the study reveals that trade liberalization has the potential to enhance developing countries food security position and reduced their food gap. Ravallion*et al* (2004) used computable General Equilibrium (CGE) model to investigate the impact of trade liberalization on Agricultural sector of the economy of developing countries , the result suggest that full liberalization of trade in developing countries reduces poverty and improve the production efficiency and output of the less develop countries. They conclude that period of trade liberalization has the most positive effects on Agriculture and Poverty.

Meschi and Vivarelli (2007) found that developing countries that liberalize may face increases in inequality through skill-enhancing trade. Using data from 70 developing countries the authors found a connection between increased trade with high income countries and inequality in middle income countries.

An empirical study by Boue*et al* (2006) on the impact of trade liberalization on agricultural output for 47 developing countries using Cluster Analysis shows that the aggregate benefit of trade liberalization outweigh the costs. Their studies also shows that more outward- oriented countries tend to grow more rapidly over time. In their conclusion they suggest that trade liberalization generates dynamic gains through free flow of investment and technology.

Tokarick (2005) used partial equilibrium model of ten Agricultural output to investigate the effects of trade liberalization, in his analysis he compare the impact between developed and developing countries, the result shows that full trade liberalization in developing countries leads to increase in agricultural output and export expansion.

A study by Anderson (2003) and Olhan (2006) confirms some of these general findings. They used an 18 region computable general equilibrium (CGE) model to evaluate the impact of trade liberalization between developed and developing nations in agricultural sector, according to this model, the global benefits or the distribution of gains between developed and developing nations depends on which countries liberalized. Their results confirm the principles that the benefits a countries or region derives from trade liberalization are determined by the degree to which it participates in the global market.

Other studies that are relevant to our work are (Egwaikhide, 1993) and (Osuntogun*et al* 1993) they worked on determinant of import in Nigeria using a dynamic specification, the study concentrated on import alone and left out the effects on export. According to Oluwasanni(2000) he observed that Agricultural sector has the potential to be the industrial and economic spring board from which a country development can take off. He also has the opinion that agricultural sector in Nigeria has the potential to shape the landscape, provide environmental benefits such as land conservation, guarantee a sustainable management of renewable natural resources and contribute to the variability of many rural areas.

Humbert(2000)stipulated that agricultural sector is strategically positioned to have a high multiplier effect on any nation's guest for socio-economic and industrial development.

The outstanding approach to the role of agriculture in economic development is formulated in terms of the contribution, the agricultural sector can make. According to Regnolds (1975) he observed that agricultural development can promote economic development of the underdeveloped countries in four scenarios.

1. By providing foreign exchange earning in Nigeria through agricultural exports.
2. By increasing the supply of food availability for domestic consumption.

3. By enlarging the size of the domestic markets for the manufacturing sector.

4. By increasing the supply of domestic savings.

In their own contribution Omawile and Rorigues (1980) observed and opined that most developing countries agriculture has been assigned as important role toward national development. An Analysis of Agricultural production in Nigeria by Muhammad et al (2006) in their study they focused on the growth of the agricultural sector of the Nigerian economy. Descriptive statistics and Duncan multiple range test regression analysis were the major tools of analyses in their study. The study showed that the overall agricultural production average growth rate, population growth rate, and the Consumer Price Index were the main factors affecting domestic agricultural production.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The preference of the methodology for this study is informed by the problem of the study, uniqueness of the study, the study objectives and recent theoretical insights and empirical studies on the link between Trade liberalization policy impact and agricultural productivity. Thus, standard procedure adopted for analyzing the impact of trade liberalization on output performance consists of at least three stages. The First is that we conceptualized the relationships between trade liberalization, government policy and agricultural productivity. Second is the formalization of the relationships in the form of theoretical or empirical models and third, is the implementation of the empirical analysis.

The methodology for this study consists of the three frameworks (conceptual, theoretical and empirical) but organized into two subsections: conceptual and theoretical framework and, empirical framework.

3.1 Conceptual and Theoretical Framework

3.1.1 Conceptual Analysis:

The conclusion of traditional international trade theory (see Adam Smith 1776 and Ricardo 1886) are derived from a number of explicit and implicit assumptions that in many ways are often contrary to the reality of contemporary international economics relations. This theory therefore often leads to conclusion incompatible with both the historical and contemporary trade experience of many developing nations like Nigeria.

The theory of comparative advantage, and corollary that nations should specialize is criticized on pragmatic grounds within the import substitution industrialization theory of development

economics, on empirical grounds by the Singe-Prebisch thesis (2001) which state that the term of trade between primary producers and manufactured goods deteriorate over time and on the theoretical grounds of infant industry and Keynesian economics in older economics terms, comparative advantages has been opposed by mercantilism and nationalism.

They argued instead that while a country may initially be comparative disadvantage in a given industry, country should shelter and invest in industries until they become globally competitive. They further argue that comparative advantage as stated is a static theory does not account for the possibility of advantage charging through investment or economic development, and thus does not provide guidance for long- term economic development.

From our observations, the models describing the various trade theories reviewed in chapter two practically do not really reflect the situations of most developing countries because of the nature of their production, the condition and terms of trade with the entire world. However Innovation theory could have had a significant contribution to this methodology but since it is still to be mathematisized, we can't adopt it.

The vent-for surplus theory of international trade stands as the theory in which this research work will build up this is important since Todaro (1977) and Iyoha (1995) agreed that this theory provide a better realistic analytical framework of the past trading experience of the developing countries than that of classical and neo-classical theories. On the basis of the above theoretical background, the empirical model of this study will start with a Cobb –Douglas production function, given the fact that Todaro (1977) and Iyoha (1995) agreed that vent –for surplus theory is a better model for developing countries therefore, researcher will adopt the aggregate production function framework model developed by Michael *et.al*. (1991) which incorporates export shares as a proxy for changes in openness with some modifications, in terms of inclusion of some vital variable.

3.2 Model specifications

The relation between openness in trade and productivity growth has long been a topic of interest in the economic literature. Trade is presumed to enhance output through different channels such as export, import, FDI and capital inflows, and technology diffusion. The role of international trade as a carrier of foreign technology has been emphasized in numerous recent studies (Das, 2002; Keller, 2004; Cameron *et al.,* 2005; Xu, 2005; Wang, 2007). The idea is that increasing trade between advanced and developing countries involve the transfer of technology and knowledge embodied in the traded goods.

Thus, this study, following the work of Griffith *et al (*2004) and Cameron *et al (*2005), suggest that output growth, in an economy behind the technological frontier, is assumed to be driven by both domestic innovation and technology transfer from technology-leading countries.

Many studies in the endogenous growth literature pointed out the importance of output in enhancing the country's innovative capacity as well as its ability to adopt foreign technology (Xu, 2000; Benhabib and Spiegel, 2002; Cameron *et al*., 2005).

We consider the following specification in which agricultural output growth depends on domestic innovation and technology transfer. The innovation part is related to the level of human capital, while the transfer part is captured via a term interacting international trade with human capital and the technology gap to the frontier. The trade interaction captures the effect of international openness on output growth through the speed of technology transfer, while the human capital interaction reflects a country's capacity to adopt advanced technology. Hence

The growth rate of agricultural productivity in Nigeria at time *t* is then given by:

$$\overset{*}{A}_{it} = \alpha_i + \alpha_1 H_{it}^{\alpha H} + \alpha_2 \ IT_{it}^{\alpha H} + \alpha_3 \ IT_{it}^{\alpha^{\alpha H}} (-GAP_{it}) + U_{it} \quad \text{.....2.0}$$

where *A* is agricultural output ($AGDP_t$); L is the agriculture human capital level measured by average years of schooling in the population over age 25; *IT* is an index of international trade captured by two alternative variables namely, total agricultural trade as a share of GDP and agricultural tariff barriers; and *GAP* is the technology gap measured by the distance from the technological frontier to capture the potential for technology transfer. α_1 α_2 $\alpha_3\alpha^H$ are parameters to be estimated αi is a country-specific constant and v_{it} is an error term. The dot indicates the growth rate.

The model adopted above is in the form of a Cobb-Douglas production function. However, it has some modifications, in the sense that some other macroeconomic variable have been included as inputs. Dummy variables have been included to capture the impact of trade agreements (policy). The choice of this model stems from the fact that variables and the technique that were used to achieve the objectives of this work are simple to follow. Hence, the agricultural output identity was specified as follows:

$$IAP_t = LICP_t + LLIP_t + LFRP_t + LFIP_t \quad \text{.....(3.1)}$$

Thus, the functional specification of equation (3.1) above is specified as follows

$IAP_t = F (DOP_t, L_{t-1}, K_{t-2}, EXR_{t-1}\ INF_{t-1}, \ SDM_t,)$ ..... (3.2)

Where the disaggregated component of equation (3.2) is implicitly specified as follows:

$LICP_t = F (DOP_t, L_t, K_t, EXR_tINF_t, \ SDM_t,)$ ..... .(3.3)

$LLIP_t = F (DOP_t, L_t, K_t, EXR_tINF_t, \ SDM_t,)$ ..... (3.4)

$LFRP_t = F (DOP_t, L_t, K_t, EXR_tINF_t, \ SDM_t,)$ ..... (3.5)

$LFIP_t = F (DOP_t, L_t, K_t, EXR_tINF_t, \ SDM_t,)$ ..... (3.6)

Also, equ.3.1–equ.3.6 are transformed into stochastic components and presented below:

$IAP_t = A\ DOP_t^{\alpha 1}, L_{t-1}^{\ \alpha 2}, K_{t-2}^{\ \alpha 3}, EXR_{t-1}^{\ \alpha 4}, INF_{t-1}^{\ \alpha 5}, SDM_t^{\ \alpha 6}, \mu_t$ ..... (3.7)

$ICP_t = A\ DOP_{t-1}^{\alpha 1}, L_{t-1}^{\alpha 2}, K_{t-2}^{\alpha 3}, EXR_{t-1}^{\alpha 4}, INF_t^{\alpha 5}, SDM_t^{\alpha 6}, \mu_t$ ..... (3.8)

$ILIP_t = A\ DOP_{t-1}^{\alpha 1}, L_{t-1}^{\alpha 2}, K_t^{\alpha 3}, EXR_{t-1}^{\alpha 4}, INF_t^{\alpha 5}, SDM_t^{\alpha 6}, \mu_t$ ..... (3.9)

$IFRP_t = A\ DOP_{t-1}^{\alpha 1}, L_{t-1}^{\alpha 2}, K_{t-2}^{\alpha 3}, EXR_{t-2}^{\alpha 4}, INF_t^{\alpha 5}, SDM_t^{\alpha 6}, \mu_t$ ..... (3.10)

$IFIP_t = A\ DOP_{t-1}^{\alpha 1}, L_{t-1}^{\alpha 2}, K_{t-1}^{\alpha 3}, EXR_{t-2}^{\alpha 4}, INF_t^{\alpha 5}, SDM_t^{\alpha 6}, \mu_t$ ..... (3.11)

Linearizing the above equations, we obtain the following:

$\log IAP_t = \log A + \alpha_1 \log DOP_t + \alpha_2 \log L_{t-1} + \alpha_3 \log K_{t-2} + \alpha_4 \log EXR_{t-1} + \alpha_5 \log INF_{t-1}$

$+ \alpha_6 SDM_t + u_t$ …….. …….(3.12)

Let $\log A = \alpha_0$

$\log IAP_t = \alpha_0 + \alpha_1 \log DOP_t + \alpha_2 \log L_{t-1} + \alpha_3 \log K_{t-2} + \alpha_4 \log EXR_{t-1} + \alpha_5 \log INF_{t-1}$

$+ \alpha_6 SDM_t + u_t$ …….. ……..(3.13)

$LogIAP_t = \alpha_0 + \alpha_1 LogDOP_t + \alpha_2 LogLt_{-1} + \alpha_3 LogK_{t-2} + \alpha_4 LogEXR_{t-1} + \alpha_5 LogINF_{t-1}$

$+ \alpha_6 SDM_t + u_t$ ……..……...(3.14)

$LogICP_t = \alpha_0 + \alpha_1 LogDOP_{t-1} + \alpha_2 LogL_{t-1} + \alpha_3 LogK_{t-2} + \alpha_4 LogEXR_{t-1} + \alpha_5 LogINF$

$+ \alpha_6 SDM_t + u_t$ ……..……...(3.15)

$LogILIP_t = \alpha_0 + \alpha_1 LogDOP_{t-1} + \alpha_2 LogL_{t-1} + \alpha_3 LogK_t + \alpha_4 LogEXR_{t-1} + \alpha_5 LogINF$

$+ \alpha_6 SDM_t + u_t$ ……..……...(3.16)

$LogIFRP_t = \alpha_0 + \alpha_1 LogDOP_{t-1} + \alpha_2 LogL_{t-1} + \alpha_3 LogK_{t-2} + \alpha_4 LogEXR_{t-2} + \alpha_5 LogINF$

$+ \alpha_6 SDM_t + u_t$ ……..……. .(3.17)

$LogIFIP_t = \alpha_0 + \alpha_1 LogDOP_{t-1} + \alpha_2 LogL_{t-1} + \alpha_3 LogK_{t-1} + \alpha_4 LogEXR_{t-2} + \alpha_5 LogINF$

$+ \alpha_6 SDM_t + u_t$ ……..……. .(3.18)

Where;

L= Natural log of numbers to base 10.

IAP_t= Index Agricultural output (GDP) in Nigeria at time t

ICP= Index of crop productionat time t

ILIP= Index of livestock productionat time t

IFIP= Index of fish productionat time t

IFRP= Index of forestry productionat time t

DOP $_t$= Degree of openness which is export plus import divide by GDP. It is used as a proxy for trade liberalization.

L_{t-1} = labour input of agricultural sector in Nigeria at time t-1.

K_{t-2}= capital input of the agricultural sector in Nigeria at time t-2. It is proxied by the value of loans granted to farmers under the operations of agricultural credit guarantee scheme fund (ACGSF)

EXR_{t-1} = Exchange rate which represent a proxy of exchange rate prices at time t-1

INF_{t-1} = Inflation rate at time t-1.

SDM_t = which take the value of 1 in the SAP period and 0 in the rest of the period

u_t=error term.

α_0= intercept (constant term)

$\alpha_1 \ldots \alpha_5$ = Elasticity coefficients of the explanatory variables $LDOP_t$, LL_{t-1}, LK_{t-2}, $LEXR_{t-1}$, and $LINF_{t-1}$, respectively.

α_6 = semi elasticity coefficient of SAP dummy variable at time t.

A priori expectations

It is expected that trade liberalization proxied by the degree of openness will encourage output expansion. This is because when an economy embraced open trade, there is every tendency that such an economy will enjoy economic of a large scale in the agricultural output (i.e.$\alpha_1 > 0$). The coefficient of LL_{t-1} and LK_{t-2} are expected to be positive (i.e. α_2 and $\alpha_3 > 0$). This is because factor

inputs are expected to increase agricultural output. The one and two period lags on labour and a capital input is because of their un-instantaneous impact on output. That is to say that it takes time for farmers to use input to produce output. It is also expected that if the exchange rate ($LEXR_{t-1}$) is devalued, the volume of agricultural exports increases. It should have a positive impact on agricultural output (i.e. $\alpha_4 > 0$). Inflation rate ($LINF_{t-1}$) affects the volume of trade and agricultural output negatively if it goes up (i.e. $\alpha_5 < 0$). The one period lag on exchange and inflation rates is also due the un-instantaneous effect of prices on output levels. SAP dummy coefficient is expected to be positive (i.e. $\alpha_6 > 0$) because trade liberalization policies should increase output in the agricultural sector. The model included a random error term in order to accommodate other factors that are not capture by the model.

3.3. SOURCE OF DATA.

Data used for this study are essentially secondary in nature. The range of the data is between 1986-2009 they are derived principally from National Bureau of Statistics (NBS) and Central Bank of Nigeria (CBN) publications. Past related literatures, social science journals.

3.4. ESTIMATION PROCEDURE

UNIT ROOT TEST

We shall start by testing for the stationary properties of the time series data in order to evade a spurious regression result. Hence, all the series are tested for stationarity by using the Augmented Dickey Fuller (ADF) and Phillip-Perron tests. The test analyzes the order of integration of the time series. According to Greene (2003), the Augmented Dickey Fuller (ADF) test is employed to test for unit root based on an equation of the following forms:

$$Y_t = \alpha + \beta Y_{t-1} + \sum_{i=1}^{n} \beta_j \Delta Y_{t-1} + \varepsilon \quad \text{.....3.19}$$

$$Y_t = \alpha + \gamma t + \beta Y_{t-1} + \sum_{i=1}^{n} \beta_j \Delta Y_{t-1} + \varepsilon \text{.....3.20}$$

Where, equations (3.19) and (3.20) indicate ADF tests without trend and with trend, respectively. The test is to verify if $\beta_0 = 0$. Thus, H_0: $\beta = 0$ indicate that the series $X_t$contains a unit root and is therefore non-stationary and the alternative hypothesis H_1: $\beta_0 < 0$, indicates that the series is stationary. We compare the ADF test statistic with the Mackinon criterion at a 5% level of significance. If ADF test statistic is greater than the Mackinon criterion, we reject the null hypothesis and conclude that the time series is stationary.

The Test of the Goodness of Fit and Significance of the Parameter

After estimating the regression parameters, R^2 is used for judging the strength of the explanatory variables. R-square (R^2) shows the total percentage of the variations of the dependent variable that can be explained by the independent variables.Also T-test and F-Test was used to test the Significance of the Parameter Estimates.It is applied for judging the statistical reliability of the estimates of the regression coefficients. Therefore in arriving at conclusion for t-test we compared the calculated t-values with tabulated t-values at a certain level of significance, for a given degree of freedom. If the calculated t exceeds the table value, it is inferred that estimated coefficient is significantly different from zero and otherwise it is not. Also, F-test is used to examine the overall significance of the model. The calculated F- variance ratio is compared with the tabulated value at a specific level of significance with v1 = (k-1) and v2 = (N-k) degrees of freedom. If Fcal<Ftab, we accept null hypothesis and if Fcal>Ftab, we reject null hypothesi

CHAPTER FOUR

RESULT PRESENTATION, INTERPRETATION AND ANALYSIS

This chapter estimates and interprets the results of the study base on the data collected from the CBN and National Bureau of Statistics. The study used econometric views 4.0 for the estimation.

4.1 Result Presentation

4.1.1 Trend Analysis

The data collected for the study are presented in table 4.2.2.1 and graph 4.1.1.1 below. The result show that between 1988 and 1999 the index of agricultural production ($LIAP_t$) rises rapidly and declined between 2000 and 2002 (see graph4.1.1.1). Evidence seems to suggest that the rapid increase in index of agriculture was due to the adoption of SAP programme.While, the declined in agricultural production in 2001 was probably due to improper funding of the sector or probably because what is actually released for agricultural production is not what is budgeted. Also, loan disbursement to farmersgoes to unintended rather than intended beneficiaries and most importantly, distribution of fertilizers to farmers by the newly enthroned democratic Government is ineffective and inadequate. However, agricultural production continues to rise after then till 2009 (Awotide (2004), Ogundele (2003), Ogundele and Okoruwa (2006), Okike (2000), Oredipe (1998), Rahji (2003).

The degree of openness ($LDOP_t$) of the Nigerian economy has widened between 1986 and 2009, suggesting that trade liberalization has also been increasing over the period. Similarly, agricultural labour (LL_t) and capital (LK_t) inputs exhibited upward trends in their behavior. Inflation rates ($LINF_t$) however exhibited wide swing in some periods, followed by period of relative calm, While exchange rates of the naira has not been stable, but showing a persistent upward trend.

In figure (4.1.1.2) the variables were stack together in a single graph to investigate the nature of relationships and behavioral pattern among the variables. The graph shows that $LIAP_t$, $LDOP_t$, LL_t, and LK_t exhibited a fairly positive linear relationship. This is shown by their behavior in figure (4.1.1.1). Also,$LINF_t$ and $LEXR_t$showed both periods of positive and negative relationships.

Figure 4.1.1.1: *Behavioral pattern of variables.*

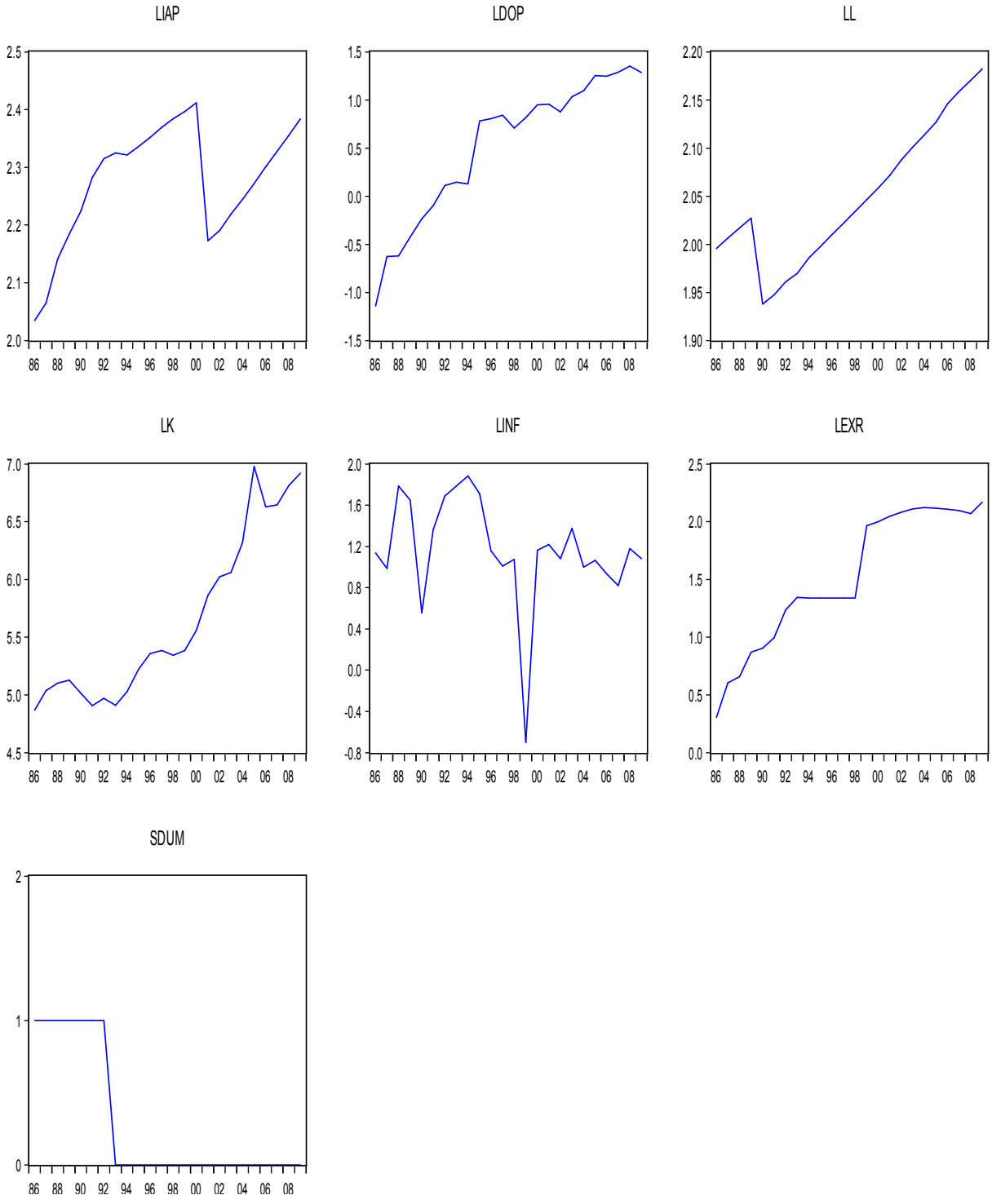
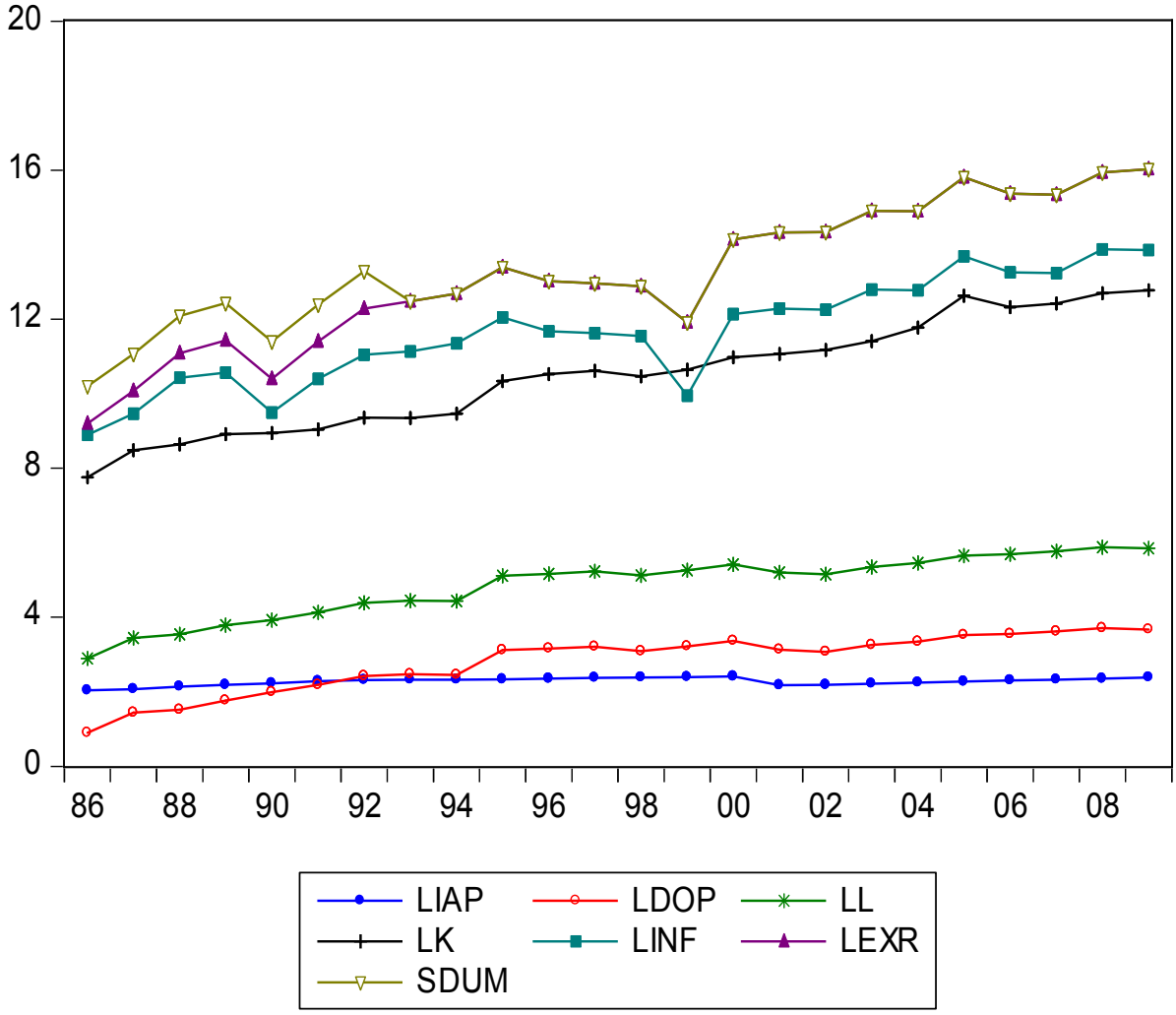


Figure 4.1.1.2: Behavioral pattern of *variables stack together in a single graph*



4.2 Empirical Estimates and Analysis of Result

4.2.1 Unit Root Test Result

The unit root test results are summarized below. The results were estimated by considering the order of integration of each of variable using the Augmented Dickey- Fuller (ADF) type of unit root test at a 5% level of significance. The order of integration of each variable indicates the number of times each variable will be differentiated to arrive at stationarity. From table 4.2.1.1, the entire variableare integrated at order one, which means that they are stationary at first difference.

Table 4.2.1.1: Summary of Unit Root Test Result

Variable	Order of Integration	ADF Test Statistic	Level of Significance (5%)
$LIAP_t$	I (1)	-4.9578	-3.0199
$LDOP_t$	I (1)	-3.4364	-3.0114
LL_t	I (1)	-3.0838	-3.0114
LK_t	I (1)	-3.8477	-3.0114
$LEXR_t$	I (1)	-3.0752	-3.0114
$LINF_t$	I (1)	-5.1833	-3.0114
$SDUM_t$	I (1)	-3.2404	-3.0114

Self-Computed

Table 4.2.1.2: Summary of significance and a- priori expectation sign of variables in the model

Equation	Variables significant at 5%&10%	Variables not significant
LIAP	LDOP, LK, LEXR, LINF, SDUM (+) (+) (-) (-) (-)	LL (-)
LICP	LL LK (-) (+)	LDOP, LEXR, LINF, SDUM (+) (+) (-) (-)
LLIP	LK LEXR, (+) (+)	LDOP, LINF, LL, SDUM (+) (+) (-) (+)
LFISP	LDOP, LL, LK , SDUM (+) (+) (-) (+)	LEXR, LINF, (+) (+)
LFRP	LK , (+)	LDOP, LEXR LL, LINF SDUM (+) (-) (+) (+) (-)

Self-Computed

4.2.2 Impact of Trade Liberalization on Agricultural Output in Nigeria.

Analysis of Result and Test of Goodness of Fit

This section analyses the impact of trade liberalization on the Nigerian agricultural output.The regression results of the specified model are presented below.The R^2 of 0.7477 and adjusted R^2 of 0.6468 suggest that the model has goodness of fit. That is to say that about 74.77% of the variations in agricultural output in Nigeria is explained by variations in trade liberalization, labour inputs, capital inputs, exchange rates, inflation rates and SAP dummy variables over the study period.The Durbin Watson statistics of 1.85 suggest that the error terms are not serially correlated. It means that the D.W. statistic fall within the acceptable boundary. The coefficients are also statistically significant at 5 percent level of significance. This is because of the fact that the T-statistics value are approximately equal to two (≈2) at both 5 and 10 percent. The result shows that all the variable have a significant impact on output of agriculture in Nigeria.

Table 4.2.2.1: Empirical Estimates of Model.

$$LIAP_t = 3.85_{+} 0.14LDOPt_{-} 0.89LLt_{-1} + 0.12LK_{t-2} - 0.24LEXR_{t-1} - 0.05LINF_{t-1} - 0.14SDM_t$$
(5.75) (2.47) (-2.05) (2.37) (-4.05) (-2.58) (-2.50)

F-statistic = 7.41, prob(F-statistic) = 0.00079, $R^2 = 0.75$,
$R^{-2} = 0.65$; D.W. statistic = 1.86……4.0

The result in (table 4.2.2.1) suggest that if we held trade liberalization, labour input, capital input, exchange rates, inflation rate and SAP policies dummy variables constant, agricultural output index will stand at 3.85 (which is the efficiency parameter). The coefficient of trade liberalization ($LDOP_t$) meets the a-priori expectation of the model. That is to say that if the Nigerian economy is liberalized by one percent, agricultural output will increase by 0.1411 percent all things being equal. It also means that there is a significant positive relationship between trade liberalization and agricultural output in Nigeria.However, the coefficient of lagged labour input (LL_{t-1}) is negative

and does not meet the a-priori expectation of the model, but, it is statistically significant at 10% level of significance. This means that when labour input was increased by one percent last year, current agricultural output will reduced by -0.8851 percent points ceteris paribus. The coefficient of capital inputs (LK_{t-2}) in the form of credits to farmers is positive and statistically significant at 5% level of significance. This implies that if capital inputs increased by one percent, current agricultural output will increase by 0.1155 percentage points ceteris paribus. This also means that capital inputs should be given to farmers in order to stimulated agricultural output.

The coefficient of lagged exchange rate ($LEXR_{t-1}$) is also negative and is significant at 5 percent level of significance. The sign of the coefficient does not meet the a-priori expectation of the model. This means that when exchange rate was appreciated by one unit, current agricultural output will reduced by -0.2421 percent points all things being equal.

The coefficient of lagged inflation rate ($LINF_{t-1}$) is negative, but meets the a-priori expectation of the model. That is there is a significant negative relationship between past values of inflation rate and current level of agricultural output in Nigeria. This also means that when inflation increases last years by one percent, current agricultural output will reduced by -0.0547 percentage points all things being equal. It means that rising inflation discourages farmers from producing more output. The SAP dummy coefficient does not meet the a-priori expectation but is significant at 5% level of significances. It suggests that trade policies of the Government impacts negatively on agricultural output in Nigeria. In order to further examine the impact of trade liberalization on agricultural sectors on Nigeria, the aggregate model (equation 3.1) was disaggregated into four sub-sectors. The effect of trade liberalization in respect of four agricultural sub- sectors has been estimated. The result obtained for the four agricultural sub- sectors is presented below. Also, the equations are

transformed into log form.Statistical and economic criteria were verified using the value of t-statistic, R^2 and F ratios as well as the levels of significance of the variables.

Index of crop production)

$$LICP_t = 4.12 + 0.08LDOP_{t-1} - 1.48LL_{t-1} + 0.17LK_{t-2} + 0.07LEXR_{t-1} - 0.12LINF - 0.74SDM_t$$
$$(4.39)\quad (0.96)\ (-2.49\}\quad (2.67)\quad (0.86)(-0.73)\quad (-0.99)$$

F-statistic = 15.40500, prob(F-statistic) = 0.000012,

$R^2 = 0.8612$, *Adj.* $R^2 = 0.8451$; *D.W. statistic = 1.9576……4.1*

Index of livestock production

$$LLIP_t = 2.69 + 0.05LDOP_{t-1} - 0.62LL_{t-1} + 0.16LK_{t-1} + 0.13LEXR_{t-1} + 0.01LINF + 0.01SDM_t$$
$$\{3.39\}\quad \{1.01\}\quad \{-1.35\}\quad \{3.05\}\quad \{2.45\}\quad \{0.17\}\quad \{0.82\}$$

F-statistic = 60.41937, prob(F-statistic) = 0.000000,

$R^2 = 0.9577$, *Adj.* $R^2 = 0.9418$; *D.W. statistic = 1.847129……..4.2*

Index of fish production

$$LFIP_t = -3.06 + 0.28LDOP_{t-1} + 3.44LL_{t-1} - 0.41LK_{t-1} + 0.10LEXR_{t-2} + 0.03LINF + 0.28SDM_t$$
$$\{-2.30\}\quad \{2.57\}\quad \{3.97\}\quad \{-3.77\}\quad \{1.06\}\quad \{0.75\}\quad \{2.91\}$$

F-statistic = 8.802587, prob(F-statistic) = 0.000319,

$R^2 = 0.778812$, *Adj.* $R^2 = 0.690336$; *D.W. statistic = 2.358607……4.3*

Index of forestry production

$$LFRP_t = -1.23 + 0.04LDOP_{t-1} - 0.08LL_{t-1} + 0.20LK_{t-2} - 0.10LEXR_{t-2} + 0.02LINF - 0.05SDM_t$$
$$(1.96)\quad (0.80)\quad (-0.20)\quad (4.20)\quad (-1.86)\quad (1.32)\quad (-1.07)$$

F-statistic = 20.94241, prob(F-statistic) = 0.000002,

$R^2 = 0.893356$, *Adj.* $R^2 = 0.850698$; *D.W. statistic = 0.919443……..4.4*

In equation (4.1 ---4.4), the value of range from R2 = *0.86 – 0.95* and The *Adj.* R^2 = *0.69 - 0.94*indicates that the explanatory variables included in the model explained, on the average, between -0.69% - 94% of the variation in the agricultural crop production in Nigeria. Implying that between 69% - 94% of the variation in the dependent variables is accounted for by the independent variables in the model. The unexplained variation, less than between 31% - 6% in the model is attributable to other factors not specified in the model due to difficulties in quantification and for computational ease.The Durbin Watson statistics of equations, 4.1, 4.2, and 4.3 are appropriately

equal to two (≈2). This suggests that the error terms are not serially correlated. In addition all the models are statistically significant 5 and 10 percent.The, F statistics which show the overall significance of the different variables used in the model are also statistically significant.

An examination of the overall equation (4.1 – 4.4) shows that all the explanatory variables were correctly signed except Labour inputs andSAP dummy which coefficients were negative.

In Equations (4.1 – 4.4) the coefficients of trade liberalization ($LDOP_t$) meets the a-priori expectation of the model and highly significant. The positive effects of trade liberalization on agricultural sub-sector such as crop production, livestock and forestry are slightly significant. Onaveragetrade liberalization exact about 5 percent increase on crop, livestock and forestrysub-sector. Also, the impact of trade liberalization on fish production output is highly significant. It exact about 28 percent on the output of fish production. This outcome suggest that trade liberalization during Structural AdjustmentProgramme(SAP) in Nigeria led to increased utilization of alternative feedstuffs; vertical integrationand intra-sectorial shifts and increased accessibility to fish feeds. All these may account forincreased productivity during the trade liberalization.Thus, the outcome of equation 4.1 – 4.4 implies that openness (trade liberalization)brings about expansion and increase in agricultural output, but on an average, over the period under consideration, some Agricultural sub- sectors exhibited better performances levels than others. And variation of agricultural performance across sub- sectors opens the possibility of investigating the factors contributing to productivity improvement and facilitating the catching up process between high-performing and low-performing sub -sectors. Also, this finding conform to neo- classical assertion that open trade leads to economic growth and efficiency and it equally conforms the a-priori expectation that openness leads to increase in agricultural productivity and output expansion. The total impact of trade liberalization across the sector justifies that although openness is positive on

output of agriculture sector, but on an average it impact still low. This suggests that agricultural sector still needs the support ofall stakeholders to ensure a better contribution, andcontinuous research is important within this era of globalization (see Teweldemedhin M. Y. el at 2010)

4.2.2.1. Test of Hypothesis

The F-statistic of 7.4086 and its probability value of 0.000799 suggest that the overall model is statistically significant at 5% level of significance. This is because of the fact that its probability value is less than the 5% level of committing type one error. This implies that, we reject the null hypothesis of no significant impact between trade liberalization and agricultural output in Nigeria. We can therefore conclude that trade liberalization has a significant impact on agricultural output in Nigeria.

4.2.2.2 Summary of Findings

The main findings of the study are as follows:

i. The study found that trade liberalization on an aggregate exact a significant positive impact on agricultural output in Nigeria.It impact on an average is about 14 percent in increase on agricultural output.

ii. In the disaggregated model the study found significant impact difference. For example, the positive effects of trade liberalization on agricultural sub-sector such as crop production, livestock and forestry are slightly significant. It impact on an average is about 14 percent in increase on agriculture output. Butthe impact of trade liberalization on fish production output is highly significant. It exact about 28 percent on the output of fish production.

iii. The study also, found that openness (trade liberalization) brings about expansion and increase in agricultural output, but on an average, over the period under consideration, some Agricultural sub- sectors exhibited better performances levels than others. And variation of agricultural performance across sub- sectors opens the possibility of investigating the factors contributing to productivity improvement and facilitating the catching up process between high-performing and low-performing sub -sectors. Also, this finding conform to neo- classical assertion that open trade leads to economic growth and efficiency and it equally conforms the a-priori expectation that openness leads to increase in agricultural productivity and output expansion.

iv. The study also found total impact of trade liberalization across the sector justifies that although openness is positive on output of agricultural sector, but on an average it impact still low. This suggests that agricultural sector still needs the support ofall stakeholders to ensure a better contribution, andcontinuous research is important within this era of globalization.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This research work examined the impact of trade liberalization on the growth of agricultural output in Nigeria. The evaluation covered a range from 1986 -2009. The data for the study were got from CBN Statistical Bulletin for various years, CBN Annual Report and Statement of Account, NBS.

To achieve its objective, the study was sub-divided into five chapters. It began with the general introduction, followed by statement of the problem with three basic research questions, objectives and the need that necessitated the study. Within this section, the scope and limitations encountered in the course of execution were clearly stated.Related literatures were reviewed in chapter two. The contending issue was first dealt with, i.e. the conceptual definition of term and argument as viewed from different perspectives. From the literature, it was identified that most of the countries that open up their border with respect to trade liberalization experienced growth in key sectors of the economy which include agriculture and manufacturing sectors.

Theoretical issues were reviewed and one theory was adopted for the study. The vent-for surplus theory of international trade stands as the theory in which this research work will build up this is important since Todaro (1977) and Iyoha (1995) agreed that this theory provide a better realistic analytical framework of the past trading experience of the developing countries than that of classical and neo-classical theories. On the basis of the above theoretical background, the empirical model of this study will start with a Cobb –Douglas production function, given the fact that Todaro (1977) and Iyoha (1995) agreed that vent –for surplus theory is a better model for developing countries therefore, researcher adopted the aggregate production function framework model developed by Michael *et.al*. (1991) which incorporates export shares as a proxy for changes

in openness with some modifications, in terms of inclusion of some vital variable. Empirical literatures were reviewed to give momentum to the study

Relevant data for the study, its sources, procedures for its generation and methodology used in presenting and analyzing it were identified. Given the objectives of the study and it uniqueness ordinary least square (OLS) regression was found to be more appropriate. Justification for using OLS as method is because of it un-biased properties, efficiency and completeness. The study found that trade liberalization on an aggregate exact a significant positive impact on agricultural output in Nigeria. It impact on an average is about 14 percent in increase on agriculture output. In the disaggregated model the study found significant impact difference. For example, the positive effects of trade liberalization on agricultural sub-sector such as crop production, livestock and forestry are slightly significant., but the impact of trade liberalization on fish production output is highly significant. It exact about 28 percent on the output of fish production.

5.2 Conclusion and Policy implications

The agricultural sector that consists of sub-sectors namely, crops, livestock, fishery and forestry has had a very slow growth. It was discovered among the sub-sectors that fish had major contribution to the agricultural sector with livestock following closely. Crop and forestry sub-sectors have very low average growth rates. From the results so far, agricultural growth has been slow. The result of this study raised fundamental concerns about the role of trade liberalization in boosting agricultural output in Nigeria.The data available to this study showed that Nigeria had complied with the policy of open trade through adoption of the structural adjustment program. Which conform World Bank proposal that developing countries like Nigeria would likely benefit from opening up their border.

The following policy implications are deduced from the study. The result of the study seems to suggest the importance as well as the imperative for Nigeria to embark on comprehensive trade liberalization policies in order to accelerate and sustain growth in agricultural sector.

It was observed from the results so far, a slightly slowdown in agricultural growth which not only affects agricultural income and growth of the economy but also affects self – reliance and self-sufficiency in the economy this was probably because what is actually released for agricultural production is not what is budgeted. This may be also being due to the fact that the loan goes to unintended rather than intended beneficiaries. If loans are received atall by farmers, they may be untimely. It is therefore recommend that the loan disbursement activities of financial institutions, be monitored.

Furthermore, the study revealed that for domestic agricultural production to improve, a number of issues need to be addressed. These include:

i. Embarking on measures that improve poultry, forestry and crop sub - sectors of the economy whose contribution to agricultural production has been slightly low over the years
ii. Empowering farmers to market their produce at reasonably good prices. This may require government buying excess of the farmers' produce particularly during the season at guaranteed minimum prices.

5.2 Recommendations

The study proffered the following recommendations. First, there is need to revive and rebuild the agricultural sector of the economy to raise output for exports. This can be achieved by providing the sector with appropriate incentives, like provision of infrastructural facilities and provision of modern farm implement and others. Secondly the study recognizes the need for trade liberalization

as a strategy for achieving economic growth on one hand. In view of these, the study recommends the following policy line for the Nigerian economy

i. Making deliberate efforts by government to increase small scale enterprises in Nigeria. This is because most enterprises in Nigeria are likely to agro-allied that may require raw materials from agriculture and also increase in per-capita productivity of the people through improved technological innovation.

ii. The monetary authorities should adopt a mechanism that will lead to the stability of the exchange rate. Erratic changes in the exchange rate have a long-term negative effect on the production of agricultural output. Therefore, to boost production through cost reduction, the naira exchange rate policy of government would need to be re-examined. Since the period covered in this research work, naira exchange rate has further depreciated if not arrested, this would further aggravate the problem of production cost in agriculture.

iii. There is a dire need for adequate infrastructural development in the country. Nigeria has been recently noted to be one of those Africa countries that have poor infrastructural condition and infrastructural facilities in Nigeria are at serious decay.

iv. In general it is important that developing countries and indeed Nigeria should seek greater concessions in the next trade round in the use of support measures and effective implementation of agreements on agriculture. Nigeria should adopt a tactical implementation of agreements on agricultural reforms.

v. However, the alternative route to boosting agricultural output for Nigeria is by proper funding of agricultural sector by government

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APPENDICES

APPENDICES A: AUGMENTED DICKER FULLER TEST

ADF Test Statistic	-4.953795	1%	Critical Value*	-3.8067
		5%	Critical Value	-3.0199
		10%	Critical Value	-2.6502

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LIAP,3)
Method: Least Squares
Date: 09/29/11 Time: 08:50
Sample(adjusted): 1990 2009
Included observations: 20 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LIAP(-1),2)	-1.947313	0.393095	-4.953795	0.0001
D(LIAP(-1),3)	0.320071	0.227540	1.406659	0.1775
C	-0.002332	0.016475	-0.141525	0.8891

R-squared	0.765386	Mean dependent var	0.001722
Adjusted R-squared	0.737784	S.D. dependent var	0.143795
S.E. of regression	0.073633	Akaike info criterion	-2.241957
Sum squared resid	0.092172	Schwarz criterion	-2.092597
Log likelihood	25.41957	F-statistic	27.72971
Durbin-Watson stat	2.142365	Prob(F-statistic)	0.000004

ADF Test Statistic	-3.436442	1%	Critical Value*	-3.7856
		5%	Critical Value	-3.0114
		10%	Critical Value	-2.6457

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LDOP,2)
Method: Least Squares
Date: 09/29/11 Time: 08:52
Sample(adjusted): 1989 2009
Included observations: 21 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LDOP(-1))	-1.208938	0.351799	-3.436442	0.0029
D(LDOP(-1),2)	0.041940	0.209791	0.199914	0.8438
C	0.111412	0.051602	2.159061	0.0446

R-squared	0.570387	Mean dependent var	-0.003534
Adjusted R-squared	0.522652	S.D. dependent var	0.241186
S.E. of regression	0.166637	Akaike info criterion	-0.614439
Sum squared resid	0.499820	Schwarz criterion	-0.465221
Log likelihood	9.451604	F-statistic	11.94907
Durbin-Watson stat	1.916539	Prob(F-statistic)	0.000499

ADF Test Statistic	-3.083802	1% Critical Value*	-3.7856
		5% Critical Value	-3.0114
		10% Critical Value	-2.6457

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LL,2)
Method: Least Squares
Date: 09/29/11 Time: 08:54
Sample(adjusted): 1989 2009
Included observations: 21 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LL(-1))	-1.022123	0.331449	-3.083802	0.0064
D(LL(-1),2)	0.034421	0.235726	0.146020	0.8855
C	0.008047	0.005739	1.402197	0.1779

R-squared	0.494424	Mean dependent var	6.15E-05
Adjusted R-squared	0.438249	S.D. dependent var	0.031330
S.E. of regression	0.023482	Akaike info criterion	-4.533604
Sum squared resid	0.009925	Schwarz criterion	-4.384386
Log likelihood	50.60284	F-statistic	8.801466
Durbin-Watson stat	1.998525	Prob(F-statistic)	0.002158

ADF Test Statistic	-3.847733	1% Critical Value*	-3.7856
		5% Critical Value	-3.0114
		10% Critical Value	-2.6457

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LK,2)
Method: Least Squares
Date: 09/29/11 Time: 08:56
Sample(adjusted): 1989 2009
Included observations: 21 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LK(-1))	-1.276521	0.331759	-3.847733	0.0012
D(LK(-1),2)	0.227141	0.229581	0.989373	0.3356
C	0.110016	0.051866	2.121142	0.0481

R-squared	0.544441	Mean dependent var	0.002037
Adjusted R-squared	0.493823	S.D. dependent var	0.280936
S.E. of regression	0.199875	Akaike info criterion	-0.250686
Sum squared resid	0.719100	Schwarz criterion	-0.101468
Log likelihood	5.632199	F-statistic	10.75593
Durbin-Watson stat	1.965368	Prob(F-statistic)	0.000845

ADF Test Statistic	-3.075243	1% Critical Value*	-3.7856
		5% Critical Value	-3.0114
		10% Critical Value	-2.6457

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LEXR,2)
Method: Least Squares
Date: 09/29/11 Time: 08:59
Sample(adjusted): 1989 2009
Included observations: 21 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LEXR(-1))	-1.018908	0.331326	-3.075243	0.0065
D(LEXR(-1),2)	-0.008814	0.225837	-0.039028	0.9693
C	0.073155	0.042164	1.735004	0.0998

R-squared	0.513830	Mean dependent var	0.002110
Adjusted R-squared	0.459811	S.D. dependent var	0.208319
S.E. of regression	0.153109	Akaike info criterion	-0.783767
Sum squared resid	0.421964	Schwarz criterion	-0.634549
Log likelihood	11.22955	F-statistic	9.512035
Durbin-Watson stat	1.944313	Prob(F-statistic)	0.001517

ADF Test Statistic	-5.183290	1% Critical Value*	-3.7856
		5% Critical Value	-3.0114
		10% Critical Value	-2.6457

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LINF,2)
Method: Least Squares
Date: 09/29/11 Time: 08:58
Sample(adjusted): 1989 2009
Included observations: 21 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LINF(-1))	-1.862271	0.359284	-5.183290	0.0001
D(LINF(-1),2)	0.333969	0.214927	1.553873	0.1376
C	-0.033731	0.135019	-0.249824	0.8056

R-squared	0.747458	Mean dependent var	-0.042675
Adjusted R-squared	0.719398	S.D. dependent var	1.167749
S.E. of regression	0.618578	Akaike info criterion	2.008778
Sum squared resid	6.887504	Schwarz criterion	2.157995
Log likelihood	-18.09217	F-statistic	26.63770
Durbin-Watson stat	2.032910	Prob(F-statistic)	0.000004

ADF Test Statistic	-3.240370	1% Critical Value*	-3.7856
		5% Critical Value	-3.0114
		10% Critical Value	-2.6457

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(SDM,2)
Method: Least Squares
Date: 09/29/11 Time: 09:01
Sample(adjusted): 1989 2009
Included observations: 21 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(SDM(-1))	-1.105263	0.341092	-3.240370	0.0045
D(SDM(-1),2)	0.052632	0.235376	0.223607	0.8256
C	-0.052632	0.052632	-1.000000	0.3306

R-squared	0.526316	Mean dependent var	0.000000
Adjusted R-squared	0.473684	S.D. dependent var	0.316228
S.E. of regression	0.229416	Akaike info criterion	0.025002
Sum squared resid	0.947368	Schwarz criterion	0.174219
Log likelihood	2.737482	F-statistic	10.00000
Durbin-Watson stat	2.005848	Prob(F-statistic)	0.001201

APPENDICES B: REGRESSION OF INDEX OF AGRICULTURAL SUB- SECTORS

Dependent Variable: LIAP
Method: Least Squares
Date: 11/29/11 Time: 22:35
Sample(adjusted): 1988 2009
Included observations: 22 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.845506	0.668315	5.754029	0.0000
LDOP	0.141132	0.057194	2.467608	0.0261
LL(-1)	-0.885129	0.431768	-2.050012	0.0583
LK(-2)	0.115510	0.048693	2.372197	0.0315
LEXR(-1)	-0.242114	0.059780	-4.050111	0.0010
LINF(-1)	-0.054692	0.021162	-2.584430	0.0207
SDUM	-0.137624	0.055118	-2.496906	0.0247

R-squared	0.747693	Mean dependent var	2.295925
Adjusted R-squared	0.646770	S.D. dependent var	0.079562
S.E. of regression	0.047286	Akaike info criterion	-3.011833
Sum squared resid	0.033539	Schwarz criterion	-2.664684
Log likelihood	40.13017	F-statistic	7.408560
Durbin-Watson stat	1.854959	Prob(F-statistic)	0.000799

Dependent Variable: ICP
Method: Least Squares
Date: 11/29/11 Time: 22:53
Sample(adjusted): 1988 2009
Included observations: 22 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.119842	0.936899	4.397314	0.0005
LDOP(-1)	0.081370	0.084651	0.961238	0.3517
LL(-1)	-1.482982	0.595433	-2.490597	0.0250
LK(-2)	0.176087	0.068076	2.586639	0.0206
LEXR(-1)	0.070734	0.081725	0.865516	0.4004
LINF	-0.022902	0.031022	-0.738237	0.4718
SDUM	-0.074977	0.075323	-0.995412	0.3353

R-squared	0.860374	Mean dependent var	2.172132
Adjusted R-squared	0.804524	S.D. dependent var	0.144268
S.E. of regression	0.063785	Akaike info criterion	-2.413228
Sum squared resid	0.061028	Schwarz criterion	-2.066079
Log likelihood	33.54551	F-statistic	15.40500
Durbin-Watson stat	1.957622	Prob(F-statistic)	0.000012

Dependent Variable: ILIP
Method: Least Squares
Date: 11/29/11 Time: 22:56
Sample(adjusted): 1987 2009
Included observations: 23 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.369189	0.697699	3.395718	0.0037
LDOP(-1)	0.051333	0.050373	1.019069	0.3233
LL(-1)	-0.621217	0.459093	-1.353140	0.1948
LK(-1)	0.159092	0.052161	3.050034	0.0076
LEXR(-1)	0.130770	0.053207	2.457782	0.0258
LINF	0.003500	0.020292	0.172505	0.8652
SDUM	0.010637	0.045313	0.234743	0.8174

R-squared	0.957730	Mean dependent var	2.216243
Adjusted R-squared	0.941878	S.D. dependent var	0.172468
S.E. of regression	0.041579	Akaike info criterion	-3.276636
Sum squared resid	0.027661	Schwarz criterion	-2.931050
Log likelihood	44.68131	F-statistic	60.41937
Durbin-Watson stat	1.847129	Prob(F-statistic)	0.000000

Dependent Variable: IFISP
Method: Least Squares
Date: 11/29/11 Time: 23:01
Sample(adjusted): 1988 2009
Included observations: 22 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.063509	1.327420	-2.307868	0.0357
LDOP(-1)	0.286618	0.111160	2.578415	0.0210
LL(-1)	3.448839	0.868235	3.972239	0.0012
LK(-1)	-0.408050	0.108115	-3.774211	0.0018
LEXR(-2)	0.108991	0.102624	1.062042	0.3050
LINF	0.030001	0.039506	0.759400	0.4594
SDUM	0.282314	0.096919	2.912893	0.0107

R-squared	0.778812	Mean dependent var	2.117324
Adjusted R-squared	0.690336	S.D. dependent var	0.146818
S.E. of regression	0.081701	Akaike info criterion	-1.918140
Sum squared resid	0.100125	Schwarz criterion	-1.570991
Log likelihood	28.09954	F-statistic	8.802587
Durbin-Watson stat	2.358607	Prob(F-statistic)	0.000319

Dependent Variable: IFRP
Method: Least Squares
Date: 11/29/11 Time: 23:04
Sample(adjusted): 1988 2009
Included observations: 22 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.236203	0.631702	1.956940	0.0692
LDOP(-1)	0.048214	0.060006	0.803495	0.4342
LL(-1)	-0.083445	0.398822	-0.209229	0.8371
LK(-2)	0.205029	0.048767	4.204270	0.0008
LEXR(-2)	-0.103223	0.055422	-1.862496	0.0822
LINF	0.027993	0.021096	1.326964	0.2044
SDUM	-0.056914	0.052834	-1.077209	0.2984

R-squared	0.893356	Mean dependent var	2.095712
Adjusted R-squared	0.850698	S.D. dependent var	0.115872
S.E. of regression	0.044773	Akaike info criterion	-3.121071
Sum squared resid	0.030069	Schwarz criterion	-2.773921
Log likelihood	41.33178	F-statistic	20.94241
Durbin-Watson stat	0.919443	Prob(F-statistic)	0.000002

APPENDICES C: ABBREVIATIONS

AOA	Agreement on Agriculture
EP	Export Promotion
ISI	Import Substitution Industrialization
IMF	International Monetary Fund
IFAD	International Fund for Agricultural Development.
IFI	International Financial Institutions
IS	Import Substitutions
GATT	General Agreement on Tariff and Trade.
HO	Hechecher-Ohlin
MUC	Multinational Corporation
NIC	Newly Industrialized Country
STFM	Second Tier Foreign Exchange
WTO	World Trade Organization