IMPACT OF MACROECONOMIC FACTORS ON ECONOMIC GROWTH, AGRICULTURAL OUTPUT AND EXPORT IN NIGERIA

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ABSTRACT

The correct determinations of the macroeconomic factors would drive economic growth especially the agricultural output and export for a specific country. Thus, the main objective of the study is to ascertain the major macroeconomic factors that would drive Nigeria's economic growth and agricultural sector in terms of output and export. The long-run and short-run effects of the macroeconomic factors identified on economic growth, agricultural output and export are examined. In addition, the direction of Granger causality among oil export, agricultural export and economic growth is determined. This study used the data span from 1981 to 2014. Augmented Dickey Fuller (ADF) and Philips and Perron (PP) unit root test were employed to test for stationarity of the series. The bound testing was then used to examine the existence of long-run relationship, while Autoregressive Distributed Lag (ARDL) was used to examine the long-run and short-run relationship. Finally, the Granger causality was employed to test further relationship among oil export, agricultural export and economic growth. The results indicate that agricultural export and crude oil price have positive and significant impact on economic growth in the long-run but insignificant in the short-run. In the short-run, agricultural land and crude oil price hindered agricultural output with government spending on agriculture and unemployment rate being positive and significant on agricultural output. In the long-run, agricultural land and crude oil price have positive and significant impact on the agricultural output; though unemployment rate is negative and significant. Structural Adjustment Policy (SAP) has negative and insignificant impact both in the short-run and long-run on agricultural output but negative and significant on agricultural export. Hence, the study suggests that an increase in the quantity of agricultural export, government spending, improvement in SAP and the rise in the crude oil price will enhance the nation's agriculture and economic growth.

Keywords: agricultural export, agricultural output, crude oil price, economic growth, exchange rate

ABSTRAK

Penentuan faktor-faktor makroekonomi yang betul akan memacu pertumbuhan ekonomi khususnya pengeluaran dan eksport pertanian sesebuah negara. Oleh itu, objektif utama kajian ini adalah untuk menentukan faktor-faktor makroekonomi utama yang akan memacu pertumbuhan ekonomi Nigeria, pengeluaran serta eksport dalam sektor pertanian. Kesan faktor-faktor makroekonomi terhadap pertumbuhan ekonomi, pengeluaran dan eksport pertanian dalam jangka masa pendek dan panjang juga akan dianalisis di samping penentuan sebab akibat Granger antara eksport minyak, eksport pertanian dan pertumbuhan ekonomi. Kajian ini menggunakan data dari tahun 1981 hingga 2014. Ujian Augmented Dickey Fuller (ADF) dan Philips dan Perron (PP) telah digunakan untuk menguji kepegunan siri masa. *Bound testing* telah digunakan untuk memeriksa kewujudan hubungan jangka panjang, manakala *Autoregressive Distributed Lag* (ARDL) telah digunakan untuk mengkaji hubungan jangka masa panjang dan pendek. Akhir sekali, ujian sebab akibat Granger telah digunakan untuk menguji hubungan antara eksport minyak, eksport pertanian dan pertumbuhan ekonomi. Keputusan kajian menunjukkan bahawa eksport pertanian dan harga minyak mentah mempunyai kesan positif dan signifikan terhadap pertumbuhan ekonomi dalam jangka masa panjang, tetapi tidak signifikan dalam jangka masa pendek. Dalam jangka masa pendek, tanah pertanian dan harga minyak mentah memberi kesan negatif terhadap pengeluaran pertanian. Perbelanjaan kerajaan ke atas pertanian dan pengangguran mempunyai kesan positif terhadap pengeluaran pertanian dalam jangka pendek, namun kadar pengangguran adalah negatif dan signifikan dalam jangka masa panjang. Namun begitu, tanah pertanian dan harga minyak mentah mempunyai kesan positif dan signifikan terhadap pengeluaran pertanian dalam jangka masa pendek. *Structural Adjustment Policy* (SAP) memberi kesan negatif terhadap output pertanian, tetapi didapati tidak signifikan dalam jangka pendek dan panjang. Oleh itu, kajian ini mencadangkan kuantiti eksport pertanian serta perbelanjaan kerajaan untuk pembangunan pertanian perlu dipertingkatkan, manakala SAP perlu dikaji semula dan kenaikan harga minyak mentah akan meningkatkan pengeluaran pertanian serta pertumbuhan ekonomi negara.

Kata kunci: eksport pertanian, output pertanian, harga minyak mentah, pertumbuhan ekonomi, kadar pertukaran

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LIST OF ABBREVIATIONS

ACGSF	Agricultural Credit Guarantee Scheme Fund
ADF	Augmented Dickey Fuller
ADP	Agriculture Development Projects
AIC	Akaike Information Criterion
ARDL	Autoregressive Distributed Lag
BOP	Balance of Payment
BOT	Balance of Trade
CB	Commodity Boards
CBN	Central Bank of Nigeria
CBNAR	Central Bank of Nigeria Annual Reports
CBNSA	Central Bank of Nigeria Statement of Account
CBNSB	Central Bank of Nigeria Statistical Bulletin
CPI	Consumer Price Index
CUSUM	Cumulative Sum
CV	Critical Value
ECM	Error Correction Model
EU	European Union
FDI	Foreign Direct Investment
FPE	Final Prediction Error
GARCH	Generalized Autoregressive Conditional Heteroskedasticity
GDP	Gross Domestic Product
GNP	Gross National Product
GRP	Green Resolution Programme
HQ	Hannan-Quinn Criterion
IMF	International monetary Fund
IRF	Impulse Response Function
JV	Joint Venture
KSA	Kingdom of Saudi Arabia
KPSS	Kwiatkowski Philips Schmidt Shin
LDCs	Less Developing Countries

LEEDS	Local-level Economic Empowerment and Development Strategy
LR	Likelihood Ration
NACB	Nigerian Agricultural and Cooperatives Bank
NAFPP	National Accelerate Food Production programme
NAP	New Agricultural Policy
NEPAD	New Partnership for Africa's Development
NER	Nominal Exchange Rate
NNPC	Nigerian National Petroleum Corporation
NOM	Non-Oil Import
NSS	National Seeds Services
OECD	Organization for Economic Cooperation and Development
OFN	Operation Feed the Nation
OLS	Ordinary Least Square
OPEC	Organization of Petroleum Exporting Countries
PP	Phillips Perron
RBDAs	River Basin Development Authorities
RDSS	Rural Development Sector Strategy
RER	Real Exchange Rate
RMB	Renminbi
SAP	Structural Adjustment Program
SBC	Schwarz Bayasian Criterion
SEEDS	State-level Economic Empowerment and Development Strategy
SMES	Small and Medium Enterprises
TOT	Terms of Trade
US	United States
USD	United States Dollar
UK	United Kingdom
VAR	Vector Autoregressive Models
VECM	Vector Error Correction Model
WGI	Worldwide Governance Indicator

CHAPTER ONE

INTRODUCTION

1.1 Background

Economic growth is a worldwide concern of countries that can be mirrored in country's Gross Domestic Product (GDP). Economic growth is also linked with national economic size of a country (Brown *et al.*, 2011). Micro and macro-economic factors can determine economic growth of a country (Meade, 2013). However, GDP is largely influenced by macroeconomic factors which can determine the trend that a country's economy is positioned. Hence it is important to make further investigation of macroeconomic factors on economic growth; for improving and achieving rise in standard of living worldwide.

Many macroeconomic factors can be identified as the primary source of economic growth where export is one of the vital factors (Robertson, 1938). There have been a considerable number of studies in economic development and growth literature concerning the exports significance as an engine for economic growth. It has been widely acknowledged in theory as well as in practice that exportation leads to several economic benefits for a country. Such as income growth, foreign exchange earnings used to finance imported goods and advancement in technology (Dawson, 2005). Likewise, export commodity by a country represents one of the important sources of foreign income that ease pressure on balance of payments (BOP) and generate employment. Hence, these economic benefits made exportation significant for both developing and developed countries. Therefore improvement is needed in their outputs for export promotion (Vohra, 2001; Abou-Strait, 2005; Omotor, 2008; Mehdi & Reza 2011).

Export promotion involves encouraging domestic production for exportation usually by providing incentives for domestic producers. Increasing exports are important not only for developing but also developed economies, since the growth of export has forward and backward links to all sectors in the economy (Uzomba, Imiosi & Somiari, 2012). Many countries have engaged in export promotion strategy far back in 1970 as part of the most proficient gears for growth and development because export has been regarded as a catalyst for the overall economic development (Abou-stait, 2005; Bahmani-Oskooee & Economidou, 2009; Klasen & Lamanna, 2009; Palley, 2011).

1.2 Nigeria Economy at a Glance

Due to the discovery of oil and population growth, the Nigerian economy has been identified as one of the best emerging economies in the continent (Ihugba, Odii & Njoku, 2014). The country's GDP was found to overtake South Africa, the leading economy for a decade. According to Nigeria's Statistics Bureau (2013) Nigeria's GDP was at USD 503 billion (80.48 trillion Naira) which exceeded South Africa at USD 350 billion (56 trillion Naira). Potts (2012) associated this growth to the modifications of economic strategies on the telecommunication and film industries. It was discovered that the modifications caused the country's GDP to rise from USD 268.6 billion (42.3 trillion Naira) to USD 509.9 billion (80.3 trillion Naira) in 2013 which is about 89 percent of improvement. This has moved Nigeria's position in the world largest economy to 24th with 12 places up. Hence, it placed the country to overtake Austria and Iran and in the same group with Belgium and Poland.

1.2.1 Economic Growth in Nigeria

Nigeria is a vivid example of developing countries with multi sectors in terms of contribution to GDP. Table 1.1 shows the oil and non-oil sub-sectors contribution to GDP in percentage at the constant prices of 1990. By the mid-1970s, agricultural, manufacturing, solid mineral and services sectors of the economy have been declining; whereas effort was being concentrated on the oil sector by the government and private organizations, a circumstance regarded as the dutch disease (Uzomba *et al.*, 2012). Since non-oil sectors' performance has been contributing significantly to GDP and sectoral growth of Nigeria, its exportation can also be necessary to increase revenue and foster growth and development.

Table 1.1

Sectors Contribution to GDP of Nigeria

Sectors	1960 (%)	1970 (%)	1980 (%)	1990 (%)	2000 (%)	2005 (%)	2010 (%)	2014 (%)
Oil (Crude petroleum)	0.3	7.1	22.0	12.8	47.5	14.7	15.9	10.8
Non-oil:								
Agriculture	64.1	47.6	30.8	39.0	35.7	27.1	40.8	20.2
Manufacturing	4.8	8.2	8.1	8.2	3.4	7.9	4.2	9.8
Solid mineral	0.8	0.9	2.2	0.3	0.3	0.09	0.3	0.1
Services	12.2	20.2	19.5	10.3	10.2	32	10.1	37.9
Others	17.8	16.0	17.4	29.4	2.9	18.2	28.7	21.2

Source: Central Bank of Nigeria (CBN): Annual Report and Statement of Accounts, 2015.

The country is mono dependent in terms of its export contributions to growth. Nigeria's export earnings increased approximately from USD 216, 000 (34.56 million Naira) in 1960 to USD 9 million (1.44 billion Naira) in 1980 due to the oil sector (CBN, 2011). Since then, the Nigeria economy has been highly dependent on proceeds from oil. This constitutes over 90 percent of total foreign exchange earnings required to finance several national development projects (Okunnu & Adeyemi, 2008). Whenever oil prices rise or fall, the fortune of increased or reduced revenue will automatically manifest itself on the economy of Nigeria. The economy is therefore prone to shocks in the oil industry. This is depicted in Figure 1.1 as the trend of oil and non-oil sectors contribution to total revenue in percentage terms. The oil revenue that was 64.4 percent in 1985 increased to 88.6 percent in 2005, but dropped to 67.5 percent in 2013. However, the non-oil revenue that was at 35.6 percent in 1985 declined to 11.4 in 2005 but increased to 32.5 percent in 2013. Hence revealing that the non-oil exports' worth accounts for less than 40 percent of the total revenue.

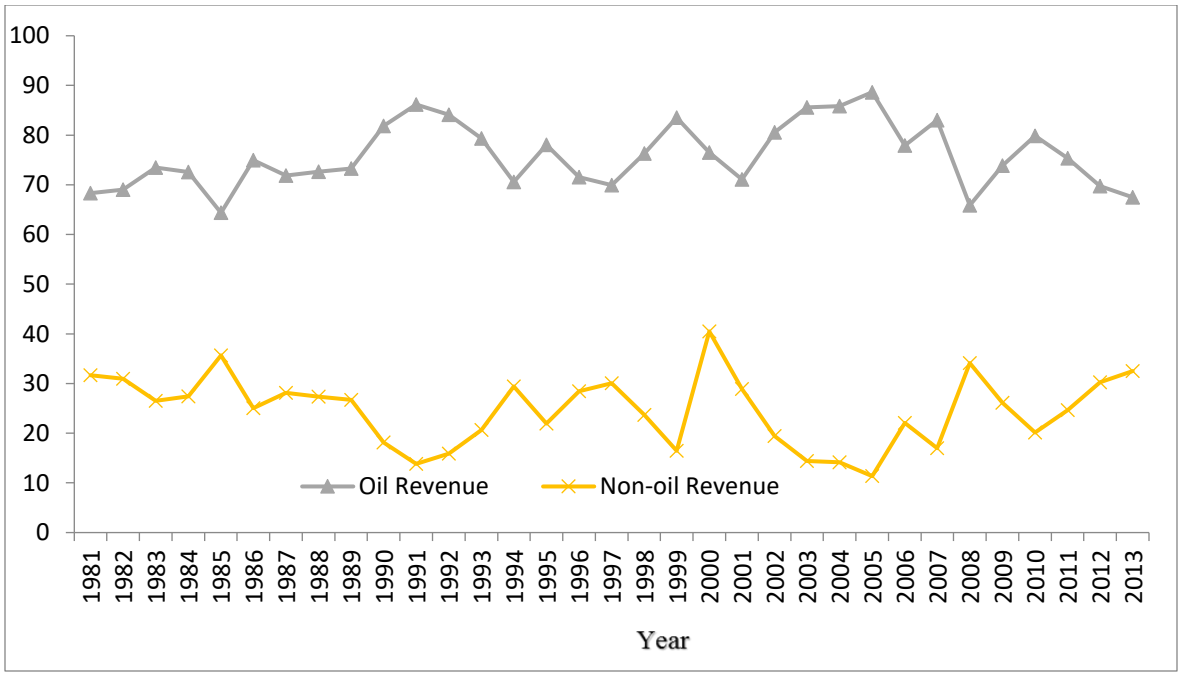


Figure 1.1
Percentage Contribution of Oil and Non-oil Sector to Total Revenue, 1981-2013.
Source: CBN Annual Report and Statement of Accounts, 2014.

The non-oil sectors served as the major products exported for the period of 1960 and 1970, with the help of 70 percent (USD 1.33 million) contribution from the agriculture sector. By the early 1980s, non-oil export prosperities declined when oil was discovered in a large marketable size. Non-oil exports also collapsed in global prime goods markets in respect to deterioration in the terms of trade. The government thereby embarked on a wide range of policy reform towards economic liberalization which was the Structural Adjustment Programme (SAP) in 1986. SAP is one of several adjustment policies being executed to increase exports, by boosting major and important non-oil output towards achieving economic diversification that is vital for the realization of growth sustainability. Nevertheless international demand for Nigeria's non-oil exports still decrease during this implementation era (Okoh, 2004; Daramola, Ehui, Ukeje & Mclntire, 2008; CBN, 2012).

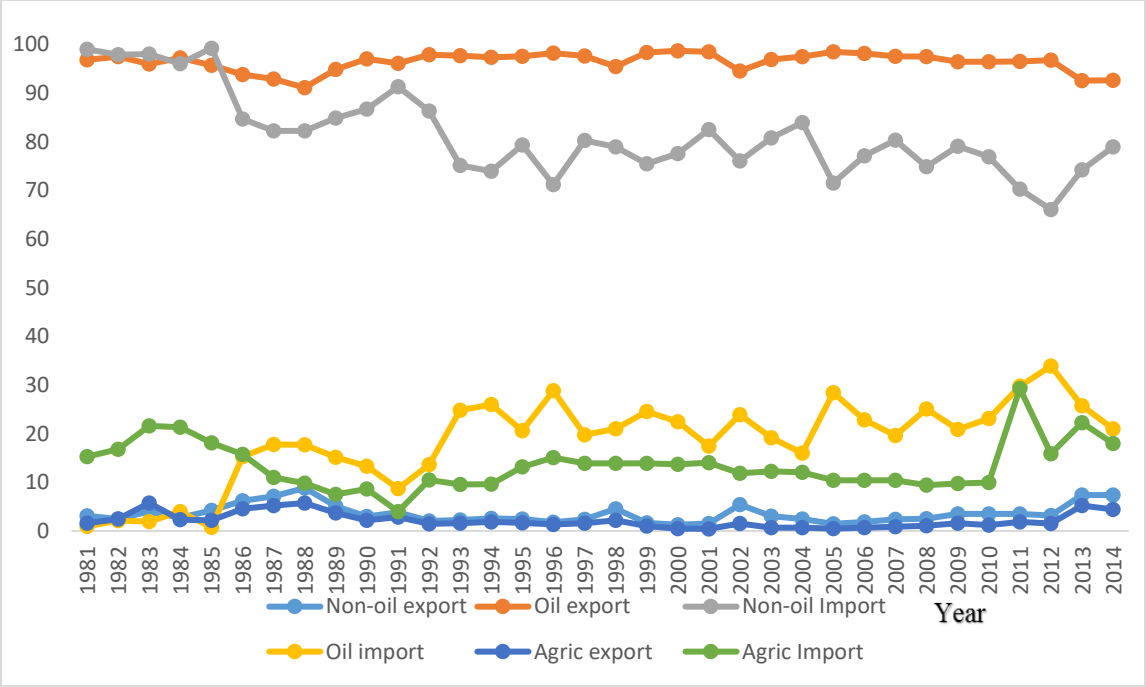


Figure 1.2
Percentage Trend of Nigeria's Oil, Non-oil and Agriculture Export and Import, 1981-2014.
Source: CBN Annual Report and Statement of Accounts, 2015.

Figure 1.2 shows the percentage trend of Nigeria's oil, non-oil and agricultural export and import from 1981 to 2014. Non-oil export is revealed to be critically low compared to the oil export. Oil export in 1990 was 97 percent but declined to 92.6 percent in 2014. Oil import in 1990 was 13.3 percent, increased to 21 percent in 2014. For the non-oil export, that was 6.2 percent in 1986 slightly increased to 7.4 percent in 2014. Whereas non-oil import of 84.7 percent in 1986 decreased to 78.9 percent by 2014. This is also similar in the case of the agricultural sector due to the fact that the non-oil export and import trends in Figure 1.2 was being mimicked by agricultural export and import trends.

In 1950s and 1960s, agriculture accounted for 60-70 percent of the total exports as a result of the country being a major exporter of agricultural commodities such as cocoa, cotton,

rubber and groundnut. Table 1.2 shows percentage of oil, agriculture and other non-oil exports (manufactured goods, semi manufactured, solid minerals, petroleum by-product, charcoal, craft and cement/limestone) to total export. Oil export remains the dominant contributor**,** maintaining its dominant role in the economy with an increasing contribution trend. However, agriculture exports show a very low contribution trend to the total exports of the country following the fluctuating trend of the agriculture output.

Table 1.2

Sectoral Contribution to Total Export in Term of Percentage

Sectors	1960 (%)	1970 (%)	1980 (%)	1990 (%)	2000 (%)	2005 (%)	2010 (%)	2014 (%)
Oil (Crude petroleum)	25.3	57.6	96.1	97.1	98.7	97.5	94.04	92.6
Non-oil: Agriculture	64.2	30.2	2.6	1.5	0.5	2.1	3.51	5.14
Others	10.5	12.2	1.3	1.4	0.8	0.4	2.45	2.26

Source. From CBN Annual Report and Statement of Accounts, 2015.

Agricultural exports as a percentage of total exports earning fell from about 30 percent to around 5 percent between 1970 and 1975. Agriculture exports continue to decline drastically thereby made agriculture accounted for only 2 percent of the total exports as at 1996. In 2000, agriculture was accounting for 0.5 percent of the total export and increased to 5.14 percent in 2014. In terms of the non-oil export, agriculture sector was contributing greatly of 70 percent and 60 percent approximately in 1970 and 1980 respectively. Agricultural merchandises constitute the bulk of non-oil sector in Nigeria by being the core source and greatest non-oil foreign exchange earner. By 2000 the agriculture sector declined to 37.6 and 58.9 percent in 2014 (Daramola *et al*., 2008; Sanusi, 2010; CBN,

2015; Uzomba *et al*., 2012). However, in order to promote the agriculture sector that is becoming weak and huge decreases in its export, numerous policies, programs and strategy reforms aiming at key macroeconomic factors were embarked on by the government. Some of the reforms targeted the regulation of exchange rate, interest rate and trade liberalization policies.

In like manner, the country's exportation also helps to attain a favorable balance of trade (BOT) position by increasing aggregate sectors output (Adenugba & Dipo, 2013). The need to investigate on the sectors comprising of non-oil is thereby necessary for the improvement in BOT, exportation and growth of the country. Moreover, the major cause of the decline in non-oil exports can be attributed to the fall in agriculture and large inflows of foreign exchange from oil export. Nigeria's BOT of non-oil sector has been indicating a negative slope and an increasing trend for the BOT of the oil sector as shown in Figure 1.3. The oil BOT that was USD 628.46 in 1990 increased to USD 61200 in 2014, whereas, the non-oil BOT that stood at USD -227.41 in 1990 declined to USD 46063.75 in 2014.

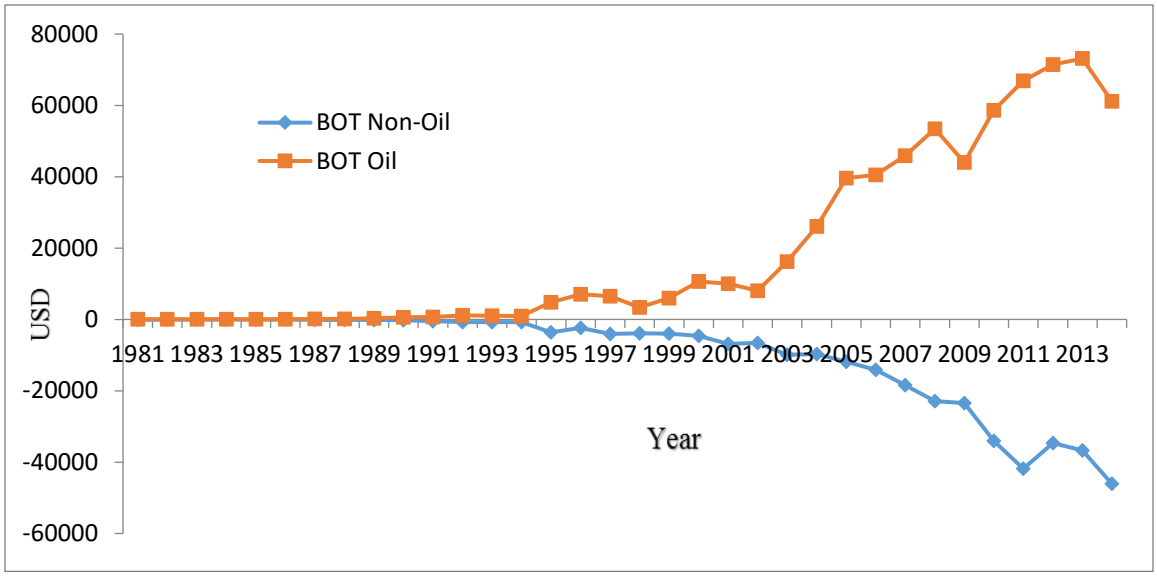


Figure 1.3
Trend of Nigeria's BOT Non-oil and Oil Export (US Dollars).
Source: CBN Annual Report and Statement of Accounts, 2015.

Moreover, since exports symbolise a crucial source of foreign exchange revenue by creating employment opportunities and reducing balance of payments pressure; exports undoubtedly have a pivotal role in Nigerian's economic growth. This is by playing a key role on the supply and demand of an economy. On the supply side, they provide the basis to acquire through foreign exchange the imported capital goods and technology which are necessary for gearing Nigeria's productive system towards a rapid economic growth. Export also serves to energize the domestic productive system by being used to foster international competitiveness. On the demand side, they act favourably and serve to support the aggregate demand. Indeed, the whole efficiency of resource allocation is, to a large extent, mirrored in terms of export performance.

1.2.2 Macroeconomic Factors and Growth in Nigeria Economy

Evidences by most economists based on the 1970s and 1980s experiences assumed that good macroeconomic policies are essential and adequate for the achievement of sustainable growth in the long run. Hence, macroeconomic factors which consists of fiscal, monetary and trade policies influence economic growth. Since all the policies (fiscal, trade and monetary) are interdependent, macroeconomic policies can therefore be defined as policy mix. Nigeria as an example of a developing nations has embraced various policy mix in the means of improving the overall feasibility of the country's economy performance. Although several policies are being designed by the government to improve Nigeria's economy as a whole, some policies often have causal and detrimental effects on output growth. For instance, the falling of global commodity price and increasing of world crude prices of recent have become more challenging for government in stimulating the economy without endangering macroeconomic stability (Ali, Ali, Farah & Ariff, 2010). Hence, associate the improvement of macroeconomic factors to be anchored to the nations' growth.

Furthermore, the international financial crisis which began in 1997 continues to affect the external trade of agricultural sector. In the case of South Africa, changes in macroeconomic factors such as exchange rate improved the agricultural sector performance (Kargbo, 2007). Likewise, Odior (2014) observed that changes in exchange rate, interest rate and other macroeconomic factors have considerable impact on Nigeria's agricultural sector. However, the downward trend of agricultural sector revealed can be ascribed to the influences of some of these macroeconomic factors. Hence, making investigation on

macroeconomic factors crucial for future performance of the economic growth of nations and also agricultural sector. This is not only to increase the agricultural sector's contribution to GDP, but can also help to cushion the effect of price shocks in the international oil (crude oil) market and promote non-oil export. In addition, to improve the outlook of other non-oil sectors such as the manufacturing sector where agricultural outputs are being required. Thus, important macroeconomic factors like the interest rate, agricultural land, unemployment rate, agricultural export, crude oil price, inflation rate, government spending, SAP, openness and exchange rate will be considered in the study.

Table 1.3

Correlation Table for Macroeconomic Factors to GDP, Agricultural Output and Export

	GDP		Agricultural Output		Agricultural Export	
Macroeconomic Factors	Pre	After	Pre	After	Pre	After
Inflation rate	-0.38	-0.11	-0.12	0.15	0.15	-0.26
Interest rate	-0.32	0.38	0.05	0.07	-0.05	0.08
Exchange rate	0.20	0.42	0.76	-0.38	-0.21	0.57
Unemployment rate	-0.03	0.27	0.70	-0.52	-	-
Crude oil Price	-0.31	-0.06	-0.07	0.26	0.42	-0.46
Agric. Export	0.01	0.13	-	-	-	-
Govt. Spending on Agric.	-	-	0.03	-0.07	0.05	0.24
Agric. Land	-	-	0.21	-0.26	-0.08	0.41
Openness	-	-	-0.69	-0.47	0.32	0.69

Source: Author's Calculation.

Table 1.3 shows the correlation results for some macroeconomic indicators to economic growth alongside the agriculture output and export. The year 1970 to 1985 was observed as the pre SAP era and after SAP was from 1986 to 2014. There was an indication of

different changes in all the correlation figures of variables observed on GDP, agricultural output and export in Table 1.3 after SAP. The correlation figures of inflation rate and crude oil price to GDP that were -0.38 and -0.31 before SAP, improved and still remains negative with -0.11 and -0.06 respectively. As for variables such as exchange rate and agricultural exports remain positive but slightly increased after SAP. While unemployment and interest rate that were negative before SAP changed to positive after SAP.

Furthermore, a critical look at Table 1.3 shows that the correlation of inflation rate, interest rate and crude oil price to agricultural output increased after SAP. Whereas government spending on agriculture, exchange rate, unemployment rate and agricultural land became negative after SAP. In the case of openness, the correlation figures retains the negative sign after SAP but less in term of figure comparison to pre-SAP. However, the outcomes of variables such as interest rate, agricultural land and exchange rate examined on agricultural exports with negative sign before SAP became positive. Government spending on agriculture and openness remains positive while inflation rate and crude oil price altered from positive to negative sign after SAP.

The movement at this period of SAP mirrors on vulnerability of the country, being that agricultural sector that is the major contributors to economic growth reduced tremendously in term of export. Hence, making the country to be exposed to economy fluctuation due to the concentration on oil export as the prime product. Whereby, misappropriation of government spending, high interest rate, exchange rate instability accompanied with high inflation rate was being experienced. More so, this indicates the poor macroeconomic

policies performance which makes the disorder of the external balance by increasing external debts despite the devaluation of the country's currency.

Despite exportation in developing countries have been proposed to enhance revenue and usher in economic growth and development (Robertson, 1938; Udosen, Etok & George, 2009; Adenugba & Dipo, 2013); diversity of Nigeria's exports base can still be identified to give a better way of achieving economic growth (Dawson, 2005; Ezike & Ogege, 2012). More so, potential access from export encouragement through macroeconomic factors could be considered, as successful development relies upon policies (Mckinnon, 1973). Furthermore, for critical addressing of problem militating subsectors of non-oil performance in view of the fact that "oil is an exhaustible asset", sectoral analysis is necessary which few studies have examined. This thereby raised the needs for investigating the sectoral components of non-oil such as agriculture for proper managing and improvement through some macroeconomic policies by the government that will aid its output and exportation. Similarly, agriculture has been concluded to be an engine of economic growth and development through its important roles like serving as other raw products for other non-oil sectors, basis of food to man, poverty reduction in most nations (Johnston & Mellor, 1961; Awokuse, 2009; Yao, 2000; Izuchukwu, 2011; Kaya, Kaya & Gunter, 2012; Luca, Cionga & Giurca, 2013) and constituting the largest share of the non-oil (Okoh, 2004; CBN, 2012) with limited work facilitate the direction for this study. Hence impact of inflation rate, crude oil price, unemployment rate, government spending on agriculture, SAP, exchange rate and agricultural land on the economy are being examined for better output growth and positioning of diversity in export base.

1.3 Problem Statement

Due to the lack of structural economic changes and world economy's ongoing globalization process, Nigeria is yet to reach the eminences of a developed economy. The country is yet to manage her resources properly for the creation of wealth and improving the economy despite her abundance of natural resources. Oil as part of the natural resources is being depended on because the economy generates revenue from the sector. The reliance on oil sector subjects the country to difficulties; whereby Nigeria as an open economy to the rest of the world is vulnerable to global market shocks once there are changes in the price of crude oil. Also, it can be perceived that a factor crucial for the low economic progress in the country is lack of economic diversity (Osuntogun, Edordu & Oramah, 1997; Colman & Okorie, 1998; Omotor, 2008; Ushie, Adeniyi & Akongwale, 2013).

Though there is reliance on oil export and the profits from exportation, fact remains that part of the country still depends on economic diversification. Nigeria's spectacular economic growth in recent times has been through the non-oil sectors such as agriculture, which was projected to be 3.5 percent growth in 2017 in spite of the country's potential in the agricultural sector. The contribution of agriculture to the country's growth is quite low compared to what it used to be in the past. It has seriously declined over the past few decades which resulted in the shortage of food and incidence of rural poverty. Likewise, the downward trend the economy has been experiencing since independence in 1960 could be due to inadequate finance and a wide range of economic reforms influencing the output growth.

The country's low effort in diversifying has caused concern for the economy which can be attributable largely to the low contribution from agriculture to real output, economic liberalization policy in 1986 that is Structural Adjustment Programme (SAP) coupled with the devaluation of the exchange rate, misappropriation of government spending and fall in export of agricultural commodity prices in the world market following the oil boom era. However, almost all of the African nations that implemented SAP are today experiencing increasing indebtedness, mass unemployment, budget deficits and even the devaluation trend of currencies of the nations; which revealed a slow growth of the nations.

The instability in the exchange rate worsened the economy by causing uncertain inflation and deterioration of trade balance by favoring imports of food and raw materials. Likewise the exchange rate influence the agricultural output and export by affecting the agricultural prices and costs. This is as a result of the country's exportation of a portion of her agricultural supply which are traded internationally. Thus, the exchange rate directly influences the agricultural export because depreciation of the exchange rate causes the domestic price of exported agricultural commodities to fall in terms of foreign exchange and to raise in terms of domestic currency thus stimulating production. However, the agricultural production has not been able to meet the increasing population needs. In light of the facts mentioned, macroeconomic factors like crude oil price, economic liberalization policy (i.e SAP), unemployment rate, exchange rate, government spending on agriculture and inflation rate influence on agriculture and the economy in Nigeria are to be examined. Since it has been established that there is a resilient link between the country's GDP and agriculture, based on the suggestion that performance of agricultural sector has prospects of non-oil and the economy in all (Anthony, 2010; Ammani, 2011; Izuchukwu, 2011).

1.4 Research Questions

Due to the major problems highlighted facing the country Nigeria, there is need for promotion of agricultural sector through the aid of macroeconomic variables to foster exportation, growth and reduce shock the economy is being exposed to from the oil sector. Therefore these specific research questions would be explored:

i. What are the important macroeconomic variables influencing economic growth, agricultural output and agricultural export in Nigeria?
ii. What are the short and long run effect among these important macroeconomic factors on the economic growth in Nigeria?
iii. What are the long and short run impact among these essential macroeconomic factors on the agricultural output in Nigeria?
iv. What are the long and short run influences of these key macroeconomic factors on the agricultural export in Nigeria? and
v. What is the Granger relationship among oil export, agriculture export and economic growth in Nigeria?

1.5 Research Objectives

The overall objective of the study is to investigate on the macroeconomic variables that affect Nigeria's economic growth and agriculture. While specific objectives guiding are:

i. to identify the important macroeconomic factors contributing to economic growth, agricultural output and agricultural export;

ii. to investigate the long and short run effects of macroeconomic factors on economic growth;

iii. to determine the long and short run impact of macroeconomic factors on agricultural output in Nigeria;

iv. to examine the long and short run impact of macroeconomic factors on agricultural export in Nigeria; and

v. to determine the direction of Granger causality among oil, agriculture export and economic growth in Nigeria.

1.6 Scope of Study

This research work will investigate on non-oil's (agriculture that consists the major percentage of the non-oil sector) trend and composition, likewise the sector's export view during pre and post SAP time. SAP was chosen because it was a policy formulated to work in line with macroeconomic factors and sectors. The study would also explore the impact and relationship of the macroeconomic factors on the agricultural output, exports and economic growth. It will be restricted to the Nigeria economy and expected to investigate on growth and one of the disaggregate non-oil sectors that is agriculture. The study is limited to time span of three decades ranging from 1981 to 2014 based on data accessibility. The credibility of the findings is largely dependent on the veracity of the secondary data to be used.

1.7 Significance of the Study

Export trade affects the economy of every nation, whereby it was recorded that trade flows between 2007 and 2009 has reduced global export growth by more than two-thirds, as a result of worldwide economic and financial crisis that harm countries socially and economically. This, therefore also threatens the survival of countries' economy which cannot dare to embrace diversity such as in the case of Nigeria. However, for Nigeria to make export perform a key function in making gain of the economic stoppage worldwide and fostering growth, it is irrefutable that its macroeconomic policies must concentrate on agriculture as the force for attaining the national vision 2020. Hence, the study is to ascertain the main macroeconomic factors that would improve agricultural and economic growth in Nigeria.

For Nigeria advancement towards a developed economy, this calls for the need to increase the quantum of agricultural sector as well as diversify the export base in the light of vagaries of oil fortunes. A country with low level of investment, as the case of Nigeria, foreign revenue is very much needed to hasten the creeping rate in growth. As a result of this, it is critically important to keep in focus the fact that agriculture offers significant advantages for Nigeria's positioning and competitiveness in the global economy. In this regard, this is designed to evaluate the viability of the agricultural sector of non-oil towards improvement in Nigeria's export diversification since turning around the nation's economic outlook for a good future includes strengthening of non-oil with the aids of

promoting good and stable policies of political and macroeconomic factors or variables that encourage exportation particularly agricultural sector.

The quest for this study can be looked at from the theoretical and practical perspectives thereby predicated on the researcher's strong will to contribute to the body of knowledge by analyzing the economic impact of government spending on agriculture, unemployment rate, crude oil price and SAP in the context of agriculture sector of non-oil for economic growth. Moreover, with the aims to bridge the literature gap in the knowledge of macroeconomic factors on the agriculture in Nigeria; since the non-oil export has the potential of growth in terms of sales, profitability, rate of earnings and productivity if the factors militating against the non-oil exports are addressed (Ningi & James, 2013). Likewise, Omotor (2008) concluded that stabilization economic policies that will boost export promotion and productivity should be sustained and implemented; in wise of government policies stimulating agricultural productivity being examined. This will be of important for policy making in developing countries of the world especially Nigeria for the design of macroeconomic policies in order to promote export through the aid of the agriculture sector; whereas leading towards improvement in economic growth. Likewise, since the role of agriculture in transforming the economy cannot be overstressed by serving as the source of food for human and animal and provides raw materials for industrial sector. More so playing a significant role in the reduction of poverty of nations (Osei & Gbadamosi, 2011), therefore calls for enhancing agricultural sector performance. Also, the research study must be able to explain succinctly components of non-oil in Nigerian

growth; so as to be able to examine the structure and policies needed to be put in place as regarding to the improving of the country's agricultural sector.

1.8 Organization of the Study

The study will consists of six chapters which are structured as follows: Chapter I and II review the overview and economic structure of Nigeria with regards to oil, non-oil sector, policies and their contributions. Chapter III will focus on theoretical and empirical literature of economic growth with regards to exports, non-oil sector and agricultural sector especially. It will also analyze the some macroeconomics variables or factors. This chapter will cover the literature on the application of growth model. The methodology employed in the study and the data utilized in the analysis are described in Chapter IV. The penultimate chapter (Chapter V) presents and analyzes impact of the macroeconomics factors and future prospect of the agricultural sector will be examined with interpretation. The concluding chapter (Chapter VI) summarizes and gives policy implications for the study.

CHAPTER TWO

NIGERIA'S ECONOMY BACKGROUND: AN OVERVIEW

2.1 Introduction

This chapter provides in a nutshell Nigerian economy consisting of the historical background of growth and development through sectors contributions and trends of the country over the years.

2.2 Nigeria's Profile

Nigeria is a country well-endowed with human and material resources that can be as guarantee to the country's sustainable economic growth and development. Nigeria happens to be the West Africa country with largest geographical unit of 923,768 square kilometers total area and 177.2 million population estimated in 2013. The diverse cultural backgrounds made the country with over 250 constituent ethnic nationalities adding efficient incentives to socio-political and cultural scenery. With the scenic structure of the land, the country is naturally divided into three main geographical locations: West, East and North through the help of river Niger and river Benue. Rivers like Benue and Niger with Lake Chad help in the provision of the needed irrigation (supplying dry land with water) for all years farming activities. A map showing Nigeria's economic activity is shown in Figure 2.1.

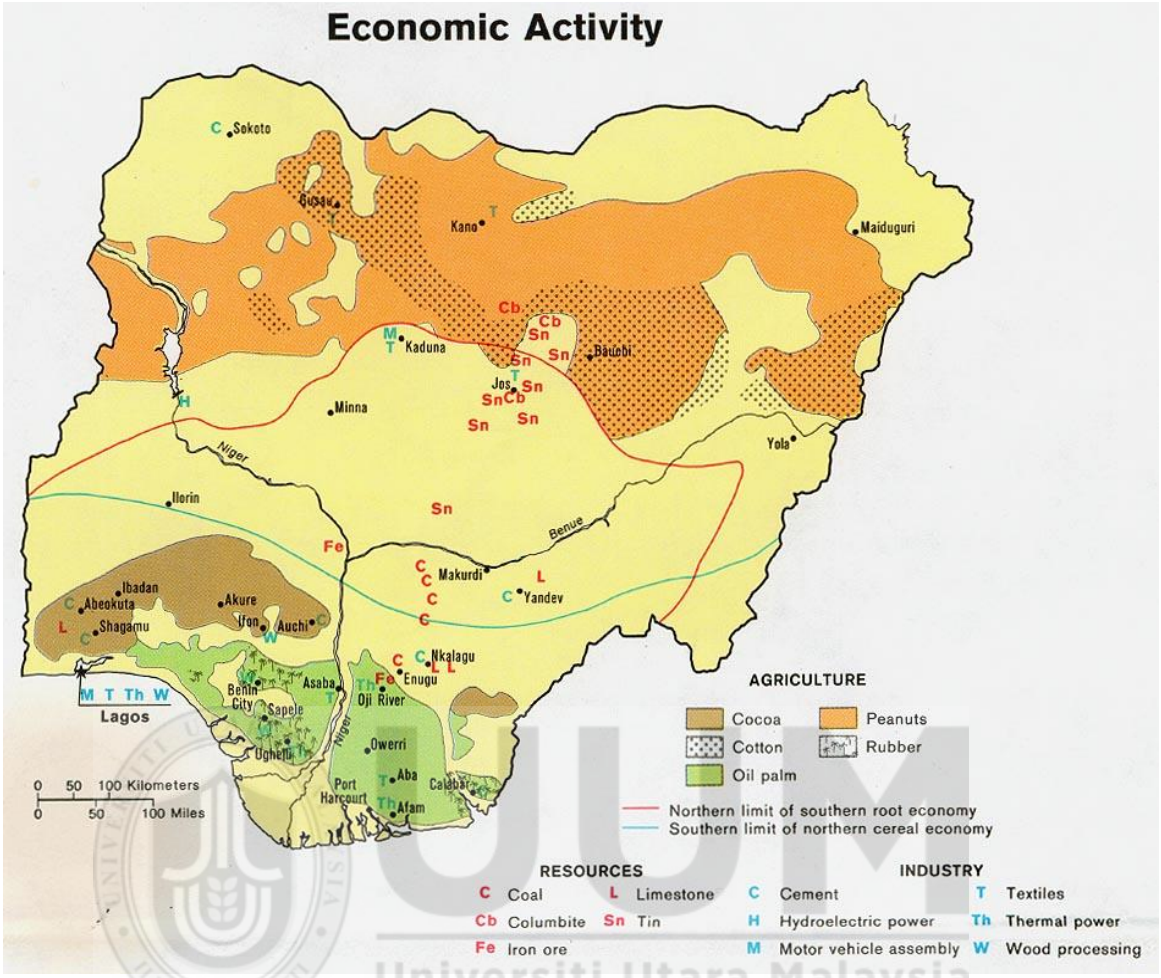


Figure 2.1
Nigeria Economic Activity.
Source: Central Intelligence Agency (CIA), National Geographic Maps

Nigeria as a country has a three-tier federal system of governance which are the legislative, executive and the judiciary; with 36 states, one Federal Capital and administrative Territory and 774 local government councils.

Agricultural activities relating to soil, vegetation and climatic conditions varies from rearing of livestock and planting of root and tree crops in the north and south respectively. There are also large solid reserves which include iron ore, bitumen, coal, tin, columbite and talc are vastly discovered in the country's middle belt area. Bitumen is majorly in the

south west, while in the South east, coal can be found and middle belt, crude oil and natural gas are in the Niger Delta region which is the southern part of the country. Inter-regional trade within the country was facilitated due to the well-endowed materials; making it possible for the country serving as a main importer of raw materials from Europe industries during the colonial period particularly Britain.

Despite the fact that the country is internationally recognized as one of the major oil exporters, production in world supply is still about 2.7 percent. In 2011, USD65 sale price per barrel was projected at export rate of 1.9 Mbbl/d that is 300,000 m^3/d as estimation for placing oil revenues into good view. Approximately, USD52.2 billion was expected as revenue from Nigeria's petroleum. Officially, 14 percent of GDP was been accounted for by the oil sector; which reduced to 10 percent when GDP calculation is done informally. Nigeria economy is highly dependent on proceeds from oil, which constitutes over 90 percent of total foreign exchange earnings required from financing several national development projects. Invariably, whenever oil prices rise or fall, the fortune of increased or reduced revenue will automatically manifest itself on the economy of Nigeria

Currently, the country exports over 90 different products of non-oil to over 103 countries worldwide. It can be exclusively divided into three parts namely: agricultural, manufactured and solid minerals. The motive to rejuvenate non-oil sector in exportation relied not only on foreign income derived, but also the generation of employment and reduction of poverty capability. Therefore, fact still holds that country's economy tends to

act on diversification though oil sector proving to be crucial. However, the contribution of Nigeria sector to GDP is shown in Figure 2.2.

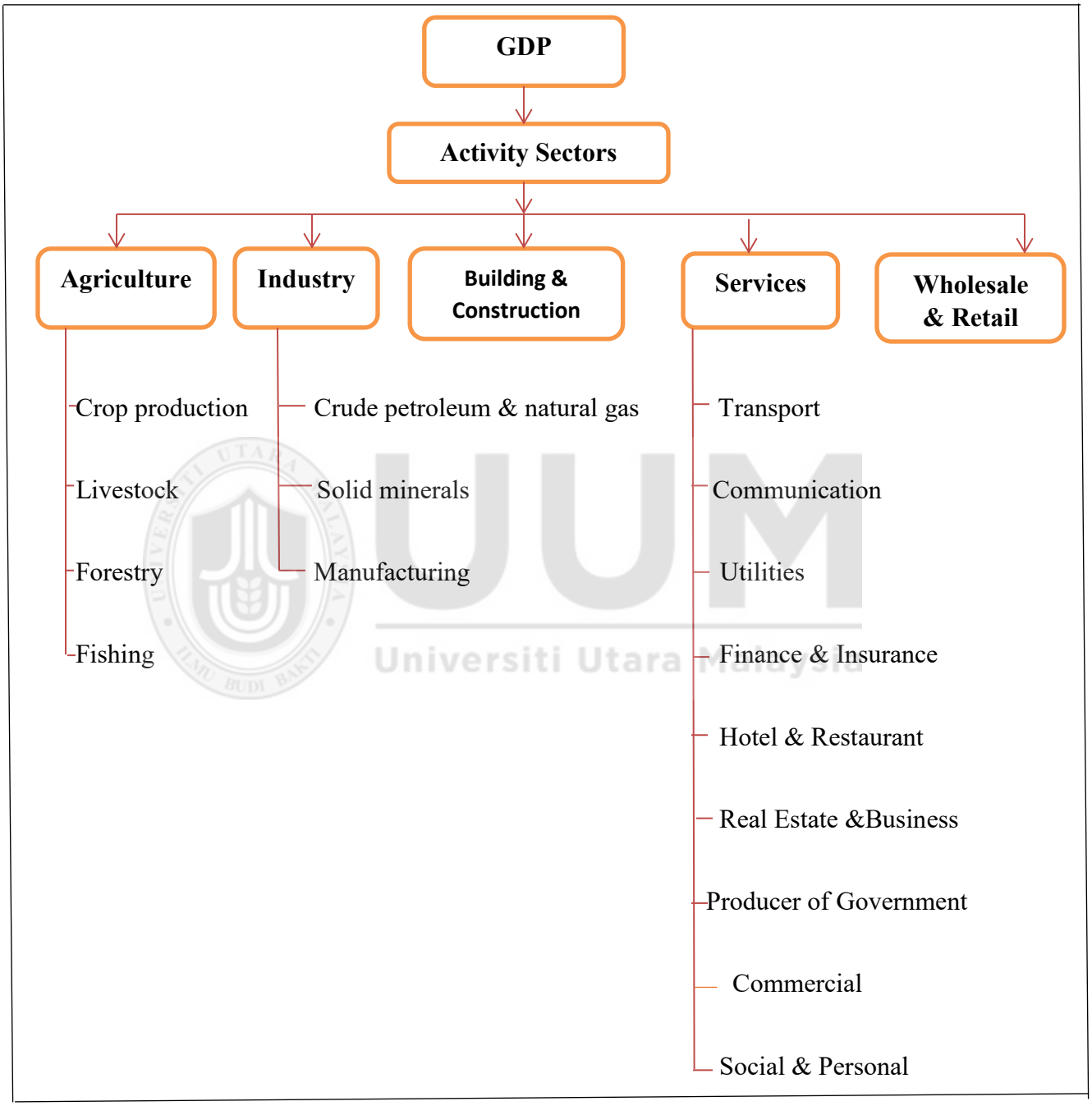


Figure 2.2
Sectoral Contribution to GDP
Source: CBN Annual Report, 2012.

GDP at purchasing power parity (PPP) twice from USD170.7 billion in 2005 to USD413.4 billion in 2011, correspondingly 8.4 percent growth, 6.9 percent 5-year compound annual growth. In 2005, GDP per capita was USD1200 and estimated to be twice as at 2011 per person with USD2600. With the about facts and figures, Nigeria is leading in terms of economy in West Africa Region, third in Africa after South Africa and Egypt and with the vision of emerging as part of the world's largest 20 economies in 2025.

Despite various problem facing oil sector in terms of pipelines facilities and attack of workers that affect output; Africa still regarded her as leader in production of oil. Nigeria is an emerging market due to entertainment, financial, service and communications sectors. A country with mixed economy and middle income. In accordance with the GDP PPP of the country to the world, the country was ranked 30th in 2011. The third largest is Nigeria in the continent and also has large percentage in production of West African region's goods and services despite weak manufacturing sector performance (CBN, 2012).

2.3 Structure of Nigeria Economy

The nation amalgamation by the British brought about the structure both internal and external of Nigerian of the economy in the early 19th century (1914). The economy was largely dominated by agriculture before the 2nd world war. It happened to be an open economy whereby there are exportation of agricultural products and importing of other ones. Although, numerous works have been carried out on Nigeria's economy structure in term of scope, sectors covered and data relied upon being dated; revealed that there are still some limited areas to be explored. Most recent structure of the country's economy focused more on stability of macroeconomic through the implementation of economic reforms

(Adedipe, 2004); whereas factual data by the CBN's works of recent makes the issues on structures more clearer (CBN, 2012). Therefore for better understanding of the structure of Nigerian economy, the structure will be discussed in regards to sectoral contribution and performance to the country within a time frame of 1960 till date.

2.3.1 Nigeria's Oil Sector (Crude Petroleum and Natural Gas)

Oil sector in Nigeria is grouped under three major sub-sectors which are gas, upstream and downstream. It was discovered that the downstream sector that is the distribution part has been of great problem overtime. It is the distribution arm that connects directly to the final consumers with refined petroleum products in economy, while upstream sector deals with drilling and refining of crude oil. Nigeria's crude oil production is being accounting for about 95 percent which is produced by the joint venture (JV) companies. Shell, Exxon Mobil, ENI/Agip, Total fina Elf, Nigerian National Petroleum Corporation (NNPC) and Chevron Texaco are the JV in Nigeria, where shell operates is the biggest government interest of 55 percent and 50 percent of country's crude oil production. Presently, there are four refineries having combination of 445,000 barrels per day (bpd) in refined capacity installed. The first refinery with 35,000 bpd was established in 1965 which later was producing 60,000 bpd as a result of expansion at Port Harcourt.

Oil in Nigeria got to be completely affirmed in the 1970s. Amid the decade, the relative significance of raw petroleum to the economy was supported by a few elements like its enrollment in Organization of Petroleum exporting countries (OPEC); the ascent in oil costs subsequent of the Arab-Israeli war in late 1973 and the authorized of the Warri

Refinery, “an installed refining capacity of 100,000 bpd” in 1978 increased output and exportation of oil. The relative input of the manufacturing and services to GDP also rose, with rise in the oil; whereas a fall in the agricultural sector in the economy.

The 1980s decade was regarded as “Africa’s lost decade” of developmental opportunities because the socio-economic conditions in most African countries weakened greatly and fall per capita income that is lower at the end than of the beginning of the decade (Iyoha & Oriakhi, 2002). This Africa’s lost decade was particularly evident in Nigeria economy; whereas there was downfall of per capita GNP in 1980 from USD710 to 270 by late 80s. Kaduna Refinery that served as the third was launched in 1980. It was commissioned with an installation of 100,000 bpd refining capacity. By 1986 it was upgraded with additional 10,000 bpd summed up to 110,000 bpd. Same year, Warri’s refinery was upgraded by 25,000 bpd.

During the decade, the recession of oil prices, rise in global interest rate and unfavorable home policy implementation were part of several characteristic factors of Nigeria’s economic crisis. The fourth Refinery was commissioned in Port Harcourt with 150,000 bpd processing capacity in 1989. It was made to fulfill two major roles which is to supply the domestic market and export its extras; since domestic consumption of products refined was low compared to the combined refineries capacities. However as import of the sector becomes consistence and persistent resulting to regulation of oil downstream sub-sector; made the refineries operating below capacities installed for.

In post SAP era, the share of industrial rose due to favorable oil prices among other factors. Relative low level of investment, low level of domestic technological development, high cost of technical production, ludicrous pricing of oil products for domestic intake; environmental degradation caused by flaring gas and crises and production disruptions restrictions imposed are some of the problem faced by the sector, despite its rise in economy. At this point, several policy formulations has been put in place for the sector since she gained political independence. Also the provision of different recommendations for reduction in the sector dependency are being considered (Adedipe, 2004).

2.3.1.1 Oil Policies in Nigeria

Oil policies in Nigeria will be discussed based on the cogent policies and programmes implemented right from the country's independence (1960) up to date. The National Development Plan (NDP) was introduced between 1962 and 1968 with the motive to industrialize the economy. But political instability within the period led to civil war (1967 to 1970); making almost all the policies made in the era targeted at taming the civil war.

The civil war that caused disruptions to economic activities creates more reconciliation and reconstruction of economic policies, making the federal government to investments heavily on infrastructure. In which a strong centre was created by the command structure of the military which remained the nature of economic policies as main determinant. The first major economic policy was introduced in 1970s as the country settle into economic activities comprised of jobs evaluation for the public services and commission comprehensive review of Udoji. This led to psyche and consumption changes habit in the average citizen for affording most of the good things.

Following was Indigenization Decree in 1974 and 1977, two important growth triggers in Nigeria having no or little economic value. The Small and Medium Scale Enterprises (SMEs) became involved in non-oil sector and there was release of entrepreneurial energy of the typical resilient Nigerian. By 1978, Obasanjo's military government introduced the first major economic policy "labeled Belt Tightening", due to downturn in oil earnings as crude oil prices dipped in the global markets. Nigeria concluded by 1979 to make use of the international capital markets to raise external loans to fund development works.

In 1980s, three key economic policies were made: paying structure in Government parastatals in 1981 by Onosode commission, 1982 Act of Economic Stabilization and the SAP adopted between 1986 and 1988. These policies were to help developments in the worldwide oil markets which was down for that period and where almost all the policies was disposed as soon as it was initiated. By 1990, there was reform of the 1980s latter policies made. This decade, the country also experienced some extra advantages from the strong prices of oil. Also the economy was re-regulated through exchange and interest rate suppressing by the government.

During this era, there is still no feasible direction of economic because of weak legal environment and institutions that hindered the benefits that would have been gained from oil revenue. However, there was introduction and establishment of National Economic Empowerment and Development Strategy (NEEDS) in 2004 by national government to aid the entire case. This laid the foundation for diversity in the economy for 2007 which served as a medium-term strategy in policy reforms and implementation. There goals were majorly

on growth by creating wealth, reforming social and institutional policies and generating employment.

2.3.2 Nigeria's Non-Oil Sector

For the past five years, oil sector growth to GDP has declined, while the non-oil sector has been enhancing growth in Nigeria. The composition of Non-oil sector in Nigeria for year 1981 and 2012 are shown as in Figure 2.3:

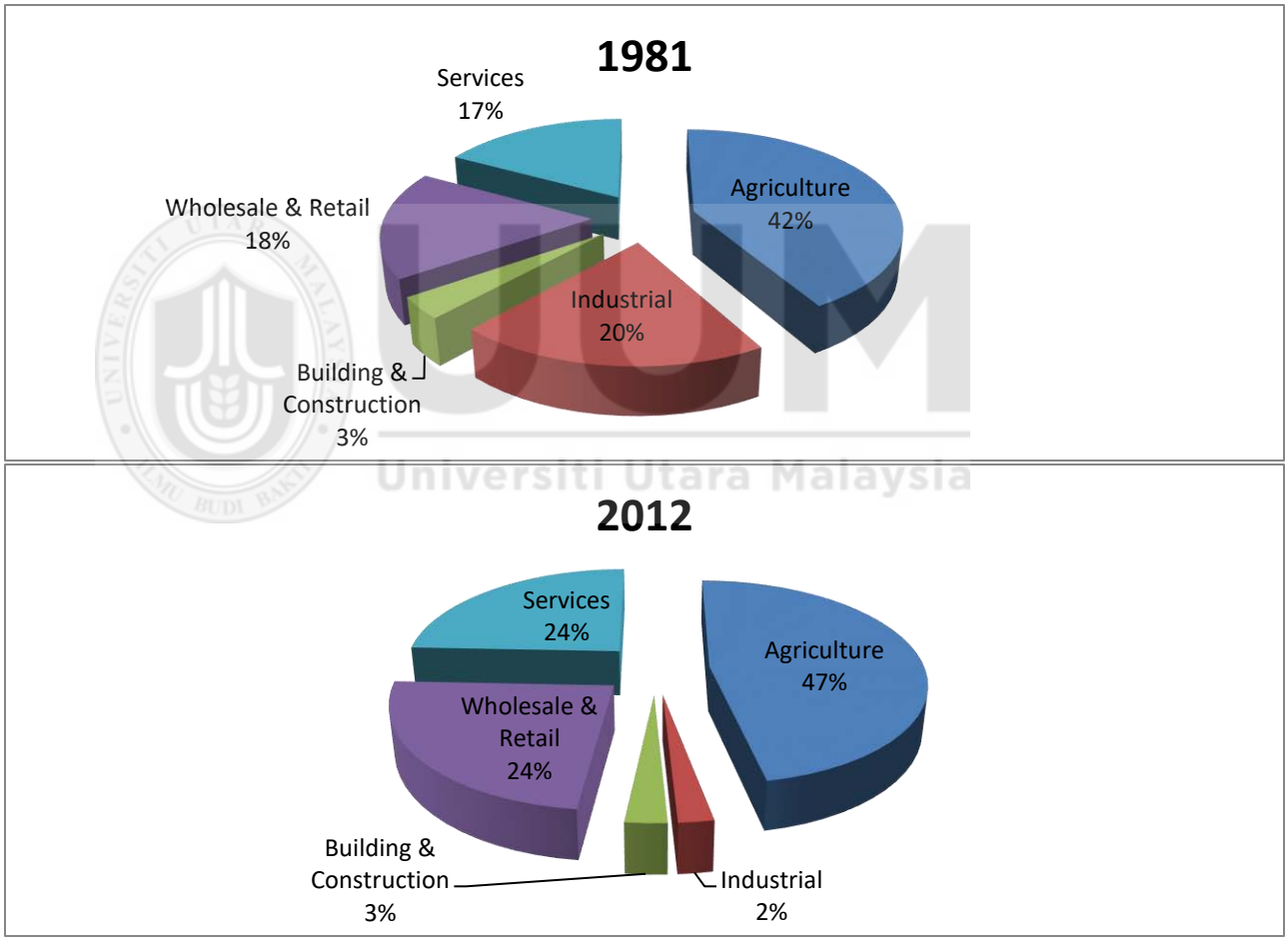


Figure 2.3
Percentage Composition of Non-oil Sector.
Source: CBN Annual Report, 2012.

2.3.2.1 Agricultural Sector

Nigerian economy was an open economy, which was largely occupied by agriculture with a small and active export activity, before the beginning of the Second World War in 1945. Crop production, livestock, forestry and fishing constitute for the value-added in agricultural sector. Agricultural products are being exported whereas the country was importing manufactured products. The crop production has been the most important sub-sector contributing to output development, GDP share and employment by providing livelihoods to the rural dwellers. Whereas, livestock, forestry and fishing sub-sector also hold countless potential for the economic development and growth because they serves as the potent source of inputs for the industrial sector.

By the end of the Second World War; Nigeria was laid hold of by the overall development which accelerated in the country's independence from British rule on October 1, 1960. The country was still generally an agriculture nation in 1960, where agriculture accounted for almost 64% of the domestic output and been employed more than 73% of the aggregate labour force. In addition the sector represented a lion offer of roughly 71% of aggregate exports; which was the transcendent earners of foreign exchange used to pay for imported manufactured products. The Nigerian economy was expressed as dualistic, with a minute export territory sector which was super imposed largely by the subsistence agricultural one in 1960.

In 1960, Nigeria was still to a great extent an agrarian creating nation which caters for her own utilization and cash crops like groundnuts, cocoa, rubber and palm oil for exports.

Encounter of oil in saleable quantities towards the end of the decade brought about decrease in the agricultural share of GDP from 64 to 49 percent in 1969. The sectoral share of agriculture in output as at this decade averaged 57.3 percent.

The contribution of agriculture as at 1970 fell drastically due to relative neglect of the sector; due to the oil sector that became quite pronounced. Its contribution fell to 28.7% in 1979 from 41.3 percent in 1970, while the offer of agriculture in total output averaged for about 33.6 percent. During the Africa's lost decade of development, the programme adopted (SAP) to battle the economic crisis had a positive and favourable effect on agriculture. Agricultural sector increased leading to expansion in prices and outputs; whereas rose the sector from 1980 with 20.6 percent to 40.6 percent by 1988 achieving an output average of 33.4 percent.

In the post SAP era, agriculture sector accounted around 30 percent, while revealing fluctuating contribution. The average share of agriculture sector to GDP was 29.3 percent; whereas 24.8 and 34.5 percent were accounting for GDP by 1992 and 1997 respectively. As at year 2000, the contribution of agricultural sector to the output was accounting for 26.8 percent; while 34.9 and 37.1 percent accounted for GDP in 2001 and 2009 respectively. The average share of the sector was 32.9 percent.

2.3.2.2 Industrial Sector

The industrial sector comprises three sub-sectors: manufacturing, solid mineral, crude oil and natural gas. In 1960, the industrial sector accounted for 7.7 percent of the domestic output, while less than 4 percent of the total GDP was been produced by the manufactured sub-sector. The oil started to raise the offer by the second half of the decade; whereas the industrial sector increased to 15.6 percent and manufacturing sub-sector to 6.4 percent of the GDP by 1969. The average share of the industrial and manufacturing production was 10.6 and 5.0 percent respectively.

By 1970 with 13.76 percent of industrial sector to GDP rose close to 38 percent in 1979 while manufacturing rose from 3.67 percent to 8.79 percent. The relative share of manufacturing production averaged 4.8 percent whereas industrial sector in output averaged 27.5 percent revealing an increase compared to the last decade. In 1980s, the industrial sector in GDP achieved a high percentage of 45.57 percent; 33.7 percent was its share in total output averaged.

The adoption of SAP in 1986 to combat with economic recession and leading to economy restructuring having a negative impact on the sector. By this period, the sector contribution has decreased to 26 percent. Manufacturing sub-sector with 8.4 percent, 9.9 percent and 8.7 percent in 1980, 1983 and 1986 fell to 5.29 percent in 1989; while averaged 8.2 percent in GDP.

The sector rose during post SAP era. The sector averaged 49.6 percent of the output. It amounted to 41 percent of GDP in the 1990, rose to 58.9 percent in 1993 and fell to 46.9 percent at the end of the period. Manufacturing sub-sector didn't perform well; while its share amounted to 5.9 and 4.0 percent as at 1991 and 1993. Its averaged contribution in output was 4.96 percent. The industrial sector rose to almost 56 percent by year 2000, while reflecting decrease averaged of 42.4 percent compared to the last era. Manufacturing sub-sector was accounting for 6.9 and 2.5 percent of the GDP as at year 2000 and 2007, with averaged contribution of 3.9 percent.

2.3.2.3 Services Sector

Services sector comprised the "transport, communication, utilities, hotel, restaurant, finance and insurance, real estate and business, producers of government services and commercial, social and personal services" as sub-sectors. The sectoral share of services in GDP in 1960 era was 28.5 percent. It increased to 37.6 percent by 1986 with an averaged share of 32.1 percent of GDP during the decade. The oil boomed in 1970s made the sector experienced a fall from 44.95 to 32.7 percent in 1974. The relative input of services sector in GDP still averaged as high as 38.9 percent compared to the last decade. Services sector by 1980s era was also adversely affected by the adoption of SAP.

The quota of the sector in output or GDP dropped from 33.8 percent in 1980 to 25.5 percent in 1989, while accounting for 32.95 percent averaged in GDP. During the post SAP period, the sector's contribution fell whereas the share of the sector averaged for 21.1 percent in GDP showing a decline compared to the last two decades (1970s and 80s). There was

fluctuation of the sector's share in output, while accounted for 25.9 percent in 1991 and 17.2 percent in 1993. Services sector contribution to output was averaged 10.3 percent which was less than the last decade. In year 2002 and 2009 the share of the sector was 9.3 and 12.5 percent respectively.

2.3.2.4 Other Sectors

The "building, construction and wholesale and retail trade" are other sub-sectors that are part of non-oil sector. These sectors account for approximately 15 percent of the GDP.

2.4 Exports

Exports contributed an important role in developing the country for transformation and promotion of the economic growth. The exports contribution as percentage of GDP was 29 percent as at 1980 but declined to 18 percent by 2013 (World Bank, 2013). Exports in Nigeria are extensively arranged into two main classifications: oil and non-oil exports. Oil include crude petroleum and natural gas, whereas non-oil exports include agricultural products, manufactured products, semi-manufactured products, solid mineral and others. Oil exports have encountered enormous development through the decades, while non-oil exports still reflecting a low contribution. In 1981, oil export was totaled USD6.7million and rose to USD85.9million in 2011. The proportion of oil to aggregate exports averaged more than 90 percent during this time frame. Non-oil export increased from USD2.1million to USD79.6million from 1981 to 2011, while its ratio to the total exports averaged less than 10 percent remaining.

2.4.1 Oil Exports

The oil sector is owned by the government as the major source of national income in Nigeria. The percentage of oil revenues to the total federal revenues were 64.4%, 65.9% and 79.9% for the years 1981, 2009 and 2011 respectively (CBN, 2012). Oil export in Nigeria since some decades ago has been experiencing tremendous increase in output as in Figure 2.4. Likewise Figure 2.5 supports the stand of oil by illuminating its ratio to GDP.

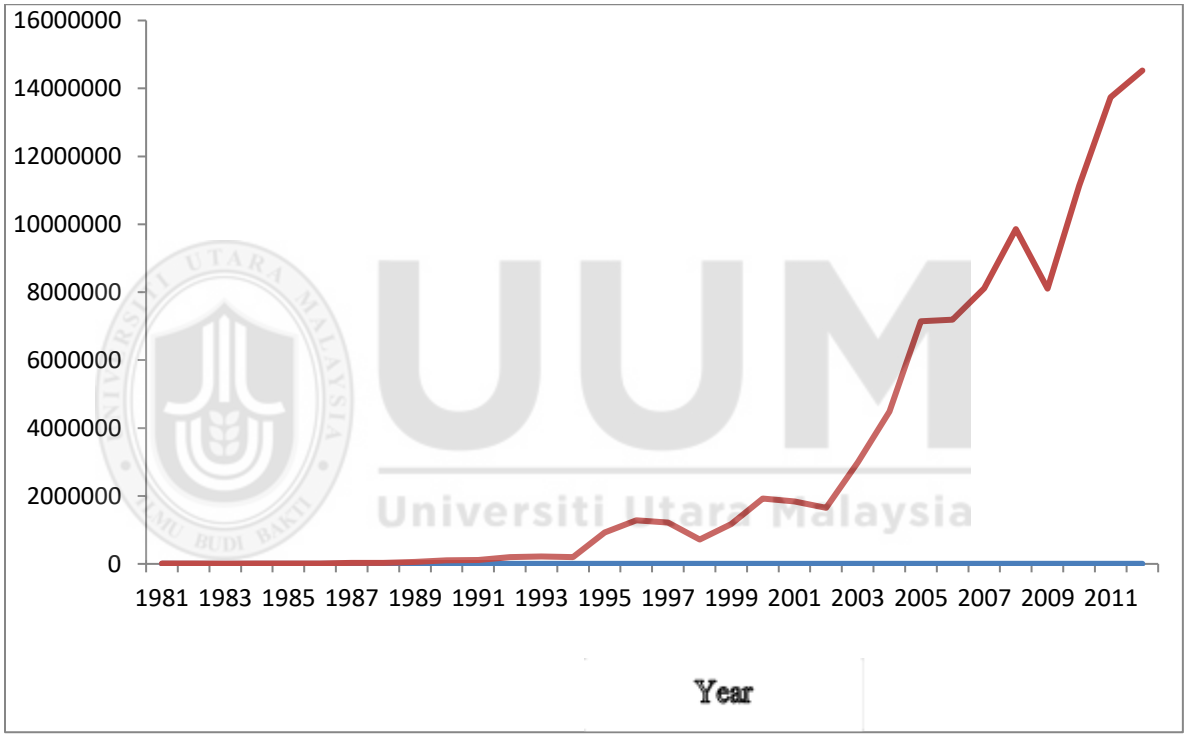


Figure 2.4
Oil export for Nigeria in millions.
Source: Central Bank of Nigeria (CBN): Statistical Bulletin, 2012.

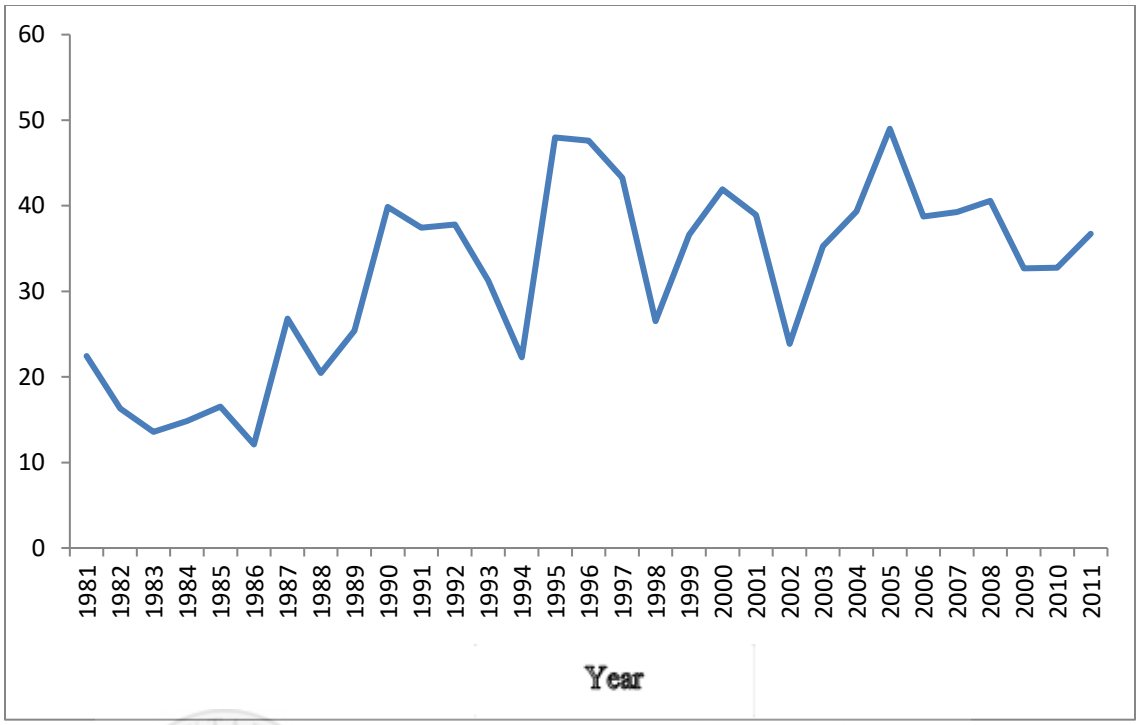


Figure 2.5
Percentage of Oil Export / GDP.
Source: Central Bank of Nigeria (CBN): Statistical Bulletin, 2012.

2.4.2 Non-Oil Exports

Non-oil exports are broadly classified into semi-manufactured, agricultural produce, solid minerals, manufactured and other exports. Agricultural produce consists of cocoa beans, rubber, fish/shrimp, cotton and others which are from food production, fishery and forestry component. Manufactured consists of tyres/tubes, textiles and others; whereas semi-manufactured consists of cocoa produces, processed wood, texture yarn, leathers from skin and others. The solid minerals consist of aluminium/carbonate and other minerals. The percentage of non-oil revenues to the total federal revenues were 35.6%, 34.1% and 20.1% for the years 1981, 2009 and 2011 respectively (CBN, 2012). In buttressing the role of non-oil in term of export and ratio to GDP, Figures 2.6 and 2.7 are shown.

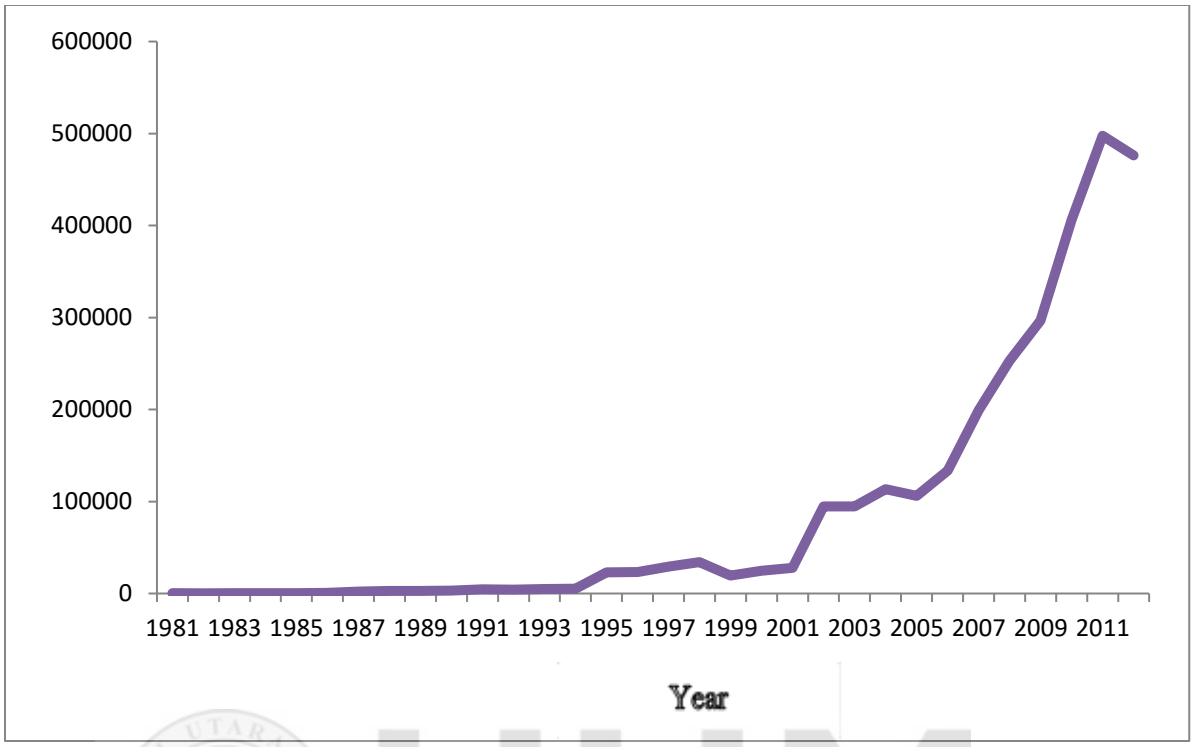


Figure 2.6
Non-oil export for Nigeria in millions.
Source: Central Bank of Nigeria (CBN): Statistical Bulletin, 2012.

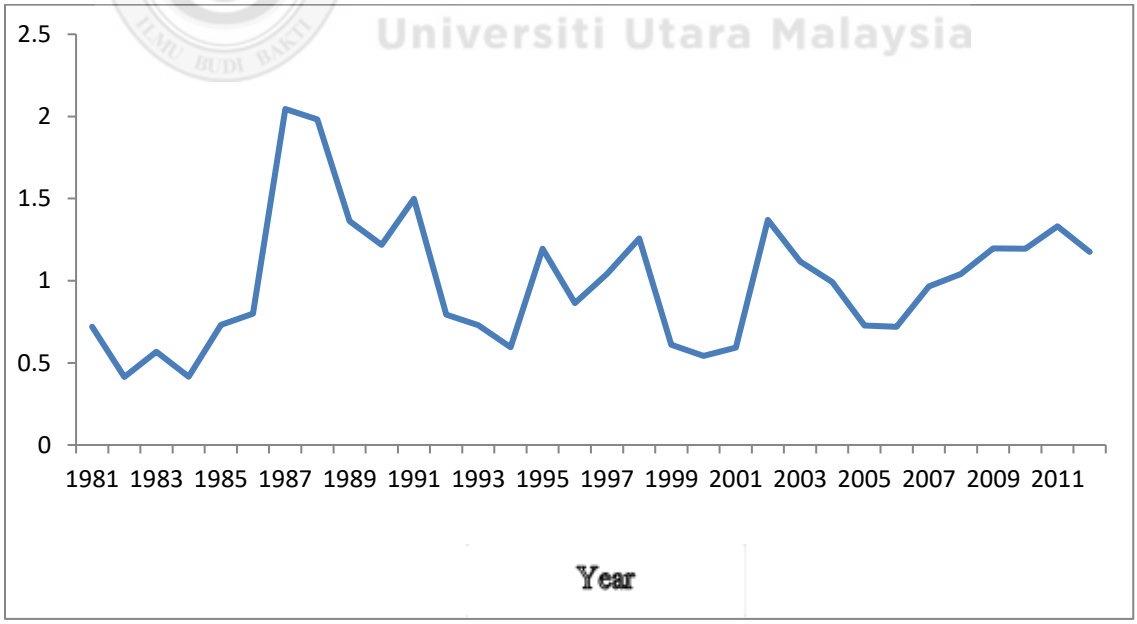


Figure 2.7
Percentage of Non-oil Export / GDP.
Source: Central Bank of Nigeria (CBN): Statistical Bulletin, 2012.

2.5 Policies and Programmes in Nigeria towards Agricultural Sector

This section discussed some agricultural sector policies in Nigeria among various difficulties hindering the realization of potential of the agricultural exports. Agricultural policy and programme can be discussed in Nigeria in five periods: pre-civil and civil war, post-civil war, SAP period, post-SAP period and current democratic period (Daramola *et al*., 2008).

2.5.1 Pre- Civil and Civil War Period (1960 – 1969)

The Nigerian economy during these two periods can be examined as follow: from 1960 which is independence to 1966 the civil war and from 1967 civil war period to 1970. Different regions specialized in producing various agricultural exports, however making the sector earning high foreign exchange as regarding to fetching for the regional governments than the oil which was discovered during the period in commercial quantities (Daramola *et al*., 2008). Agriculture was being taxed for development of the other sectors in the economy, since the sector was produced in large quantities to be enough to feed the populace and for exportation to finance government expenditure.

2.5.2 Post-Civil War: Oil Boom Era (1970 – 1985)

The crisis of agricultural exports sector began during this era when the oil boom was launched, which deteriorated infrastructure and damaged most palm oil plantations in the eastern of the country. The agricultural sector was neglected due to the fact that the windfall from the oil wealth was invested on manufacturing, commerce and construction. This led to the attraction of factors of production such as land and labour away from agriculture,

which led to the serious problem referred to “Dutch disease”. The era also led to currency overvaluation, which led to the making of the agricultural exports being uncompetitive and decline. Due to the poor performance of the agricultural sector in this era, variety of policies, programmes and incentives were introduced for direct government involvement in agricultural production and low tariffs on agricultural inputs. This historical period was characterized by a greater participation of government in agricultural development as a belief that only more concentrated interference could curd the decline in agriculture (Iyoha & Oriakhi, 2002; Daramola *et al*., 2008). The era witnessed the establishment of many agricultural institutions and programmes like the National Accelerate Food Production Programme (NAFPP) established in 1973 with objective of accelerating the food crops production like rice, cassava, millet, maize, wheat and sorghum. Also Nigerian Agricultural and Cooperatives Bank (NACB) was proposed in the same year (1973) to provide medium and long-term credit for the expansion of agricultural activities by the Government to help financially in the agricultural sector especially on low savings, inadequate investment and lack of entrepreneurial skill. In 1976, River Basin Development Authorities (RBDAs) in Sokoto which was the first to be established among all, was to help in transforming the particular area to become very productive by more increase in food production, water supply, control of drought, flood and erosion, through efficient and effective supply of water for multi-purpose use for the development, poverty alleviation and ensuring of better living and jobs for the people in the area.

Operation Feed the Nation (OFN) programme in 1976 was launched with the aims of mobilizing in order to achieve self-sufficiency and reliance in food by increasing food

production. The programme encouraged free flow nutrition as a way of having a healthy nation and citizen's opportunity to buy food to grow on their own. The OFN programme was later incorporated into Green Resolution Programme (GRP). The setting up of the so-called Agricultural Credit Guarantee Scheme Fund (ACGSF) in 1978 and NACB were the two crucial initiatives that were part of the OFN and GRP programmes. The 1970s also witnessed the setting up of some other programmes such as Agriculture Development Projects (ADPs), National Seeds Services (NSS) and Commodity Boards (CB).

2.5.3 Structural Adjustment Programme (SAP) Era from 1986 – 1992

It is known that most nations in Africa are implementing SAP, an economic `panacea' inspired by the World Bank and International Monetary Fund. The purposes of SAP are unanimously the same for most African nations, because the world presumed that all the African countries are experiencing same problems based on the level of development. The designed SAP was a program which was to stimulate growth and to stimulate rapid development. Nigeria went ahead implementing the SAP program by president Babangida in July, 1986; to solve the acute economic problems which were characterized as internal and external disequilibrium that affected the economic situation in the first half of the 1980s. The SAP period began the era of liberalization of Nigerian agricultural exports with the scrapping of the commodity boards and deregulation of the whole economy. SAP led to a movement of de-industrialization and uprising in unemployment.

The outlined objectives of SAP are to reform and diversify the economy for reduction on the dependence on oil exportation and importation of non-oil; the dominance of unproductive investments, achieve minimal inflationary growth and positive and stable balance of payments. Since, then she has practically applied SAP close to a decade now, with various main SAP measures like: deregulation of the exchange rate and financial sector, trade liberalization, abolition of commodity marketing boards, adoption of relevant pricing policies especially for petroleum products and rationalization and privatization of public sector enterprises. However, the objective seems not be achieved using the chosen program instruments during this era.

The implementation of SAP did nothing to change the situation of the agricultural sector in the sense that USD 2,755 million (89.8 percent) of the USD 3,067 million of her external earnings was earmarked to machinery, spare parts and raw materials in 1990. In 1991 this figure increased to USD 3,344 million (93.3 percent) of the USD 3,584.1 million in total revealing that Nigeria is trying to achieve industrialization through an efficient approach of passive technology transfer, therefore latter effect is necessitated to give real sustained growth in agricultural export.

2.5.4 Post-SAP Era (1992 – 1999)

During the era there was a political crisis that halted the national economy which was caused by the presidential elections in 1993. This era was not very eventful in terms of implementing economic policies towards agricultural exports because the government was

finding ways to solve the political crisis at hand. In this era, various economic sanctions from western nations that happened to the importing nation of the country such as United Kingdom (UK), United States (US) and Canada led to the growing of food bill and foreign exchange restrictions and import licensing from time to time. Also, the oil windfall in 1991 of Gulf War had been misspent; in which the government's business are the only growing and flourishing business. These all consisted to the productivity in Nigeria not growing during this era.

2.5.5 Current Democratic Period (1999 to date)

There are three policies and strategies that clearly reviled the Nigeria's vision for the development of agriculture during this period: The National Economic Empowerment Development Strategy (NEEDS) in 2004, New Agricultural Policy (NAP) in 2001 and Rural Development Sector Strategy (RDSS). In the quest for reformation and acceleration in development in the Nigeria's agricultural sector, led to the adoption of the New Agricultural Policy (NAP) in 2001, with the Integrated Rural Development sector Strategy; with the main aim of contributing to agriculture sector for poverty reduction in Nigeria. Despite the NAP outlined the role and functions of each tier of government, no guidance was given on the sequencing and devolution of responsibilities between state and local governments toward promoting the agricultural sector, the policy failed due to the fact that the private sector recognized as an initial source of transformation in the economy and macroeconomic policy environments needed to accelerate private sector development that are being pursued are not put into consideration.

Therefore another development strategy for growth and poverty reduction was launched in May 2004 under the umbrella of NEEDS. They were referred to as Economic Empowerment and Development Strategy at state (SEEDS), and the local level (LEEDS). The strategy is with the aim of improving governance; social service delivery; private sector, changing government's process of work and focusing on non-oil growth. NEEDS provides the overall framework of the country's coordinated sectors strategies while NAP laid the foundation for sustainable growth in agricultural sector productivity.

2.6 Labour Market in Nigeria

The Nigerian labour market has the same nature with most of the developing counties; that can characterized with the labour force (employed), unemployed and wage policies. The labour market is dominated by self-employed people, while wage and salary earners followed. According to the World Bank, the labour force was approximately 50.3million in 2010 comprising of aged 15 and above people who met the International Labour Organization definition of the population.

2.7 Currency

The official currency in Nigeria is Naira (₦), whereas the Central Bank of Nigeria (CBN) serves as the official power in charge of the implementation of the financial policy. Pre-SAP era, one dollar was exchange for 0.77 naira (₦1 = 100 kobo). When SAP started in later year of 1986, dollar was being exchange for 1.756 naira due to decrease in sufficiency of international currency e.g. dollars in circulation to be exchange for the amount of

available naira being complained among corporate executives. Establishments became impoverished – they cannot get enough naira to exchange for dollars as its being exchanged for more naira at the period. Respectively, dollar was being exchanged for 4.016, 5.35, 9.93, 22 and 165 naira in 1987, 1988, 1991, 1993and 2012. Interestingly by 2014 up till date, one dollar is being exchange for between the ranges of 250 to 400 naira which revealed a trend of endless devaluation in the country.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

This chapter reviews relevant literature which are related to export as source of promotion to the investment and economic growth of a nation. The past literature pertaining to macroeconomic factors on agricultural export, agriculture output and economic growth are broadly reviewed in a synthesized approach. It will present the theoretical review relating macroeconomic factors to agricultural export, agricultural output and economic growth will be discussed. In addition, empirical literatures which are conducted and have related evidences and findings on the structure of the Nigeria economy.

3.2 Theoretical Review

The role of exports in economic growth and the correlation between them have been the subject of different theoretical and empirical studies in international trade and economic development arena. The discussion on export expansion and economic growth connection has shown extensive attention in the arena of economies development. The debate on role of exports can be traced from the classical economic theories as part of the core essentials of growth by Adam Smith and David Ricardo. Also to investigate the association between the growth of exports and economic performance, the evolution on growth theory is introduced in this section and followed by some theories relating to economic growth such as production function and growth theories briefly, based on the classical and neo-classical

growth analysis (Vohra, 2001; Abou-Stait, 2005; Omotor, 2008 and Ibrahim, 2008). Likewise theoretical reviews on export led growth and macroeconomic factors approach to economic growth and agricultural output. The argument for growth, exports and output are couched on the following theories:

3.2.1 Classical Theory

Classical economic theories are the first modern school of economic thought. Major developers comprised of Adam Smith, David Ricardo, Jean-Baptiste Say, Thomas Malthus and John Stuart Mill. The beginning of classical economics was by Adam Smith in 1776 "The Wealth of Nations." Therefore, international trade theories are based on Adam Smith's theory, which his points about absolute advantage were important for the early development of the classical view for international trade; although his economic theory of trade was opposed by David Ricardo's theory of comparative advantage. David Ricardo revealed that the prospective benefits from trade are greater than Smith's proposed in absolute advantage concept.

3.2.1.1 Adam Smith and Absolute Advantage

The law of absolute advantage was part of the classical theories of trade developed by Adam Smith. Conferring to Smith (1776), mutually favorable trade happens based on absolute advantage. He believed that for two countries to trade with one other freely, both will gain. He refused the fact of one nation gained nothing or lost. Smith (1776) stated that each nation should concentrate in the production of those goods and services where

absolute advantage exists. Likewise Iyoha (1995) stated that "if each of the country focuses on the production of those goods or services which it has absolute advantage," it will be beneficial to both countries. Thereby, identified simplicity of the theory to be that a nations' will prefer to export products where absolute cost is lower and import the ones where absolute cost is higher (Smith, 1937).

Three core sources of growth is being acknowledged by the theory which are: labour force and capital stock growth; improvement in the efficiency with aids of capital used in labour through greater division of labour and technological progress and promotion of foreign trade that widens the market and strengthens the other sources of growth.

3.2.1.2 David Ricardo and Comparative Advantage

David Ricardo, one of the greatest theoretical economists like Smith put much less interest in the growth of economics over his theory of value and distribution; yet still reckons his personal theory of growth in the formation of the generalized version because of his post in the classical school. Ricardo (1817) exhibited that "the prospective gains from trade are greater than Smith proposed in absolute advantage perception." The theory is of importance with crucial variable "technology" used for global trade explanation patterns (Barney, 2001). The Ricardian model based his assumptions on the following: each country has a fixed endowment of resources and in which all units of each particular resource are same; the economy is represented by perfect competition; factors of production are perfectly mobile between sectors within a nation but immobile between countries; only one factor of production which is labor; technology is fixed (different countries may have different levels of technology); fully employed factors of production; unit costs of manufacture are

constant and there is no hindrance in trade as regarding to transportation costs or administration imposed macroeconomic variables to economic activity.

3.2.2 Neo-Classical Theory of Economic Growth

Nevertheless, this section also will review widely the accepted framework which is "growth accounting analysis proposed by Solow (1957) and Swan (1956) basically giving a footing for modelling economic growth of a country. Of which some economists have revisited the theory for example Romer (1986), Lucas (1988), Elias (1992), Young (1995), Hu and Khan (1997), Sarel (1997), Barro (1998), Dowling (1998), Senhadji (1999) and Iyoha (2000). Neo-classical growth examination (Solow, 1957; Cass, 1965) is based on labour supplementing technology production function and constant return to scale. The demand side framework will be discuss where Harrod (1939) and Domar (1946) related growth theory with Keynesian analysis, since it was acknowledged that terms of trade are important to develop trade theory which will take into account not just productive or supply side but demand side as well (Ibrahim, 2008; Zhang, 2008; Mo, 2010; and Ozturk & Acaravci, 2010).

3.2.2.1 Aggregate Growth Theory Evolution

The pioneer study in growth theory was written by Ramsey which deals with utility function and inter-temporal optimization in 1928. Harrod (1939) and Domar (1946) related growth theory with Keynesian analysis in the late 1950s, which was appreciated by economists of post-depression era. The significant contribution developed by Solow (1956)

and Swan (1956) to the growth literature will be considered in this study. The Diamond model was developed in growth theory by Cass (1965) after Solow- Swan's model. The introduction of increasing return to scale generated by production and investment by Arrow (1962) and Sheshinski (1967) followed. Romer (1986) and Lucas (1988) linked economic growth theory with macroeconomic problem examination in the short run and replaced new growth theories with internal with external technological developments in the long run of neo classical growth models. Romer was involved in growth model by the introduction of research and development (R&D) and imperfect competition. More so, Grossman and Helpman (1991) also contributed R & D factors into the models by bringing forth the monopolistic power. It was concluded that growth would hold if creative information and innovation continue in an economy in the long run. Hence, since growth models can be ignored due to technicality undertaken of the model and few empirical studies showing the connection, makes macroeconomic fluctuations become the center of attention.

3.2.2.2 Production Function of the Economy

This study relates Cobb Douglas production function with growth theory from Solow (1956) and Swan (1956) most significant contribution to growth accounting and regression model, Feder (1982), Ram (1986), Grossman (1988), and Mankiw, Romer and Weil (MRW) growth regression model (1992).

3.2.2.2.1 Cobb Douglas Production Function

The function that examines the statistical evidence between an output and inputs can be represented by Cobb-Douglas production function. The production function which has

constant return to scale since sum of its exponents equal to one. Total production output was expressed as a function of capital and labour input, coupled with total factor productivity and output elasticity of labour and capital. It was also deduced that productivity per worker is a function of autonomous growth factor and capital per worker. This made it known that output growth can be influenced by on autonomous growth factor and growth in capital per worker.

3.2.2.2.2 Solow's Model

Aggregate growth accounting method initially used by Solow (1957) will be adopted to ascertain economic growth sources in Nigeria. A growth accounting exercise was simplified into two namely; factors of production (capital and labor) and utilization of these factors growth efficiency that is Total Factor Productivity (TFP). The aggregate growth accounting production function can also be regarded as the supply side. For policy purpose, it may consider whether factor accumulation or increases in TFP consists to output growth stems. Saving, population growth and technological progress rate was considered as exogenous factors. "Solow (1956)" set up the growth accounting foundations which reflected neoclassical production function:

$$Y_t = A_t F(K_t, L_t) \tag{3.1}$$

where:

Y_t = aggregate output,

K_t = stock of physical capital,

L_t = labor force and

A_t = Total Factor Productivity (TFP) appearing in Hicks neutral manner.

After some simple alterations, it can be written in terms of factors' growth rates. For plainness in considering Cobb-Douglas production function:

$F(K_t, L_t) = A_t K_t^{\alpha} L_t^{1-\alpha}$ where $0 < \alpha < 1$.

Then taking natural logarithms and differentiating both sides of (3.1) with respect to time t the growth rate of aggregate output can be expressed as:

$$\dot{Y}/Y = \dot{A}/A + \alpha(\dot{K}/K) + (1-\alpha)(\dot{L}/L) \qquad (3.1.1)$$

"For a variable $E = Y, A, K, L$ the term $\dot{E}$ stands for the derivative of E with respect to time t, and so $\dot{E}/E$ stands for the growth rate."

Capital and labor growth rates are weighted by α and $(1-\alpha)$; whereas weights relate to corresponding portions of rental expenses in total income for capital and labor. With accessible data on growth rates for output, labour and capital; TFP growth can be figured out from (3.1.1) as the residual, according to so called Solow.

3.2.2.2.3 Feder's Model (Export and Non-export)

This model relates with production function, where the production growth model is categorized into export and non-export, exhibiting non-export and export stated as function of capital stocks, labour forces and technologies in each sector respectively according to

the first assumption. Non-export also reflected as function of export. However, in the second assumption, the aggregate quantity of inputs was arrived at by addition of each sectors capital and labour force. This led to the third assumption of total output as summation of production from non-export and export sectors. The forth assumption was based on the marginal factor productivities between sectors resulting to growth equation after manipulating and differentiating production function. It reveals that growth in output is susceptible to the growth in labour, capital and other sectors respectively.

3.2.2.2.4 Ram and Grossman (1986 & 1988) Non-Government and Government

They modified on Feder's model by exploring the relation between government size and growth of summative output. It was assumed that an economy consists of two wide sectors, government sector (G) and non-government sector (I). G is a function of government employment (L) and capital (K) denoting sectorial involvements respectively. The sum of total inputs in the two sectors (C + G), results to entire output (Y).

3.2.2.2.5 Mankiw, Romer and Weil's Model (1992)

Through consideration of a wider measure for capital stock, Solow's model was expended by utilizing of human capital in the equation. Capital was split into physical and human coupled with other variables as function of "Y". These two capitals are augmented by investment in aggregate demand (AD). The roles of macroeconomic factors in aggregate demand management can be illustrated by Keynesian simple standard model of goods market equilibrium. Keynesian economics viewed that aggregate demand is not necessarily equal to economy's productive capacity, but influenced by mass of factors and sometimes

acts irregularly by effect of macroeconomics factors. Y = AD, whereby through net export effect on AD, the growth rate is being affected as follows:

$$AD = C + I + G + NX \quad (3.2)$$

Where AD is aggregate demand for domestic goods or total output; "C, I, G and NX" are consumption, investment, government spending and net export respectively.

3.2.2.3 Theory of Employment

Possible factors for unemployed have been proposed in literature of economics based on the Neo-classical approach. According to the classical approach, full employment is determined. There is absence of unemployment in the classical world. The common general way to examine unemployment is by assuming that the real wage adjusts rapidly to equal supply and demand. It was assumed that production factors such as labour force, capital and land are fully employed (Zhang, 2008).

The labour market analysis of the neo-classical (Keynesian) approach regarded labour as one of the production factors in economic theory. Unemployment is voluntary according to the neo-classical theory. Keynesian economics that is known as new economics invented new techniques of economic analysis consists of multiplier, liquidity preference, capital marginal efficiency and effective demand in the model. Assumption was made by Keynes that population, capital equipment; labour efficiency and technical knowledge were constant in the short run. Whereas making the employment volume depends on national income and output level. Rise in national output will lead to upturn in employment.

"Theory of employment" and "income flexibility of prices and wages" bring about full employment.

3.2.2.4 Export Supply Function

An imperfect substitute's model of trade is being considered where neither exports nor imports are perfect substitutes for domestic goods. Habitually in the long run, export supply function depends on relative prices, input prices and productivity capacity. For modelling a single export function, corresponding price elasticity of export demand needs to be elastic. In general form of the long run in steady state, export supply function is expressed as: volume of exports as function of relative export price (export prices/domestic absorption deflator), variable cost and capacity of production. Export supply is assumed to be negatively related to the internal pressure of demand.

3.2.2.4.1 Exchange Rates and Exports

This is based on the illustration of the IS-LM analysis for an open economy, nominal exchange rate (NER) between two currencies. NERs are set officially at determined levels worldwide. Nominal exchange rate is the units of domestic currency in number that can be accepted for a foreign currency unit. For instance 160naira in Nigeria can purchase 1 US dollar.

Nominal exchange rate in Nigeria (e_n) = 160naira

Whereas in a flexible exchange rate, nominal are not formally fixed but are determined by circumstances of demand and supply in foreign exchange market. Currency real purchasing

power is not reflected in NER, therefore the real exchange rate was introduced for measuring of the purchasing power of currencies. Real exchanges rates is domestic goods figure interchange for imported goods. Prices, nominal and real exchange rate are interrelated generally. According to definitions:

$$e = e_n P / P$$

Where: "e" = real exchange rate, "e_n" = nominal exchange rate and "P & P*" = Prices measured in term of the countries' currencies.

In reality, RERs are usually based on price index to measure P and P* because modern economy produces lot of dissimilar goods. The RER is the rate of exchange between aggregate goods in one economy and in the other economy. Increment in RER at a period of time shows that goods of the domestic country are becoming less expensive compared to other countries goods and vice versa.

Incomes and real interest rates in the domestic and outer world are used in determining RER. Real exchange rate is a function of output (Y), foreign (Ÿ), local interest rate (r) and foreign real interest rate (ř).

$$e = A(Y, Ÿ, r, ř)$$

3.3 Empirical Review

Apart from the important theories that has been discussed in the previous section, it is also crucial to study the empirical evidences. The following section shows empirical reviews of

the study in category of each selected macroeconomic factors in relation to economic growth, agriculture output and agricultural export.

3.3.1 Macroeconomic Factors and Economic Growth

Literature on economic growth concept has been explored which make this study to agree with the definitions of Meade (2013), Lewis (2013) and Brown *et al.* (2011). The study acclaims that economic growth is the increment in consumption of services and goods and its production and it's mirrored in country's gross domestic product (GDP). Haller (2012) classified the effect of micro and macro-economic factors such as GDP per capita to be positive, zero and negative with a nation's economic growth. He asserted that there is positive economic growth effect if the macro-economic factors are found to be higher than the country population growth. Zero economic growth occurs when these factors are equal to the population growth whereas negative economic growth is obtained when population growth are higher than these factors. Haller's (2012) assertion supported Barro's (1991) conclusion that economic growth has a significant relationship with a country's resources, infrastructure development, institutional development, government intervention and culture. However, Bagli and Adhikary (2014) argued that one of the factors that also face economic growth is population growth. Therefore, past works were reviewed with consideration on few macroeconomic factors on economic growth that are necessary in this study.

3.3.1.1 Exchange Rate

Boyd, Caporale and Smith (2001) measured the impacts of the real exchange rate (RER) on the balance of payment (BOP) using structural cointegrating vector autoregressive distributed lag (VARDL) models for local and international output. Eight organization for economic cooperation and development (OECD) nations with small structures were estimated to examine long-run relationship. The impulse response functions (IRF) were summed to study the response to shocks, showing an indication of J-effects curve; that is worse off of the country's trade deficit at the start of its currency's depreciation. The estimation used a single-equation autoregressive distributed lag (ARDL). The outcomes suggested that the maximum likelihood condition is satisfied in the long run, despite the considerable heterogeneity discovered.

This work is comparable to Kandil and Dincer (2008) that examined Egypt and Turkey exchange rate variations impacts on output, price level and the real value of units of total demand. In Turkey, proposed exchange rate appreciation raises inflation and has not so good effects on real output of growth, demand for exports and investments. In contrast Egypt, anticipated that exchange rate appreciation increases growth of real output and decreases export growth. As for the evidence found for Turkey and Egypt, excessive volatility in the effective real exchange rate (RER) could be detrimental to real growth.

Soofi (2009) deliberated on exchange rate strategy, in relation to Chinese financial and capital control reform; using general regional equilibrium of input-output for empirical results. The results signifies that there are other options to renminbi/dollar appreciation

strategy in managing US-China tenacious trade deficiency ought to be given. In this way, offering another and exact based arrangement suggestion in managing the US exchange shortage with China was made. Likewise, Rodrik (2008) examined how a high RER stimulates economic development for developing countries. The finding used different estimation techniques and RER measurements, because of its robustness in nature. The results suggested that tradable suffer excessively from the government failures that keep poor countries from uniting toward countries with higher incomes; while official model clarified relationship between RER and economic appreciation. Since linkage between exchange rate and economic development exist in developing nations, therefore existence is obvious in most African nations.

Nyamrunda (2012) disagreed on the proposition that devaluating the exchange rate in developing countries will lead to fast growth and economic development, especially in the Sub Sahara Africa region. The study focused on random movements of Tanzania's exchange rate and the net foreign direct inflows (FDI). The Vector Error Correction Model (VECM) and Johansen's cointegration test were used for estimation. The study concluded that there exist substantial long-run relationship between the exchange rate of Tanzanian shilling and the total FDI inflow. The study suggested that less developed countries (LDCs) to include the exchange rate level on the settings of the policies so that more FDI will be attracted.

Olurankinse and Bayo (2012) studied effect of exchange rate, inflation rate and interest rate on the non-oil sector as whole. Their study concluded that non-oil export was said to

have progressive outcome on economic development; thereby recommended that increase in production of agricultural and manufacturing sectors have to be ensured for product availability in both domestic and export purposes. Akinbobola and Oyetayo (2010) examined the relationship between the country's RER and domestic output growth. The study adopted the error correction model technique and found that there is no co-integration between RER and other explanatory variables on the long run. The study revealed that RER is to operate through aggregate supply chain which can enhance output expansion and economic expansion at large in Nigeria. Therefore the study suggested that, there is need to use real exchange rate as one of the macroeconomic policies to assist an economy.

3.3.1.2 Interest Rates

Another macroeconomic factor that influences economic growth greatly is interest rates. Eggertsson (2011), stated that interest rate is the annual price charged from a borrower on a loan and it's express as percentage of the total loan. Maddaloni and Peydró (2011) assert that it's the profit over a period of time which is gotten from financial instrument. It can also be view as the difference in money back and money initial given over a period of time. The interest rates phenomenon explains how commercial banks make their revenue and which is found have influence on a country's economy.

Balassa (2013) investigated the effects of interest rates on savings by focusing on developing countries. The study also reported on recent work on the interest elasticity of savings in the United States that has relevance outcomes for the interpretation of

developing country. Using time-series and cross-sectional methods to analyse for a number of countries, the result signifies the positive effects of interest rates on savings. Since interest rate has a positive effect on saving in developing countries, this could be evident in the case of Nigeria.

Ayadi (2009) investigated the determinants of huge capital flight along with its constraints on economic growth. The study analysed the capital flight of Nigeria in a new context by different innovative model and econometric techniques. This study was carried out with use of the ordinary least squares (OLS) and the error correction model (ECM). The study found that interest rate causes capital flight in both Nigeria's short and long run; while exchange rate depreciation significantly increases capital flight. Output growth in the short run was significant and negative, indicating that non-active home resources can trigger capital flight.

3.3.1.3 Inflation Rate

Inflation is another major macroeconomic factor that influences economic growth. It can be explained as the annual continuous inflation in product's price and service in the country's unit of currency (Hoogenveen & Kuipers, 2012; Neely & Rapach, 2011). It is an annual rate that is reflected in a country's price of good and services which directly influence the country index of money prices. Saz (2011) pointed out that inflation rates indicates that there is continuous fall in the total purchase power of a country's monetary system and its effect will be directly felt on the country's economic growth.

Lim and McNelis (2012) evaluated "macroeconomic adjustment with an estimated dynamic stochastic general equilibrium (DSGE) model under a fixed exchange rate period in Hong Kong". The study found that world inflation shocks and exportations are the main bases of GDP volatility. Also non-considered fact was assumed, whereas flexible exchange rate era with inflation aiming, showed that inflation would have been reduced, but interest-rate instability would have been amplified.

Similarly, Risso and Carrera (2009), examined "long-run relationships and threshold effects between Mexico's inflation and economic growth". Employing cointegration technique, they found that there exist significant and undesirable long-run association between inflation and economic progression. Their result also observed high level of inflation produce a destructive effect on economic development which is consistence with other studies. In Africa, Odhiambo (2013) observed whether inflation causes South Africa's growth. Employment rate was incorporated into the model as variable affecting both inflation and economic growth, so as to address the problem of omitted variable associated with some previous studies. A bidirectional causal relationship was found between inflation and economic development in South Africa by using ARDL approach. Likewise, in Nigeria, Omoke (2010) carried out a study on economic growth and inflation. Consumer price index (CPI) and GDP were used as a substitute for inflation and economic development respectively using cointegration and causality test. No co-integrating existence was discovered variables for the period. VAR-Granger causality also resulted at unidirectional causality running from inflation to growth. It was stated that inflation has no

good impact on growth and the fact was maintained in the case of country with high inflation.

3.3.1.4 Unemployment Rate

The ratio of the labor force within a country is referred to as employment rate by Riva and Curtis (2012) and is one of the leading macroeconomic factors that influence a country's economic growth. Similarly, Cylus, Glymour and Avendano (2014) explained unemployment rate as the measurement of employable force within a country's workforce which is expected to be 16 years and above and the unengaged force (either those that have lost their job or/and unable to secure a job within last one month). It is a fact that when there is positive economic growth in a country then it be influential on the employment rate of the citizen. Kamble (2013) claimed that there is an affirmative association between India's growth and employment rate which supported Keynesian theories. He concluded that increment in fiscal development will lead to an increase in the employment ratio of a country.

Hassan and Nassar (2013) examined the effect of unemployment rate on GDP alongside with macroeconomics variables such as government deficit spending, interest and inflation rate. It was discovered that government deficit spending and unemployment rate has a negative effect; while inflation and interest rate had no significant effect on GDP. More recently, Caceres (2014) examined the interdependence in national labour markets in Central America, by constructing two sets of panel data (Costa Rica and El Salvador; Honduras and Nicaragua). Vector Auto Regression (VAR) models that included the

economic growth, investment, and unemployment rates; and export ratios in place of the investment rates are used for estimation. Likewise, Kashi and Tash (2014) analysed impact of inflation, unemployment rate and government expenditure on poverty level in Iran. The study revealed that unemployment and inflation have positive impact on poverty; whereas government expenditure has no tangible effects on poverty.

Bratu (2012) examined the forecasts accuracy of some macroeconomic variables in Romania. ARIMA models were used for prediction of the inflation and the unemployment rate, while it was concluded that the unemployment forecasts were better than the naive predictions and the static prognosis were superior to the dynamic. Helpman and Itskhoki (2010) examined two-country and sector model whereas one sector produces homogeneous products and the other differentiated products for trade. The relationship of labour market rigidities and trade weaknesses in repositioning welfare, trade flows, productivity, and unemployment are also studied. The opening to trade increases rate of unemployment for a country if relative labour market frictions in the differentiated sector are low and otherwise. Unemployment rates of cross-country differences display rich patterns, this will be evident in African particularly Nigeria.

Ogujiuba and Abraham (2013) tested the validity of the Philips curve hypothesis in Nigeria by employing generalized error correction model on inflation, unemployment rate and gross domestic product. The result showed that inflation and unemployment are not significant and has an inverse relationship in short run, while in long run inflation and unemployment moved in the same direction. The relationship between inflation and

unemployment on growth showed that inflation accompanies growth while unemployment has a negative relationship with growth. However as employment creation cannot be left out of achieving price stability and growth, policy measures aimed at reducing unemployment are recommended.

3.3.1.5 Government Spending

Government is the consultant of a country's economic and her activities directly or indirect determine the state of the country's economic growth. Government spending is another important macroeconomic factor that greatly influences economic growth. It deals with government attitude, actions and policies on the country's daily spending and trade.

Dao (2012) investigated on impact of growth in relation with various spending programmes of government's share on GDP in 28 developing economies. The result found that per capita GDP growth rely on improvement of per capita government health costs, per capita government expenses on education, population growth, share of total health expenditure and gross capital formation. Recommendation was given based on the statistical results that it will be of help for the policy-makers; once their government expenditure places in order to stimulate economic growth. Additionally, Dorica (2013) identified government financial discipline as important fraction in a country's economic growth.

Similarly, Cebula and Mixon (2012) examined the impacts of fiscal freedom reduction that is taxing and spending parts on economic growth. Panel two stage least squares estimation set for the OECD nations was used for analysing. Nominal interest rates, federal government budget deficits and other factors are variables utilized. The result revealed that

fiscal freedom direction leads to same way on economic growth; likewise freedom from excessive government size. Also Baily (2003) concluded that open trade policies, public and private investment, human capital and government spending were factors militating OECD countries economic evolution. He advocated that for these countries to experience desire economic growth their government must pay close attention to their taxation, government spending and public and private sector development.

Wennekers and Thurik (1999) also argued that economic growth can be enhanced by venture and entrepreneurship capitals. Another counter argument from Audretsch and Keilbach (2004) and Acs (2006) suggested that only active venture and entrepreneurship capital enhances economic growth. This infers that venture and entrepreneurship capital is part of the macro-economic factors that contribute to economic growth. Many of these studies were done in Europe and America whereas Gyimah-Brempong (1989) and Jerven (2010) argued that there are differences in Africa economic growth factors and the westerners due to long military rule and corruption which is characterized by Africa countries history. They further identified negative spending of the military as a factor militating against economic growth in Africa. This was supported by the findings of Anaman (2006) in Ghana that only when Africa countries can abolish military coup, military rule and extreme political mayhem that the continent can experience sustainable economic growth.

Fan, Yu and Saurkar (2008) examined the tendencies in government spending in the emerging countries by analysing the factors that influence change and build a framework for defining the different effects of several government expenses on economic

development. It is found that all sectors do not receive equal treatment, but SAP increased the size of government spending which was contrary to the general belief. The influence of numerous types of government expenditure on economic growth was also found to be mixed based on Africa, Asia and Latin America context. In Africa, promoting economic growth was acknowledged to be strongly supported by government expenditure on agriculture and health; Investments in defence, agriculture and education had positive effects on promoting growth in Asia; while in Latin America, all forms of government expenditures were said to be significant except health expenditure which is found to be insignificant. It was concluded that SAP influence development in Lain America and also in Asia but impeded growth in Africa where poverty alleviation solely depends on enhancement of agricultural production with Nigeria as a good example.

Kalu and James (2012) investigated "consequence of government spending on the growth from periods of 1980 to 2011. Study adopted the ARDL approach and the deviation from their equilibrium trail. Their results found that government periodic expenses is positively correlated to economic development, whereas affirming the validity of Wagner's law: that states that "increase in responsibilities of any state leads to increases in the economy size in the short and long run". Therefore it was advised that government should ensure that capital outlay and periodic expenses are well managed appropriately in a way that will boost productive capacity as it will influence the rapid of the growth rate of Nigeria economy.

3.3.1.6 Export

The beginning of literature on economic growth and export can be traced back to 1970 where many studies (Michalopoulos & Jay, 1973; and Michaely, 1977) used correlation coefficients to analyze relationship between economic growth and export. While in 1980s (Chow, 1987; Jung & Marshall 1985) uses Granger causality methodology to further determine lead and lag relationship. In the 1990s scholars (Bahmani-Oskooee, Mohtadi & Shabsigh, 1991; Sharma & Dhakal, 1994; Ghartey, 1993; Riezman *et al*. 1996; Shan & Sun, 1998; Asafu- Adjaye & Chakraborty, 1999; Huang, Oh & Yang, 2000) employed the combination of causality test, unit root and cointegration to deeper the understanding of the phenomena. It can be observes that majority of studies support the notion that export positively influence economic growth, however there are some differ options to the notion.

For instance, (Fosu, 1990; Salvatore & Hatcher, 1991) studies supported the notion that export positively influence economic growth whereas (Ahmad & Kwan, 1991; Oxley, 1993; Dodaro, 1993; Yaghmaian, 1994; Ahmad & Harnhirum, 1995) disagreed with the notion that export positively influence economic growth. These studies findings were recently capture by (Chen, 2014; Dreger & Herzer, 2013 and Blecker, 2009) that there is no perfect conclusion on the influence of export to economic growth. They observed that it depend on government operation policies. This observation was pointed out by Canuto, Haddad and Hanson (2010) that there are possible for economic growth to create inflation pressure leading to low export. Likewise, it is possible for it to produce high interest rate which will also lead to low export. However, they noted that economic growth can boost

export if exchange rate favors the country and there is more money in circulation to increase productivity.

In a study on China's economic growth, Herrerias and Orts (2010) pointed out that export lead to industrialization which was termed export-oriented industrialization or export-led growth. They defined export-led growth as the act of exporting good and service to other countries to facilitate industrialization in their home country by creating a comparative advantage. This was identified to enhance advantageous opportunities to the domestic market by obtaining foreign exchange from foreign country markets. This position support Bahmani-Oskooee and Economidou (2009) assertion that when there is increase in export activities then it will influence economic growth. This is the major argument of export-led growth hypothesis. The hypothesis reflects that increase in export activities influence demand which influence currency exchange; whereas currency exchange is directly link with exchange rate and economic growth. Likewise, in Jordan Abual-Foul (2004) observed that in promoting rapid economic development, government must keep on attracting foreign investors and increase exports.

Similarly, Palley (2011) in his study titled rise and fall of export-led growth (ELG) maintained that ELG causes specialization which enhances productivity of goods and services. The output of productivity is transformation from non-performing trade sector to performing sector. Hence when productivity is positive and the sector becomes performing then it leads to economic growth. Likewise, in Mexico Waithe, Lorde and Francis (2011) concluded that export-led growth enable exporting countries to have more opportunities of manufacturing more goods which open their local market for foreign benefits. This also

influences their technological drives and promotes inter-industrial trade. Therefore, export is a vital factor that leads to technological change and economic growth if it's position properly. Yavari and Mohseni (2012) demonstrated there is a huge impact of labor market, non-oil exports, physical and human capital stock and import tariffs on Iran's economic growth. They further argued that free trade is an important factor of economic growth.

Abou-Stait (2005) study described these mixed findings in two ways, the first was a group of studies using cross-country analysis (Yang & Mallick, 2014; Kalhoro, Bhutto, Maari, Bibi & Butt, 2011; Ngoc, Phuong, Anh & Nga, 2003; Edwards, 1992) whereas the second group used single country analysis (Golovko & Valentini, 2011; Crespo-Cuaresma & Wörz, 2003, Srinivasan & Bhagwati, 2001). He concluded by pointing out that for developing countries to experience sustainable economic growth then there is need to limit their heavy dependency on export of raw on unfinished goods. This is because slight changes in international market will directly affect primary goods which will affect producing countries especially developing countries.

This conclusion is similar to Amirkhalkhali and Dar (1995) declaration that the link between export and growth indicates that inward oriented countries should be cautious on policies and practicing strategies. Roshan (2007) in Iran suggested that export positively influence economic growth due to net increase in GDP. He revealed that although oil export is playing a significant role in Iran's economic growth now however, the manufacture exports will cause the further economic growth for the country. This finding was further explored by Rafiq (2011) when he resolved that there is significant affiliation among export, exchange rate and growth. A similar conclusion was made recently by Dao (2014)

when he extended Esfahani (1991) model by integrating government consumption. He suggested the notion that there is optimistic influence amid government consumption, export and growth.

In other recent studies by Tasos (2014), Olson (2014) and Sannassee, Seetanah, and Jugessur (2014) on the relationship of export, growth and FDI. It was concluded that GDP and export growth leads to FDI growth. Hence, he maintained that there is significant relationship between the three factors. However, Sannassee *et al*. (2014) argued that the effect of export on growth is unidirectional while Koh & Mah (2013) claimed that it's bidirectional. However, none of these claims can be establish with Africa countries. Where many countries in European, America and Asia experience growth economically due to export, Africa countries experiences has being dismal (Elbadawi, Kaltani, & Soto, 2012). As a result, many Africa countries are still in huge debts and their citizens having below the poverty line compared with other countries.

Wamboye, Adekola and Sergi (2014) and Lloyd, Morrissey and Osei (2001) examined the effect of international aid, export and economic advance in Africa. These two studies also maintained that foreign aid, export and public investment have progressive influence on economic growth. These verdicts were found to be consistent with Frimpong and Oteng-Abayie (2006) when they examined the outcome of trade and FDI inflows on Ghana's economic development between the periods of 1970 – 2002. The studies likewise maintained that trade, private and public investment and labor have huge influence on economic growth of Africa countries. Consequently, it could be observed that there are mixed findings empirically on the influence of export on economic growth. Also Wamboye

et al. (2013) argued that with all the foreign aids and westerner interventions Africa is still considered the least developed among the continent.

Thus, there have being many arguments surrounding Nigeria's exports and growth. For instance, majority of literatures in Nigeria uses econometric methodology to explore connection concerning exports and economic growth (Idowu, 2005; Odusola & Akinlo, 1995; Ekpo & Egwaikhide, 1994). Consequently, Ugochukwu and Chinyere (2013) pointed out that many of these studies fail to explore in-depth issues like causality and its direction. They assert that causality issue is vital due to its relationship with validity on export-led growth hypothesis. Also, it was observed that there is need to separately analysis oil and non-oil Nigeria's exports data. This is because majority of exports literatures in Nigeria presents oil and non-oil data as a whole (Oyatoye, Arogundade, Adebisi & Oluwakayode, 2011; Okunnu & Adeyemi 2008; Onafowora & Owoye, 2008; Isham, Woolcock, Pritchett & Busby, 2005). Therefore this study will examine macro-economic factors that will promote economic growth in Africa particularly Nigeria, creating literature gap on the effect export on growth.

3.3.1.7 Agriculture

While some studies argued that agriculture plays a passive contribution to economic growth (Hussain & Chakraborty, 2012; Huang, Chen, Kuo & Wang, 2011; Chebbi, 2010; Chebbi & Lachaal, 2007; Ellis & Biggs, 2001). This argument was based on the fact that agriculture provides platform for industrialization and resources. Majority of raw materials

inputs needed for advancement both in industries and technology relies on agricultural output. Also it creates wealth and employment for the normal masses of the country. Hence, these studies concluded that agriculture has a passive role on economic growth.

The other arguments counter this position and suggest that agriculture plays a vital and active role on economic growth (Kumari, Kaushal, Dubey, Sharma & Sharma, 2014; Konrad & Thum, 2014; Lewis, 2013; Malerba & Nelson, 2012; Bai, Chen & Shi, 2011). It is more like a market on its own than provision of raw resources and material input for productivity and industrialization of a country. In fact, it could be seen that many subsector like technology and manufacturing benefit greatly from agriculture which means all these sectors inter-dependent on each other. Thus, these two arguments imply that there is disagreement on the true role of agricultural sector on economic growth especially in Africa where there are abundant opportunities for agricultural activity.

Although, many studies have explored different approaches and method in determining the true position of agricultural sector to economic growth and likewise outlined the theoretical relationship between the two. However, a study by Tsakok and Gardner (2007) maintained that many of the previous studies do not provide conclusive output and position on the impact of agriculture to economic growth. They thereby use conventional regression techniques for their findings. Hence, their finding is inconclusive.

Hussin and Yik (2012) used time series data for the period of 1978 - 2007 time series data to investigate the contribution of manufacturing, agricultural and services sectors on economic growth in China and India. They discovered that these sectors have positive relation with economic growth, however they observed that China's economic growth is

due to the huge contribution from the manufacturing sector while India's economic growth is due to the service sector. This implies that macro-economic sectors have different impact on economic growth. Similarly, Gardner (2005) uses a panel making up to 52 countries and concluded that positive association does not exist between growth and agriculture. But this finding was contradicted Tiffin and Irz (2006) when they explore 85 countries using Granger-causality tests. Conclusion was arrived at that the relationship was positive. However, the study was unable to provide the direction of causality of these countries. This finding supports Awokuse (2009) investigation where he concluded that agriculture is the driving engine of Africa.

Another major study that explains the role of agriculture in economic growth was done in China by Yao (2000). He made two unique arguments that agriculture greatly influences GDP and non-agricultural sector has a little influence on agricultural sector growth. This finding is consistency with Kaya, Kaya and Gunter (2012) reveals that out of the four foreign sectors namely agricultural, investment, non-investment and social infrastructure. Agriculture sector remains the only sector that positively contributed to economic growth. More recently Luca, Cionga and Giurca (2013) concluded that agricultural sector is one of the major contributions to Romania's economic growth. They argued that farm products and commercial farming are the major factors influencing the economic growth in Romania.

Specifically, Anthony (2010) pointed out Nigeria agriculture sector as a major boost to her economic growth out of all the Africa countries. However, calls for in-depth investigation on problems militating against the sector. Ammani (2011) highlighted that Nigeria

government neglect on agriculture sector over oil sector will create a big problem for the country in the future. Hence he advocated for the need to redirect the country attention to both encompass agriculture and oil for sustainable development of the country.

Furthermore, Izuchukwu (2011) maintained that agriculture is the only engine of development that Nigeria government can relies on because there are indications that oil sector might crashed. This is the reason why the sector should be well funded and serviced to reduce the mono-cultural dependence on the oil sector. This point supported Ita, Ukpong and Ekpebu (2013), Mafimisebi, Oguntade and Mafimisebi (2010) and Eyo (2008) argument that there is need for Nigeria government to increase her budgetary allocation to agriculture section to create a way for the country industrialization and employment. These positions were similar to Olajide, Akinlabi and Tijani (2012) that there is drop in the influence of agriculture to Nigeria's growth particularly during the oil boom period till now. Hence, this study will investigate the role and influence of agriculture export to economic growth in Nigeria.

3.3.1.8 Oil Price

Umar and Kilishi (2010) examined the impact of oil price shocks on Nigeria macroeconomic variables using VAR. The study found that oil prices have significant impact on real GDP, money supply and unemployment; while no significant impact on consumer price index. The need for diversification of the economy to minimize the consequences of external shocks is thereby suggested. Similarly, Edame and Effiong (2013) posed a huge challenge on Nigeria government. They observed that the total

dependence on oil to generate over 80% of Nigeria revenue will negatively affect the country when there is fall in oil price or oil consumption. Export of manufacturing, agriculture and human capital were suggested to reposition the country for future economic growth. This suggestion supported Ross (2003) that there is need for Nigeria government to diversify her economy and export beyond oil toward solid minerals and agriculture.

Also Ayadi (2005) study focused on oil price changes or shock and industrial production relationship used as proxy for economic development. Real exchange rate as one of macroeconomic variables was being analysed by VAR model. Insignificant and indirect statistical effect of prices of oil on production of industry. Once oil price shock affects real exchange rates, industrial production will be affected. However, the results implied increase in industrial production is not as an increment in prices of oil.

In another major study Ighodaro (2010) examined energy consumption and economic growth relationship. Electricity demand, domestic crude oil consumption and gas utilization are used for the estimation, which are identified as energy consumption's proxies. A long run relationship existed among the series. Furthermore, electricity consumption, domestic crude oil production and gas utilization were found to have unidirectional causality with economic growth. Causality runs from two (gas utilization and electricity consumption) of the proxies used to economic growth as well as from economic growth to domestic production of crude oil. It was therefore concluded that economic growth will be harm by consumption of electricity and gas according to their conservation policy whereas domestic consumption of crude oil regarding policy won't harm.

Adeniyi, Oyinlola and Omisakin (2011) studies other measures of oil value shocks through utilization of previous studies with the perception to determine the degree to which decisions about the petroleum value development definition rely on upon the meaning of the definition of shocks adopted. The study was the pioneering attempt to introduce effects of threshold into shocks of oil price and output linkage. Their findings suggested that oil cost shocks did not justify tangible development in total macroeconomic aggregates, even with the introduction of brink effects.The threshold effects were discovered as weak linkages with the nature of Nigeria's petroleum. The study therefore, concluded that spending of oil income profitably is vital if positive impact on genuine output development is anticipated. Similarly, Ushie, Adeniyi and Akongwale (2013) investigated on oil revenue, institutions and macroeconomic indicators such as institutional quality index, money supply, fiscal deficit, inflation, conversion and interest rate over period of time. It was observed that both economic and political strategies are required for managing oil windfalls.

3.3.1.9 Other Factors

Harb (2009) examined exports of natural resources on economic performance in long and short run among oil exports, non-oil GDP and investment. Majorly five countries exporting oil "Kuwait, Oman, Qatar, Kingdom of Saudi Arabia (KSA), and United Arab Emirates (UAE)" were examined in the study. The results reveals no long-run relationship; whereas the effect of oil on investment and non-oil was found to depends on local policies by a VAR analysis used for estimation in the short-run. This mode of process used is similar to

AlSaqri and Ahmed (2010) examined the "connexions between Oman's mineral and non-mineral sector, while oil represented the mineral sector. The study provided a clear picture of the possible linkages of oil sector and non-oil growth in promoting overall economy. Likewise, Deller and Schreiber (2013) examined the relationship between gas mining, non-oil activities and growth for a period of time on the rural US counties. It was found that lower population growth affected non-oil and mining gas and has positive effect on per capita income (PCI), but no effect on growth of employment.

Similarly in Pakistan, Shahbaz, Arouri and Teulon (2014) identified natural gas conservative as a factor of economic growth. They argued that gas consumption is a major factor that drives production in Pakistan, hence it adds up to the factors enhancing country's growth. In a study by Zalgiryte, Guzavicius and Tamulis (2014), it was observed that stock market has a greater sway on France's economic compared to US. They also revealed that industrial and financial sector give the best prediction of economic growth in the US while consumer services and healthcare sectors were identified for France. This supported Manish and Powell's (2014) position that the creation of institutional freedom of price formation enhances economic growth in a nation. Similarly in Malaysia Tang and Tan (2014) observed that tourism is a good example of macro-economic factors to enhance economic growth. In the same manner, Neycheva (2014) revealed that education and economic growth has no significant relationship whereas there is huge significant between physical capital, export, import, FDI and economic growth.

Likewise Zubair and Khan (2014) pointed out political stability factor out of the four factors of Worldwide Governance indicators (WGI) to have the highest contribution to Pakistan's economic growth. The other three namely rule of law, corruption control and

accountability mechanism were found to be low in contribution to political stability. Likewise Salisu and Ogwumike (2010) argued that bad government, incessant socio-political crisis and policy inconsistencies were factors affecting economic growth generally among Africa countries. In another major study by Jerven (2011), Okonkwo and Odularu (2013) and Antwi, Mills and Zhao (2013), external debt, excessive reliance on westerner intervention, population growth and crisis were identified as major factors militating against Africa countries economic growth. Moreover, Hong (2014) discovered that foreign direct investment (FDI) has a huge influence on China's economic growth. His study was based on FDI factors within the period of 1994 to 2010 where he concluded that there is a positive influence of FDI on economic growth.

Ghura and Hadjimicheal (1996) also investigated on economic growth among Africa countries in the sub-Saharan Africa between 1981 and 1992. They maintained that only the public and private investment in Africa can bring about significant economic growth. Additionally, Booth *et al*. (2004) argued that only economic liberalization can enhance the desired economic growth that Africa countries longs for to ensure the continent development. Their result support Elhiraika (2008) and Elhiraika, Aboubakar and Muhammad (2014) claim that Africa countries can only experience the desired economic growth when both private and public investment is geared toward agriculture sector and not only nature resources. They maintain that sustainable economic growth can be achieved in Africa when these countries government commit to their labor force, practice open trade policies and investment in human and physical capital.

In Egypt, Dobronogov and Iqbah (2005) argued that Africa countries non-performance of financial intermediation is one of the key factors militating against economic growth in the continent. They maintained that only an improve quality of financial intermediation can bring the desire sustainable economic growth in Africa. Hence they pointed out that Africa governments must of necessity pay huge attention to their private sector credit and government spending to achieve their economic growth desires. This result support Seetanah and Rojid (2011) and Mobolaji Hakeem (2010) finding that there is a need for Africa governments to development their financial institution to drive economic growth in their countries. Also in Malawi, Khungwa (2007) suggested that for Africa countries particularly Malawi to experience sustainable economic growth then government must ensure stable and strategic macroeconomic policies that will enhance such conducive economic environment.

Recently, Glewwe, Maïga and Zheng (2014) and Young (2012) advocated the need for Africa countries to pay attention to education in the continent because he observed that there is link between education standard and economic progress. Whereas Ahamada and Coulibaly (2013) found out that remittances does not enhance Africa economic growth because it do not have influence on Africa physical capital investment. Likewise Fayissa and Nsiah (2013) argument that unless Africa achieve the NEPAD four goals namely, stimulating sustainable growth and development, eradicating poverty, incorporating Africa into the global economy, and hastening women empowerment in the continent then sustainable economic growth might be impossible. Therefore, it can be inferred that the need for good and maintain governance and education is a huge step toward economic

growth in the continent. This is found to be consistent with Leshoro's (2013) position that only a positive economic growth can reduce unemployment and eradication of poverty in the continent.

Ibrahim (2008) observed the factors behind retarding economic growth in Nigeria despite various potential resources opportunities such as excessive availability of petroleum produce. The findings found that mining and exportation of petroleum produce has influence on economy's income potential, technological progress and also on factors of production. The study concluded that creating proper conditions for viable local use of petroleum resources to improve inter-sectoral linkages is primarily approach for petroleum driven economic growth rather than depending on foreign exchange revenues. Similarly Obi, Wafure and Menson (2012) also examined the relationship among savings, investment and Nigeria's growth rate. Relationship among savings, investment and growth was found. Policy was therefore given to ensure and enhance friendly saving and investment context for significant impact in the nation's growth. Mode of this study is comparable in complexity to that of Ikpefan and Osabuohien (2012). Interactions of discount houses, economic growth and money market tools were investigated. Long-run association was established between growth and discount houses processes, likewise in money market instruments and growth. Rebate on houses were found to serve as real economic growth's stimulant, during global economic melt-down that adversely affected stock market of the country.

Also, Oladipo (2008) studied on the determinants of foreign direct investment (FDI). Links among variables affecting the country's growth economically are causally investigated

based on the export and FDI led growth assumptions. The essentials FDI flows determinants found are prospective market size, human capital, export orientation rate, enable environment through the availability of infrastructural amenities and macroeconomic permanency. The findings indicated that complementary factors to growth are openness in trade, human capital and expenditure of government for consumption; while also FDI and increase in exports activities have essentially driven economic development. The approach of this study is similar to that of Egbo (2011) which examined the direction of causality between FDI and GDP as proxy for economic growth. Result also indicated that a causality relationship ran from FDIs to GDP. Therefore, concluding that FDI leads to economic growth in Nigeria since there was a positive relationship between FDI and GDP. The process used is comparable to the study of Adebola and Opeyemi (2011) where the electricity consumed and economic growth relationship alongside with labour and capital as other variables was examined. ARDL bound testing was used for identification of the long run interaction. The study also found that apart from electricity consumption, capital and labour are the key determinants of economic growth; since both have significant positive causality to economic growth.

Uyi Kizito (2014) examined the link between the tax system and economic growth using correlation method and Granger Causality to establish the relationship. The study revealed that the tax system has no significant impact on growth because of the numerous challenges confronting the system. Further analysis on the components of the tax system such as custom duties, company income tax, value added tax and petroleum profit tax shows that some have significant impact on economic growth; whereas some are negative and

insignificant. The study therefore suggested that the Nigerian tax system should be reformed, by embarking on policies and programmes that will enhance the level of income in the country toward having a significant control on economic growth.

Many of these studies have investigated factors of economic growth whereas several studies focus on GDP as proxy for economic growth with its interrelationship and effect from macroeconomic factors. However, there are still few studies on the in-depth of macroeconomic factors on other proxy of economic growth particularly in Nigeria. Hence, it creates a literature gap within the economic growth factors on the extent that these factors affect economic growth especially within Nigeria. Consequently, this study will contribute to this literature gap by examining macro-economic factors such as agricultural export, SAP and crude oil price that can enhance economic growth in Nigeria. It will also contribute to strength existing literature of macro-economic factor that enhance economic growth by ensuring recommendation to enhance policy makers and government not only in Nigeria but other developing countries worldwide.

3.3.2 Macroeconomic Factors and Exports

Export has been found to have direct link with country's foreign exchange income, flow of currency and employment (Klasen & Lamanna, 2009). According to Joshi (2005) export referred to the movement of goods and services from a country port to another country port. The first country port is known as the seller port or exporter while the receiving port is the buyer port or importer. He further defined export as an act of international trade where goods and services are exchange between two home countries markets (seller and

buyer or exporter and importer). This definition is consistency with Amiti and Freund (2010) declaration that export deals with the transfer of goods and services within two frontiers with the aim of selling and obtaining currency exchange. Past works are reviewed based on few macroeconomic variables impact on export.

3.3.2.1 Exchange Rate

Tang (2008) investigated exchange rate variability influence on demand of five most ranking exports electrical in Malaysia as grouped by the Standard International Trade Classification (SITC) product associations. The ARDL modelling co-integration method was used to evaluate the effects of export rate degree variability. The outcomes in both run indicated that international revenue and prices are crucial determinants of demand for all the exports electrical. The paper supported that variability of exchange rate has undesirable effects on electrical exports of Malaysia. Similarly, Chen (2011) examined the link of China's changes and volatility of exchange rate Renminbi (RMB) and its agrarian export. It was revealed that impact of RMB conversion in net trade depends on the correlation of level of exchange rate change and risk effects. However, in the case China's agricultural exports to Japan showed that the devaluation of RMB against Yen will improve export growth rates whereas increment limits export and exchange rate instability certainly encourage farming exports to Japan. Hence, concluded that volatility of exchange rate is quite minute than level of exchange rate, which yields an unfavourable impacts on export.

Kumar (2011) utilized the new specification proposed by Bhaskara Rao and Singh (2007) to evaluate equation of export among five developing countries in Asian: Singapore, India,

China, The Philippines, Malaysia and Indonesia. In the specification of demand export with variable of relative price, there is inclusion of exchange rate. The Granger causality test determined the income, exports and relative prices direction. It was deduced from results that export promotion policies should be encouraged; since it's an engine for the countries' growth.

Boug and Fagereng (2010) explored relationship between Norway's export performance and exchange rate fluctuation. The cointegration and VAR context using the implied conditional variance from a GARCH model was used for volatility measurement. The study with VAR found no evidence that performance of export has been affecting uncertainty of exchange rate. Significant cointegration relationship was observed among market world's demand, level of exports and relative prices. The dynamic model rejected the view that exchange rate volatility increased as targeting inflation in term of monetary policy rises; reflecting significant impact on export performance by forecasting.

Likewise, Ekanayake, Ledgerwood and D'Souza (2010) investigated instability of exchange rate on exports, using sectorial disaggregated US data. The results suggested that negative effect upon export demand was from the increase in exchange rate volatility majorly on examined. Therefore, it was found that four export products out of ten are significantly positive and others have negative effects.

In the same way Afta, Abbas and Kayani (2012) explored exchange rate volatility's impact on exports sectorial level in Pakistan. All sectors in export trade were used to explain the relationship in this work. Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root and GARCH are used to study exchange rate volatility. Whereas approach of bound

testing was used for relationship study of sectorial export and exchange rate volatility. It was found that exports are negatively affected by exchange rate volatility and relative prices; while positively by foreign income. These relationship existed on all sectors used. Whereas, the existence of long run link was been revealed with aid of bound testing, despite some equations results were not statistically significant.

Similarly, Dincer and Kandil (2011) examined Turkey's exporting sectors data disaggregated comprising 21 based on. The study traced the effects through demand and supply chains. The evidence indicated that reduced demand of exports is from currency appreciation over time. Although, export growth is said to has being stimulated by little influence of depreciation. Moreover, the study found that to improve sectorial growth of the country's export is likely from less variability of exchange rate.

Hasanov and Samadova (2010) in Azerbaijan investigated on impact of real non-oil GDP and RER to non-oil exports. It was found that rise in RER has negative effect whereas real no-oil GDP has positive impacts on the sector exports both in long and short run.

Hsu and Chiang (2011) used a threshold regression model to examine the consensual exports impact between US and 13 top partners in trade. Based on previous research that analyzed the effects of instability of exchanges rate on real trade which results to debatable results, as a result of this, the effects are non-linear. The results observed that effects of threshold existed once variable of threshold is real GDP per capita of US ally's countries relays to US GDP per capita. Exchange rate instability was found to reduce export activities of US to arguably its high income ally's nation while boosting US exports to arguably low income ally state

Greenaway, Kneller and Zhang (2012) explored how exchange rate affects the export market entry and intensity decision of firms and behaviour of multinationals in the UK. Their result concluded that exchange rate contribute minimal effects on export activities nevertheless, it has substantial impacts on export shares. Addition to this, their study also shows that local EU companies are mostly affected by exchange rate compared to those originating from outside EU. Likewise in Africa, Ekanayake, Thaver and Plante (2011) examined the influence of the RER fluctuation on commerce flows between South Africa and European Union. Exports and imports quarterly trade flows data was used in the paper. The bounds testing method to cointegration and ECM was utilized. Results suggested that exchange volatility used in short and long-run mixed effects. Imports depend positively on foreign exchange reserves and domestic economic activity levels, while inverse on prices comparative value of exchange instability. Export was found to absolutely rely on the intensification of international commercial activities but otherwise on exchange rate instability and prices.

Etta-Nkwelle, Jeong and Fanara (2010) investigated if the 1980 to 1993 era of pre-devaluation overvaluation of Communaute´ Financie`re Africaine (CFA) franc is same with the devaluation period of 1995 to 2004, as overvaluation may undesirably influences exports. It was suggested that equal overvaluation occurs after devaluation period; the overvaluation trend has been frequently regressing until 1999 and 2000 while constantly rising since 2001; the economies dominated by agriculture are more overvalued comparing it to economies where the sector has fewer control; and the oil producing states are less overvalued compared with non-oil producing nations; likewise average income countries are not as much overvalued than lower income nations. The study suggested that

"contribution of the parity connexion to the overvaluation of the currency is minor". In considering Nigeria is an example of a developing country in Africa, there exist connection between exchange rate and economic growth.

Adubi and Okunmadewa (1999) examined Nigeria's exchange rate instability, price and trade flows on agriculture using dynamic analysis. The study established negative effect of fluctuation of exchange rate on export of agricultural sector, whereas instability of export price has a positive effect. The study also established that increasing output of export crops was as a result of usefulness of price increase. In contrast, exchange rate appreciation reduces imports, while its volatility has a positive effect.

Likewise, Onafowora and Owoye (2008) examined Nigeria's exchange rate volatility on exportation over a period of time. The empirical tests carried out using cointegration and VECM indicated presence of cointegrating vector linking exports, foreign income, export prices and RER volatility. The result also showed that increases in RER volatility elevate doubt about anticipated proceeds whereas applying negative significant effects on exports both in the short and long-run. The findings found that economic restructuring policies and trade liberalization executed contributed to export performance in the country. Whereas, suggested that exporting activities in the country can be boost through targeted policies aimed to maintain and achieve stable RER competitively.

In the same way, Aliyu (2010) investigated on the "impact of exchange rate volatility on non-oil export flows". The study uses central analysis; whereas the flow of non-petroleum exports of the country economy was presumed to rely on terms of trade (TOT) and index of openness (OPN), Naira and USD exchange rate volatility as variables. Empirical result

of cointegration revealed presence of a long-run equilibrium and stable association between non-oil exports and the variables. Vector cointegration estimated signifies that the unpredictability naira exchange rate reduced it, whereas the USD instability amplified Nigeria's non-oil exports. Promoting of greater openness and exchange rate stability in the economy is thereby recommended by the study. Similarly, Ezike and Ogege (2012) examined the impact of some trade policies such as effective nominal exchange rate on non-oil export. Negative relationship between trade policies and the non-oil export was found; whereas recommendation that the nation should diversify rather concentrating on the oil export sector.

Omisakin, Oyinlola and Adeniyi (2010) investigated exchange rate's impact and price changes on flows of commerce both in the short and long term using exportation and importation functions. ARDL approach to cointegration is applied. The results indicated that Nigeria's trade flows are affected by "local and international income, relative prices, nominal effective exchange rates and stock of external reserves in short and long run". The results also revealed that relative price is less effective than devaluation in changing imports demand at both baseline and augmented models in long-run, while reverse is the case on exports demand.

In the same country, Ogun (1998) compared results of two different methods used to the analysis of the effect of the movements of RER on the growth of exports. The study found that restrictive trade practices can significantly appreciate RER, whereas substance of a liberalization process requires exchange rate depreciation. The RER misalignment and unpredictability was said to have reduce the exportation of non-oil goods in Nigeria. The

study therefore recommended the introduction and maintaining of policies that would reduce the negative influence of RER, to enhance the economy of non-oil exporting countries.

3.3.2.2 Inflation Rate

Muktadir-Al-Mukit and Shafiullah (2014) investigated the "relationship of inflation with import and export by using monthly time series data". Econometric techniques of determining short and long term link was employed among variables by using cointegration, ECM and analysis of Variance Decomposition in Bangladesh over the period of 1994 to 2011. It was found that increase in import increases inflation rate while increase in export decreases inflation respectively in the long run. The variance decompositions' result revealed that comparing between shock of import and export, import has fewer shock than export. Granger causality analysis suggested that a bilateral causality between export and inflation exists; while a unidirectional causality from inflation to import.

Homayounifar (2008) in Iran examined the expansion of exports towards economic growth. It was found that increase in exports depend on increase in population, income per capita and consumer price index; while decrease in exports depend on decrease exchange rate and political instability.

3.3.2.3 Government Spending

Müller (2008) examined the "effects of fiscal policy on foreign trade" using VAR on US time series. It was discovered that depreciation of nominal exchange rate, improves the

Term of Trade (TOT) and escalate exports are due to a significant increase in government expenses. Similarly, Uzomba, Imoisi and Somiari (2012) investigated the effect of some macroeconomics variables such as exchange rate, interest rate, government capital and recurrent expenditure on non-oil exports by using OLS. It was concluded that government should place less emphasis on the oil export and focus on other economy aspects in real sector.

Efobi and Osabuohien (2011) investigated empirically on the ACGSF for promotion of non-oil export. Poor participation in the international market as regarding to non-oil export was discovered despite various policies put in place by the government. Existence of long relationship between the ACGSF and non-oil export was discovered. Similarly, contribution of export-import bank in Nigeria was examined on the non-oil export towards achieving growth. It was found that non-oil exports performance during the period was less satisfactory; therefore various policies concerning the sector should be investigated on (Usman & Salami, 2008).

3.3.2.4 Natural Resources, Technology, Sectors and Policies

Page (2012) pointed out that natural endowments and technologies influence on a country's export rate which is guided by liberal and transparent government policies. However, Africa's economic growth and export is limited by these liberal and transparent policies. Also long military rule, insecurity, political instability, inter-tribal crisis, corruption, unemployment, bad governance and lack of infrastructure have been identified as factor affecting Africa countries economic growth (Harrison, Lin & Xu, 2014; Macbean, 2011).

For instance, Rangasamy (2009) declares that for Africa to attain the desire economic growth then deliberate policies and strategies should be put in place to encourage export production especially the non-primary exports. Similarly, Hamilton (2012) mentioned that economic growth is determined largely by the efficiency usage of a country's resources to enlarge her production section. This is found to have a positive effect on income, exchange and export which brings about better standard of living on the country's citizens.

Menson (2012) and Ahmed, Cheng and Messinis (2011) suggested that there is need for Africa countries to utilize her natural resources on her continent development before exporting them to other countries. They maintained that a majority of Africa natural endowments are exported to other continent instead of utilizing them for the continent development. This finding support Hammouda, Karingi, Njuguna and Jallab (2009) argument that unless Africa countries stand together to develop her continent then global marginalization and economic poverty will be her possession. They advocate for structural diversification of Africa economic which will be geared toward stability in export revenue and embarking on international trade both manufactured and primary goods. This similar advocate was made by Udude and Okulegu (2012) on Nigeria's exports and economic growth. In their conclusion, Udude and Okulegu (2012) advocated that there is need for Africa countries especially Nigeria to diversifies her export goods, exchange rate, infrastructure and standardizes exports processing operations.

Omgba (2011) investigated on "effect of oil wealth on Cameroon's economy". Oil boom was found to have optimistic result on the non-oil and was not liable for economic consequences in the country. Oil prosperity was found helping to stop the non-oil decline,

whereas reductions in oil production and prices were detrimental to the economy. He concluded that amendments should be made at eras' boom so has to counter the societal issues that occurred. Likewise several studies were carried out in Nigeria on non-oil sectors. Okoh (2004) examined relationship in the long run among non-oil exports, import of principal inputs and global integration growth which was substituted by openness index, by employing VECM. The results found that global integration was positive, but insignificant in determining the performance of non-oil exports' long and short run. Whereas import of principal inputs have positive effects on non-oil exports growth. It identified that there is need for inward renegotiation Nigeria's commitments as a solution to the declining non-oil exports. Similarly, Akeem (2011) examined the export performance and determinants of non-oil export for a period of time in Nigeria. Export promotion was found to have significant effect on economic productivity than import substitution. Multi-linear regressions were employed to investigate the relationship between the non-oil export and GDP. He also perceived that export of non-oil is one of the major factors that affect GDP positively, whereas revealed that non-oil export has some significant contribution on the country's economic growth.

Similarly, Owusu and Odhiambo (2014) and Omotor (2008) maintained that only diversify, motivated labor force and liberal economic policies can reposition Nigeria exports sector to achieve positive economic growth. These conclusions were consistent with Babatunde, Oyeranti, Bankole and Ogunkola (2012) argument that despite over 50 years of Nigeria dependent on oil exploration, the country still remain in poverty and unemployment. They advocated that only liberal economic policies where all sectors (oil and non-oil) are developed maximally can reduce poverty, unemployment and inequality in the country.

They recommended the need for government to revitalize the non-oil sector in Nigeria. Adewuyi and Akpokodje (2010) examined the "influence of trade liberalization on trade flow" within a period of time, while employed the use of OLS and Generalized Method of Moment (GMM) for analysis in Nigeria. Manufactured exports was found to be positive and have significant impact to growth, whereas opposite in the case of total non-oil exports and agriculture. It was found that all group except oil export performed worse before trade liberalization than the period, while suggesting that the impact of positive imports is not strong enough for growth. The study concluded that trade liberalization has no significant impact to boost the trade flows.

In like manner, Ekperiware (2011) examined oil and non-oil FDI sectorial impact on growth by using OLS. It was found that oil FDI and non-oil FDI sector have statistically significant effect on the economy, while non-oil FDI is more statistically significant and has positive effect compared to oil FDI on the averaged of the economy and oil sector with higher FDI has less impact to economic growth. Government and stakeholders were advised to encourage FDI into the non-oil sector that has more economic returns than oil sector.

Likewise, Akanegbu (2014) examined the influences of price distortions on products in the non-oil sectors in Nigeria. A model based on modified neoclassical production function where non-oil export was taken as production input was adopted. The study tested the hypothesis that price distortions inversely affect the non-oil sector on the supply side and the aggregate demand component (non-oil exports). Whereas the study confirmed that price distortions have significant negative influence on the non-oil sectors of the economy.

Nigeria economy was be examined based on global financial crisis influence (Adamu, 2009). Financial crisis was observed to cause fall in prices goods, export, FDI inflow, equity market and foreign payment. The study concluded that policies that will minimize these effects should be recommended by the federal government.

3.3.3 Macroeconomic Factors and Agricultural Output

Based on literature on impact of macroeconomic indicators on economic growth and exports the findings revealed that there are connection between them. In general, it has been argued that changes in export rate as one of the macroeconomic factors has positive effect on economic growth. Whereas, some scholars maintained that export is a major factor that contributes to productivity. It was further argued that exports has a direct effect on employment rate and is also mirrored on a country's GDP growth. However, there is still mix finding on the impact of macroeconomic factors on economic growth and export based on preceding reviews. More so, literatures on linkages between macroeconomic factors and agriculture will be reviewed subsequently.

Gil, Benkaabia and Chebbi (2009) analysed the "impact of macroeconomic factors on agricultural supply, prices and exports". The methodology used was based on the multivariate cointegration approach over a period of time from 1967 to 2002 with ten variables which are "interest rates, exchange rates, money supply, inflation rate, agricultural output and input prices, agricultural supply and exports, income and the rate of commercial openness". The results found that agriculture is affected by changes in macroeconomic variables in Tunisia, while the contrary does not exist. In like manner,

Kargbo (2007) examined some macroeconomic variables which are multilateral RER index, inflation rate, interest rate, money supply, openness, employment index in manufacturing sector, input prices of cost of farm, capital-output ratio and change in government on agriculture in South Africa. Some of the factors are identified to have significant effect on the sector's output. Long run relationship was revealed among the factors to boosts agriculture and aids in poverty reduction of the country.

Henley, Tirtosudarmo and Fuady (2012) explored an alternative apart from blames of failure to transform to national prosperity of country's oil wealth but neglect on agriculture. Whereby subjected markets to excessive policies and involved exchange-rate regulations which lowered export activities. The arguments are based on the debatable case of Indonesia, "which has pursued market-friendly, export promotion policies, and development spending bias" on rural-agricultural. Similar findings were discovered in Africa by Bates and Block (2013) that Africa countries are blessed with lot of agrarian resources and her development depends on these resources. However, political instability, corruption, inter-tribal crises, religious crises, bad government, military rule and infrastructural decay were factors militating to the development of the agrarian system in the region.

Ali, Ali, Fatah and Ariff (2010) discovered that money supply on credit availability, inflation, exchange and interest rates had significant relationships on both agricultural income and exports in Malaysia. The study also suggested that impact of interest rate, exchange rate and money supply should be managed properly to avoid the unintended effects that can hinder the development and export of the country's agriculture. In the same

manner, Jaroensathapornkul and Tongpan (2007) examined the extent at which government consumption spending in Thailand has been useful to agricultural sector. The study indicated that government spending linked to the agricultural sector through its impact on exchange rate, interest rate. Price index and real GDP. It was concluded that agriculture was affected by spending on it and also government consumption spending.

Mousavi and Leelavathi (2013) studied the causal relationship between RER and agricultural exports in India for the period of 1980 to 2010. It was revealed that RER and agricultural export are not co-integrated, implying that there is no long run relationship between them. Similarly, Letsoalo and Kirsten (2003) examined the trade and macroeconomic factors' importance on the agricultural sector in South Africa using data ranging from 1981 to 1999. Degree of openness, RER and relative agricultural domestic prices are the endogenous variables while import prices, prices of home goods, export tax, import tariff rate, money supply in total income and the government expenditure share are exogenous variables.

In Africa study on macroeconomic factors on agriculture is not left out, where Abdullahi (2014) investigated macroeconomic policies impact from 1978 to 2011 on agricultural output particularly on crop production in Nigeria. The study recommended an expansionary fiscal and monetary policy that is not inflationary with a realistic exchange rate to achieve a sustainable food security in the country. Similarly, Odior (2014) investigated on macroeconomic policy indicators on agricultural performance from 1970 to 2012 in Nigeria. Variables such as credit to agricultural sector, government expenditure, real monetary aggregate, technological changes overtime, exchange rate, inflation rate and

nominal interest rate on loan were employed in the model of the study. It was recommended that policies should be designed to ensure high performance in the agricultural sector that attract little or no interest. More so, future favorable policies on agricultural development should be restructured and implemented coherently.

Thus, the literature on the impact of macroeconomic factors on agriculture is indecisive and inconclusive as there are other macroeconomic policy indicators that needs to be examine. Hence, this present study will also explore the explicit impact of macroeconomic factors on Nigeria agricultural output to improve economic growth and exportation.

3.4 Summary

The result of previous studies showed that the oil and non-oil sectors contribute to the economic growth whereas helping the nation growth. Likewise, impact of some macroeconomic factors has been proven to have positive role to play on the sectors to improve exportation with different methods utilized to achieve their aims. Empirical findings has shown that most of the past research studies evaluated the performance of GDP, oil and non-oil sector as a whole, however little out of the research paid attention to the agriculture sector. This creates a literature gap for this research where the influence of export on growth will be specifically explored to further understand the role played by agricultural export on economic growth in Nigeria. Since nations' growth can't depend on natural resources only, hence promotion of agriculture through macroeconomic policy measures brought out the gap in the literature to be filled. By this reason, this study is to scrutinize the impact of macroeconomic factors like crude oil price, SAP and government

spending on agriculture output for improvement in nation's growth and export promotion; despite the oil export sector dominancy in the country.

Table 3.1

Summary of Previous Research

Study	Data set (Country And Sample)	Dependent	Hypothesis (Independent)	Technique	Results
Olurankinse & Bayo (2012)	Nigeria (2000-2008)	Non-oil export of GDP	Exchange rate, Inflation rate, Interest rate	OLS	Increase in the production of agricultural and manufacturing sectors have to be ensured for product availability in both domestic and export purposes.
Akinbobola & Oyetayo (2010)	Nigeria (1986-2004)	Output growth	Real exchange rate, Inflation rate, money supply, openness, real government consumption, financial development	ECM	Exchange rate operates positively through the supply chain which enhance output and economic expansion and otherwise in the demand channel.
Gill *et al*. (2009)	Tunisia (1967-2002)	Agricultural supply, Prices and exports	Real exchange rate, Inflation rate, money supply, openness, interest rate, input prices	Multivariate Cointegration	Macroeconomic variables have an effect on the agricultural sector but the reverse effect does not exist.
Kargbo (2007)	South Africa (1957-2004)	Agricultural sector	Exchange rate, Inflation rate, money supply, openness, interest rate, farm input prices, food import	VECM (dynamic effects)	RER shocks shift relative prices in favor of agriculture, thereby boosting farm incomes and accelerates poverty reduction in the country.

Ali *et al*. (2010)	Malaysia (1990-2009)	Agricultural income, Agricultural exports and Commodity Prices	Exchange rate, Inflation rate, money supply, interest rate	Co-integration	Macroeconomic factors have had and will continue to have a greater influence on the resiliency and sustainability of Malaysian economy.
Mo (2010)	East Asian, Sub-Saharan, OECD, Latin American (1970-1985)	Real GDP growth rate	Total trade per capital, per capital real income in 1970, share of private investment and government consumption in GDP, political instability, growth rate of population	Correlation coefficients and Descriptive statistics	Conclusion was arrived at that international trade has positive effects on economic growth.
Abdullahi (2014)	Nigeria (1978-2011)	Agricultural output on crop production	Exchange rate, Inflation rate, interest rate, government recurrent expenditure, agricultural credit to farmers.	Multivariate VECM	Favorable macroeconomic factors should be rigorously pursued along to achieve a sustainable food security.
Odior (2014)	Nigeria (1970-2012)	Agricultural Performance	Exchange rate, Inflation rate, interest rate, credit to agric. Sector, real monetary aggregate, government expenditure on agriculture.	OLS, Dynamic forecasting	Macroeconomic policy instruments had substantial effect on the agricultural sector.

Mousavi & Leelavathi (2013)	India (1980-2010)	Agricultural export	Real exchange rate	Johansen test, Granger causality test.	No long run relationship between the variables and do not cause each other in either direction.
Omotor (2008)	Nigeria (1979-2005)	Real GDP	Exports, imports, exchange rate, labor force, Economic liberalization policies.	Bounds test – unrestricted ECM	Exports, labor force and economic liberalization policies stimulated economic growth; while imports and exchange rate negatively impacted GDP.
Obioma & Charles (2015)	Nigeria (2007-2015)		Exchange rate, Inflation rate (proxy for consumer price level), crude oil price.	Johansen co-integration, Granger causality test.	Policy that will promote an enabling environment for local investors to produce goods locally so as to conserve foreign exchange should be equally encouraged.
Babatunde (2014)	Nigeria (1960-2014)	Exports, Imports	Oil export, non-oil export, oil import, non-oil import.	Johansen, Bound testing and Hansen parameter instability test.	Bi-directional causality between aggregate exports and imports but uni-directional causality from oil exports to oil imports and from non-oil imports to non-oil exports.
Inyiama & Ikechukwu (2015)	Nigeria (2006-2014)	Foreign exchange rates	Crude oil selling prices, export and production.	OLS, correlation analysis, pairwise Granger causality.	Macroeconomic and microeconomic variables should strengthen in other to foster a stable foreign exchange regime.
Uzomba, Imoisi & Somiari (2012)	Nigeria (1986-2010)	Non-oil exports	Exchange rates, interest rate, government capital & government recurrent expenditure.	OLS	Government should increase lending to agricultural sector and manufacturing sub-sector and also place less emphasis on oil sector so as to concentrate more on other

					aspects of the real sector of the economy.
Hasanov & Samadova (2010)	Azerbaijan (2002Q3-2009Q3)	Non-oil exports	Real effective exchange rate and real non-oil to GDP.	Johansen co-integration, ECM, VECM.	Appreciation of real effective exchange rate has negative effect on non-oil exports in real terms but real non-oil GDP has positive impact.
Vohra (2001)	5 developing countries: Malaysia, India, Thailand Pakistan, Philippians. (1973-1993)	Aggregate real output.	Labor, capital, investment-income ratio, export-income ratio.	OLS	Indicated that export has positive and significant impact on economic growth when a country has achieved some level of economic development.
Hsu & Chiang (2011)	USA (1973Q2-2004Q4)	Real GDP/bilateral export	Real exchange rate	GARCH, fixed effect model	Exchange rate volatility reduces the exports from the US to relative high income partner countries but increases exports from the US to relative low-income partner countries.
Mehdi & Reza (2011)	Iran (1961-2006)	Exports	Ratio of investment of value added in the industry sector, agricultural sector and dummy variables.	OLS	Macroeconomic policies that will encourage exports are recommended.
Ozturk & Acaravci (2010)	Turkey (1968-2005)	Real GDP	Energy consumption, employment ratio, carbon emissions.	ARDL Bound testing to cointegration.	There is existence and direction of Granger causality between employment ratio and real GDP while other have adverse effect.

Aftab, Abbas & Kayani (2012)	Pakistan (2003-2010)	Sectoral export	Exchange rate volatility	ARDL Bound testing to cointegration.	It showed that a stabilized and competitive exchange rate so that Pakistan's exports can be increased.
Odhiambo (2013)	South Africa (1991-2011)	Economic growth	Inflation rate	ARDL Bound testing to cointegration.	There is a prima facie causal flow from economic growth to employment.
Bagli & Adhikary (2014)	India (1991-2010)	Economic growth	FDI Inflow, domestic capital formulation, openness, population growth.	OLS linear regression model.	It was found that FDI inflows and openness are immaterial in the determination of economic growth.
Chebbi (2010)	Tunisia (1960-2008)	Economic growth	Agriculture	Johansen's multivariate approach.	Agricultural sector does not fully benefit from the development of commerce and service sector.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

This chapter focuses on econometric models based on the theoretical arguments in the literature on analysis of macroeconomic factors affecting economic growth, agricultural output and agricultural export. Some of the macroeconomic factors that will be examined to be affecting outputs and exports such as government expenditure, crude oil price, inflation rate, unemployment rate, exchange rate, interest rate and Structural Adjustment Programme (SAP). The models will be evaluated by using annual time-series data. Application of various relevant tests will be carried out for this research. The data would be extracted from secondary sources given the nature of this research to provide useful information for future decision making.

4.2 Data Collection Procedures

Given the nature of this research which requires the analysis of past economic happenings to provide tools for decision making, this study will draw substantial data from secondary sources. The study will employ annual data of all variables for the period of 1981-2014. Data are sourced from publications of the Statistical Bulletin, World Bank Report and Central Bank of Nigeria Annual Economic Report. Also, data are sourced from robust internet research and publications.

4.3 Research Framework

The research framework of this study will be based on some underpinning theories (generalized growth production model and export supply function) discussed in the previous chapter (chapter three) that portray empirical linkages among macroeconomic factors as independent variables and their impacts on economic growth, agricultural output.

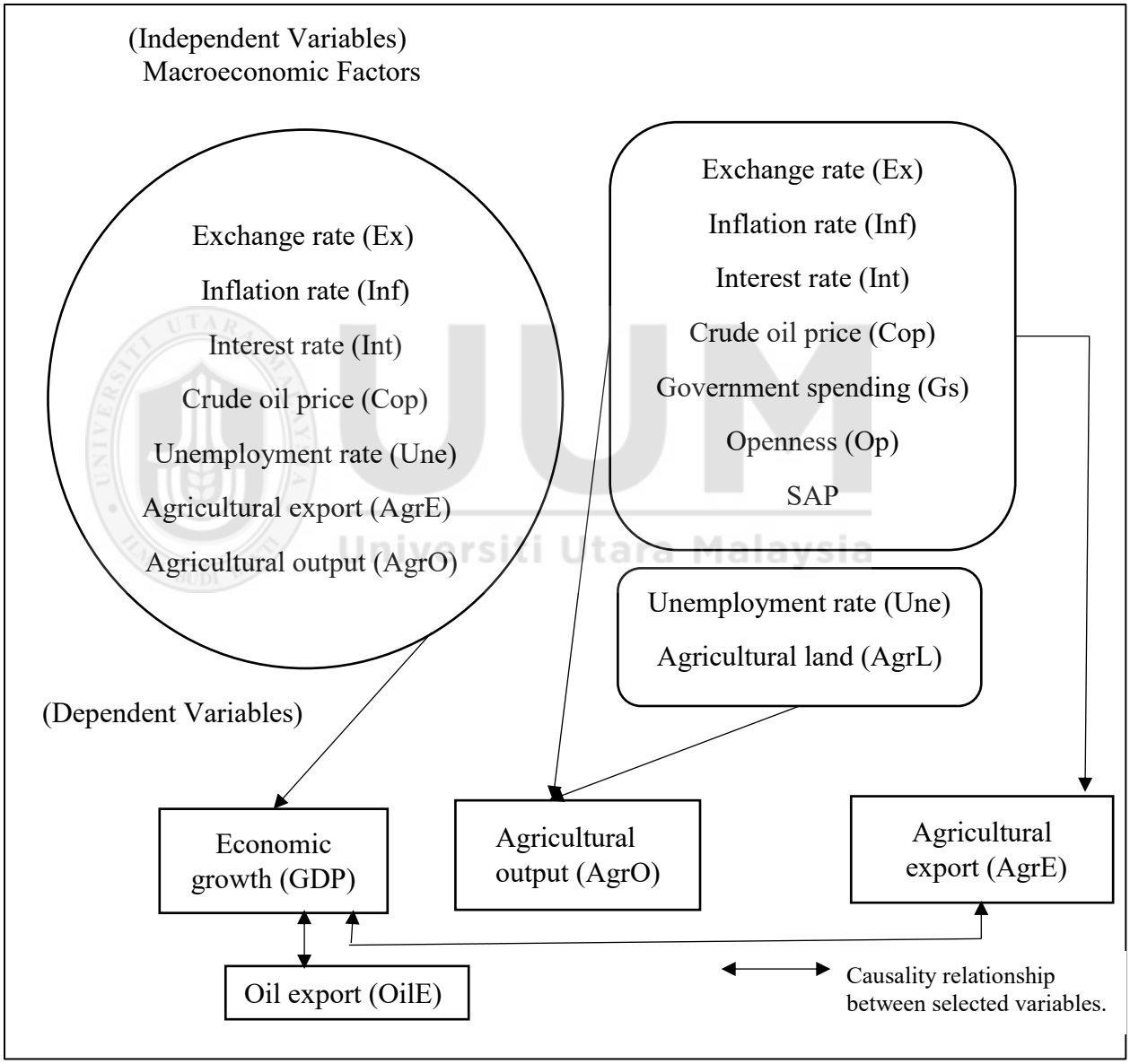


Figure 4.1
Research Framework.

Figure 4.1 presents the research framework designed in line with the research objectives. However, for achieving of the first objective which is to identify the important macroeconomic factors contributing to economic growth, agricultural output and agricultural export; literatures were reviewed and summarized in Table 3.1. Also a correlation analysis was carried out which was presented in Table 1.3. One of the objective of this study is to investigate the impact of macroeconomic factors such as crude oil price and agricultural export on economic growth (GDP). This study will also examine the impact of selected macroeconomic factors which are crude oil price, government spending on agriculture and SAP among others on agricultural output and agricultural export. The effect of agricultural land will also be examine on agricultural output. Likewise the direction of causal relationship among agricultural export, oil export and economic growth will be examined. Therefore, econometric models to be used in this study take GDP, agricultural output and agricultural export as the dependent variables whereas the macroeconomic variables or factors are considered as independent variables.

4.4 Model Specifications

This section describes the theoretical and empirical models that will be used.

4.4.1 Theoretical Specification

For theoretical specification, growth production model based on Solow (1956), the model in equation 3.1 is re-presented in equation 4.1

$$GDP_t = A_t F(K_t, L_t) \tag{4.1}$$

where GDP denotes aggregate output, A is level of technology, K is capital and L is labour. Equation 4.1 can also be expressed as the neoclassical aggregate production function where physical capital (K), human capital (H) and labour (L) are used as inputs for the generalized production function. H that is added to equation 4.1. Schuh (1974) amended the aggregate output (GDP) model in equation 4.1 as follows:

$$GDP = F(f_T(La, K_{La}), f_k(K_l, L)) \tag{4.2}$$

where La is land which was included into the model, K was put into consideration through the use of K_{La} and K_L. K_{La} is land augmented capital (biochemical), K_L is labour augmented capital (machinery). The K_L relates to the H earlier stated. The level of technology that was denoted by A in equation 4.1 was examined to have been captured by the labour augmented capital which is referred to as machinery (K_L).

The second model is the Feder (1982) framework, where the economy was assumed to consist of two sectors: export and non-export, denoted by X and N respectively. Each of the sectors are presented to have different production functions with the incorporation of A, K and L as factors to produce output. The Feder's model thereby extended the production function by including X and N into equation 4.2. In addition Al-Yousif (1997) re-modified the output model of equation 4.2 with the inclusion of X and other factors to be responsible for the aggregate output model as indicated in equation 4.2. In equation 4.3, L and K remain in the model with the addition of X as export level, G as government expenditure and T as terms of trade. The level of technology denoted by A in equation 4.1

that was captured in equation 4.2 as K_L is still retained in equation 4.3. This is being represented by K in equation 4.4.

$$GDP = f(L, La, K, N, X, G, T) \tag{4.3}$$

Furthermore, Akinbobola and Oyetayo (2010) examined domestic output growth with real exchange rate (Ex). Likewise, Hassan and Nassar (2013) investigated on GDP with Ex and other macroeconomic factors such as unemployment rate (Une), government deficit spending (G), interest rate (Int) and inflation rate (Inf). Therefore the output model as in equation (4.4) can be expanded as thus:

$$GDP = f(La, G, Une, Ex, Inf, Int, K, X, N, T) \tag{4.4}$$

where Une is considered to replace the L. Ex and interest rate (Int) relate based on monetary policy that is associated with K in equation 4.3. Inf is often considered as a determinant of the exchange rate, which justified the reason for the addition in equation 4.4. This is as a result of an increase in G, leading to increase in output (GDP) and then tends to reduces interest rate (Int). This thereby implies that higher K puts the pressure of interest rate (Int) downward. This study identify agricultural export (AgrE) as an export item, therefore substituting AgrE for X. Agricultural output (AgrO) and crude oil price (Cop) as non-export item by replacing N with AgrO and Cop.

However to achieve the second objective which is to examine the impact of macroeconomic factors on economic growth; equations from 4.2 to 4.3 are modified. Likewise, in line with equation 4.4 this study presents equation 4.5 to examine the second

objective, which considered the addition of crude oil price (Cop) and agricultural export (AgrE) to the economic growth equation.

$$GDP = f(Ex, Int, Inf, AgrE, Une, Cop, AgrO) \quad (4.5)$$

Likewise for agricultural output model equation 4.5 was adapted, where GDP can be equal to agricultural output (AgrO). The macroeconomic factors affecting output model can also be link to be affecting agricultural output, as stated from equation 4.1 to 4.4. Therefore,

$$AgrO = f(K, La, Ex, Int, Inf, G, Une, X, N, T) \quad (4.6)$$

The relationship between agricultural land and agricultural output growth in this study is based on Schuh's (1974) model in equation 4.2. However the relationship between government spending and agriculture is based on Ram's (1986) framework. Ram's framework is based on Feder's (1982) exports and output growth model. Also Grossman (1988) model which followed Ram (1986) assumed that the economy consists of government (G) and non-government (C) sector. This model is represented by equation 4.7.

$$AgrO = f(Ex, Int, Inf, Gs, Op, Cop, SAP, AgrL, Une) \quad (4.7)$$

Equation 4.6 however, links agricultural output to some of the macroeconomic factors (Ex, Int, Une, Inf and Op) associated with output in addition with new variables. Introduction of new variables such as agricultural land (AgrL), SAP, crude oil price (Cop) and government spending on agriculture (Gs) was made in an attempt to answer the stated third objective.

Moreover to achieve the fourth objective on investigating the impact of Cop, SAP and Gs on agricultural export, this study follows the theoretical specification in Gil *et al*. (2009) and Ali *et al*. (2010) to consider agricultural export as dependent variable. Gil *et al*. (2009) simplified the agricultural export model as follows:

$$AgrE = f(Ex, PP, Op) \tag{4.8}$$

where PP is the farm output prices, Ex is the exchange rate and Op is openness. Also Ali *et al*. (2010) considered exchange rate (Ex), interest rate (Int), inflation rate (Inf) and money supply (M) to determine agricultural export as indicated in equation 4.9.

$$AgrE = f(Ex, Int, Inf, M) \tag{4.9}$$

However, based on equation 4.8 and 4.9, agricultural export in this study will be determined with equation 4.10 with the inclusion of variables such as Cop, SAP and Gs. The relationship between agricultural export and government spending on agriculture is based on export supply function, therefore Gs is used to replace M in equation 4.9. Hence, the PP in equation 4.8 was represented by Cop. SAP is a policy made by the government.

$$AgrE = f(Ex, Int, Inf, Cop, Gs, Op, SAP) \tag{4.10}$$

4.4.2 Empirical Model Specification

This study thereby adapt models from Schuh (1974); Al-Yousif (1997); Akinbobola and Oyetayo (2010); Gil *et al*. (2009) and Ali *et al*. (2010) based on some macroeconomic variables examined alongside with the introduction of new variables (crude oil price, SAP,

agricultural land and government spending on agriculture). In an attempt to determine the relationship between dependent and independent variables in Nigeria, models are specified as:

$$GDP_t = \lambda_0 + \lambda_1 Ex_t + \lambda_2 Int_t + \lambda_3 Inf_t + \lambda_4 AgrE_t + \lambda_5 Une_t + \lambda_6 Cop_t + \lambda_7 AgrO_t + \mu_t \quad (4.4.2.1)$$

$$AgrO_t = \alpha_0 + \alpha_1 Ex_t + \alpha_2 Int_t + \alpha_3 Inf_t + \alpha_4 Gs_t + \alpha_5 Op_t + \alpha_6 Cop_t + \alpha_7 SAP_t + \alpha_8 AgrL_t + \alpha_9 Une_t + \mu_t \quad (4.4.2.2)$$

$$AgrE_t = \beta_0 + \beta_1 Ex_t + \beta_2 Int_t + \beta_3 Inf_t + \beta_4 Cop_t + \beta_5 Gs_t + \beta_6 Op_t + \beta_7 SAP_t + \mu_t \quad (4.4.2.3)$$

where,
AgrO = Agricultural Outputs (%)
AgrE = Agricultural Export (%)
GDP = Gross Domestic Product growth (%)
Inf = Inflation Rate (%)
Int = Interest Rate (%)
Cop = Crude Oil Price
Une = Unemployment Rate (%)
Gs = Government Spending on Agriculture (%)
Ex = Exchange Rate (Naira per USD)
Op = Openness
AgrL = Agricultural Land (%)
OilE = Oil Export
SAP = Government Policy
$_t$ = Time
α, β and λ = Parameters and μ= Error term

4.5 Description of Variables

This section describes measurement of the variables through definition based on the conceptualized framework. In addition, Table 4.1 depicts the variables' measurement and sources that were made used of in this study.

Agriculture output: is agriculture's portion of GDP in terms of value added. It was found to be significantly positive but in a passive manner in improving growth like in Hussian & Chakraborty (2012) and dynamic as indicated by (Yao, 2000; Tiffin & Irz, 2006; Lewis 2013).

Agricultural export: is an index of quantity supplied of agriculture exports by the country (Kargbo, 2006). The agriculture's percentage share of the country's total exports, products that includes fish, cocoa, rubber and cotton.

Exchange rate: In this study, it is defined as a country or national's currency expressed in terms of another currency (Beer & Hebein, 2011; CBN, 2012; World Bank, 2013). Mixed results were discovered about this factor influences on exports and growth; Tang (2008) and Kandil & Dincer (2008) identified it to be positively influencing, while Rodrik (2008) and Chen (2011) findings are against.

Interest rate: is a macroeconomic indicator measured by GDP deflator that is lending rate attuned for inflation (World Bank, 2013).

Inflation rate: serves as an indicator of yearly percentage adjustment in cost of goods and services measured by CPI (World Bank, 2013). Most studies like Gil *et al*. (2009) and

Muktadir-Al- Mukit & Shafiullah (2014) found it to be negatively affecting the import, export and growth.

Unemployment rate: segment of the labour force without work but able and willing to work (Riva & Curtis, 2012; World Bank, 2013). Porto (2008) established it negative on export.

Government spending on agriculture: measured by government recurrent expenditure on agriculture in percentage to total expenditure (CBN, 2013). Muller (2008) and Dao (2012) stated that it influences output growth positively and significant by increasing net exports, while Fan *et al*. (2008) presented a mixed results based on its sectoral contribution in some developing domains examined.

Agricultural land: refers to the percentage portion of land area that is arable, under permanent crops and pastures; where arable lands are referred to as the land under temporary crops, meadows, kitchen gardens and fallow land excluding the abandoned land. Land under permanent crops are land cultivated with crops occupying land for a long period such as rubber, coffee and cocoa. Land for forage includes cultivated and natural crops used for five or more years are referred to as permanent pasture (World Bank, 2014).

GDP growth: is the annual percentage growth rate of GDP at market price based on constant local currency. Hence, GDP is the addition of gross value by all resident producers in the economy with any taxes levied on product and without subsidies excluded in the value of the products (World Bank, 2014).

Crude oil: serves as an indicator to capture the crude oil impact on the economy. This is measured by the percentage difference between the value of crude oil production at world prices and total costs of production (World Bank, 2014).

Oil export: represent the value of oil provided to the rest of the world in annual percentage of the country's total export (CBN, 2013).

Openness: is a macroeconomic indicator providing how Nigerian economy relates to world trade policy, measured by the ratio of the sum of exports and imports to GDP (Kargbo, 2006; Gil *et al*. 2009).

SAP: A program adopted for the economic liberalization in Nigeria. It is a Dummy variable, Ds = 0 for observation before 1986, Ds = 1 from 1986 onwards.

Table 4.1

Variables Measurements and Sources

s/n	Variables	Measurement	Nature of the Data	Sources of Data
1.	GDP Growth	The growth rate of GDP at market price (annual %)	Time series data from 1981 to 2014	World Bank (2016)
2.	Agricultural Output	Agriculture's share of the country's total output (annual %)	Time series data from 1981 to 2014	Central Bank of Nigeria Statistical Bulletin various years.
3.	Exchange Rate	Real country's currency (Naira) expressed in another currency (USD).	Time series data from 1981 to 2014	Central Bank of Nigeria Statistical Bulletin various years.
4.	Inflation Rate	The consumer price index (CPI) reflecting the annual % changes in goods and services' costs.	Time series data from 1981 to 2014	World Bank Report (2016).
5.	Agricultural Export	Agriculture's export of the country's total export (annual quantity export)	Time series data from 1981 to 2014	Central Bank of Nigeria Annual Report various years.
6.	Interest Rate	Measured by the GDP deflator (annual %)	Time series data from 1981 to 2014	World Bank Report (2016)
7.	Government Spending on Agriculture	The government recurrent expenditure on agricultural sector (annual %)	Time series data from 1981 to 2014	Central Bank of Nigeria Statistical Bulletin various years.
8.	Agricultural Land	Arable lands of the country's total land (annual %)	Time series data from 1981 to 2014	World Bank Report (2016)
9.	Crude Oil Price	Total costs of crude oil production minus the value of production at world price (annual %)	Time series data from 1981 to 2014	World Bank Report (2016)
10.	Unemployment Rate	Annual unemployment rate	Time series data from 1981 to 2014	Central Bank of Nigeria Annual Report various years.
11.	Openness	Annual ratio of exports and imports in respect to GDP	Time series data from 1981 to 2014	World Bank Report (2016)
12.	SAP	Dummy variable	Time series data from 1981 to 2014	
13.	Oil Export	Oil's export of the country's total export (annual %)	Time series data from 1981 to 2014	Central Bank of Nigeria Statistical Bulletin various years.

4.6 Hypotheses Testing

In this research work, hypotheses were formulated to verify whether one or more explanatory variables would affect the dependent variables in the three regression models. The process where the null hypothesis would be rejected is when t-statistic calculated value is greater than t-statistic critical value and the alternative hypothesis would be accepted. This present study is therefore restricted to certain hypotheses which are in line with the stated models that were identified to achieve the research objectives. The hypotheses were as follows:

Hypothesis 1: An agricultural export would have significant impact on economic growth in Nigeria both in the long and short-run; whereas the alternative hypothesis is not equal to zero either positive or negative. This is indicated as follows:

$$H_0: \lambda_4 = 0$$

$$H_1: \lambda_4 \neq 0$$

Hypothesis 2: As for crude oil price having a significant impact on Nigeria's economic growth the null and alternative hypotheses are as follows:

$$H_0: \lambda_6 = 0$$

$$H_1: \lambda_6 \neq 0$$

Hypothesis 3: Also, the null hypothesis emphasised that government spending on agriculture will affect the agricultural output and export in Nigeria. Hence, the alternative hypothesis is non-zero either positive or negative; the hypotheses are as follows:

$$H_0: \beta_5 = 0 \; and \; \alpha_4 = 0$$

$$H_1: \beta_5 \neq 0 \; and \; \alpha_4 \neq 0$$

Hypothesis 4: Likewise, crude oil price has influences on agriculture output and export in Nigeria with these hypotheses:

$$H_0: \beta_4 = 0 \; and \;\; \alpha_6 = 0$$

$$H_1: \beta_4 \neq 0 \; and \; \alpha_6 \neq 0$$

Hypothesis 5: As for the case of SAP which tends to affect the country's agricultural output and export, have the null and alternative hypothesis:

$$H_0: \beta_7 = 0 \; and \;\; \alpha_7 = 0$$

$$H_1: \beta_7 \neq 0 \; and \; \alpha_7 \neq 0$$

Hypothesis 6: Agricultural land tends to influence agricultural output in Nigeria. The null and alternative hypotheses are as follows:

$$H_0: \alpha_8 = 0$$

$$H_1: \alpha_8 \neq 0$$

Hypothesis 7: In addition, the null hypothesis states that unemployment rate affects Nigeria's agricultural output; while the alternative hypothesis suggests that there is causal effect which is not equal zero expressed as follows:

$$H_0: \alpha_9 = 0$$

$$H_1: \alpha_9 \neq 0$$

4.7 Data Analysis and Estimation Technique

The time series data will be used for the specification test. The unit root test will be conducted under Augmented Dickey Fuller (ADF), Philips and Perron (PP) and Kwiatkowski Philips Schmidt Shin (KPSS) test for checking stationarity for ensuring

that variables in the regression are not having spurious correlation. Based on the specification test, appropriate estimation method to examine short and long run association among the variables such as the cointegration test, Error Correction Model (ECM) and Autoregressive Distributed Lag (ARDL) will be utilized. Furthermore, the Granger causality test as a way to investigate causal relationship between variables also will be applied.

4.7.1 Unit Root Test

The unit root test is crucial to be conducted for most time series data because of its non-stationary nature. Time series data are non-stationary once variance and covariance are not finite and bounded. Most time series data can be stationary at 3 different points. At level, variable is said to be stationary and written as I (0). At first difference, variable is integrated of order 1 written as I (1). If variable is not stationary at I (1), there is need for second difference, that is integrated for order 2 denoted as I (2). ADF and PP test method will be employed as the formal test for variables stationarity in this study.

4.7.1.1 Augmented Dickey- Fuller (ADF) Test

This is a process that was developed as part of the formal test on time series data. The procedures check the order of integration of each variable by using 3 unlike regression equations. Regression equation with neither trend nor intercept is equation 4.7.1.1, equation 4.7.1.2 is with intercept only, while equation 4.7.1.3 is with trend and intercept.

$$\Delta Y_t = \beta_1 Y_{t-1} + \sum_{t=1}^{p} \alpha_i \Delta Y_{t-i} + \varepsilon_t \qquad (4.7.1.1)$$

$$\Delta Y_t = \beta_0 + \beta_1 Y_{t-1} + \sum_{t=1}^{p} \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad (4.7.1.2)$$

$$\Delta Y_t = \beta_0 + \beta_1 Y_{t-1} + \beta_2 t + \sum_{t=1}^{p} \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad (4.7.1.3)$$

where Δ is the difference operator, Y_t is the relevant time series, t is the time trend, ε is white noise error term while β_0, β_1 and β_2 are parameters to be estimated. Part of the various ways that can be used for determining optimal lag length are Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC). Based on the 3 equations, critical values are considered in order for the hypothesis below to be rejected or accepted.

H_0: $\beta_1 = 0$ (is non-stationary)

H_1: $\beta_1 \neq 0$ (is stationary)

The hypothesis can be rejected if the calculated t-value of the coefficient β_1 is greater than critical t-value tabulated that is a unit root exists in the time series (implies non-stationary). However, if the null hypothesis of β_1 equals zero, is not rejected for a variable at level l(0), then the variable can therefore be transformed to a differentiated form l(1). Once such variable is tested at I(1) where the null hypothesis of non-stationarity could be rejected, the variable would be viewed to be stationary at I(1). Hence indicating that further estimation can be carried out since the variable is stationary (Gujarati, 1995).

4.7.1.2 Philips and Perron (PP) Test

Philips-Perron test has the same null hypothesis as ADF. PP takes the same estimation scheme as in ADF but modified in a way through the robustness of serial correlation by using Newey-West (1987) heteroskedasticity and autocorrelation consistent covariance matrix. PP differ from the ADF primarily in how serial correlation and heteroskedasticity are dealt with in terms of the errors. ADF tests use a parametric autoregression to approximate the Autoregressive Moving Average (ARMA) structure of the errors in the test regression, whereas PP ignores any serial correlation in the test regression. The PP t-statistic is the same as the ADF t-statistic in terms of asymptotic distribution theory, likewise the critical values are being applicable. Also the PP test can be executed with the inclusion of a constant, constant and linear trend or neither in the test regression. So, PP is just modifications of the ADF that considered estimation of the following equations:

$$\Delta Y_t = \beta_1 + \alpha Y_{t-1} + \varepsilon_{1t} \quad (4.7.1.4)$$

$$\Delta \mathbf{Y_t} = \beta_2 + \theta_t + \beta \mathbf{Y_{t-1}} + \varepsilon_{2t} \quad (4.7.1.5)$$

where ΔY_t is the first difference of variable Y_t. Parameters to be estimated are α, θ and β; β_1 and β_2 are constants (drift terms); t is a deterministic time trend and the residuals are ε_{1t} and ε_{2t}. Since most macroeconomic time series variables are trended and in major cases are non-stationary, unit root test is therefore needed to be carried out. Likewise, to control phenomenon of spurious regression (Asterious & Hall, 2007) and gives direction of appropriate estimation technique to be utilized, based on the three different possible outcomes of stationarity test that is level, first and second differences denoted by I (0), I (1) and I (2) respectively. If all variable results are at I (0), OLS or

VAR can used, Cointegration once all variables are at I (1); while ARDL Bound test method once mixed results is being revealed by the test.

4.7.2 Cointegration Test

Cointegration test is meaningful for estimating a long-run relationship between two or more time series economic variables. From the economist's view, cointegration test is important because of the possible existence of a long run or steady state equilibrium relationship. This test requires that all variables be integrated of the same order that is I (1). Furthermore, it is a necessary situation to ratify whether there is a stable long run relationship among variables. It suggested that times series cannot move away from each other; implying that a steady long run association exists among cointegrated variables. The concept of cointegration was introduced by Granger (1981) and was extended by Engle and Granger (1987). Apart from these methods, there exist other numbers of cointegration tests such as Johansen's maximum likelihood (1988; 1991) and Johansen-Juselius (1990) tests. These procedures can be used to test the existence of a long-run relationship among the variables. Once there exists a long run relationship between variables, the order of integration will be lower with a linear combination of the non-stationary variables. This linear combination transforms non-stationary time series into a stationary time series. If the calculated t-statistic is greater than the critical value, the null hypothesis is rejected indicating that the variables are cointegrated; whereas if the calculated t-statistic is lower than critical value, the null hypothesis is not rejected showing that the variables are not cointegrated.

4.7.2.1 Engle Granger Test

The Engle-Granger test comprises a two-step procedure which covers both the short run adjustment and long run equilibrium process. This is as a result of the residual error being tested for stationarity in the first step. Likewise, the test shows that any cointegrated series has an error correction representation. For example, variables Y and Z can be say to be cointegrated when the estimate of their residual error is stationary even though the variables might be non-stationary separately. This implied that the regression is not spurious and variable Y and Z form a long run relationship. However, the error correction model which is the second step can be estimated once the residual error of the estimation is stationary. The residual cointegration tests are ineffective especially when more than two variables stationary at I (1) are being considered (Pesaran & Pesaran, 1997). Hence necessitate the used of Johansen (1988) and Johansen and Juselius (1990) tests that can accommodate multi variables.

4.7.2.2 Johansen Test

Johansen's test has a number of desirable properties compared to others. It includes the fact that all test variables are treated as endogenous variables. By using the Johansen approach, it will involve the test of cointegrating vectors. Hence Johansen suggested two tests in order to determine the number of cointegrating vectors. One of these tests is the likelihood ratio that is based on the maximum eigenvalue and the other based on the trace test. The maximum eigenvalue test's power is higher than the power of the trace test (Johansen & Juselius, 1990). The test indicates the existence of long run relationship among variables in a model if the alternative hypothesis of cointegrating vector can be accepted. This method needs that all the variables in the model must be

at same order of integration. However, these methods (Engle Granger and Johansen test) excluded the information on structural break in time series and likewise suffering from low power. Due to these problems connected with this method, the ARDL approach to cointegration becomes prevalent of recent.

4.7.2.3 Autoregressive Distributed Lag (ARDL)

ARDL is a method developed for the cointegration analysis by Pesaran and Shin (1998). It is applicable regardless of the stationarity of variables; that is variables mainly I (0) or I (1) and with mixed results are used. In terms of the number of variables, more are required than in VAR models. It allows for identification of long-run and short-run changes on the dependent variable. The ARDL based method yields a consistent estimation of the long-run coefficients that are asymptotically normal. It could be relied on when using small samples for estimation and hypotheses testing on the long-run coefficient. The pretesting problem that is indirectly involved in the cointegration analysis can be avoided by the ARDL approach. There is no priori exogenous and endogenous division of variables in the model. Likewise, zero restrictions are not forced and no strict theory of economic in which the model is developed. In addition, a dynamic ECM can be derived from this approach through a simple linear transformation. However, to illustrate ARDL model approach, this model is considered:

$$\Delta \mathbf{x_t} = \alpha + \beta z_1 + \infty \mathbf{y_t} + \mathbf{e_t} \qquad (4.7.2.3)$$

where x_t, y_t and z_t are the three unlike time series; ∞, α and β are the parameters and e_t is the vector of error term. Hence, this study might be using the ARDL model to analyse the time series data, in view of the fact that ARDL model's merits are incomparable to other cointegration methods.

4.7.3 Error Correction Model (ECM)

The presence of the long-run relationship among the variables shows that there is an existence of error correction depiction. It is applied after the existence of the long-run relationship among variables are being confirmed. The importance of ECM is that it combines short and long run relationship between the first differences of the variables and at the level respectively. It integrates the short-run dynamics with the long-run equilibrium without losing long-run information. The ECM illustrates the speed of adjustment towards the long-run equilibrium from the short-run after the shock. However, the error term (u_t) from the cointegrating equation can be used as error correction terms in explaining the short-run dynamic specification. Since time series modelling should describe both short-run and long-run equilibrium simultaneously, therefore the purpose ECM is needed in the equation. These are based on the assumption that two or more time series show an equilibrium relationship that determines both short and long run traits. Thus considering ARDL model in equation 4.7.2.3 the error correction model can be specified as follows:

$$\Delta x_t = \alpha_0 + \sum_{i=1}^{p} \gamma_1 \Delta x_{t-i} + \sum_{i=0}^{p} \gamma_2 \Delta z_{t-i} + \sum_{i=0}^{p} \gamma_3 \Delta y_{t-i} + \psi ect_{t-1} + \mu_t \qquad (4.7.3)$$

where ψ is the speed of adjustment illustrating short run alteration of variables toward the long-run, ECM as the residuals that are obtained from the estimated cointegration model, and μ_t is error term.

4.7.4 Causality Test

This shows a relationship that exists between variables either negative or positive and determines whether a time series is useful in forecasting another. It is to reflect the

cause happening between two variables; whereas revealing that Y is causing Z or Z is causing Y or Y and Z cause one another. By Y causing Z, it shows that Y entails some important data about Z that can help to predict efficiently the Z's value. The causality technique's idea is to test the causality between variables and not finding the relationship that existed. The Granger test is the mostly used test to explore the causality direction. The Sims test uses a different means of data trend separation apart from Granger test. Two regressions are being estimated in order to carry out the causality test. The causality test between Y and Z for example are:

$$\mathbf{Y_t} = \sum_{i=1}^{n} \alpha_i \mathbf{Z_{t-i}} + \sum_{j=1}^{n} \beta_j \mathbf{Y_{t-j}} + \mathbf{U_{1t}} \quad (4.7.5)$$

$$\mathbf{Z_t} = \sum_{i=1}^{n} \lambda_i \mathbf{Z_{t-1}} + \sum_{j=1}^{n} \eta_j \mathbf{Y_{t-j}} + \mathbf{U_{2t}} \quad (4.7.5.1)$$

Y and Z are variables; U_{1t} and U_{2t} are uncorrelated disturbance terms and a_i, β_j, λ_i and η_j are coefficients of variable.

Based on these, there are four possible outcomes that may be obtained after the two equations are tested. They are unidirectional, conversely unidirectional, bilateral and independence causality. Unidirectional causality is possible when the set of estimated coefficients on the lagged Z in equation (4.7.5) is statistically different from zero and the estimated coefficients of the lagged Y in (4.7.5.1) is not statistically different from zero, therefore Granger causality runs from Z to Y. Similarly, if the Granger causality runs from Y to Z based on equations (4.7.5) and (4.7.5.1) the conversely unidirectional causality is the outcome. Bilateral causality is when the sets of lagged Z and Y coefficients are statistically different from zero in equations (4.7.5) and (4.7.5.1), hence Z causes Y and Y causes Z. Independence occurs if the sets of lagged Z and Y

coefficients are not statistically different from zero in equations (4.7.5) and (4.7.5.1), making both Z and Y independent.

4.7.5.1 Causality Among variables

Likewise in the case of answering the fifth specific objective, these models will be employed for the direction of granger causality among oil export, agricultural export and economic growth. These models are thereby reflecting the cause happening between: agricultural export (AgrE) and GDP; also oil export (OilE) and AgrE.

4.7.6.1.1 Agriculture and Economic growth

$$\mathrm{AgrE}_t = \sum_{i=1}^{n} \alpha_i \mathrm{GDP}_{t-i} + \sum_{j=1}^{n} \beta_j \mathrm{AgrE}_{t-j} + \mathrm{U}_{1t}$$

$$\mathrm{GDP}_t = \sum_{i=1}^{n} \lambda_i \mathrm{GDP}_{t-1} + \sum_{j=1}^{n} \eta_j \mathrm{AgrE}_{t-j} + \mathrm{U}_{2t}$$

4.7.6.1.2 Oil and Agriculture export

$$\mathrm{OilE}_t = \sum_{i=1}^{n} \alpha_i AgrE_{t-i} + \sum_{j=1}^{n} \beta_j \mathrm{OilE}_{t-j} + \mathrm{U}_{1t}$$

$$AgrE_t = \sum_{i=1}^{n} \lambda_i AgrE_{t-1} + \sum_{j=1}^{n} \eta_j \mathrm{OilE}_{t-j} + \mathrm{U}_{2t}$$

4.8 Diagnostic Tests

This will be carried out for testing the data's adequacy and closeness of fit in the model. The diagnostic tests will be provided for possible investigation of serial correlation, normality and heteroskedasiticity. The Jarque-Bera will present the normality test for the series normal distribution. The Breusch-Godfrey Serial Correlation LM test showed

if the models are having traces of autocorrelation. Breusch-Pagan-Godfrey and Harvey heteroskedasticity test specified whether the disturbances are equal or constant variance. In addition, the stability test of cumulative sum of recursive residuals (CUSUM) will be applied to examine the closeness of stability for the long-run relationship in the models. Apart from the principle of using stability test which is to ensure that coefficients and variances of the disturbance terms were not altered (Pesaran & Pesaran, 2009). Likewise, the structural stability tests CUSUMSQ will be graphically illustrated with upper bound and lower bound, where the CUSUMSQ must be in-between in order for the test to be passed at 5% level of significance.

CHAPTER FIVE

ANALYSIS AND DISCUSSIONS

5.1 Introduction

The main aim of this chapter is for the empirical examination of the models specified in the previous chapter. The chapter embodies two major parts. The first part 5.2 has three sections, where section 5.2.1 explains the results of the pre-requisite tests required before the estimation process. Section 5.2.2, the model estimation, presents the results and discussions on the impact of selected macroeconomic factors on economic growth, agricultural output and agricultural export in Nigeria. This section comprised the estimation of Autoregressive Distributed Lag (ARDL), long-run parameters and the short run dynamics and adjustment towards the long run equilibrium from the Error Correction Model (ECM) estimates. Section 5.2.3 is the models validation section. The second part of this chapter, part 5.3 provides the summary of prospects for economic growth, agriculture output and export in Nigeria for years ranging from 1981 to 2014.

5.2 Macroeconomic Factors' Impact on Economic Growth, Agricultural Output and Export

5.2.1 Pre-estimation Tests

The pre-estimation tests section entails the unit root test, bound test and lag length selection criteria.

5.2.1.1 Unit Root Test

Unit root test helps to identify stationary and non-stationary variables, likewise defines the stationary variables to have finite variances and auto covariance. The Augmented

Dickey Fuller (ADF) and Philips and Perron (PP) tests will be used to determine the order of integration of the time series in all models, also the presence of deterministic trend in each regression will be checked. The unit root tests will be conducted for the variables in levels as well as first difference form with and without deterministic trend. The ADF and PP test will be examined based on constant and trend and constant. The results of these tests are presented in Table 5.1.

Table 5.1
Unit Root Tests Results

Variable	Level				1st Difference				Results
	ADF		PP		ADF		PP		
	Constant	Trend and Constant	Constant	Trend and Constant	Constant	Trend and Constant	Constant	Trend and Constant	
Agriculture output	-2.320055	-3.101063	-2.333738	-3.044448	-6.129264***	-6.275153***	-7.681409***	-10.28299***	I (1)
Agriculture export	-2.452100	-3.914584**	-2.29447	-2.397820	-1.048330	-1.336463	-4.947428***	-4.884353***	I (0)
Agriculture land	-3.484661**	-1.498188	-9.718014***	-1.940256	-4.421247***	-4.628296***	-4.436637***	-10.23936***	I (0)
Exchange rate	-0.194921	-2.152268	-0.194921	-2.196346	-5.386226***	-5.326928***	-5.386226***	-5.326928***	I (1)
Interest rate	-5.846192***	-6.126334***	-5.846279***	-6.523427***	-7.029601***	-6.922790***	-29.79072***	-32.40993***	I (0)
Unemployment rate	0.552918	-1.708057	0.225247	-1.593506	-4.239225***	-3.657077**	-4.263896***	-4.334678***	I (1)
GDP	-4.715920***	-5.324528***	-4.709583***	-5.323995***	-8.569793***	-8.437414***	-22.97623***	-25.73077***	I (0)
Inflation rate	-2.709184*	-3.708760**	-2.579284	-2.633997	-5.254674***	-5.197616***	-8.259443***	-9.726759***	I (0)
Crude oil price	-2.214145	-3.059967	-2.214145	-2.949600	-6.323787***	-6.482564***	-7.203390***	-10.00710***	I (1)
Government spend.	-2.587815	-3.271290*	-2.537730	-3.306385*	-6.838536***	-5.849401***	-8.816227***	-10.45245***	I (0)
Openness	-2.154773	0.296899	-1.983695	-1.973705	-7.925946***	-4.680973***	-7.952780***	-9.348908***	I (1)
Oil export	-2.342170	-2.193513	-2.408046	-2.266839	-5.901000***	-5.852359***	-6.087774***	-6.124626***	I (1)

Notes: ***, **, * denotes rejection of the null hypothesis of a unit root at the 1%, 5%, and 10% significance level. No asterisk indicates that the series is non-stationary

The results for the models specified show that some of the variables are non-stationary at level whether the constant or constant and time trend are included. The variables included in the models specified for Nigeria that are stationary at I (0) are GDP, interest rate and agricultural land at 1 percent level of significance. Likewise agricultural export and inflation rate are stationary at 5 percent level of significance, where government spending on agriculture at 10 percent level of significance. This revealed that the calculated t-statistics of other selected variables are higher than the critical value of ADF and PP test statistics respectively at 1, 5 and 10 percent level of significance; whereby implying that null hypothesis of unit root for agricultural output, exchange rate, unemployment rate, crude oil price, openness and oil export cannot be rejected at least at 10 percent level of significance.

Thus, first difference test is thereby carried out on all variables; where the null hypothesis of unit root is rejected at 1 percent significance level either at inclusion of constant or trend and constant. This indicated that the calculated t-statistics is lower than the critical value of ADF and PP statistic test at 1% level. However, the acceptance of null hypothesis indicates that there is unit root and the variable is not stationary at 1 percent level either at the consideration of constant or trend with constant. Thus, the first difference test results from the two methods implied that other variables (agricultural output, exchange rate, unemployment rate, crude oil price, openness and oil export) are stationary after first differencing I (1).

Findings by Vohra (2001); Mehdi and Reza (2011); Hussin and Yik (2012) and Mousavi and Leelavathi (2013) are some studies that are only based on ADF test on unit root, while several researchers such as Shan and Sun (1998); Omotor (2008); Odhiambo (2013); Abdullahi (2014); Oluwatoyese and Applanaidu (2014) and Bagli and Adhikary (2014) are based on ADF and PP unit root test approach which are being made used of in this study. However from Table 5.1, the findings revealed that each of the specified models of the nation includes variables stationary at I (0) and I (1) that is a mixture of I (0) and I (1) variables. Based on the result, the appropriate means to analyse the long and short run relationship of the macroeconomic factors on economic growth, agriculture output and export in the nation is by using the bound test (BT) approaches. Thus, ARDL representation of equations 4.4.2.1, 4.4.2.2 and 4.4.2.3 are formulated in an attempt to determine the short and long-run relationship between dependent and independent variables in Nigeria as follows respectively:

GDP

For answering the second objective, this model will be utilized for output growth

$$\Delta GDP_t = \lambda_0 + \sum_{i=1}^{n} \lambda_{1i} \Delta GDP_{t-i} + \sum_{i=1}^{n} \lambda_{2i} \Delta Ex_{t-i} + \sum_{i=1}^{n} \lambda_{3i} \Delta Int_{t-i} + \sum_{i=1}^{n} \lambda_{4i} \Delta Inf_{t-i} + \sum_{i=1}^{n} \lambda_{5i} \Delta AgrE_{t-i} + \sum_{i=1}^{n} \alpha_{6i} \Delta Une_{t-i}$$
$$+ \sum_{i=1}^{n} \alpha_{7i} \Delta AgrO_{t-i} + \sum_{i=1}^{n} \alpha_{8i} \Delta Cop_{t-i} + \sigma_1 GDP_{t-i} + \sigma_2 Ex_{t-i} + \sigma_3 Int_{t-i} + \sigma_4 Inf_{t-i} + \sigma_5 AgrE_{t-i} + \sigma_6 Une_{t-i}$$
$$+ \sigma_7 AgrO_{t-i} + \sigma_8 Cop_{t-i} + e_t$$

(5.2.1.1)

Agriculture Outputs

For answering the third objective this model is therefore employed for agriculture output:

$$\Delta AgrO_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta AgrO_{t-i} + \sum_{i=1}^{n} \alpha_{2i} \Delta Ex_{t-i} + \sum_{i=1}^{n} \alpha_{3i} \Delta Int_{t-i} + \sum_{i=1}^{n} \alpha_{4i} \Delta Inf_{t-i} + \sum_{i=1}^{n} \alpha_{5i} \Delta Gs_{t-i} + \sum_{i=1}^{n} \alpha_{6i} \Delta Op_{t-i}$$
$$+ \sum_{i=1}^{n} \alpha_{7i} \Delta Cop_{t-i} + \sum_{i=1}^{n} \alpha_{8i} \Delta SAP_{t-i} + \sum_{i=1}^{n} \alpha_{9i} \Delta Agrl_{t-i} + \sum_{i=1}^{n} \alpha_{10i} \Delta Une_{t-i} + \theta_1 AgrO_{t-1} + \theta_2 Ext_{t-1} + \theta_3 Int_{t-1}$$
$$+ \theta_4 Inf_{t-1} + \theta_5 Gs_{t-1} + \theta_6 Op_{t-1} + \theta_7 Cop_{t-1} + \theta_8 SAP_{t-1} + \theta_9 Agrl_{t-1} + \theta_{10} Une_{t-1} + e_t$$

(5.2.1.2)

Agriculture Export

For consideration on the fourth objective, agriculture export model is designed

$$\Delta AgrE_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} \Delta AgrE_{t-i} + \sum_{i=1}^{n} \beta_{2i} \Delta Ex_{t-i} + \sum_{i=1}^{n} \beta_{3i} \Delta Int_{t-i} + \sum_{i=1}^{n} \beta_{4i} \Delta Inf_{t-i} + \sum_{i=1}^{n} \beta_{5i} \Delta Cop_{t-i} + \sum_{i=1}^{n} \beta_{6i} \Delta Gs_{t-i}$$
$$+ \sum_{i=1}^{n} \beta_{7i} \Delta SAP_{t-i} + \sum_{i=1}^{n} \beta_{8i} \Delta Op_{t-i} + \pi_1 AgrE_{t-i} + \pi_2 Ex_{t-i} + \pi_3 Int_{t-i} + \pi_4 Inf_{t-i} + \pi_5 Cop_{t-i} + \pi_6 Gs_{t-i} + \pi_7 SAP_{t-i}$$
$$+ \pi_8 Op_{t-i} + e_t$$

(5.2.1.3)

5.2.1.2 Lag Length Selection

It is very crucial to choose an appropriate lag order for the models specified before carrying out the co-integration test. That is before co-integration test, the study will focus firstly on optimum lag length selection which entails Vector Auto Regression (VAR) model by making models taking into consideration the dynamic time series properties. Pesaran and

Shin (1998) recommended the selection of 2 lags as the maximum in the case of a small sample size; which is an example of this study with 34 observations. The optimal lag length can be determined by several criteria such as Final Prediction Error (FPE), Hannan and Quinn criterion (HQ), Akaike Information Criterion (AIC), Likelihood Ratio (LR) test and Schwarz Information Criterion (SIC). In addition, all variables are treated as endogenous variables in VAR with a constant as exogenous. This study used two lag selection criteria as maximum order, considering the small sample and the yearly features of the data. The SIC, AIC and HQ criteria for lag selection are used in this study for taking merit of having the option among parsimony achieved by following the SIC. Likewise, the better fit is obtainable by following the AIC criterion. Although, AIC and SIC criteria have quite similar small sample properties, SIC slightly operates better in the majority of the experiments. The results of utilizing the three choice criteria for selecting the order of the VAR models and the sequential modified LR test statistics for the specified models in chapter 4, are presented in Table 5.2, 5.3 and 5.4 respectively.

Table 5.2
Choice of VAR Lag Order Selection Criteria for GDP Model

Lag	LogL	LR	FPE	AIC	SIC	HQ
0	-1125.590	NA	8.12e+20	70.84935	71.21578	70.97081
1	-980.2265	208.9594*	5.69e+18	65.76416	69.06206*	66.85732
2	-891.6435	83.04656	2.85e+18*	64.22772*	70.45710	66.29258*

Notes: * indicates lag order selected by the criterion, each test at 5% level.

Table 5.3
Choice of VAR Lag Order Selection Criteria for Agricultural Output Model

Lag	LogL	LR	FPE	AIC	SIC	HQ
0	-929.7223	NA	1.52e+13	58.73264	59.19069	58.88447
1	-715.0061	281.8150	1.57e+10	51.56288	56.60135	53.23299
2	-477.4194	163.3409*	29031909*	42.96371*	52.58260*	46.15210*

Notes: * indicates lag order selected by the criterion, each test at 5% level.

Table 5.4
Choice of VAR Lag Order Selection Criteria for Agricultural Export Model

Lag	LogL	LR	FPE	AIC	SIC	HQ
0	-1157.355	NA	3.69e+20	72.89721	73.30945	73.03385
1	-986.7585	234.5706*	1.66e+18	67.29741	71.41979*	68.66386
2	-877.3278	88.91244	1.16e+18*	65.52049*	73.35301	68.11675*

Notes: * indicates lag order selected by the criterion, each test at 5% level.

The AIC and HQ criterion selected two as an optimal lag for the GDP model (4.4.2.1), the agriculture output model (4.4.2.2) and the agricultural export (4.4.2.3) for Nigeria. According to SIC selected lag of one was indicated for GDP and agricultural export model. However, SIC selected lag of two for the agricultural output model. Thus, lag of one will be used for agricultural export and GDP model while lag two for the agricultural output model in the study for testing the long and short run relationships among the selected variables.

5.2.1.3 Bounds Test Results

This test was carried out on the models to examine the presence of a long run relationship among the specified variables with the aid of the lag length selected previously for the country. Table 5.5 summarizes the results of the bound test across the three models.

Table 5.5
F-Statistics for Test of the Existence of Long-run Relationships

Model	RHS Variables	F-Statistic
*F*GDP	(Ex, Int, Inf, Une, AgrO, AgrE, Cop)	4.613949***
*F*AgrO	(Ex, Int, Inf, Gs, Op, Une, SAP, AgrL, Cop)	4.484450***
*F*AgrE	(Ex, Int, Inf, Gs, Op, SAP, Cop)	11.19667***

Notes: Asterisks ***, **, * denotes 1%, 5%, and 10% significance level respectively. Table CI(ii)Case II: Restricted constant and no trend (Pesaran *et al*., 2001; Narayan, (2005).

By applying this test to the first model where GDP is the dependent variable, the calculated F-statistics equal to 4.613949 lies between the upper (5.230) and lower bound (3.599) critical value (CV) for seven regressors at 1 percent significance level indicating that the test is inconclusive. But it is greater than the upper bound (3.907) at 5 percent level of significance. Therefore, the null hypothesis of no long-run relationship can be rejected at 5 percent. Hence, the ARDL procedure can be used to estimate the long run relationship and the corresponding ECM for GDP model in Nigeria. The calculated F-statistic for agricultural output model is equal to 4.484450, which is higher than the upper bound (3.77) CV for nine regressors at 1 percent level of significance. The null hypothesis of no long run relationship is rejected, so this indicates there is a long-run relationship among the explanatory variables and agricultural output. Similarly, for the agricultural export model,

the computed F-statistics is equal to 11.19667, which is higher than the upper bound CV for seven regressors at 1 percent level of significance. This result also thereby supported the alternative hypothesis of a long-run relationship between the variables of specified model.

The conclusions deduced from these outcomes are that there is a presence of a cointegrating (long-run) relationship among the variables included in the agricultural output, agricultural export and GDP models. However, despite several methods that can be used for conducting cointegration tests, the proposed ARDL approach will be used for estimating the three models. This is based on the major merit of permitting the testing of a long-run relationship in irrespective of the order of integration and in small samples compared to other cointegration techniques that require all variables to be at same order of integration. Also Narayan (2005) critical value table that was generated for a small sample between 30 to 80 observations is made use of in this study since the sample size of the study is 34years. The Pesaran *et al*. (2001) critical value table based on large sample of 500 to 1000 and large replications of 20,000 to 40,000 is therefore not appropriate for small sample observation like in the case of this study.

5.2.2 Model Estimation

5.2.2.1 Autoregressive Distributed Lag Estimates

The presence of a cointegrating relationship and also the mixed results of the stationarity tests, permits the use of ARDL technique for the estimation of the three models specified in order to respond to the objectives stated. Table 5.6, 5.7 and 5.8 summarize the results of GDP, agricultural output and agricultural export models respectively based on the selected ARDL models. An ARDL (1, 0, 0, 1, 1, 1, 0, 1) was chosen for the GDP model. The results of R^2 (78.7%), the adjusted R^2 (65.9%) in Table 5.6 along with the F-statistic for GDP equation model show that the model obtained best goodness of fit and variations of the selected independent variables explained certain the changes of the dependent variable. The significance of the F-statistics test justifies the inclusion of all the explanatory variables existing in the GDP model.

Table 5.6

ARDL Estimates for GDP Model

Variables	Coefficients	T-statistic
GDP (-1)	-0.373573	(-2.553105)**
Ex	0.108320	(2.539847)**
Int	0.278470	(3.485740)***
Inf	0.004742	(0.068213)
Inf (-1)	0.098445	(1.762210)*
Une	-2.183584	(-2.830504)***
Une (-1)	2.180632	(3.395908)***
AgrO	-0.689918	(-2.654416)**
AgrO (-1)	1.012727	(3.263556)***
Cop	0.153848	(1.648163)
AgrE	-0.689918	(-2.654416)**
AgrE (-1)	1.012727	(3.263556)***
c	-18.28316	(-1.769113)
R^2	78.7%	
Adjusted R^2	65.9%	
DW statistic	2.473551	
F-statistics	6.163654 [0.000197]***	

Note: *, ** and *** denote statistical significance at 10, 5 and 1 percent respectively. Symbols are used to represent variables for convenience (i.e GDP, AgrE, Ex , Int, Inf, Cop, Une, AgrO are growth, agricultural export, exchange rate, interest rate, inflation rate, crude oil price, unemployment rate and agricultural output respectively). Figures in parentheses beside the coefficient values are the t-Statistic values while figure in bracket is the probability value.

As for the agricultural output model, the SIC selected an ARDL (2, 1, 2, 0, 2, 2, 2, 2, 2) model.

Table 5.7

ARDL Estimates for Agricultural Output Model

Variables	Coefficients	T-statistic
AgrO (-1)	0.999767	(8.525776)***
AgrO (-2)	-0.464949	(-2.459139)**
Ex	-0.142729	(-1.789287)
Ex (-1)	0.274429	(5.327221)***
Inf	-0.233981	(-4.018203)***
Inf (-1)	0.183816	(4.059129)***
Inf (-2)	-0.110803	(-2.083465)*
Int	0.228163	(3.510655)***
Gs	-2.395688	(-1.336399)
Gs (-1)	-14.96304	(-4.040140)***
Gs (-2)	-27.53005	(-6.181996)***
Op	-0.374143	(-5.902913)***
Op (-1)	-0.097442	(-1.494521)
Op (-2)	0.229179	(2.254303)*
Cop	-0.450195	(-5.842997)***
Cop (-1)	0.497683	(6.740176)***
Cop (-2)	1.062755	(5.845946)***
Une	3.440858	(5.892011)***
Une (-1)	-1.564127	(-3.146450)**
Une (-2)	-3.237464	(-5.358086)***
AgrL	-4.474861	(-6.112314)***
AgrL (-1)	-0.303433	(-0.934121)
AgrL (-2)	5.988304	(6.155492)***
SAP	-3.757025	(-1.036873)
c	-37.11576	(-1.555412)
R^2	97.7%	
Adjusted R^2	89.7%	
DW statistic	2.942140	
F-statistics	12.10630 [0.001177]***	

Note: *, ** and *** denote statistical significance at 10, 5 and 1 percent respectively. Symbols are used to represent variables for convenience (i.e AgrO, Ex , Int, Inf , Gs ,Op, Cop, Une, SAP, AgrL, (-1), (-2) are agricultural output, exchange rate, interest rate, inflation rate, government spending, openness, crude oil price, unemployment rate, government policy, agricultural land variables lag 1 and lag 2 respectively). Figures in parentheses beside the coefficient values are the t-Statistic values while figure in bracket is the probability value.

Table 5.7 reveals that almost all the coefficients of the regressors included in the specified model happens to be significant at a point in time except for exchange rate, government

spending on agriculture, SAP, a year lagged of openness and agricultural land having negative signs and insignificant. The R^2 (97.7%) and adjusted R^2 (89.7%) values suggest that the model has a high explanatory power. The one year lagged dependent variable that is agricultural output for the country was found to be statistically significant implying that the preceding year's output does influence the current nation's output.

An ARDL (2, 2, 2, 0, 2, 2, 2) model was selected for agricultural export. Table 5.8 shows the results of the ARDL estimates for agricultural export model. Nearly all the variables are statistically significant with expected signs. A year and 2 years lagged dependent variable that is agricultural export for the nation was found to be significant implying that past years' export does influence the current nation's export. The R^2 (87.5%) and adjusted R^2 (64.7%) values are quite high, which reflects that nearly all of the variations in the dependent variable (agricultural export) are being explained by the estimation model.

Table 5.8

ARDL Estimates for Agricultural Export Model

Variables	Coefficients	T-statistic
AgrE (-1)	-0.432393	(-3.130441)***
AgrE (-2)	-0.527614	(-2.988240)***
Int	-1.422470	(-0.354287)
Int (-1)	4.344762	(1.514357)
Int (-2)	-7.057461	(-2.826609)**
Ex	-0.712868	(-0.160500)
Ex (-1)	9.736385	(2.082718)*
Ex (-2)	-14.06580	(-3.254974)***
Inf	3.033056	(1.024294)
Gs	-324.3186	(-2.235362)**
Gs (-1)	185.9328	(1.186521)
Gs (-2)	-653.3879	(-3.427628)***
Op	-2.243262	(-0.480857)
Op (-1)	9.050982	(1.785955)*
Op (-2)	-11.93150	(-2.530157)**
Cop	0.795611	(0.160920)
Cop (-1)	-8.421722	(-1.330673)
Cop (-2)	14.27116	(1.952888)*
SAP	-552.8755	(-2.749667)**
c	-54.54823	(-0.245957)
R^2	87.5%	
Adjusted R^2	64.7%	
DW statistic	3.194656	
F-statistics	3.834615 [0.013010]***	

Note: *, ** and *** denote statistical significance at 10, 5 and 1 percent respectively. Symbols are used to represent variables for convenience (i.e AgrE, Ex, Int, Inf, Gs, Op, Cop, SAP are agricultural export, exchange rate, interest rate, inflation rate, government spending, openness, crude oil price and government policy respectively). Figures in parentheses beside the coefficient values are the t-Statistic values while figure in bracket is the probability value.

Thus, the long-run relationship parameters will be examined and with the corresponding short-run dynamic error correction model for achieving the objectives stated by this research work based on the chosen ARDL models.

5.2.2.2 Long Run Estimation

To achieve the first part of the objective two, three and four; which are to determine the long run impact of the selected macroeconomic factors on GDP, agricultural output and agricultural export, the empirical results obtained from the estimated long run coefficients derived from the selected ARDL models for the country Nigeria are reported in Table 5.9, 5.10 and 5.11 respectively. The coefficients on the explanatory variables represent the constant long-run impact on GDP, agricultural output and agricultural export with the corresponding variables.

Table 5.9
Estimated Long Run Coefficients Using ARDL Approach (GDP Model)

Variables	Coefficients	T-statistic
Ex	0.078860	(3.058617)***
Int	0.202734	(3.638587)***
Inf	0.075123	(1.688872)
Une	-0.002150	(-0.009499)
AgrO	0.235014	(1.313771)
Cop	0.112006	(1.722018)*
AgrE	-0.004551	(-1.933707)*
c	-13.310654	(-1.783455)*

Note: *, ** and *** denote statistical significance at 10, 5 and 1 percent respectively. Symbols are used to represent variables for convenience (i.e AgrE, Ex , Int, Inf , Cop, Une, AgrO are agricultural export, exchange rate, interest rate, inflation rate, crude oil price, unemployment rate and agricultural output respectively). Figures in parentheses beside the coefficient values are the t-Statistic values.

The corresponding long-run model estimated from the selected ARDL equation for GDP, shows that some of the estimated long-run regressors' coefficients are statistically significant and have the correct signs. In the long run, GDP is influenced positively and significantly by the exchange rate and interest rate at 1% level of significance. Other

macroeconomic factors like inflation rate and agricultural output are also positive but insignificant. This is as a result of the agricultural output positive contribution to GDP of the country which is in line with Yao (2000), Anthony (2010), Izuchukwu (2011), Kaya, Kaya and Gunter (2012) and Luca, Cionga and Giurca (2013). Unemployment rate revealed negative signs to the GDP of the country. More so, the insignificant might be due to the reduction in the quantity of agricultural output in comparison to what it used to be at past decades. This is aligned with Kancil and Dincer (2008), Odhiambo (2013) and Hassan and Nassar (2013) findings. However, macroeconomic factors added to the model (agricultural export, crude oil price) are significant at 10 percent level of significance. The agricultural export as one of the added macroeconomic factors carries a negative sign and it is statistically significant at 10 percent. This indicates that agricultural export negatively impact the nation's GDP. This result notified that the country's GDP is being negatively affected by the weak growth of agricultural export. Likewise, the insignificant is as a result of reduction in the quantity of agricultural output in comparison to what it used to be at past decades. Crude oil price reveals a positive sign and also statistically significant at 10 percent, implies a significant positive impact of crude oil price on the economic growth of the country. Thus, the crude oil price participate significantly in determining the country's growth the long run. However, the null hypotheses (H_0) was rejected for the stated hypothesis one and two.

Table 5.10
Estimated Long Run Coefficients Using ARDL Approach (AgrO Model)

Variables	Coefficients	T-statistic
Ex	0.325221	(1.806642)*
Int	0.563424	(2.843491)**
Inf	-0.397492	(-1.878924)*
Gs	-110.8481	(-2.833651)**
Op	-0.598597	(-2.270619)*
Cop	2.741625	(2.664638)**
Une	-3.360185	(-3.490024)***
SAP	-9.277573	(-0.858379)
AgrL	2.987991	(1.936319)*
c	-91.65343	(-1.116454)

Note: *, ** and *** denote statistical significance at 10, 5 and 1 percent respectively. Symbols are used to represent variables for convenience (i.e AgrO, Ex , Int, Inf , Gs ,Op, Cop, Une, SAP, AgrL are agricultural output, exchange rate, interest rate, inflation rate, government spending, openness, crude oil price, unemployment rate, government policy and agricultural land respectively). Figures in parentheses beside the coefficient values are the t-Statistic values.

The results for agricultural output revealed that the estimated long run regressor coefficients, except for the constant (intercept) term and SAP are statistically significant. In the long-run, agricultural output is positive and significantly influenced by exchange rate and interest rate at 10% and 5% level of significance respectively. This result is consistent with Letsoale and Kirsten (2003), Kargbo (2007), Jaroensathapornkul and Tongpan (2007), Gil *et al*. (2009) and Abdullahi (2014). Inflation rate and openness have revealed a negative relationship at 10% level of significance to the agricultural output; which follows the findings of Odior (2014).

The results show that the chosen macroeconomic variables such as crude oil price is statistically significant at the 5 percent level and contributing to agricultural output in the

long run. Similarly, government spending on agriculture is also statistically significant at 5 percent level of significance, but reflecting a negative effect on the agricultural output. In terms of unemployment rate, the result is negative and statistically significant at the 1 percent level of significance; whereas agricultural land is positive and significant at the 10 percent level of significance. However, SAP shows a negative and insignificant effect to the agricultural output, meaning that there is insufficient evidence that the policy contributes to the growth of agricultural output in the long run. Thus, the null hypotheses stated concerning government spending on agriculture, crude oil price, unemployment rate and agricultural land can be rejected.

Table 5.11
Estimated Long Run Coefficients Using ARDL Approach (AgrE Model)

Variables	Coefficients	T-statistic
Ex	-2.572584	(-1.943137)*
Int	-2.109772	(-0.563289)
Inf	1.547472	(1.057479)
Gs	403.964658	(3.496869)***
Op	-2.614166	(-0.980210)
Cop	3.390319	(0.877802)
SAP	-282.078298	(-2.806549)**
c	50.173232	(4.722413)***

Note: *, ** and *** denote statistical significance at 10, 5 and 1 percent respectively. Symbols are used to represent variables for convenience (i.e AgrE, Ex, Int, Inf, Gs, Op, Cop, SAP are agricultural export, exchange rate, interest rate, inflation rate, government spending, openness, crude oil price and government policy respectively). Figures in parentheses beside the coefficient values are the t-Statistic values.

The estimated long-run model corresponding to the selected ARDL equation for agricultural export show that some the estimated long-run regressors' coefficients are statistically significant and having the correct signs. In the long run, the agricultural export

is influenced significantly by the exchange rate at the 10 percent level of significance. This is consistent with the study of Tang (2008), Boug and Fagereng (2010), Ali *et al*. (2010) and Greenaway, Kneller and Zhang (2012). Macroeconomic variable like interest rate shows a negative effect on the quantity of agricultural export which following the findings of Hamoyounifar (2008), Hasanov and Samadova (2010), Mousavi and Leelavathi (2013) and Abdullahi (2014).

In the case of this finding, the a priori expectation that an increase in government spending on agriculture leads to agricultural export expansion is supported. However, the crude oil price have positive sign but insignificant in determining the performance of agricultural export. The dummy variable included to take account of the SAP policy efforts carries a negative sign, but is statistically significant at 5 percent level of significance. Thus in the long run, macroeconomic variables that is government spending on agriculture and SAP that are respectively positive and negative at 1% and 5% level of significance contributes in determining the quantity of agricultural export. Thus, the null hypotheses for the case of SAP and government spending on agriculture can be rejected in the long run.

5.2.2.3 Short Run Dynamics Estimation

Table 5.12, 5.13 and 5.14 display the error correction model representations for the selected ARDL models corresponding to the GDP, agricultural output and agricultural export equations for Nigeria. For answering the second parts of objectives two, three and four that is based on the short run impacts, the following tables are presented.

Table 5.12
Error Correction Representations for the selected ARDL Model (dGDP)

Variables	Coefficients	T-statistic
dEx	0.111972	(1.796628)*
dInt	0.271620	(8.094986)***
dInf	-0.000060	(-0.001378)
dCop	0.144419	(1.668396)
dAgrE	0.001413	(0.698801)
dUne	-2.214750	(-4.287133)***
dAgrO	-0.683991	(-4.824979)***
CointEq(-1)	-1.391797	(-11.616695)***

Note: *, ** and *** denote statistical significance at 10, 5 and 1percent respectively. Symbols are used to represent variables for convenience (i.e AgrE, Ex , Int, Inf , Cop, Une, AgrO are agricultural export, exchange rate, interest rate, inflation rate, crude oil price, unemployment rate and agricultural output respectively). Figures in parentheses beside the coefficient values are the t-Statistic values.

The outcome obtained for the ECM estimation for GDP shown in Table 5.12 revealed that almost all the independent variables have been proved to be significant and adjusting variables for the short run equilibrium of the dependent variable (GDP), which reflects the significance of these variables as determinants of Nigeria's GDP in the short run as well as in the long run. Among all the variables, exchange rate, interest rate, agricultural output and unemployment rate turned out to be significant; whereas agricultural export, inflation rate and crude oil price are insignificant. However, the insignificance of the agricultural export and crude oil price make this result inconclusive on the effect of these variables on growth. The ECT coefficient (-1.39) has a negative sign and highly significant, reflecting the joint significance of the long run coefficients. Furthermore, the ECT coefficient is quite high indicating a high speed of adjustment to disequilibrium in the short run. The findings of the error correction model support the conclusion of a unique cointegrated and stable

long run GDP relationship. Thus, the correct sign of ECT coefficient further confirm and certify the presence of a long run equilibrium relationship between GDP and the selected variables.

Table 5.13
Error Correction Representations for the Selected ARDL Model (dAgrO)

Variables	Coefficients	T-statistic
dAgrO(-1)	0.476634	(6.712611)***
dEx	-0.140284	(-4.769535)***
dInt	0.233248	(10.35382)***
dInf	-0.232594	(-9.050302)***
dInf(-1)	0.111530	(5.385305)***
dGs	-2.284892	(-2.760840)**
dGs(-1)	27.314639	(16.243377)***
dOp	-0.373896	(-10.946086)***
dOp(-1)	-0.232570	(-6.159904)***
dCop	-0.452583	(-8.134165)***
dCop(-1)	-1.057761	(-12.366627)***
dUne	3.467666	(9.140542)***
dUne(-1)	3.250381	(11.328755)***
dSAP	-3.191992	(-1.547115)
dAgrL	-4.526628	(-9.347069)***
dAgrL(-1)	-5.985414	(-14.569676)***
CointEq(-1)	-0.405151	(-13.428096)***

Note: *, ** and *** denote statistical significance at 10, 5 and 1 percent respectively. Symbols are used to represent variables for convenience (i.e AgrO, Ex, Int, Inf, Gs, Op, Cop, Une, SAP, AgrL, (-1) are agricultural output, exchange rate, interest rate, inflation rate, government spending, openness, crude oil price, unemployment rate, government policy, agricultural land and variables lag 1 respectively). Figures in parentheses beside the coefficient values are the t-Statistic values.

The results obtained for the ECM for agricultural output as shown in Table 5.13 revealed that the first difference of agricultural output and almost all the explanatory variables are significant and adjusting variables for the short run equilibrium of the dependent variable, which reflects the importance of all these variables as determinants of agricultural output

growth; except for the policy SAP which shows to be negative and statistically insignificant. The policy introduced did not improve the sector because the sector performed worse compared to the initial contribution during the period. Moreover, the ECT coefficient (-0.41) is significant at 1 percent and with a negative, reflecting the joint significance of the long run coefficients. The magnitude of the lagged error correction term is relatively low in the speed of adjustment of the dependent variable to disequilibrium in the short run. This implies that the short run shock gaps which occur is closed toward the adjustment process to the stability of the long run; that is the adjustment of the imbalance in the short run toward commencing of the long run equilibrium.

Table 5.14
Error Correction Representations for the selected ARDL Model (dAgrE)

Variables	Coefficients	T-statistic
dEx	-0.717793	(-0.315519)
dEx (-1)	13.938657	(5.800242)***
dInt	-1.300915	(-0.849023)
dInt(-1)	7.213034	(5.617465)***
dInf	3.786796	(2.526570)**
dGs	-331.190347	(-5.342756)***
dGs(-1)	645.998455	(7.916884)***
dOp	-2.119786	(-0.924773)
dOp(-1)	12.172266	(5.357833)***
dCop	2.042229	(0.568293)
dCop(-1)	-14.245885	(-4.054840)***
dSAP	-431.800773	(-3.025130)***
dAgrE(-1)	0.528568	(5.240570)***
CointEq(-1)	-1.257960	(-12.436177)***

Note: *, ** and *** denote statistical significance at 10, 5 and 1 percent respectively. Symbols are used to represent variables for convenience (i.e AgrE, Ex, Int, Inf, Gs, Op, Cop, SAP are agricultural export, exchange rate, interest rate, inflation rate, government spending, openness, crude oil price and government policy respectively). Figures in parentheses beside the coefficient values are the t -Statistic values.

The findings based on the results obtained for the ECM for agricultural export revealed that most of the independent variables used in the model have proven to be significant and adjusting factors for the short run equilibrium of the dependent variable, which reflects the importance of these macroeconomic factors as determining variables for agricultural export model. However, the government policy as SAP, crude oil price and government spending on agriculture turned out to have significant function in determining the volume of Nigeria's agricultural export in the short run. In addition, the ECT (-1.26) is found to be significant at 1 percent level of significance giving further evidence for the existence of long relationship between the variables in the equation. The relatively high value of the lagged ECT coefficient is significant and has negative sign implying a high speed of adjustment to disequilibrium in the short run.

5.2.2.4 Granger Causality Test

This study also makes use of the Granger causality test for actualizing objective five, to examine the direction of the causality for:

1. Oil export and Agricultural export
2. GDP and Agricultural export
3. GDP and Oil export

Table 5.15a and 5.15b summarize the results of causality among variables investigated.

Table 5.15a

Granger Causality Results among Oil Export, Agricultural Export and GDP

Null hypothesis	P-value at level of Significance (F-test)	Results
Oil E does not Granger cause Agr E	0.09%**	rejected
Agr E does not Granger cause Oil E	11%	cannot be rejected
GDP does not Granger cause Agr E	51%	cannot be rejected
Agr E does not Granger cause GDP	85%	cannot be rejected
GDP does not Granger cause Oil E	10%*	rejected
Oil E does not Granger cause GDP	63%	cannot be rejected

Table 5.15b

Granger Causality Results among Oil Export, Agricultural Export and GDP

Oil E	⟶	Agr E
GDP		Agr E
GDP	⟶	Oil E

*: Arrows denote the direction of granger causality between the variables.

The findings generally for the oil export, agricultural export and GDP causality relationship revealed that there is a one-way causality between oil export (Oil E) and agricultural export (Agr E), but it does not go the other way. The result indicated that oil exports are dominant and have huge impact on income and employment in Nigeria; hence implying an influence of oil export on the other many sectors in the economy like in the case of agricultural exports.

In term of the causality relationship between GDP and Agr E, causality between the variables does not go either way. This result implies that agricultural export does not cause

growth in Nigeria, which is against the export led growth hypothesis. Likewise indicates that the percentage of the agricultural export of the total export does not cause GDP. However, this is consistent with the study's aim for gearing the Nigeria's government in planning of diversifying the sources of income in order to decrease its dependence on the oil sector.

For the causality relationship between GDP and oil export, the finding indicated that the relationship goes only from GDP to oil export. Thus, confirms the reality of the country's dependency on the revenue from oil export as main concern in development of the Nigerian economy. However, this is justified since developing of more advanced technologies on oil sector, increasing spending on this sector and workers' skills lead to an increase in the level of efficiency and raise the oil exports.

5.2.3 Diagnostics/Robustness Tests

For making sure that the main models used in the study are consistent with the standard assumptions of OLS, tests such as serial correlation, normality, heteroscedasticity, Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUM of squares) are carried out and the results are shown as follows:

Table 5.16

Robustness Tests

	Tests	Statistics	Probability
a.	Jarque-Bera (normality test):		
	1	0.738897	0.691115
	2	4.138637	0.126272
	3	0.976115	0.613818
b.	Breusch-Godfrey Serial Correlation LM test:		
	1. F statistics	1.150824	0.3386
	Obs R-squared	3.741293	0.1540
	2. F statistics	0.523552	0.6044
	Obs R-squared	2.385356	0.3034
	3. F statistics	0.361569	0.7074
	Obs R-squared	2.652761	0.2654
c.	Heteroskedasticity test Breusch-Pagan-Godfrey:		
	1. F statistics	1.450367	0.2343
	Obs R-squared	18.43906	0.2403
	2. F statistics	0.340910	0.9610
	Obs R-squared	22.30638	0.7217
	3. F statistics	1.900197	0.1475
	Obs R-squared	25.58771	0.2226
	Harvey:		
	1. F statistics	2.173023	0.0673
	Obs R-squared	21.46401	0.1226
	2. F statistics	2.397726	0.2052
	Obs R-squared	30.13787	0.3080
	3. F statistics	0.907261	0.5956
	Obs R-squared	20.98545	0.4598

Notes: 3, 2, 1 denotes the agricultural export, agricultural output and GDP model respectively.

The results from Jarque-Bera normality test is insignificant, implying that the null hypothesis of normality errors cannot be rejected at 5 percent level of significant. Thus the residuals are normally distributed. The null hypothesis of no heteroscedasticity tested by using Breusch-Pagan-Godfrey and Harvey approaches fail to be rejected, since the probability for both F and Chi^2 statistics are insignificant. For the Breusch-Godfrey serial

correlation LM test examined, revealed that there is insignificant indication of serial correlation in the residuals since the null hypothesis of no serial correlation cannot be rejected.

However, for examining the stability of short and long run coefficients, CUSUM and CUSUM of squares are carried out. The findings are presented graphically in Figure 5.1, 5.2, 5.3, 5.4, 5.5 and 5.6 respectively.

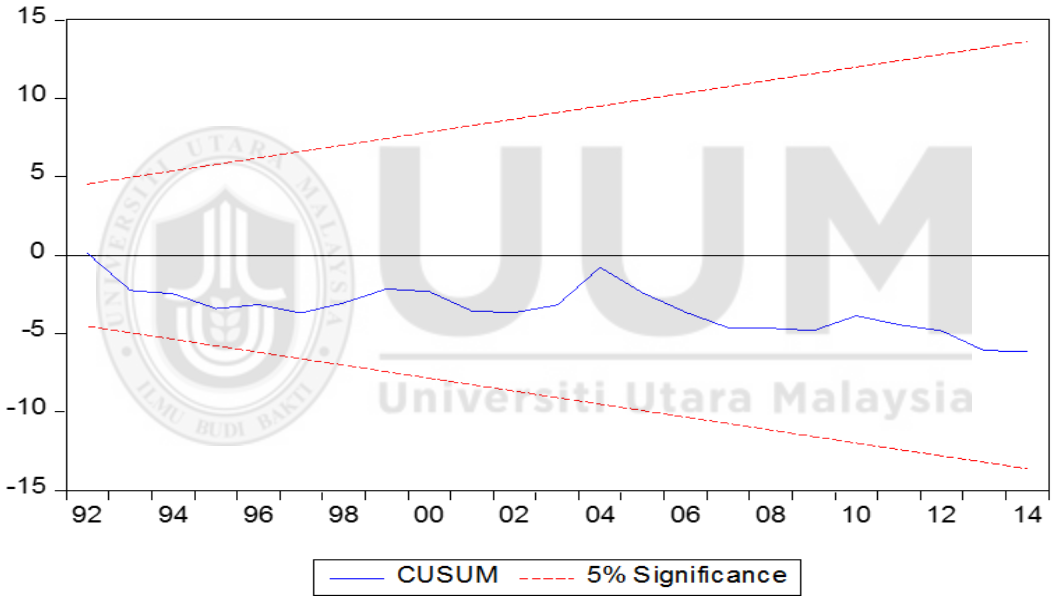


Figure 5.1
CUSUM for GDP

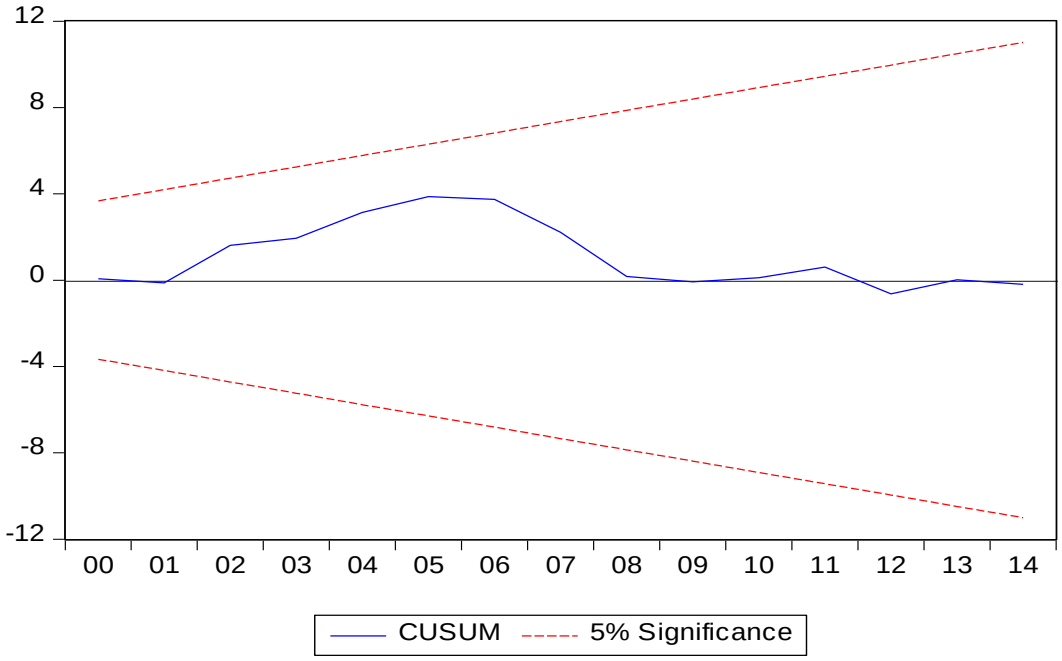


Figure 5.2
CUSUM for Agricultural Output

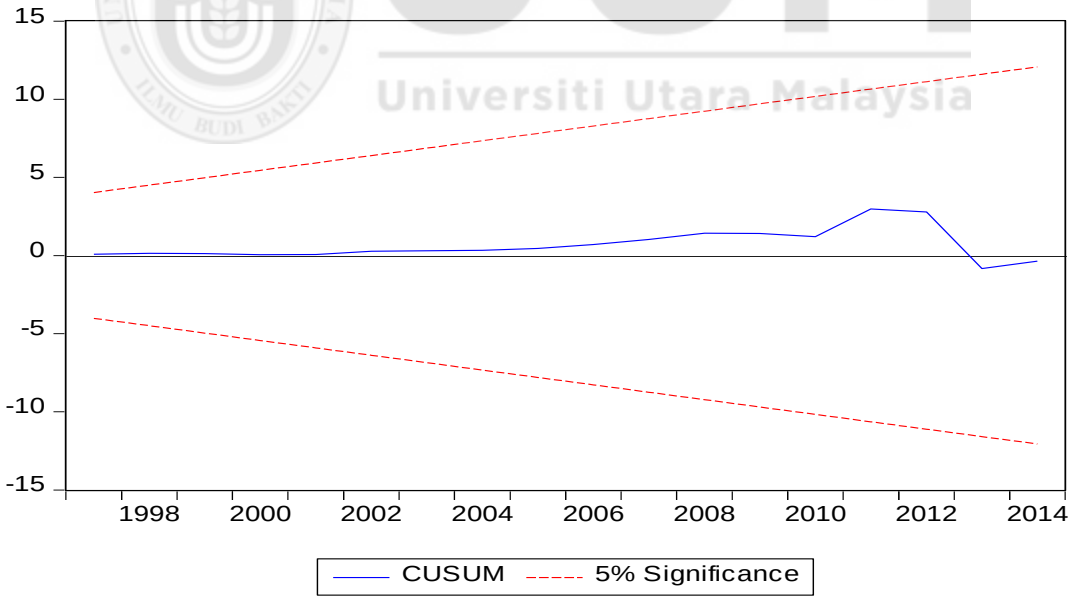


Figure 5.3
CUSUM for Agricultural Export

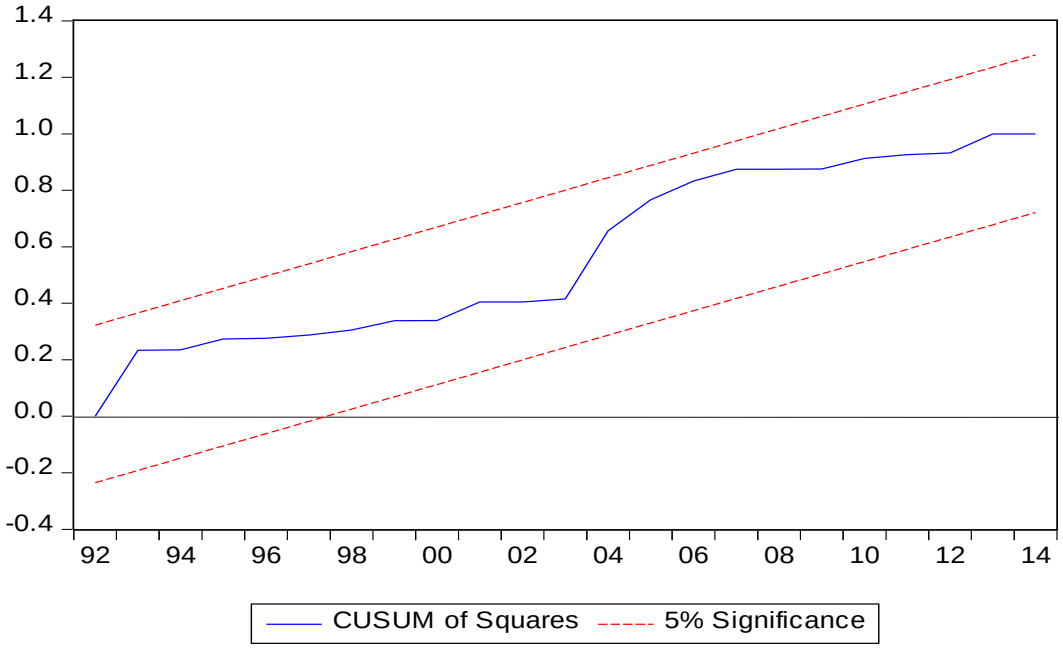


Figure 5.4
CUSUM of squares for GDP

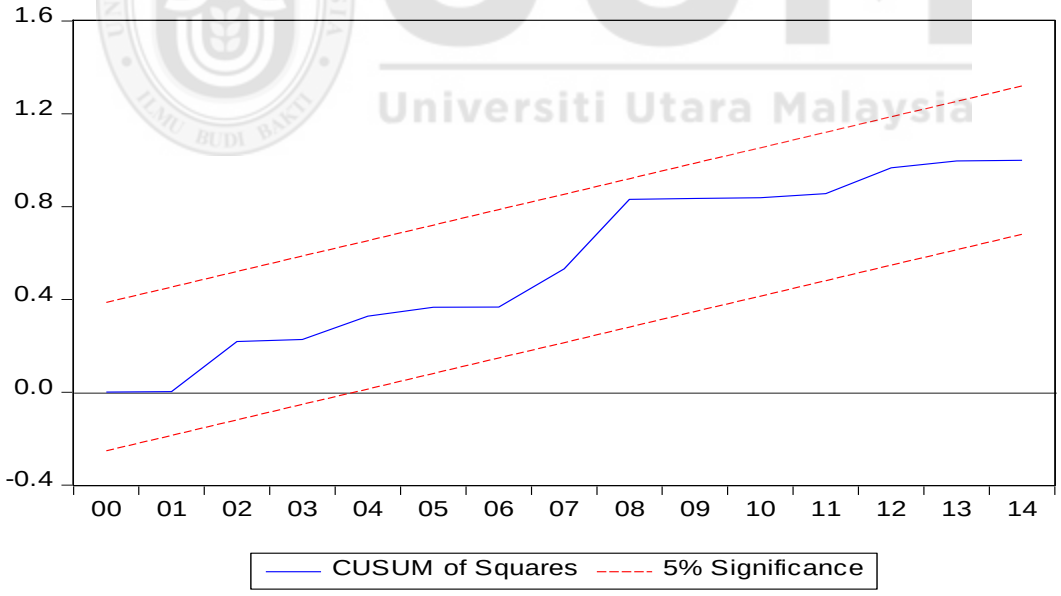


Figure 5.5
CUSUM of squares for Agricultural Output

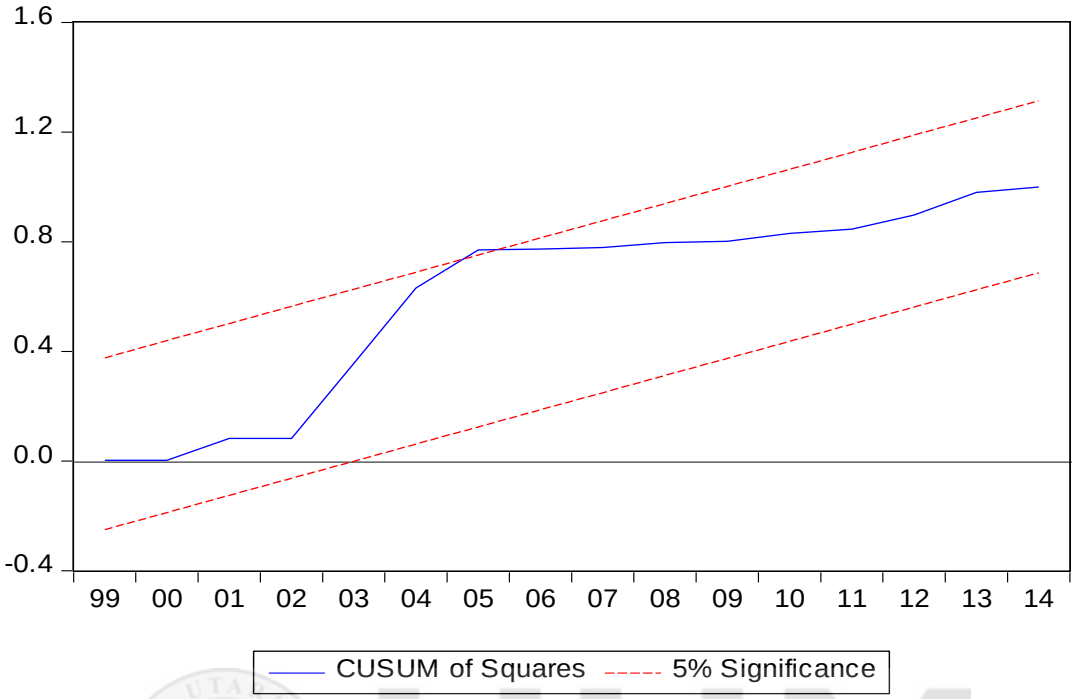


Figure 5.6
CUSUM of squares for Agricultural Export

The null hypothesis of correct specification of the regression equations fail to be rejected, since the plots of CUSUM and CUSUM of squares of OLS recursive residuals lies between the lower and upper critical boundaries at 5 percent. Hence, suggesting that the long run coefficient of regressors are stable and confirming the results of unit root tests on OLS residuals. In summary for the diagnostic tests, the models examined are well specified functional form with stable regressors, normal distribution of residual, no autocorrelation and heteroscedasticity.

5.3 Summary

The analyses of the data are presented based on time series statistical procedures proposed in chapter four (unit root, ARDL, co-integration, short run dynamic estimation and granger causality tests). The results of this study are subjected to variables, time period and statistical methods used. The summary of the findings mainly exhibits the long and short run impact of the selected macroeconomic factors on economic growth, agricultural output and export. Crude oil price and agricultural export was found to be affecting the economic growth. The agricultural output is being influenced by the crude oil price, unemployment rate, agricultural land and government spending. Also the government spending on agriculture, SAP, openness and crude oil price affected the agricultural export. In addition, Granger causality test was explained among GDP, oil and agricultural export. However, the signs of long and short run estimate of the models are summarized in Table 5.17. The details discussion on the findings and policy implications will be given in the subsequent chapter.

Table 5.17

Summary of Signs for Long and Short Run Relationships for the Models

Model	Variables	Long run	Short run
GDP			
	Ex	+***	+*
	Int	+***	+***
	Inf	+	-
	Une	-	-***
	AgrO	+	-***
	AgrE	-*	+
	Cop	+*	+
Agricultural Output			
	Ex	+*	-***
	Inf	-*	-***
	Int	+**	+***
	Gs	+**	+***
	Op	-*	-***
	Une	-***	+***
	SAP	-	-
	AgrL	+*	-***
	Cop	+**	-***
Agricultural Export			
	Ex	-*	+***
	Int	-	+***
	Inf	+	-**
	Gs	+***	-***
	Op	-	+***
	SAP	-**	-***
	Cop	+	-***

Asterisks ***, **, * denotes 1%, 5%, and 10% significance level respectively.

CHAPTER SIX

CONCLUSION AND POLICY RECOMMENDATIONS

6.1 Introduction

This chapter discusses the findings of the study shown in Chapter 5 in a more details way. Policy recommendations, limitation and some recommendations for future research are highlighted in this chapter.

6.2 Study's Objective Recapitulation

The objectives of the study are to determine the long and short run impact of the selected macroeconomic variables (crude oil price, SAP, agricultural export, agricultural land, unemployment rate, government spending on agriculture) on economic growth, agricultural output and export. Likewise the Granger causality direction among Gross Domestic Product (GDP), agricultural and oil export in Nigeria. The study is based on time series data from 1981 to 2014, utilizing econometric techniques such as bound testing, short and long Autoregressive Distributed Lag (ARDL) and Granger causality. The time series properties of the data are verified by using ADF and PP unit root tests, therein it was found that some of the variables are stationary at levels and other at first difference form. The use of bound testing analysis exhibits the presence of long run relationship among the variables in the stated models for the study.

For the first objective, the study found that macroeconomic factors related to economic growth, agricultural output and agricultural export in Nigeria. Simply put, macroeconomic factors are found to be correlated with economic growth, agricultural output and agricultural export either positively or negatively at the particular period of time examined. The second objective examined the impact of agricultural export and crude oil price on the economic growth. It was revealed that agricultural export adversely affect economic growth of the country in the long run but positive and insignificant in the short run. Crude oil price impacts economic growth positively both in the long and short run.

As for the third objective, the study found that SAP negatively impacts the agricultural output. Crude oil price significantly and positively impact agricultural output in the long run but negative impact in the short run. Government spending in agriculture increases agricultural output when more money is allocated into the sector. Unemployment rate adversely affects agricultural output. Agricultural land increases agricultural output in the long run. The fourth objective examined macroeconomic factors on agricultural export. It was revealed that SAP adversely affects agricultural export significantly in Nigeria. Government spending on agriculture increases agricultural export in the long run. Crude oil price impacts agricultural export negatively in the short run.

The study further investigates the causal relationship among selected variables (GDP, agricultural and oil export) by adopting Granger causality tests. As for the Granger causality results, the study ascertains the unidirectional relationship between economic growth and oil export in Nigeria. Likewise unidirectional relationship was found from oil

export to agricultural export. Interestingly, no causality was observed between GDP and agricultural export thereby not supporting the export led growth hypothesis. This outcome indicates that the agricultural export's portion of the total export is small and not affecting GDP. However, consistent with the Nigeria as a mono dependent nation (depending on the oil sector).

6.3 Policy Recommendations of the Study

This section is based on suggestions for policy recommendations as means for the improvement of Nigeria's economic growth, agricultural output and export, in line with the findings in chapter five.

Nigeria can improve its economic performance not only by focusing on oil as a main source of growth but also on the agricultural export. This is based on the fact that improvement of the export can enhance the nation's economic growth as identified by literatures. Thus, Nigeria needs to further fortify their exertions by establishing and developing adequate infrastructure for the agricultural sector as a way of maximizing the available resources endowed. Hence, for the nation to achieve desirable economic growth through agricultural export, macroeconomic policies that will introduce favourable exchange rate and also minimize export duty structure for agricultural goods is needed.

The study also serves as hints to the policy makers towards agricultural sector in playing a very important function in Nigeria. This is based on the fact that agricultural land, unemployment rate, government spending on agriculture, Structural Adjustment Programme (SAP) and crude oil price were discovered to have significant effect on the agricultural sector. As a result of agricultural land influences on the agricultural output, the government are thereby suggested to make use of the abundant agrarian lands for the production of more agricultural output which can also aid in strengthening the nation's manufacturing sector.

In the long run, unemployment rate tends to be improving the agricultural output in Nigeria; hence the study therefore indorses that the government should mobilize the unemployed youth by engaging and equipping them towards the agricultural sector. In the case of the crude oil price influencing the agricultural sector, the government should control the crude oil price to a minimum favourable price in order to encourage cheap and easy mobility of the agricultural output.

The country needs to revisit some of its programme and policy formulated in terms of their objectives such as SAP in order to achieve improvement in the economic and separate sectors such as agricultural sector. This is based on the result that SAP introduced in 1986, marking the beginning of total deregulation and setting of exchange rate liberalization did not yield any improvement in agricultural output and hence makes the sector's export of

the country threatened. The research finding recommends that the nation needs to further strengthen their efforts on economic stabilization policies that will enhance agricultural export promotion and sustaining of the output. In this wise, government policies that promote and stimulate increase in output of agriculture for the export purposes should be campaigned.

Similarly, the government spending on agriculture is significant on agricultural sector; therefore the country should ensure to improve by committing more finance and investment in the production of agricultural output. Therefore, more finances are tactically encouraged to be directed to the prospective agricultural sector to further improve opulence in the sense of optimal output, full employment in Nigeria. This is due to the fact that the government spending on agriculture indicated a positive and significant effect on agricultural output; likewise in the case of agricultural exports result.

6.4 Limitations of Study

There are many perspectives when examining macroeconomic variables impacts such as environmental, ecological, social etc. However, this research emphasizes on the economic aspect with consideration on some monetary and fiscal variables. Based on the finding, the study does not analyze all sectors pertaining to the nation's growth, because according to Hussin and Yik (2012), Haller (2012) and Tang and Tan (2015) economic growth is achieved when all sectors contribute to the improvement of the economy such as

manufacturing, services, solid mineral etc. More so, since identification of agricultural export is not specifically given in a nation's GDP but categorize under exports item; therefore it is quite difficult to estimate the economic impact of agricultural export precisely. Moreover, due to limited information, the findings created might not be as accurate in estimation of macroeconomic variables to growth and agricultural output and export. Other limitations that exist for this study includes:

The study focused on agricultural sector and economic growth because other sectors consisting of the non-oil are difficult to measure as a result of data unavailability.

This study did not consider other sectors comprised in non-oil because of the various policies and programs involvement in separate sectors. Furthermore, the consideration period for the study is 34years which might be considered short and might make the results of the study exhibit biasness.

6.5 Recommendations for Future Research

This study could be extended by broadening the geographical regions to the Africa or other developing nations like Nigeria to see how each of the macroeconomic factors examined response to growth, agricultural output and export. Hence, comparative study among Africa or developing nations can be obverse to determine if these nations' macroeconomic variables reject or support growth, agricultural output and export in the long run as well as the Granger causality direction among variables.

In addition, further study could investigate on the impact of other non-oil sectors like manufacturing sector towards economic growth. This study recommends making of evaluation between the contribution of agricultural sector and other non-oil sectors in appraisal of Nigeria's growth. This is also crucial because the government spends on other non-oil sectors to attract the country's growth and likewise would aid policy makers in recognizing the most beneficial strategies for the country's growth outlook.

REFERENCES

Abdullahi, H. (2014). Macroeconomic policy and agricultural output in Nigeria: implications for food security. *American Journal of Economics*, *4*(2), 99-113.

Abou-Strait, F. (2005). Are exports the engine of economic growth? An application of cointegration and causality analysis for Egypt, 1977-2003. *African Development Bank, Economic Research Working Paper*.

Abual-Foul, B. (2004). Testing the export-led growth hypothesis: evidence from Jordan. *Applied Economics Letters*, *11*(6), 393-396.

Acs, Z. (2006). How is entrepreneurship good for economic growth? *Innovations*, *1*(1), 97-107.

Adamu, A. (2009). The effects of global financial crisis on Nigerian economy *International Journal of Investment*.

Adebola, S. S., & Opeyemi, B. M. (2011). Multivariate causality test on electricity consumption, capital, labour and economic growth for Nigeria. *Journal of Business & Economics*, *3*(1).

Adedipe, B. (2004, June). The impact of oil on Nigeria's economic policy formulation. In *conference on 'Nigeria: Maximizing Pro-poor Growth: Regenerating the Socio-economic Database', organized by Overseas Development Institute in collaboration with the Nigerian Economic Summit Group, 16th/17th June*.

Adeniyi, O., Oyinlola, A., & Omisakin, O. (2011). Oil price shocks and economic growth in Nigeria: are thresholds important? *OPEC Energy Review 35*(4), 308-333.

Adenugba, A. A., & Dipo, S. O. (2013). Non-oil exports in the economic growth of Nigeria: a study of agricultural and mineral resources. *Journal of Educational and Social Research*, *3*(2), 403.

Adewuyi, A. O., & Akpokodje, G. (2010). Impact of trade reform on Nigeria's trade flows. *The International Trade Journal*, *24*(4), 411-439.

Adubi, A. A., & Okunmadewa, F. (1999). *Price, exchange rate volatility and Nigeria's agricultural trade flows: A dynamic analysis* (No. RP_087). African Economic Research Consortium.

Aftab, M., Abbas, Z., & Kayani, F. N. (2012). Impact of exchange rate volatility on sectoral exports of Pakistan: an ARDL investigation. *Journal of Chinese Economic and Foreign Trade Studies*, *5*(3), 215-231.

Agung, I. G. N. (2011). *Time series data analysis using EViews*. John Wiley & Sons.

Ahamada, I., & Coulibaly, D. (2013). Remittances and growth in Sub- Saharan African Countries: Evidence from a Panel Causality Test. *Journal of International Development*, *25*(3), 310-324.

Ahmad, J., & Harnhirun, S. (1995). Unit roots and cointegration in estimating causality between exports and economic growth: Empirical evidence from the ASEAN countries. *Economics letters*, *49*(3), 329-334.

Ahmad, J., & Kwan, A. C. (1991). Causality between exports and economic growth: empirical evidence from Africa. *Economics Letters*, *37*(3), 243-248.

Ahmed, A. D., Cheng, E., & Messinis, G. (2011). The role of exports, FDI and imports in development: evidence from Sub-Saharan African countries. *Applied Economics*, *43*(26), 3719-3731.

Akanegbu, B. (2014). Price distortions, exports, and economic growth: Evidence from the non-oil sectors of Nigeria. *International Journal of Management and Sustainability*, *3*(1), 1-15.

Akeem, U. O. (2011). Non-oil export determinant and economic growth Nigeria (1988-2008). *European Journal of Business and Management*, *3*(3), 236-257.

Akinbobola, T. O., & Oyetayo, O. J. (2010). Econometric analysis of real exchange rate and domestic output growth in Nigeria. *International Journal of Academic Research*, *2*(5).

Ali, R., Ali, A. K. A., Fatah, F. E., & Ariff, E. E. (2010). Linkages of macroeconomic indicators and agricultural variables in Malaysia. *Economic and Technology Management Review, 5, 1-9*.

Aliyu, S. U. R. (2010). Exchange rate volatility and export trade in Nigeria: An empirical investigation. *Applied Financial Economics*, *20*(13), 1071-1084.

AlSaqri, S., & Ahmed, A. D. (2010). Mineral and non-mineral sector interdependency: empirical evidence from Oman. *The IUP Journal of Applied Economics*, *9*(2), 14-33.

Al-Yousif, Y. K. (1997). Exports and economic growth: Some empirical evidence from the Arab Gulf countries. *Applied Economics*, *29*(6), 693-697.

Amaghionyeodiwe, L. A. (2009). Public sector intervention, economic growth and poverty alleviation in Nigeria. *The IUP Journal of Public Finance*, *7*(2), 45-68.

Amirkhalkhali, S., & Dar, A. A. (1995). A varying-coefficients model of export expansion, factor accumulation and economic growth: Evidence from cross-country, time series data. *Economic Modelling*, *12*(4), 435-441.

Amiti, M., & Freund, C. (2010). The anatomy of China's export growth. In *China's growing role in world trade* (pp. 35-56). University of Chicago Press. Austria; available at: http://www.wiiw.ac.at/pdf/crespo_woerz_etsg_2003.pdf

Ammani, A. A. (2011). Nigeria's Oilboom Period (1973-1983): Was agriculture really neglected? *International Journal of Statistics and Applications*, *1*(1), 6-9.

Anaman, K. A. (2006). *Factors that enabled successful economic reform and recovery in Ghana from 1983 to 2006* (No. 11). Institute of Economic Affairs.

Anthony, E. (2010). Agricultural credit and economic growth in Nigeria: An empirical analysis. *Business and Economics Journal*, *14*, 1-7.

Antwi, S., Mills, E. F. E. A., & Zhao, X. (2013). Impact of macroeconomic factors on economic growth in Ghana: A cointegration analysis. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *3*(1), 35-45.

Anyanwu, J. C. (2013). Characteristics and macroeconomic determinants of youth employment in Africa. *African Development Review*, *25*(2), 107-129.

Arrow, K. (1962). Economic welfare and the allocation of resources for invention. In *the rate and direction of inventive activity: Economic and social factors* (pp. 609-626). Princeton University Press.

Asafu- Adjaye, J., & Chakraborty, D. (1999). Export- led growth and import compression: Further time series evidence from LDCs. *Australian Economic Papers*, *38*(2), 164-175.

Asteriou, D., & Hall, S. G. (2007). *Applied Econometrics: A modern approach using Eviews and Microfit*. New York: Palgrave Macmillan.

Audretsch, D., & Keilbach, M. (2004). Entrepreneurship capital and economic performance. *Regional studies*, *38*(8), 949-959.

Austria; available at: http://www.wiiw.ac.at/pdf/crespo_woerz_etsg_2003.pdf

Awokuse, T. O. (2009, July). Does agriculture really matter for economic growth in developing countries? In *American Agricultural Economics Association Annual Meeting, Milwaukee, WI, July* (pp. 26-28).

Ayadi, O. F. (2005). Oil price fluctuations and the Nigerian economy. OPEC review, 29(3), 199-217.

Ayadi, F. S. (2009). Determinants of capital flight in developing economies: A study of Nigeria. In *Emerging Issues and Challenges in Business & Economics: Selected*

Contributions from the 8th Global Conference (Vol. 24, p. 245). Firenze University Press.

Aydın, M. F., Çıplak, U., & Yücel, M. E. (2004). Export supply and import demand models for the Turkish economy. *The Central Bank of the Republic of Turkey Research Department Working Paper*, *4*(09).

Babatunde, M. A., Oyeranti, O. A., Bankole, A. S., & Ogunkola, E. O. (2012). Exports trade, employment and poverty reduction in Nigeria. *International Journal of Social Economics*, *39*(11), 875-899.

Bagli, S., & Adhikary, M. (2014). FDI inflow and economic growth in India an empirical analysis. *Economic Affairs*, *59*(1), 23-33.

Bahamni-Oskooee, M., Mohtadi, H., & Shabsign, G. (1991), "Exports, growth and causality in LDCs: A re-examination," Journal of Development Economics, 36, 405-415.

Bahmani-Oskooee, M., & Economidou, C. (2009). Export led growth vs. growth led exports: LDCs experience. *The Journal of Developing Areas*, 179-212.

Bai, X., Chen, J., & Shi, P. (2011). Landscape urbanization and economic growth in China: Positive feedbacks and sustainability dilemmas. *Environmental science & technology*, *46*(1), 132-139.

Baily, M.N. (2003): "The sources of economic growth in OECD countries: A Review Article". *Retrieved April 14, 2009, from http//www.cslc.ca/ipm/7/bailyreview-epdf.*

Balassa, B. (2013). The effects of interest rates on savings in developing countries. *PSL Quarterly Review*, *43*(172).

Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, *27*(6), 643-650.

Barro, R. J. (1991). *Economic growth in a cross section of countries* (No. w3120). National Bureau of Economic Research.

Bates, R. H., & Block, S. A. (2013). Revisiting African agriculture: Institutional change and productivity growth. *The Journal of Politics*, *75*(02), 372-384.

Batten, D. S., & Belongia, M. T. (1986). Monetary policy, real exchange rates, and US agricultural exports. *American Journal of Agricultural Economics*, 422-427.

Bhaskara Rao, B., & Singh, R. (2007). Estimating export equations. Applied Economics Letters, 14(11), 799-802.

Beer, F., & Hebein, F. (2011). An assessment of the stock market and exchange rate dynamics in industrialized and emerging markets. *International Business & Economics Research Journal (IBER)*, *7*(8).

Blecker, R. A. (2009). Long-run growth in open economies: export-led cumulative causation or a balance-of-payments constraint. *Summer School on Keynesian Macroeconomics and European Economic Policies*, *2*, 2009-23.

Booth, David, Richard Crook, E. Gyimah-Boadi, Tony Killick and Robin Luckham, with Nana Boateng (2004), Drivers of change in Ghana: Overview Report, Final Draft, 25 May 2004, London: ODI and Accra: CDD.

Boug, P., & Fagereng, A. (2010). Exchange rate volatility and export performance: a cointegrated VAR approach. *Applied Economics*, *42*(7), 851-864.

Boyd, D., Caporale, G. M., & Smith, R. (2001). Real exchange rate effects on the balance of trade: cointegration and the Marshall–Lerner condition. *International Journal of Finance & Economics*, *6*(3), 187-200.

Bratu, M. (2012). Macroeconomic forecasts accuracy in Romania. *Review of Economic Studies and Research Virgil Madgearu*, (02), 99-120.

Brown, J. H., Burnside, W. R., Davidson, A. D., DeLong, J. P., Dunn, W. C., Hamilton, M. J., & Zuo, W. (2011). Energetic limits to economic growth. *Bio Science*, *61*(1), 19-26.

Buiter, W. H., & Grafe, C. (2012). Anchor, float or abandon ship: exchange rate regimes for the accession countries. *PSL Quarterly Review*, *55*(221).

Caceres, L. R. (2014). Economic integration and unemployment in Central America. *The Journal of Developing Areas*, *48*(1), 43-60.

Canuto, O., Haddad, M., & Hanson, G. (2010). Export-led growth v2. 0.

Cass, D. (1965). Optimum growth in an aggregative model of capital accumulation. *The Review of economic studies*, *32*(3), 233-240.

CBN (2008), *Annual Report and Financial Statements*, Central Bank of Nigeria, Abuja, Nigeria.

CBN (2012), *Annual Report*, Central Bank of Nigeria, Abuja, Nigeria.

CBN (2011), *Statistical Bulletin*, Volume 22, Central Bank of Nigeria, Abuja, Nigeria.

CBN (2012), *Statistical Bulletin*, Volume 23, Central Bank of Nigeria, Abuja, Nigeria.

CBN (2013), *Statistical Bulletin*, Volume 24, Central Bank of Nigeria, Abuja, Nigeria.

Cebula, R. J., & Mixon Jr, F. G. (2012). The impact of fiscal and other economic freedoms on economic growth: An empirical analysis. *International Advances in Economic Research*, *18*(2), 139-149.

Chebbi, H. E. (2010). Agriculture and economic growth in Tunisia. *China Agricultural Economic Review*, *2*(1), 63-78.

Chebbi, H. E., & Lachaal, L. (2007). Agricultural sector and economic growth in Tunisia: Evidence from co-integration and error correction mechanism.

Chen, H. (2014). A literature review on the relationship between foreign trade and economic growth. *International Journal of Economics and Finance*, *1*(1), p127.

Chen, L. (2011). The effect of China's RMB exchange rate movement on its agricultural export: A case study of export to Japan. *China Agricultural Economic Review*, *3*(1), 26-41.

Chow, P.C.Y. (1987), "Causality between export growth and industrial development," Journal of Development Economics, 26, 55-63

Colman, D., & Okorie, A. (1998). The effect of structural adjustment on the Nigerian agricultural export sector. *Journal of International Development*, *10*(3), 341-355

Crespo-Cuaresma, J. and J. Wörz (2003) "On export composition and growth", University of Vienna, Department of Economics, Vienna, Austria; and Vienna Institute for International Economic Studies (WIIW), Vienna,

Cylus, J., Glymour, M. M., & Avendano, M. (2014). Do generous unemployment benefit programs reduce suicide rates? A state fixed-effect analysis covering 1968–2008. *American journal of epidemiology*, kwu106.

Dao, M. Q. (2012). Government expenditure and growth in developing countries. *Progress in Development Studies*, *12*(1), 77-82.

Dao, M. Q. (2014). Exports, imports, government consumption and economic growth in upper-middle income countries. *Progress in Development Studies*, *14*(2), 197-204.

Daramola, A., Ehui, S., Ukeje, E., & McIntire, J. (2007). Agricultural export potential in Nigeria. *Economic Policy Options for a Prosperous Nigeria, Collier, P. and C. Pattillo (Eds.). Palgrave Macmillan, London*.

Dawson, P. J. (2005). Agricultural exports and economic growth in less developed countries. *Agricultural economics*, *33*(2), 145-152.

Deller, S., & Schreiber, A. (2013). Mining and community economic growth. *The Review of Regional Studies*, *42*(2), 121-141.

Dewan, E., and Hussien, S. (2001): "Determinants of economic growth: Panel Data Approach". *Working Paper,* 01/04.

Diewert, W. E. (1986). Export supply and import demand functions: A production theory approach.

Dincer, N., & Kandil, M. (2011). The effects of exchange rate fluctuations on exports: A sectoral analysis for Turkey. *The Journal of International Trade & Economic Development*, *20*(6), 809-837.

Dobronogov, A., and Iqbal, F. (2005): "Economic growth in Egypt: Constraints and determinants": *Retrieved April 14, 2009, from htt//site.sources.worldbank.org /INTMENA/Resources/WP42SEPTEMBER2006pdf.*

Dodaro, S. (1993). Exports and growth: a reconsideration of causality. *The Journal of Developing Areas*, 227-244.

Domar, E. D. (1946). Capital expansion, rate of growth, and employment. *Econometrica, Journal of the Econometric Society*, 137-147.

Dorica, S. (2013). The financial discipline-A factor of economic growth. *Annals of Faculty of Economics*, *1*(2), 263-271.

Dreger, C., & Herzer, D. (2013). A further examination of the export-led growth hypothesis. *Empirical Economics*, *45*(1), 39-60.

Dreger, C., & Marcellino, M. (2007). A macroeconometric model for the Euro economy. *Journal of Policy Modeling*, *29*(1), 1-13.

Edame, G. E., & Effiong, C. E. (2013). The trend analysis of oil revenue and oil export in Nigeria. *IOSR Journal of Business and Management*, *10*(3), 01-08.

Edwards, S. (1992) "Trade liberalization and growth in developing countries" Journal of Development Economics, Vol. 39: 31-57.

Efobi, U. R., & Osabuohien, E. S. (2011). Promotion of non-oil export in Nigeria: Empirical assessment of agricultural credit guarantee scheme fund.

Egbo, O. P. (2011). Bivariate causality analysis on the impact of FDI inflows and economic growth in Nigeria. *Journal of Internet Banking and Commerce, 11*(3).

Eggertsson, G. B. (2011). What fiscal policy is effective at zero interest rates? In *NBER Macroeconomics Annual 2010, Volume 25* (pp. 59-112). University of Chicago Press.

Ekanayake, E. M., Ledgerwood, J. R., & D'Souza, S. (2010). The real exchange rate volatility and US exports: An empirical investigation. *The International Journal of Business and Finance Research*, *4*(1), 23-35.

Ekanayake, E. M., Thaver, R. J., & Plante, D. R. (2011). The effects of exchange rate volatility on South Africa's trade with the European Union. In *Global Conference on Business and Finance Proceedings* (Vol. 6, pp. 620-627).

Ekperiware, C. M. (2011). Oil and non-oil FDI and economic growth in Nigeria.*Journal of Emerging Trends in Economics and Management Sciences*, *2*(4), 333-343.

Ekpo, A. H., & Egwaikhide, F. O. (1994). Export and economic growth in Nigeria: A reconsideration of the evidence. *Journal of Economic Management*, *1*(1), 100-115.

Elbadawi, I. A., Kaltani, L., & Soto, R. (2012). Aid, real exchange rate misalignment, and economic growth in Sub-Saharan Africa. *World Development*, *40*(4), 681-700.

Elhiraika, A. B. (2008). Promoting manufacturing to accelerate economic growth and reduce volatility in Africa. In *Paper prepared at the African Economic Conference, jointly organized by the African Development Bank and UNECA in Tunis, Tunisia, November*.

Elhiraika, A. B., Aboubakar, O., & Muhammad, K. (2014). Promoting manufacturing to accelerate economic growth and reduce growth volatility in Africa. *The Journal of Developing Areas*, *48*(2), 1-20.

Ellis, F., & Biggs, S. (2001). Evolving themes in rural development 1950s- 2000s. *Development policy review*, *19*(4), 437-448.

Esfahani, H. S. 1991: 'Exports, imports, and economic growth in semi-industrialized countries' *Journal of Development Economics* 35, 93–116.

Etta-Nkwelle, M., Jeong, J. G., & Fanara, P. (2010). Misalignment of the real exchange rate in the African Financial Community (CFA zone) and its policy implications. *Applied Financial Economics*, *20*(15), 1205-1215.

Evans, M. D., & Lyons, R. K. (2012). Exchange rate fundamentals and order flow. *The Quarterly Journal of Finance*, *2*(04).

Eyo, E. O. (2008). Macroeconomic environment and agricultural sector growth in Nigeria. *World Journal of Agricultural Sciences*, *4*(6), 781-786.

Ezike, J. E., & Ogege, S. (2012). Nigerian foreign trade policy: Its impact on non-oil exports. *Journal of Economics and International Finance*, *4*(8), 192-200.

Fan, S., Yu, B., & Saurkar, A. (2008). *Public spending in developing countries: trends, determination and impact*. Washington, DC: IFPRI, and Baltimore, MD: Johns Hopkins University Press.

Farzanegan, M. R., & Markwardt, G. (2009). The effects of oil price shocks on the Iranian economy. *Energy Economics*, *31*(1), 134-151.

Fayissa, B., & Nsiah, C. (2013). The impact of governance on economic growth in Africa. *The Journal of Developing Areas*, *47*(1), 91-108.

Feder, G. (1982). Adoption of interrelated agricultural innovations: Complementarity and the impacts of risk, scale, and credit. *American Journal of Agricultural Economics*, *64*(1), 94-101.

Fosu, A. K. (1990). Exports and economic growth: the African case. *World Development*, *18*(6), 831-835.

Frank, B., & Enkawa, T. (2009). Does economic growth enhance life satisfaction? The case of Germany. *International Journal of Sociology and Social Policy*, *29*(7/8), 313-329.

Frimpong, J. M., & Oteng-Abayie, E. F. (2006). Bivariate causality analysis between FDI inflows and economic growth in Ghana.

Gardner, B. L. (2005). Causes of rural economic development. *Agricultural Economics*, *32*(s1), 21-41.

Ghartey, E.E. (1993), "Causal relationship between exports and economic growth: Some empirical evidence in Taiwan, Japan and the U.S.," Applied Economics, 25, 1145-1152.

Ghura, D and M.T. Hadjimicheal (1996), "Growth in Sub-Saharan Africa," IMF Staff Papers, 43(3): 605 – 634.

Gil, J. M., Benkaabia, M., & Chebbi, H. E. (2009). Macroeconomics and agriculture in Tunisia. *Applied Economics*, *41*(1), 105-124.

Girma, S., Gong, Y., Görg, H., & Yu, Z. (2009). Can production subsidies explain China's export performance? Evidence from firm- level Data*. *The Scandinavian Journal of Economics*, *111*(4), 863-891.

Glewwe, P., Maïga, E., & Zheng, H. (2014). The contribution of education to economic growth: A review of the evidence, with special attention and an application to Sub-Saharan Africa. *World Development*, *59*, 379-393.

Goetz, S. J., Partridge, M. D., Rickman, D. S., & Majumdar, S. (2011). Sharing the gains of local economic growth: race-to-the-top versus race-to-the-bottom economic development. *Environment and Planning-Part C*, *29*(3), 428.

Golovko, E., & Valentini, G. (2011). Exploring the complementarity between innovation and export for SMEs' growth. *Journal of International Business Studies*, *42*(3), 362-380.

Goodfriend, M., & King, R. (1997). The new neoclassical synthesis and the role of monetary policy. In *NBER Macroeconomics Annual 1997, Volume 12* (pp. 231-296). MIT Press.

Gordon, D. F. (1974). A neo-classical theory of Keynesian unemployment*. *Economic inquiry*, *12*(4), 431-459.

Greenaway, D., Kneller, R., & Zhang, X. (2012). The effect of exchange rates on firm exports and the role of FDI. *Review of World Economics*, *148*(3), 425-447.

Greene, W. H. (2003). *Econometric analysis*. Pearson Education India.

Greenwald, B., Stiglitz, J. E., & Weiss, A. (1984). Informational imperfections in the capital market and macroeconomic fluctuations. *The American Economic Review*, 194-199.

Grossman, P. J. (1988). Government and economic growth: A non-linear relationship. *Public Choice*, *56*(2), 193-200.

Grossman, G. M., & Helpman, E. (1991). Quality ladders in the theory of growth. *The Review of Economic Studies*, *58*(1), 43-61.

Grossmann, A., & Orlov, A. G. (2014). A panel- regressions investigation of exchange rate volatility. *International Journal of Finance & Economics*.

Gujarati, D. J. 1995. Basic Econometrics.

Gyimah-Brempong (1989)," Defence spending and economic growth in sub-Saharan Africa," Journal of Peace Research vol.30.no.1. 1993. pp.95-99.

Haller, A. P. (2012). Concepts of economic growth and development. Challenges of crisis and of knowledge. *Economy Transdisciplinarity Cognition*, *15*(1), 66-71.

Hamilton, J. D. (2012). *Oil prices, exhaustible resources, and economic growth* (No. w17759). National Bureau of Economic Research.

Hammouda , H. B., Karingi, S.N., Njuguna, A. E., and Jallab, M. S. (2009). Growth, productivity and diversification in Africa, *Journal of Productivity Analysis*, 33(2), 125-146.

Harb, N. (2009). Oil exports, non- oil GDP, and investment in the GCC Countries. *Review of Development Economics*, *13*(4), 695-708.

Harrod, R. F. (1939). An essay in dynamic theory. *The economic journal*, *49*(193), 14-33.

Harrison, A. E., Lin, J. Y., & Xu, L. C. (2014). Explaining Africa's disadvantage. *World Development*.

Hasanov, F. (2012). The impact of the real exchange rate on non-oil exports: Is there an asymmetric adjustment towards the equilibrium? ... *Economic Research,*

Department of Economics, The Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2250545

Hasanov, F., & Samadova, I. (2010). The impact of real exchange rate on non-oil exports: The case of Azerbaijan. *MPRA Paper*, *29556*, 1-19.

Hassan, M., & Nassar, R. (2013). Effect of government deficit spending on the GDP in the United States. *Proceeding of the Academy for Economics and Economic Education*, *16*(1), 19-24.

Helpman, E., & Itskhoki, O. (2010). Labour market rigidities, trade and unemployment. *The Review of Economic Studies*, *77*(3), 1100-1137.

Henley, D., Tirtosudarmo, R., & Fuady, A. H. (2012). Flawed vision: Nigerian development policy in the Indonesian Mirror, 1965–90. *Development Policy Review*, *30*(s1), s49-s71.

Herrerias, M. J., & Orts, V. (2010). Is the Export- led growth hypothesis enough to account for China's growth? *China & World Economy*, *18*(4), 34-51.

Homayounifar, M., & Pour, F. R. (2008). Analysis of economic-political factors affecting non-oil export of Iran. *American-Eurasian Journal of Agricultural & Environmental Science*, *2*.

Hong, L. (2014). Does and how does FDI promote the economic growth? Evidence from dynamic panel data of prefecture city in China. *IERI Procedia*, *6*, 57-62.

Hoogenveen, V. C., & Kuipers, S. K. (2012). The long-run effects of low inflation rates. *PSL Quarterly Review*, *53*(214).

Hsu, K. C., & Chiang, H. C. (2011). The threshold effects of exchange rate volatility on exports: Evidence from US bilateral exports. *The Journal of International Trade & Economic Development*, *20*(1), 113-128.

Huang, B.N., Oh, J.J.R., & Yang, C.W. (2000), "On the causality of exports and economic growth: An application of direct and indirect causality," Working Paper.

Huang, S. L., Chen, Y. H., Kuo, F. Y., & Wang, S. H. (2011). Emergy-based evaluation of per-urban ecosystem services. *Ecological Complexity*, *8*(1), 38-50.

Hussain, F., & Chakraborty, D. K. (2012). Causality between financial development and economic growth: Evidence from an Indian State. *Romanian Economic Journal*, *15*(35), 27-48.

Hussin, F., & Yik, S. Y. (2012). The contribution of economic sectors to economic growth: The cases of China and India. *Research in Applied Economics*, *4*(4), p38-p53.

Ibrahim, M. J. (2008). Growth prospects of oil and gas abundant economies: the Nigerian experience (1970-2000). *Journal of Economic Studies*, *35*(2), 170-190.

Idowu, K.O. (2005), "A preliminary investigation into the causal relationship between exports and economic growth in Nigeria"; CBN Economic and Financial Review 43(3): 29-50.

Ighodaro, C. A. (2010). Co-integration and causality relationship between energy consumption and economic growth: further empirical evidence for Nigeria *Journal of Business Economics and Management*, (1), 97-111.

Ihugba, O. A., Odii, A., & Njoku, A. C. (2014). Theoretical analysis of entrepreneurship challenges and prospects in Nigeria. *International Letters of Social and Humanistic Sciences*, *5*, 21-34.

Ikpefan, O. A., & Osabuohien, E. (2012). Discount houses, money market and economic growth in Nigeria (1992-2007). Petroleum-Gas University of Ploiesti Bulletin, Technical Series, 64(3).

Imimole, B., & Enoma, A. (2011). Exchange rate depreciation and inflation in Nigeria (1986-2008). *Business and Economic Journal (BEJ)*, *28*(1).

Isham, J., Woolcock, M., Pritchett, L., & Busby, G. (2005). The varieties of resource experience: natural resource export structures and the political economy of economic growth. *The World Bank Economic Review*, *19*(2), 141-174.

Islam, N., & Subramanian, A. (1989). Agricultural exports of developing countries: estimates of income and price elasticities of demand and supply. *Journal of Agricultural Economics*, *40*(2), 221-231.

Ita, M. N., Ukpong, I. G., & Ekpebu, I. D. (2013). Budgetary allocations to the agricultural sector in Nigeria: Implications on investment and productivity. *Journal of Agricultural Science*, *5*(11), p49.

Iyoha, M. A. (1995). Traditional and contemporary theories of external trade. *External Trade and Economic Development in Nigeria. Selected Papers for the*, 1-23.

Iyoha, M. A., & Oriakhi, D. (2002). Explaining African economic growth performance: The case of Nigeria. *Revised Interim Report on Nigerian Case Study, Prepared for the African Economic Research Consortium Research Project, Explaining African Economic Growth Performance*.

Izuchukwu, O. (2011). Analysis of the contribution of agricultural sector on the Nigerian economic development. *World Review of Business Research*, *1*(1), 191-200.

Jaroensathapornkul, J., & Tongpan, S. (2007). Impacts of government spending on Thailand's agricultural sector (Doctoral dissertation, Kasetsart University).

Jarreau, J., & Poncet, S. (2012). Export sophistication and economic growth: Evidence from China. *Journal of development Economics*, *97*(2), 281-292.

Jerven, M. (2010). African growth recurring: an economic history perspective on African growth episodes, 1690–2010. *Economic history of developing regions*, *25*(2), 127-154.

Jerven, M. (2011). The quest for the African dummy: explaining African post- colonial economic performance revisited. *Journal of International Development*, *23*(2), 288-307.

Johansen, S. (1988), "Statistical analysis of co-integration vectors," Journal of Economic Dynamics and control, 12: 231-254.

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration—with applications to the demand for money. *Oxford Bulletin of Economics and statistics*, *52*(2), 169-210.

Johnston, B. F., & Mellor, J. W. (1961). The role of agriculture in economic development. *The American Economic Review*, 566-593.

Joshi, R. M, (2005) International Marketing, Oxford University Press, New Delhi and New York ISBN 0-19-567123-6

Jung, W., and P. Marshall (1985), "Exports, growth and causality in developing countries," Journal of Development Economics 18, 1-12

Kalhoro, F. A., Bhutto, N. A., Maari, S. A., Bibi, S., & Butt, F. (2011). Small and medium enterprises as engine of economic growth: A cross-country analysis. In *3rd SAICON Conference, Available at: http://saicon2011. ciitlahore. edu. Pk /Economics/11-1303% 20farooq% 20ahmed. Pdf [March 2012]*.

Kalu, I. E., & James, O. N. E. (2012). Government expenditure and economic growth In Nigeria, 1980-2011. *International Journal of Academic Research*, *4*(6).

Kamble, P. S. (2013). Economic growth–employment linkages in India. *International Journal of Marketing and Technology*, *3*(12), 155-175.

Kandil, M., & Dincer, N. N. (2008). A comparative analysis of exchange rate fluctuations and economic activity: The cases of Egypt and Turkey. *International Journal of Development Issues*, *7*(2), 136-159.

Kargbo, J. M. (2006). Exchange rate volatility and agricultural trade under policy reforms in South Africa. *Development Southern Africa*, *23*(01), 147-170.

Kargbo, J. M. (2007). The effects of macroeconomic factors on South African agriculture. *Applied economics*, *39*(17), 2211-2230.

Kashi, F. K., & Tash, M. N. S. (2014). Effects of macroeconomic variables on poverty in Iran (Application of bootstrap technique). *Theoretical and Applied Economics*, *18*(5 (594)), 85-96.

Kaya, O., Kaya, I., & Gunter, L. (2012). Development aid to agriculture and economic growth. *Review of Development Economics*, *16*(2), 230-242.

Keynes, J. M. (1937). The general theory of employment. *The quarterly journal of economics*, 209-223.

Keynes, J. M. (2006). *General theory of employment, interest and money*. Atlantic Publishers & Dist.

Khungwa, M. (2007): "Determinants of economic growth in Malawi". *Abstract Retrieved April14, 2009, from UNPANO261pdf.*

Klasen, S., & Lamanna, F. (2009). The impact of gender inequality in education and employment on economic growth: new evidence for a panel of countries. *Feminist Economics*, *15*(3), 91-132.

Klein, L. R., & Keynes, J. M. (1968). *The Keynesian Revolution* (Vol. 19). New York: Macmillan.

Koh, S. R., & Mah, J. S. (2013). The effect of export composition on economic growth: The case of Korea. *The Journal of Developing Areas*, *47*(1), 171-179.

Kohli, U. R. (1978). A gross national product function and the derived demand for imports and supply of exports. *Canadian Journal of Economics*, 167-182.

Konrad, K. A., & Thum, M. (2014). The role of economic policy in climate change adaptation. *CESifo Economic Studies*, *60*(1), 32-61.

Kumar, S. (2011). Estimating export demand equations in selected Asian countries. *Journal of Chinese Economic and Foreign Trade Studies*, *4*(1), 5-16.

Kumari, A., Kaushal, P., Dubey, J. K., Sharma, R., & Sharma, K. K. (2014). Women empowerment in forest development agencies (FDAs) of Himachal Pradesh and Punjab. *International Journal of Farm Sciences*, *3*(1), 135-143.

Leshoro, T. L. (2013). Does economic growth lead employment in South Africa?. *Journal of Economics & Behavioral Studies*, *5*(6).

Letsoalo, A., & Kirsten, J. F. (2003). Modelling the impacts of macroeconomic and trade policies on the South African agricultural sector. In *2003 Annual Conference, October 2-3, 2003, Pretoria, South Africa* (No. 19085). Agricultural Economic Association of South Africa (AEASA).

Lewis, W. A. (2013). *Theory of economic growth* (Vol. 7). Routledge.

Lim, G. C., & McNelis, P. D. (2012). Macroeconomic volatility and counterfactual inflation-targeting in Hong Kong. *Pacific Economic Review 17*(2), 304-325.

Lind, D. A., Marchal, W. G., & Wathen, S. A. (2005). Statistical techniques in business & economics.

Lloyd, T., Morrissey, O., & Osei, R. (2001). *Aid, exports and growth in Ghana*. University of Nottingham, Centre for Research in Economic Development and International Trade.

Luca, L., Cionga, C., & Giurca, D. (2013). An estimation of the effects of selected farm consolidation measures on the economic growth in Romanian agriculture. *Agronomy Series of Scientific Research/Lucrari Stiintifice Seria Agronomie*, *56*(2).

Lucas, R. E. (1988). On the mechanics of economic development. *Journal of monetary economics*, *22*(1), 3-42.

Macbean, A. (Ed.). (2011). *Export instability and economic development* (Vol. 45). Routledge.

Maddaloni, A., & Peydró, J. L. (2011). Bank risk-taking, securitization, supervision, and low interest rates: Evidence from the Euro-area and the US lending standards. *Review of Financial Studies*, *24*(6), 2121-2165.

Mafimisebi, T., Oguntade, A., & Mafimisebi, O. (2010). Re-engineering agriculture for enhanced performance through financing. *Journal of Economics, Finance and Administrative Science*, *15*(29), 35-49.

Malerba, F., & Nelson, R. R. (Eds.). (2012). *Economic development as a learning process: variation across sectoral systems*. Edward Elgar Publishing.

Manish, G. P., & Powell, B. (2014). Capital theory and the process of inter-temporal coordination: The Austrian Contribution to the Theory of Economic Growth. *Atlantic Economic Journal*, *42*(2), 133-142.

Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *The quarterly journal of economics*, *107*(2), 407-437.

McKinnon, R. I. (1973). *Money and capital in economic development*. Brookings Institution Press.

Meade, J. E. (2013). *A Neo-Classical Theory of Economic Growth (Routledge Revivals)*. Routledge.

Mehdi, S., & Reza, M. (2011). A study examining the effect of export growth in iran. *Canadian Social Science*, *3*(1), 92–98. doi:10.3968/j.ibm.

Menson, A. E. (2012). Infrastructure, export-led growth and economic development in Sub-Saharan Africa: An Empirical Analysis. *The IUP Journal of Managerial Economics*, *10*(1), 46-78.

Michaely, M.(1977), "Exports and growth: An empirical investigation," Journal of Development Economics, 4(1), March, 49-53.

Michalopoulos, C., & Jay, K. (1973), "Growth of exports and income in the developing world: A neoclassical view," A.I.D. Discussion Paper No. 28 (Washington, DC)

Mo, P. H. (2007). Government expenditures and economic growth: The supply and demand sides*. *Fiscal Studies*, *28*(4), 497-522.

Mo, P. H. (2010). Trade intensity, net export, and economic growth. *Review of Development Economics*, *14*(3), 563-576.

Mobolaji Hakeem, I. (2010). Banking development, human capital and economic growth in Sub-Saharan Africa (SSA). *Journal of Economic Studies*, *37*(5), 557-577.

Mousavi, S., & Leelavathi, D. S. (2013). Agricultural export and exchange rates in India: The granger causality approach. *International Journal of Scientific and Research Publications*, *3*(2), 1-8.

Muktadir-Al-Mukit, D., & Shafiullah, A. Z. M. (2014). Export, import and inflation: A study on Bangladesh. *Amity Global Business Review*, *9*.

Müller, G. J. (2008). Understanding the dynamic effects of government spending on foreign trade. *Journal of International Money and Finance 27*(3), 345-371.

Narayan, P. K. (2005). The saving and investment nexus for China: evidence from cointegration tests. *Applied economics*, *37*(17), 1979-1990.

Neely, C. J., & Rapach, D. E. (2011). International co-movements in inflation rates and country characteristics. *Journal of International Money and Finance*, *30*(7), 1471-1490.

Neycheva, M. (2014). The role of education for the economic growth of Bulgaria. *Economics, Management, and Financial Markets*, (1), 182-190.

Ngoc, P.M.; N. T. Phuong Anh and P.T. Nga (2003) "Exports and long-run growth in Vietnam, 1976-2001" ASEAN Economic Bulletin, Vol. 20: 1-25

Nigeria's statistics bureau (2013). Revised and final GDP rebasing results by output approach Q1 2010 - Q4 *2013. Retrieved on July 26th, 2014 from* http://nigerianstat.gov.ng/

Ningi, S. I. (2013). An analysis of banks financing of non-oil exports in Nigeria. *American International Journal of Contemporary Research*, *3*(1), 85–92.

Ningi, S. I., & James, H.L. (2013). A scheme for assessing non-oil exports performance (NEP) -Evidence from non-oil exporting firms in Nigeria. *Global Conference on Business and Finance Proceedings* (Vol. 8, pp. 2–8).

Nyamrunda, G. C. (2012). An empirical study on the long-run relationships between lower exchange rates and foreign direct investments in developing economies; Evidence from Tanzania. *Journal of Applied Economics & Business Research*, *2*(4).

Obi, B., Wafure, G. O., & Menson, A. E. (2012). Savings, investment and economic growth in Nigeria: An empirical analysis. *The IUP Journal of Monetary Economics*, *10*(1), 16-38

Odhiambo, N. M. (2013). Inflation and economic growth in South Africa: An empirical investigation. *Economics, Management, and Financial Markets*, (4), 27-41.

Odior, E. S. (2014). The macroeconomic policy effect on Nigerian agricultural performance: One-step dynamic forecasting analysis. *International Journal of Economics and Finance*, *6*(9), p190.

Odusola, A.F. and A.E. Akinlo. (1995), "Trade, growth and causality in Nigeria", In external trade and economic development in Nigeria, selected papers for the Annual Conference of the Nigerian Economic Society (NES)

Ogujiuba, K., & Abraham, T. W. (2013). Testing the Philips curve hypothesis for Nigeria: Are there likely implications for economic growth? *Economics, Management, and Financial Markets*, (4), 59-68.

Ogun, O. (1998). *Real exchange rate movements and export growth: Nigeria, 1960—1990* (No. RP_82).

Ogwumike, F. O., & Salisu, A. A. (2012). Financial development and economic growth in Nigeria. *Journal of Monetary and Economic Integration*, *12*(2), 91-119.

Okoh, Rosemary N. (2004). Global integration and the growth of Nigeria's non-oil exports. In *The African Conference* (pp. 1–30).

Okoh, R. N. (2004, March). Global integration and the growth of Nigeria's non-oil exports. In *African Conference 2004, on Growth, Poverty Reduction and Human Development in Africa 21 to 22 March 2004, Oxford, UK* (pp. 1-30). World Trade Organisation.

Okonkwo, C. S., & Odularu, G. O. (2013). External debt, debt burden and economic growth nexus: Empirical evidence and policy lessons from selected West African countries. *International Journal of Economics & Business Studies*, *3*(1).

Okunnu, M., & Adeyemi, O. (2008). Non-oil export development and promotion as a vital strategy for increasing foreign exchange earning in an economy. *Lex ET Scientia International Journal (LESIJ)*. Retrieved from http://www.ceeol.com/aspx/getdocument.aspx?logid=5&id=477d4108590d4c5280562b594875ea78

Oladipo, O. S. (2008). Foreign direct investment flow: Determinants and growth effects in a small open economy. *Proceedings of the Northeast Business & Economics Association*.

Olajide, O. T., Akinlabi, B. H., & Tijani, A. A. (2012). Agriculture resource and economic growth in Nigeria. *European Scientific Journal*, *8*(22).

Olayiwola, K., & Okodua, H. (2009). Foreign direct investment, non-oil exports, and economic growth in Nigeria: a causality analysis. *Department of Economics and Development Studies Covenant University, Ota, Nigeria*.

Olson, J. E. (2014). Economic growth in Latin American countries: Is it based on export-led or import-led growth? *Emerging Markets Finance and Trade*, *50*, 6-20.

Olurankinse, F., & Bayo, F. (2012). Analysis of the impact of non-oil sector on economic growth. *Canadian Social Science*, *8*(4), 244–248. doi:10.3968/j.css.1923669720120804.1222

Olusegun, A. O. (2009). Export-led growth hypothesis: Further econometric evidence from Nigeria. *Pakistan Journal of Social Sciences*, 6(4), 219-223.

Oluwatoyese, O. P., & Applanaidu, S. D. (2014). Effect of agricultural sector determinants on economic growth. *Australian Journal of Basic and Applied Sciences*, *8*(8), 68-72.

Omgba, L. D. (2011). Oil wealth and non-oil sector performance in a developing country: Evidence from Cameroon. *Oxford Development Studies*,*39*(4), 487-503.

Omisakin, O., Oyinlola, M. A., & Adeniyi, O. (2010). Responsiveness of trade flows to changes in exchange rate and relative prices: Evidence from Nigeria. *International Journal of Economic Sciences and Applied Research*, (2), 123-141.

Omoke, P. C. (2010). Inflation and economic growth in Nigeria. *Journal of Sustainable Development*, *3*(2), P159

Omotor, D. G. (2008). The role of exports in the economic growth of Nigeria : The Bounds Test Analysis. *International Journal of Economic Perspectives*, *2*(4), 222–235.

Onafowora, O. A., & Owoye, O. (2008). Exchange rate volatility and export growth in Nigeria. *Applied Economics*, *40*(12), 1547-1556.

Osei, C., & Gbadamosi, A. (2011). Re-branding Africa. *Marketing Intelligence & Planning*, *29*(3), 284-304.

Osuntogun, C., Edordu, C., & Oramah, B. (1997). *Potentials for diversifying Nigeria's non-oil exports to non-traditional markets*. Retrieved from http://www.aercafrica.org/documents/RP68.pdf

Owusu, E. L., & Odhiambo, N. M. (2014). Financial liberalisation and economic growth in Nigeria: an ARDL-bounds testing approach. *Journal of Economic Policy Reform*, *17*(2), 164-177.

Oxley, L. (1993). Cointegration, causality and export-led growth in Portugal, 1865–1985. *Economics Letters*, *43*(2), 163-166.

Oyatoye, E. O., Arogundade, K. K., Adebisi, S. O., & Oluwakayode, E. (2011). Foreign direct investment, export and economic growth in Nigeria. *Journal of Humanities and Social Sciences*, *2*(1).

Ozturk, I., & Acaravci, A. (2010). CO 2 emissions, energy consumption and economic growth in Turkey. *Renewable and Sustainable Energy Reviews*, *14*(9), 3220-3225.

Page, J. (2012). Can Africa industrialise? *Journal of African Economies*, *21*(suppl 2), ii86-ii124.

Palley, T. I. (2011). *The rise and fall of export-led growth* (No. 675). Working paper, Levy Economics Institute.

Pesaran, M. H., & Pesaran, B. (1997). *Working with Microfit 4.0: interactive econometric analysis; [Windows version]*. Oxford University Press.

Pesaran, B. and Pesaran, M., H. (2009) Time series econometrics using microfit 5.0, Oxford University Press, Oxford.

Pesaran, M. H., & Shin, Y. (1998). An autoregressive distributed-lag modelling approach to cointegration analysis. *Econometric Society Monographs*, *31*, 371-413.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, *16*(3), 289-326.

Porto, G. G. (2008). Agro-manufactured export prices, wages and unemployment. *American Journal of Agricultural Economics*, *90*(3), 748-764.

Potts, D. (2012). Challenging the myths of urban dynamics in sub-Saharan Africa: the evidence from Nigeria. *World Development*, *40*(7), 1382-1393.

Rafiq, M. S. (2011). Sources of economic fluctuations in oil- exporting economies: implications for choice of exchange rate regimes. *International Journal of Finance & Economics*, *16*(1), 70-91.

Ram, R. (1986). Government size and economic growth: A new framework and some evidence from cross-section and time-series data. *The American Economic Review*, *76*(1), 191-203.

Rangasamy, L. (2009). Exports and economic growth: The case of South Africa. *Journal of International Development*, *21*(5), 603-617.

Riezman, R.G., Whiteman, C.H., & Summers, P.M. (1996), "The engine of growth or its handmaiden? A time series assessment of export-led growth," Empirical Economics, vol. 21, No. 1, 77-110.

Risso, W. A., & Carrera, E. J. S. (2009). Inflation and Mexican economic growth: long-run relation and threshold effects. *Journal of Financial Economic Policy*, *1*(3), 246-263.

Riva, M., & Curtis, S. E. (2012). Long-term local area employment rates as predictors of individual mortality and morbidity: a prospective study in England, spanning more than two decades. *Journal of epidemiology and community health*, *66*(10), 919-926.

Robertson, D. H. (1938). The future of international trade. *The Economic Journal*, 1-14

Rodrik, D. (2008). The real exchange rate and economic growth. *Brookings papers on economic activity*, *2008*(2), 365-412.

Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of political economy*, *94*(5), 1002-1037.

Roshan, S. A. (2007). Export linkage to economic growth: evidence from Iran. *International Journal of Development Issues*, *6*(1), 38-49.

Ross, M. L. (2003). Nigeria's oil sector and the poor. *Position Paper for DFID-Nigeria, UCLA, Los Angeles*.

Salisu, A. A., & Ogwumike, F. O. (2010). Aid, macroeconomic policy environment and growth: Evidence from Sub-Saharan Africa. *Journal of Economic Theory*, *4*(2), 59-64.

Salvatore, D., & Hatcher, T. (1991). Inward oriented and outward oriented trade strategies. *The Journal of Development Studies*, *27*(3), 7-25.

Sannassee, R. V., Seetanah, B., & Jugessur, J. (2014). Export-led growth hypothesis: A meta-analysis. *The Journal of Developing Areas*, *48*(1), 361-385.

Sanusi, L. S. (2010). Growth prospects for the Nigerian economy. *Paper delivered in a Public lecture at the Igbinedion University Eighth Convocation Ceremony*.

Saz, G. (2011). The efficacy of SARIMA models for forecasting inflation rates in developing countries: the case for Turkey. *International Research Journal of Finance and Economics*, *62*, 111-142.

Schuh, G. E. (1974). The exchange rate and US agriculture. *American Journal of Agricultural Economics*, *56*(1), 1-13.

Seetanah, B., & Rojid, S. (2011). Analysing the sources of economic growth in Africa using growth an accounting and a panel VAR approach. *The Journal of Developing Areas*, *44*(2), 367-390.

Shahbaz, M., Arouri, M., & Teulon, F. (2014). Short-and long-run relationships between natural gas consumption and economic growth: Evidence from Pakistan. *Economic Modelling*, *41*, 219-226.

Shan, J., & Sun, F. (1998). On the export-led growth hypothesis: the econometric evidence from China. *Applied Economics*, *30*(8), 1055-1065.

Sharma, S.C., & D. Dhakal (1994), "Causal analyses between exports and economic growth in developing countries," Applied Economics, 26, 1145-1157.

Sheshinski, E. (1967). Optimal accumulation with learning by doing. *Essays on the theory of optimal economic growth*, 31-52.

Smith, A. (1937). *The wealth of nations [1776]* (p. 421). na.

Smith, A. (1776). An inquiry into the wealth of nations. *Strahan and Cadell, London*.

Solow, R. M. (1956). A contribution to the theory of economic growth. *The quarterly journal of economics*, *70*(1), 65-94.

Solow, R. M. (1999). Neoclassical growth theory. *Handbook of macroeconomics*, *1*, 637-667.

Soofi, A. S. (2009). China's exchange rate policy and the United States' trade deficits. *Journal of Economic Studies*, *36*(1), 36-65.

Srinivasan, T.N. and J. Bhagwati (2001) “Outward orientation and development: Are revisionist right?” in D. Lai and H. Snape (eds),

Swan, T. W. (1956). Economic growth and capital accumulation. *Economic record*, *32*(2), 334-361.

Tang, T. C. (2008). The effects of exchange rate variability on Malaysia's disaggregated electrical exports. *Journal of Economic Studies*, *35*(2), 154-169.

Tang, C. F., & Tan, E. C. (2015). Does tourism effectively stimulate Malaysia's economic growth? *Tourism Management*, *46*, 158-163.

Tasos, S. (2014). Dynamic relationship between growth, foreign direct investment and exports in the US: An approach with structural breaks. *IUP Journal of Applied Economics*, *13*(2).

Tiffin, R., & Irz, X. (2006). Is agriculture the engine of growth? *Agricultural Economics*, *35*(1), 79-89.

Trade, Development and Political Economy (Essays in Honor of Anne O. Krueger), New York: Palgrave Publishers.

Tsakok, I., & Gardner, B. (2007). Agriculture in economic development: primary engine of growth or chicken and egg? *American Journal of Agricultural Economics*, *89*(5), 1145-1151.

Udosen, C., Etok, A. I. S., & George, I. N. (2009). Fifty years of oil exploration in Nigeria: The paradox of plenty. *Global Journal of Social Sciences*, *8*(2), 37-47.

Udude C. C. & Okulegu B. E. (2012). Exports and Nigerians economic growth: A co-integration analysis. *Journal Asian Economic and Financial Review*. Vol 2, 429-444

Ugochukwu, U. S., & Chinyere, U. P. (2013). The impact of export trading on economic growth in Nigeria. International Journal of Economics, Business and Finance Vol. 1, No. 10, November 2013, PP: 327-341, ISSN: 2327-8188

Umar, G., & Kilishi, A. A. (2010). Oil price shocks and the Nigeria economy: a variance autoregressive (VAR) model. *International Journal of Business and Management*, *5*(8), P39.

Ushie, V., Adeniyi, O., & Akongwale, S. (2013). Oil revenue, institutions and macroeconomic indicators in Nigeria. *OPEC Energy Review*, *37*(1), 30-52.

Usman, O. A., & Salami, A. O. (2008). The contribution of Nigerian export-import (NEXIM) bank towards export (non-oil) growth in Nigeria (1990-2005). *International Business Management*, *2*(3), 85-90.

Uyi Kizito, E. (2014). The nexus between tax structure and economic growth in Nigeria: A prognosis. *Journal of Economic and Social Studies*, *4*(1), 107-131.

Uzomba, P. C., Imoisi, A. I., & Somiari, S. (2012). The impact of macroeconomic variables on non-oil exports performance in Nigeria, 1986-2010. *Lwati: A Journal of Contemporary Research*, *9*(1).

Vohra, R. (2001). Export and economic growth: Further time series evidence from less-developed countries. *International Advances in Economic Research*, *7*(3), 345-350.

Waithe, K., Lorde, T., & Francis, B. (2011). Export-led growth: A case study of Mexico. *International Journal of Business, Humanities and Technology*, *1*(1), 33-44.

Wamboye, E., & Adekola, A. (2013). Can small and medium multinational enterprises offer an alternative to multinational corporations in African countries? Evidence from Nigeria. *International Journal of Economic Policy in Emerging Economies*, *6*(3), 279-295.

Wamboye, E., Adekola, A., & Sergi, B. S. (2014). Foreign aid, legal origin, economic growth and Africa's least developed countries. *Progress in Development Studies*, *14*(4), 335-357.

Wennekers, S., & Thurik, R. (1999). Linking entrepreneurship and economic growth. *Small business economics*, *13*(1), 27-56.

World Bank Group (Ed.). (2014). *World Development Indicators 2014*. World Bank Publications. http://data.worldbank.org/

Yaghmaian, B. (1994). An empirical investigation of exports, development, and growth in developing countries: Challenging the neoclassical theory of export-led growth. *World Development*, *22*(12), 1977-1995.

Yang, Y., & Mallick, S. (2014). Explaining cross-country differences in exporting performance: The role of country-level macroeconomic environment. *International Business Review*, *23*(1), 246-259.

Yao, S. (2000). How important is agriculture in China's economic growth? *Oxford development studies*, *28*(1), 33-49.

Yavari, K., & Mohseni, R. (2012). Trade liberalization and economic growth: A case study of Iran. *Journal of Economic Policy Reform*, *15*(1), 13-23.

Young, A. (2012). *The African growth miracle* (No. w18490). National Bureau of Economic Research.

Yusuf, M., Malarvizhi, C. A., Mazumder, M. N. H., & Su, Z. (2014). Corruption, poverty, and economic growth relationship in the Nigerian economy. *The Journal of Developing Areas*, *48*(3), 95-107.

Zalgiryte, L., Guzavicius, A., & Tamulis, V. (2014). Stock market and economic growth in the US & France: Evidence from stock market sector indices. *Engineering Economics*, *25*(1), 47-53.

Zhang, W. B. (2008). *International Trade Theory*. Springer.

Zubair, S. S., & Khan, M. A. (2014). Good governance: Pakistan's economic growth and worldwide governance indicators. *Pakistan Journal of Commerce and Social Sciences*, *8*(1), 258-271.

APPENDIX

Dependent Variable: AGRICUTURAL OUTPUT
Method: ARDL
Date: 06/02/16 Time: 00:20
Sample (adjusted): 1983 2014
Included observations: 32 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Schwarz criterion (SIC)
Dynamic regressors (2 lags, automatic): EXCHANGE_RATE INFLATION_RATE INTEREST_RATE UNEMPLOYMENT_RATE CRUDE_OIL_RENT GOVERNMENT_SPENDING OPENNESS AGRICULTURAL_LAND
Fixed regressors: SAP C
Number of models evalulated: 13122
Selected Model: ARDL(2, 1, 2, 0, 2, 2, 2, 2, 2)
White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
AGRICUTURAL OUTPUT(-1)	1.059991	0.124328	8.525775	0.0001
AGRICUTURAL OUTPUT(-2)	-0.464949	0.189070	-2.459139	0.0435
EXCHANGE RATE	-0.142729	0.079768	-1.789287	0.1167
EXCHANGE RATE(-1)	0.274429	0.051515	5.327221	0.0011
INFLATION RATE	-0.233981	0.058230	-4.018203	0.0051
INFLATION RATE(-1)	0.183816	0.045285	4.059129	0.0048
INFLATION RATE(-2)	-0.110803	0.053182	-2.083465	0.0757
INTEREST RATE	0.228163	0.064992	3.510655	0.0099
UNEMPLOYMENT RATE	3.440858	0.583987	5.892011	0.0006
UNEMPLOYMENT RATE(-1)	-1.564127	0.497108	-3.146450	0.0162
UNEMPLOYMENT RATE(-2)	-3.237464	0.604220	-5.358086	0.0011
CRUDE OIL RENT	-0.450195	0.082108	-5.482997	0.0009
CRUDE OIL RENT(-1)	0.497683	0.073838	6.740176	0.0003
CRUDE OIL RENT(-2)	1.062755	0.181794	5.845946	0.0006
GOVERNMENT SPENDING	-2.395688	1.792645	-1.336399	0.2232
GOVERNMENT SPENDING(-1)	-14.96304	3.703593	-4.040140	0.0049
GOVERNMENT SPENDING(-2)	-27.53005	4.453262	-6.181996	0.0005
OPENNESS	-0.374143	0.063383	-5.902913	0.0006
OPENNESS(-1)	-0.097442	0.065200	-1.494521	0.1787
OPENNESS(-2)	0.229179	0.101663	2.254303	0.0588
AGRICULTURAL_LAND	-4.474861	0.732106	-6.112314	0.0005
AGRICULTURAL_LAND(-1)	-0.303433	0.324833	-0.934121	0.3813
AGRICULTURAL_LAND(-2)	5.988304	0.972839	6.155492	0.0005
SAP	-3.757025	3.623417	-1.036873	0.3343
C	-37.11576	23.86234	-1.555412	0.1638

R-squared	0.976475	Mean dependent var	33.19688
Adjusted R-squared	0.895816	S.D. dependent var	6.688193
S.E. of regression	2.158782	Akaike info criterion	4.419639
Sum squared resid	32.62237	Schwarz criterion	5.564745
Log likelihood	-45.71423	Hannan-Quinn criter.	4.799210
F-statistic	12.10630	Durbin-Watson stat	2.942140
Prob(F-statistic)	0.001177		

*Note: p-values and any subsequent tests do not account for model selection.

ARDL Bounds Test
Date: 06/02/16 Time: 00:22
Samrpte: 1983 2014
Included observations: 32
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	4.484450	8

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	1.85	2.85
5%	2.11	3.15
2.5%	2.33	3.42
1%	2.62	3.77

Test Equation:
Dependent Variable: D(AGRICUTURAL_OUTPUT)
Method: Least Squares
Date: 06/02/16 Time: 00:22
Sample: 1983 2014
Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(AGRICUTURAL_OUTPUT(-1))	0.358838	0.182030	1.971310	0.0893
D(EXCHANGE_RATE)	-0.128039	0.092133	-1.389710	0.2072
D(INFLATION_RATE)	-0.278240	0.065943	-4.219424	0.0039
D(INFLATION_RATE(-1))	0.112613	0.066099	1.703699	0.1322
D(UNEMPLOYMENT_RATE)	1.472202	0.923813	1.593615	0.1551
D(UNEMPLOYMENT_RATE(-1))	2.346132	0.741034	3.166023	0.0158
D(CRUDE_OIL_RENT)	-0.290159	0.141049	-2.057146	0.0787
D(CRUDE_OIL_RENT(-1))	-0.668076	0.187404	-3.564898	0.0092
D(GOVERNMENT_SPENDING)	-2.772090	2.190435	-1.265543	0.2462
D(GOVERNMENT_SPENDING(-1))	23.84478	4.971587	4.796212	0.0020
D(OPENNESS)	-0.305722	0.097677	-3.129929	0.0166
D(OPENNESS(-1))	-0.165973	0.095597	-1.736184	0.1261
D(AGRICULTURAL_LAND)	-2.512200	0.997878	-2.517541	0.0400
D(AGRICULTURAL_LAND(-1))	-4.733286	1.113417	-4.251134	0.0038
SAP	-7.810888	5.445744	-1.434310	0.1946
C	-41.36488	35.09981	-1.178493	0.2771
EXCHANGE_RATE(-1)	0.023668	0.083196	0.284491	0.7843
INFLATION_RATE(-1)	-0.312533	0.088882	-3.516274	0.0098
INTEREST_RATE(-1)	-0.114499	0.055302	-2.070436	0.0772
UNEMPLOYMENT_RATE(-1)	-0.700454	0.640018	-1.094427	0.3100
CRUDE_OIL_RENT(-1)	0.761007	0.253298	3.004398	0.0198
GOVERNMENT_SPENDING(-1)	-30.05536	8.349468	-3.599674	0.0087
OPENNESS(-1)	-0.074001	0.109896	-0.673375	0.5223
AGRICULTURAL_LAND(-1)	1.176437	0.540242	2.177612	0.0659
AGRICUTURAL_OUTPUT(-1)	-0.379595	0.179245	-2.117744	0.0720

R-squared	0.943291	Mean dependent var	-0.381250
Adjusted R-squared	0.748858	S.D. dependent var	5.652601
S.E. of regression	2.832745	Akaike info criterion	4.963044
Sum squared resid	56.17113	Schwarz criterion	6.108150
Log likelihood	-54.40871	Hannan-Quinn criter.	5.342614
F-statistic	4.851516	Durbin-Watson stat	2.078709
Prob(F-statistic)	0.019189		

ARDL Cointegrating And Long Run Form
Dependent Variable: AGRICUTURAL_OUTPUT
Selected Model: ARDL(2, 1, 2, 0, 2, 2, 2, 2, 2)
Date: 06/02/16 Time: 00:23
Sample: 1981 2014
Included observations: 32

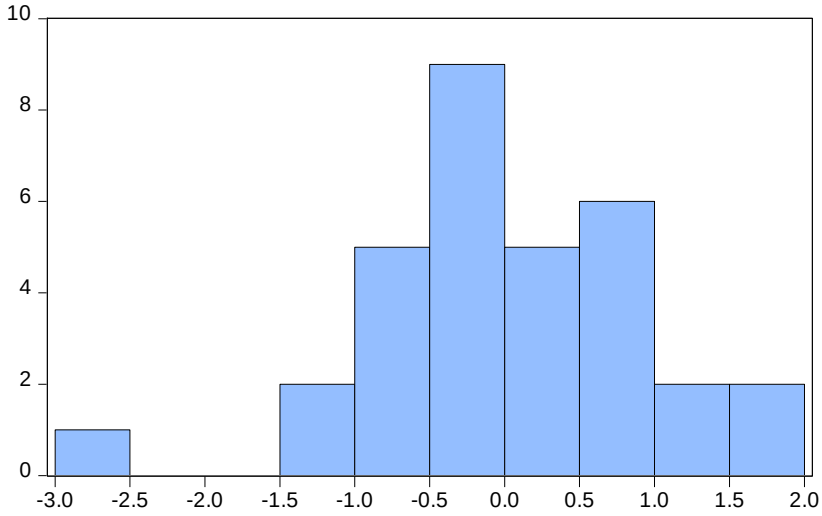
Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(AGRICUTURAL_OUT...	0.476634	0.071006	6.712611	0.0003
D(EXCHANGE RATE)	-0.140284	0.029413	-4.769535	0.0020
D(INFLATION_RATE)	-0.232594	0.025700	-9.050302	0.0000
D(INFLATION RATE(-1))	0.111530	0.020710	5.385305	0.0010
D(INTEREST_RATE)	0.233248	0.022528	10.353822	0.0000
D(UNEMPLOYMENT R...	3.467666	0.379372	9.140542	0.0000
D(UNEMPLOYMENT_R...	3.207012	0.283086	11.328755	0.0000
D(CRUDE OIL RENT)	-0.452583	0.055640	-8.134165	0.0001
D(CRUDE_OIL_RENT(-1))	-1.057761	0.085533	-12.366627	0.0000
D(GOVERNMENT SPE...	-2.284892	0.827608	-2.760840	0.0281
D(GOVERNMENT_SPE...	27.314639	1.681586	16.243377	0.0000
D(OPENNESS)	-0.373896	0.034158	-10.946086	0.0000
D(OPENNESS(-1))	-0.232570	0.037755	-6.159904	0.0005
D(AGRICULTURAL LA...	-4.526628	0.484283	-9.347069	0.0000
D(AGRICULTURAL_LA...	-5.985414	0.410813	-14.569676	0.0000
D(SAP)	-3.191992	2.063189	-1.547115	0.1658
CointEq(-1)	-0.405151	0.030172	-13.428096	0.0000

Cointeq = AGRICUTURAL_OUTPUT - (0.3252*EXCHANGE_RATE -0.3975
*INFLATION RATE + 0.5634*INTEREST RATE -3.3602
*UNEMPLOYMENT_RATE + 2.7416*CRUDE_OIL_RENT -110.8481
*GOVERNMENT SPENDING -0.5986*OPENNESS + 2.9880
*AGRICULTURAL_LAND -9.2776*SAP -91.6534)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXCHANGE RATE	0.325221	0.180014	1.806642	0.1138
INFLATION_RATE	-0.397492	0.211553	-1.878924	0.1023
INTEREST RATE	0.563424	0.198145	2.843491	0.0249
UNEMPLOYMENT_RATE	-3.360185	0.962797	-3.490024	0.0101
CRUDE OIL RENT	2.741625	1.028892	2.664638	0.0322
GOVERNMENT_SPEND...	-110.848053	39.118453	-2.833651	0.0253
OPENNESS	-0.598597	0.263627	-2.270619	0.0574
AGRICULTURAL_LAND	2.987991	1.543129	1.936319	0.0940
SAP	-9.277573	10.808253	-0.858379	0.4191
C	-91.653429	82.093324	-1.116454	0.3011



Series: Residuals	
Sample 1983 2014	
Observations 32	
Mean	3.53e-14
Median	-0.004371
Maximum	1.769248
Minimum	-2.984044
Std. Dev.	0.962819
Skewness	-0.579837
Kurtosis	4.326324
Jarque-Bera	4.138637
Probability	0.126272

Heteroskedasticity Test: Harvey

F-statistic	2.397726	Prob. F(27,4)	0.2052
Obs*R-squared	30.13787	Prob. Chi-Square(27)	0.3080
Scaled explained SS	117.5540	Prob. Chi-Square(27)	0.0000

Test Equation:
Dependent Variable: LRESID2
Method: Least Squares
Date: 04/10/16 Time: 10:17
Sample: 1983 2014
Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-86.12958	39.91708	-2.157712	0.0971
AGRICUTURAL OUTPUT(-1)	0.535188	0.225035	2.378247	0.0761
AGRICUTURAL OUTPUT(-2)	-0.161388	0.263641	-0.612151	0.5735
EXCHANGE RATE	-0.221207	0.109702	-2.016426	0.1140
EXCHANGE_RATE(-1)	0.000562	0.125789	0.004466	0.9967
EXCHANGE_RATE(-2)	0.264418	0.121994	2.167464	0.0961
INFLATION_RATE	0.010980	0.076135	0.144218	0.8923
INFLATION_RATE(-1)	0.171694	0.119436	1.437546	0.2239
INFLATION RATE(-2)	0.080410	0.087321	0.920848	0.4092
INTEREST RATE	0.077819	0.139336	0.558500	0.6063
INTEREST RATE(-1)	0.209212	0.127220	1.644490	0.1754
INTEREST RATE(-2)	0.106934	0.085700	1.247780	0.2802
GOVERNMENT SPENDING	-0.173061	2.367984	-0.073084	0.9452
GOVERNMENT SPENDING(-...	-22.43518	8.758331	-2.561582	0.0625
GOVERNMENT SPENDING(-...	-12.42299	6.998334	-1.775135	0.1505
UNEMPLOYMENT_RATE	4.301433	1.702646	2.526322	0.0649
UNEMPLOYMENT_RATE(-1)	-2.828769	1.270122	-2.227163	0.0899
UNEMPLOYMENT_RATE(-2)	-1.678884	1.591398	-1.054974	0.3509
CRUDE_OIL_RENT	-0.249622	0.178963	-1.394825	0.2355
CRUDE_OIL_RENT(-1)	0.392243	0.191529	2.047951	0.1099
CRUDE OIL RENT(-2)	0.314856	0.314699	1.000499	0.3737
OPENNESS	-0.033612	0.116132	-0.289424	0.7866
OPENNESS(-1)	-0.108321	0.123705	-0.875644	0.4307
OPENNESS(-2)	0.079498	0.109962	0.722958	0.5097
AGRICULTURAL LAND	-4.336073	1.670414	-2.595808	0.0603
AGRICULTURAL LAND(-1)	2.226891	0.835619	2.664959	0.0561
AGRICULTURAL_LAND(-2)	3.578657	1.538297	2.326376	0.0806
SAP	-14.14567	8.145408	-1.736643	0.1575

R-squared	0.941809	Mean dependent var	-2.599003
Adjusted R-squared	0.549016	S.D. dependent var	4.457501
S.E. of regression	2.993450	Akaike info criterion	4.701289
Sum squared resid	35.84297	Schwarz criterion	5.983807
Log likelihood	-47.22062	Hannan-Quinn criter.	5.126407
F-statistic	2.397726	Durbin-Watson stat	3.429896
Prob(F-statistic)	0.205167		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.340910	Prob. F(27,4)	0.9610
Obs*R-squared	22.30638	Prob. Chi-Square(27)	0.7217
Scaled explained SS	0.579674	Prob. Chi-Square(27)	1.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 04/10/16 Time: 10:15
Sample: 1983 2014
Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.591267	34.00033	0.252682	0.8130
AGRICUTURAL OUTPUT(-1)	0.115434	0.191679	0.602228	0.5795
AGRICUTURAL_OUTPUT(-2)	-0.134755	0.224563	-0.600079	0.5808
EXCHANGE RATE	0.035013	0.093442	0.374701	0.7269
EXCHANGE_RATE(-1)	0.032313	0.107144	0.301586	0.7780
EXCHANGE RATE(-2)	0.061747	0.103911	0.594230	0.5843
INFLATION_RATE	0.012343	0.064850	0.190327	0.8583
INFLATION RATE(-1)	0.017493	0.101732	0.171954	0.8718
INFLATION_RATE(-2)	0.024847	0.074378	0.334063	0.7551
INTEREST RATE	0.069415	0.118683	0.584879	0.5900
INTEREST_RATE(-1)	0.053710	0.108362	0.495652	0.6461
INTEREST_RATE(-2)	0.006679	0.072997	0.091498	0.9315
GOVERNMENT SPENDING	0.512698	2.016987	0.254190	0.8119
GOVERNMENT_SPENDING(-...	-5.241687	7.460118	-0.702628	0.5210
GOVERNMENT SPENDING(-...	-2.068211	5.960998	-0.346957	0.7461
UNEMPLOYMENT_RATE	0.473202	1.450270	0.326286	0.7606
UNEMPLOYMENT RATE(-1)	-0.563732	1.081857	-0.521078	0.6298
UNEMPLOYMENT_RATE(-2)	-0.733761	1.355511	-0.541317	0.6170
CRUDE OIL RENT	0.022468	0.152436	0.147395	0.8900
CRUDE_OIL_RENT(-1)	-0.031469	0.163140	-0.192893	0.8564
CRUDE OIL RENT(-2)	0.161992	0.268052	0.604329	0.5782
OPENNESS	-0.027343	0.098918	-0.276415	0.7959
OPENNESS(-1)	-0.051695	0.105368	-0.490613	0.6494
OPENNESS(-2)	-0.083155	0.093663	-0.887811	0.4248
AGRICULTURAL LAND	-0.676101	1.422815	-0.475185	0.6594
AGRICULTURAL_LAND(-1)	0.007876	0.711759	0.011066	0.9917
AGRICULTURAL LAND(-2)	0.683274	1.310281	0.521471	0.6296
SAP	1.292728	6.938047	0.186324	0.8613

R-squared	0.697074	Mean dependent var	0.898051
Adjusted R-squared	-1.347673	S.D. dependent var	1.664093
S.E. of regression	2.549743	Akaike info criterion	4.380420
Sum squared resid	26.00475	Schwarz criterion	5.662939
Log likelihood	-42.08672	Hannan-Quinn criter.	4.805539
F-statistic	0.340910	Durbin-Watson stat	3.098291
Prob(F-statistic)	0.961011		

Dependent Variable: AGRICULTURAL_EXPORT
Method: ARDL
Date: 06/20/16 Time: 09:10
Sample (adjusted): 1983 2014
Included observations: 32 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Schwarz criterion (SIC)
Dynamic regressors (2 lags, automatic): EXCHANGE_RATE
INTEREST_RATE INFLATION_RATE GOVERNMENT_SPENDING
OPENNESS CRUDE_OIL_RENT
Fixed regressors: SAP C @TREND
Number of models evalulated: 1458
Selected Model: ARDL(2, 2, 2, 0, 2, 2, 2)
White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
AGRICULTURAL_EXPORT(-1)	-0.432393	0.138125	-3.130441	0.0096
AGRICULTURAL_EXPORT(-2)	-0.527614	0.176564	-2.988240	0.0123
EXCHANGE_RATE	-0.712868	4.441552	-0.160500	0.8754
EXCHANGE_RATE(-1)	9.736385	4.674846	2.082718	0.0614
EXCHANGE_RATE(-2)	-14.06580	4.321325	-3.254974	0.0077
INTEREST_RATE	-1.422470	4.015021	-0.354287	0.7298
INTEREST_RATE(-1)	4.344762	2.869047	1.514357	0.1581
INTEREST_RATE(-2)	-7.057461	2.496794	-2.826609	0.0165
INFLATION_RATE	3.033056	2.961119	1.024294	0.3277
GOVERNMENT_SPENDING	-324.3186	145.0855	-2.235362	0.0471
GOVERNMENT_SPENDING(-1)	185.9328	156.7042	1.186521	0.2604
GOVERNMENT_SPENDING(-2)	-653.3879	190.6239	-3.427628	0.0056
OPENNESS	-2.243262	4.665131	-0.480857	0.6400
OPENNESS(-1)	9.050982	5.067868	1.785955	0.1017
OPENNESS(-2)	-11.93150	4.715718	-2.530157	0.0280
CRUDE_OIL_RENT	0.795611	4.944148	0.160920	0.8751
CRUDE_OIL_RENT(-1)	-8.421722	6.328920	-1.330673	0.2102
CRUDE_OIL_RENT(-2)	14.27116	7.307721	1.952888	0.0767
SAP	-552.8755	201.0700	-2.749667	0.0189
C	-54.54823	221.7797	-0.245957	0.8102
@TREND	98.33990	31.65731	3.106388	0.0100

R-squared	0.874561	Mean dependent var	49.68406
Adjusted R-squared	0.646491	S.D. dependent var	268.8285
S.E. of regression	159.8363	Akaike info criterion	13.23084
Sum squared resid	281024.2	Schwarz criterion	14.19273
Log likelihood	-190.6934	Hannan-Quinn criter.	13.54968
F-statistic	3.834615	Durbin-Watson stat	3.194656
Prob(F-statistic)	0.013010		

*Note: p-values and any subsequent tests do not account for model selection.

ARDL Bounds Test
Date: 06/20/16 Time: 09:12
Sample: 1983 2014
Included observations: 32
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	11.19667	6

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.33	3.25
5%	2.63	3.62
2.5%	2.9	3.94
1%	3.27	4.39

Test Equation:
Dependent Variable: D(AGRICULTURAL_EXPORT)
Method: Least Squares
Date: 06/20/16 Time: 09:12
Sample: 1983 2014
Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(AGRICULTURAL_EXPORT(-1))	0.435659	0.169073	2.576756	0.0257
D(EXCHANGE_RATE)	-0.677725	4.122404	-0.164400	0.8724
D(EXCHANGE_RATE(-1))	12.83344	3.877209	3.309968	0.0070
D(INTEREST_RATE)	-5.295840	3.443284	-1.538020	0.1523
D(INTEREST_RATE(-1))	8.603558	2.869608	2.998165	0.0121
D(GOVERNMENT_SPENDING)	-330.3148	107.1803	-3.081860	0.0104
D(GOVERNMENT_SPENDING(-1))	669.3205	139.2709	4.805888	0.0005
D(OPENNESS)	-3.764266	3.677014	-1.023729	0.3280
D(OPENNESS(-1))	9.966595	3.970831	2.509952	0.0290
D(CRUDE_OIL_RENT)	2.798686	6.636186	0.421731	0.6813
D(CRUDE_OIL_RENT(-1))	-12.13036	7.381989	-1.643237	0.1286
SAP	-511.7283	185.4613	-2.759219	0.0186
C	-158.4917	288.7486	-0.548892	0.5940
@TREND	95.62056	23.46636	4.074794	0.0018
EXCHANGE_RATE(-1)	-5.125219	2.552202	-2.008156	0.0698
INTEREST_RATE(-1)	-12.78308	7.458134	-1.713978	0.1145
INFLATION_RATE(-1)	-2.142606	3.236613	-0.661990	0.5216
GOVERNMENT_SPENDING(-1)	-759.4466	184.1516	-4.124029	0.0017
OPENNESS(-1)	-2.860039	4.621753	-0.618821	0.5486
CRUDE_OIL_RENT(-1)	8.560494	8.795382	0.973294	0.3513
AGRICULTURAL_EXPORT(-1)	-1.800105	0.281784	-6.388254	0.0001

R-squared	0.936361	Mean dependent var	0.183748
Adjusted R-squared	0.820654	S.D. dependent var	386.5719
S.E. of regression	163.7102	Akaike info criterion	13.27873
Sum squared resid	294811.4	Schwarz criterion	14.24062
Log likelihood	-191.4597	Hannan-Quinn criter.	13.59757
F-statistic	8.092525	Durbin-Watson stat	3.285485
Prob(F-statistic)	0.000514		

ARDL Cointegrating And Long Run Form
Dependent Variable: AGRICULTURAL_EXPORT
Selected Model: ARDL(2, 2, 2, 0, 2, 2, 2)
Date: 06/20/16 Time: 09:13
Sample: 1981 2014
Included observations: 32

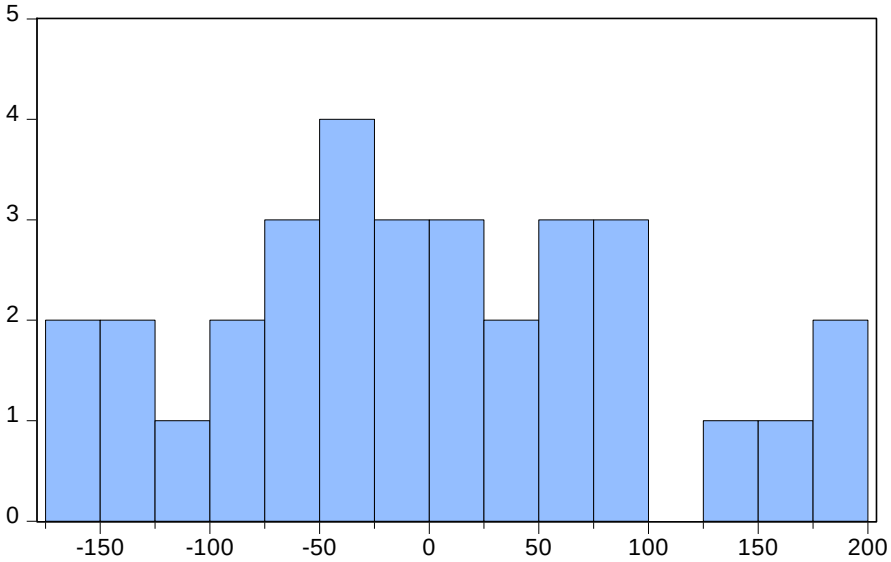
Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(AGRICULTURAL_EX...	0.528568	0.100861	5.240570	0.0003
D(EXCHANGE_RATE)	-0.717793	2.274957	-0.315519	0.7583
D(EXCHANGE_RATE(-1))	13.938657	2.403117	5.800242	0.0001
D(INTEREST_RATE)	-1.300915	1.532250	-0.849023	0.4140
D(INTEREST_RATE(-1))	7.213034	1.284037	5.617465	0.0002
D(INFLATION_RATE)	3.786796	1.498789	2.526570	0.0281
D(GOVERNMENT_SPE...	-331.190347	61.988675	-5.342756	0.0002
D(GOVERNMENT_SPE...	645.998455	81.597561	7.916884	0.0000
D(OPENNESS)	-2.119786	2.292223	-0.924773	0.3749
D(OPENNESS(-1))	12.172266	2.271864	5.357833	0.0002
D(CRUDE_OIL_RENT)	2.042229	3.593622	0.568293	0.5813
D(CRUDE_OIL_RENT(-1))	-14.245885	3.513304	-4.054840	0.0019
D(SAP)	-431.800773	142.737924	-3.025130	0.0115
C	41.434916	28.200036	1.469321	0.1698
CointEq(-1)	-1.957960	0.157441	-12.436177	0.0000

Cointeq = AGRICULTURAL_EXPORT - (-2.5726*EXCHANGE_RATE
-2.1098*INTEREST_RATE + 1.5475*INFLATION_RATE -403.9647
*GOVERNMENT_SPENDING -2.6142*OPENNESS + 3.3903
*CRUDE_OIL_RENT -282.0783*SAP + 50.1732*@TREND)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXCHANGE_RATE	-2.572584	1.323934	-1.943137	0.0780
INTEREST_RATE	-2.109772	3.745453	-0.563289	0.5845
INFLATION_RATE	1.547472	1.463360	1.057479	0.3130
GOVERNMENT_SPEND...	-403.964658	115.521800	-3.496869	0.0050
OPENNESS	-2.614166	2.666945	-0.980210	0.3480
CRUDE_OIL_RENT	3.390319	3.862284	0.877802	0.3988
SAP	-282.078298	100.507165	-2.806549	0.0171
@TREND	50.173232	10.624490	4.722413	0.0006



Series: Residuals	
Sample 1983 2014	
Observations 32	
Mean	1.29e-13
Median	-5.886970
Maximum	187.9755
Minimum	-157.1728
Std. Dev.	95.21184
Skewness	0.237282
Kurtosis	2.288049
Jarque-Bera	0.976115
Probability	0.613818

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.361569	Prob. F(2,8)	0.7074
Obs*R-squared	2.652761	Prob. Chi-Square(2)	0.2654

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 04/27/16 Time: 11:50
Sample: 1983 2014
Included observations: 32
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AGRICULTURAL_EXPORT(-1)	0.060295	0.184174	0.327381	0.7518
EXCHANGE_RATE	-0.154417	2.637470	-0.058547	0.9547
INFLATION_RATE	0.814547	5.546425	0.146860	0.8869
INFLATION_RATE(-1)	-0.822871	4.274270	-0.192517	0.8521
INFLATION_RATE(-2)	0.394028	4.552914	0.086544	0.9332
INTEREST_RATE	-0.917956	4.968245	-0.184765	0.8580
INTEREST_RATE(-1)	-0.526524	4.729572	-0.111326	0.9141
INTEREST_RATE(-2)	-0.286163	3.290760	-0.086960	0.9328
GOVERNMENT_SPENDING	-3.145672	129.9801	-0.024201	0.9813
GOVERNMENT_SPENDING(-1)	42.33331	164.2802	0.257690	0.8032
GOVERNMENT_SPENDING(-2)	-10.70557	166.5580	-0.064275	0.9503
CRUDE_OIL_RENT	-0.390811	8.031134	-0.048662	0.9624
CRUDE_OIL_RENT(-1)	-0.693621	8.693161	-0.079789	0.9384
CRUDE_OIL_RENT(-2)	-1.250003	8.245159	-0.151604	0.8833
OPENNESS	-0.543714	5.696759	-0.095443	0.9263
OPENNESS(-1)	0.675555	5.553353	0.121648	0.9062
OPENNESS(-2)	-0.082310	6.408226	-0.012844	0.9901
AGRICULTURAL_LAND	15.91271	43.37819	0.366837	0.7233
AGRICULTURAL_LAND(-1)	-8.336402	47.89507	-0.174056	0.8661
AGRICULTURAL_LAND(-2)	-4.705886	44.41524	-0.105952	0.9182
SAP	-38.96974	309.8177	-0.125783	0.9030
C	-145.0137	1591.908	-0.091094	0.9297
RESID(-1)	-0.322972	0.445897	-0.724319	0.4895
RESID(-2)	-0.276477	0.503598	-0.549004	0.5980

R-squared	0.082899	Mean dependent var	-1.92E-12
Adjusted R-squared	-2.553767	S.D. dependent var	98.90782
S.E. of regression	186.4555	Akaike info criterion	13.40797
Sum squared resid	278125.1	Schwarz criterion	14.50727
Log likelihood	-190.5275	Hannan-Quinn criter.	13.77236
F-statistic	0.031441	Durbin-Watson stat	2.015097
Prob(F-statistic)	1.000000		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.900197	Prob. F(21,10)	0.1475
Obs*R-squared	25.58771	Prob. Chi-Square(21)	0.2226
Scaled explained SS	2.544156	Prob. Chi-Square(21)	1.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 04/27/16 Time: 11:51
Sample: 1983 2014
Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-115839.5	90929.16	-1.273953	0.2315
AGRICULTURAL_EXPORT(-1)	-9.592237	9.609807	-0.998172	0.3417
EXCHANGE_RATE	-52.06933	151.4251	-0.343862	0.7381
INFLATION_RATE	570.3431	268.7353	2.122323	0.0598
INFLATION_RATE(-1)	-277.9620	241.2859	-1.152003	0.2761
INFLATION_RATE(-2)	-137.9054	252.2611	-0.546677	0.5966
INTEREST_RATE	562.8276	274.7961	2.048164	0.0677
INTEREST_RATE(-1)	125.6601	249.2070	0.504240	0.6250
INTEREST_RATE(-2)	-319.8576	187.0984	-1.709568	0.1181
GOVERNMENT_SPENDING	-5710.797	7229.018	-0.789982	0.4479
GOVERNMENT_SPENDING(-1)	-8589.530	8967.100	-0.957894	0.3607
GOVERNMENT_SPENDING(-2)	10869.72	9140.816	1.189141	0.2619
CRUDE_OIL_RENT	676.9400	465.6079	1.453884	0.1766
CRUDE_OIL_RENT(-1)	-837.3264	478.4885	-1.749941	0.1107
CRUDE_OIL_RENT(-2)	284.3164	465.7321	0.610472	0.5552
OPENNESS	-281.1598	298.3556	-0.942365	0.3682
OPENNESS(-1)	412.5365	306.6952	1.345102	0.2083
OPENNESS(-2)	-316.5445	362.9653	-0.872107	0.4036
AGRICULTURAL_LAND	3278.605	2248.774	1.457952	0.1755
AGRICULTURAL_LAND(-1)	-195.4854	2699.994	-0.072402	0.9437
AGRICULTURAL_LAND(-2)	-1134.867	2407.824	-0.471325	0.6475
SAP	-9349.145	17749.08	-0.526740	0.6099

R-squared	0.799616	Mean dependent var	9477.046
Adjusted R-squared	0.378809	S.D. dependent var	13740.05
S.E. of regression	10829.31	Akaike info criterion	21.62975
Sum squared resid	1.17E+09	Schwarz criterion	22.63744
Log likelihood	-324.0760	Hannan-Quinn criter.	21.96377
F-statistic	1.900197	Durbin-Watson stat	2.559486
Prob(F-statistic)	0.147519		

Heteroskedasticity Test: Harvey

F-statistic	0.907261	Prob. F(21,10)	0.5956
Obs*R-squared	20.98545	Prob. Chi-Square(21)	0.4598
Scaled explained SS	46.92015	Prob. Chi-Square(21)	0.0010

Test Equation:
Dependent Variable: LRESID2
Method: Least Squares
Date: 04/27/16 Time: 11:52
Sample: 1983 2014
Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	18.37761	29.27124	0.627838	0.5442
AGRICULTURAL_EXPORT(-1)	-0.006449	0.003094	-2.084553	0.0637
EXCHANGE_RATE	-0.009881	0.048746	-0.202713	0.8434
INFLATION_RATE	0.069124	0.086509	0.799038	0.4428
INFLATION_RATE(-1)	-0.051400	0.077673	-0.661750	0.5231
INFLATION_RATE(-2)	-0.023236	0.081206	-0.286132	0.7806
INTEREST_RATE	0.069583	0.088460	0.786598	0.4498
INTEREST_RATE(-1)	0.000630	0.080223	0.007854	0.9939
INTEREST_RATE(-2)	-0.082861	0.060229	-1.375764	0.1989
GOVERNMENT_SPENDING	0.550548	2.327112	0.236580	0.8178
GOVERNMENT_SPENDING(-1)	-1.085374	2.886622	-0.376001	0.7148
GOVERNMENT_SPENDING(-2)	2.610930	2.942544	0.887304	0.3958
CRUDE_OIL_RENT	0.053314	0.149885	0.355699	0.7295
CRUDE_OIL_RENT(-1)	-0.114155	0.154031	-0.741112	0.4757
CRUDE_OIL_RENT(-2)	-0.031644	0.149925	-0.211062	0.8371
OPENNESS	-0.036735	0.096044	-0.382481	0.7101
OPENNESS(-1)	0.023015	0.098729	0.233111	0.8204
OPENNESS(-2)	0.087626	0.116843	0.749947	0.4706
AGRICULTURAL_LAND	0.109192	0.723909	0.150836	0.8831
AGRICULTURAL_LAND(-1)	-0.071424	0.869162	-0.082176	0.9361
AGRICULTURAL_LAND(-2)	-0.268773	0.775109	-0.346755	0.7360
SAP	3.938659	5.713651	0.689342	0.5063

R-squared	0.655795	Mean dependent var	7.385112
Adjusted R-squared	-0.067035	S.D. dependent var	3.374812
S.E. of regression	3.486092	Akaike info criterion	5.547289
Sum squared resid	121.5284	Schwarz criterion	6.554982
Log likelihood	-66.75662	Hannan-Quinn criter.	5.881311
F-statistic	0.907261	Durbin-Watson stat	2.919632
Prob(F-statistic)	0.595588		

Dependent Variable: GDP
Method: ARDL
Date: 06/20/16 Time: 11:31
Sample (adjusted): 1982 2014
Included observations: 33 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Schwarz criterion (SIC)
Dynamic regressors (1 lag, automatic): EXCHANGE_RATE INTEREST_RATE INFLATION_RATE UNEMPLOYMENT_RATE AGRICULTURAL_EXPORT CRUDE_OIL_RENT AGRICUTURAL_OUTPUT
Fixed regressors: C
Number of models evalulated: 128
Selected Model: ARDL(1, 0, 0, 1, 1, 1, 0, 1)
White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	-0.373573	0.146321	-2.553105	0.0189
EXCHANGE_RATE	0.108320	0.042648	2.539847	0.0195
INTEREST_RATE	0.278470	0.079888	3.485740	0.0023
INFLATION_RATE	0.004742	0.069517	0.068213	0.9463
INFLATION_RATE(-1)	0.098445	0.055865	1.762210	0.0933
UNEMPLOYMENT_RATE	-2.183584	0.771447	-2.830504	0.0103
UNEMPLOYMENT_RATE(-1)	2.180632	0.642135	3.395908	0.0029
AGRICULTURAL_EXPORT	0.001389	0.001883	0.737256	0.4695
AGRICULTURAL_EXPORT(-1)	-0.007640	0.002467	-3.097140	0.0057
CRUDE_OIL_RENT	0.153848	0.093345	1.648163	0.1149
AGRICUTURAL_OUTPUT	-0.689918	0.259913	-2.654416	0.0152
AGRICUTURAL_OUTPUT(-1)	1.012727	0.310314	3.263556	0.0039
C	-18.28316	10.33465	-1.769113	0.0921

R-squared	0.787152	Mean dependent var	4.211058
Adjusted R-squared	0.659444	S.D. dependent var	7.306283
S.E. of regression	4.263743	Akaike info criterion	6.025276
Sum squared resid	363.5901	Schwarz criterion	6.614809
Log likelihood	-86.41705	Hannan-Quinn criter.	6.223636
F-statistic	6.163654	Durbin-Watson stat	2.473551
Prob(F-statistic)	0.000197		

*Note: p-values and any subsequent tests do not account for model selection.

ARDL Bounds Test
Date: 06/20/16 Time: 11:32
Sample: 1982 2014
Included observations: 33
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	4.613949	7

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	1.92	2.89
5%	2.17	3.21
2.5%	2.43	3.51
1%	2.73	3.9

Test Equation:
Dependent Variable: D(GDP)
Method: Least Squares
Date: 06/20/16 Time: 11:32
Sample: 1982 2014
Included observations: 33

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INFLATION_RATE)	-0.082625	0.088865	-0.929774	0.3636
D(UNEMPLOYMENT_RATE)	-1.543702	0.873282	-1.767701	0.0924
D(AGRICULTURAL_EXPORT)	0.001518	0.005535	0.274289	0.7867
D(AGRICUTURAL_OUTPUT)	-0.221872	0.281601	-0.787895	0.4400
C	-9.537604	12.93600	-0.737292	0.4695
EXCHANGE_RATE(-1)	0.114944	0.061628	1.865135	0.0769
INTEREST_RATE(-1)	-0.057891	0.090408	-0.640333	0.5292
INFLATION_RATE(-1)	0.008283	0.106198	0.077995	0.9386
UNEMPLOYMENT_RATE(-1)	-0.286184	0.622522	-0.459717	0.6507
AGRICULTURAL_EXPORT(-1)	-0.002485	0.009135	-0.271997	0.7884
CRUDE_OIL_RENT(-1)	-0.028860	0.193174	-0.149400	0.8827
AGRICUTURAL_OUTPUT(-1)	0.334476	0.268275	1.246766	0.2269
GDP(-1)	-1.133201	0.209627	-5.405793	0.0000

R-squared	0.676541	Mean dependent var	0.589018
Adjusted R-squared	0.482466	S.D. dependent var	9.237961
S.E. of regression	6.645777	Akaike info criterion	6.912944
Sum squared resid	883.3269	Schwarz criterion	7.502477
Log likelihood	-101.0636	Hannan-Quinn criter.	7.111304
F-statistic	3.485969	Durbin-Watson stat	2.167403
Prob(F-statistic)	0.006702		

ARDL Cointegrating And Long Run Form
Dependent Variable: GDP
Selected Model: ARDL(1, 0, 0, 1, 1, 1, 0, 1)
Date: 06/20/16 Time: 11:33
Sample: 1981 2014
Included observations: 33

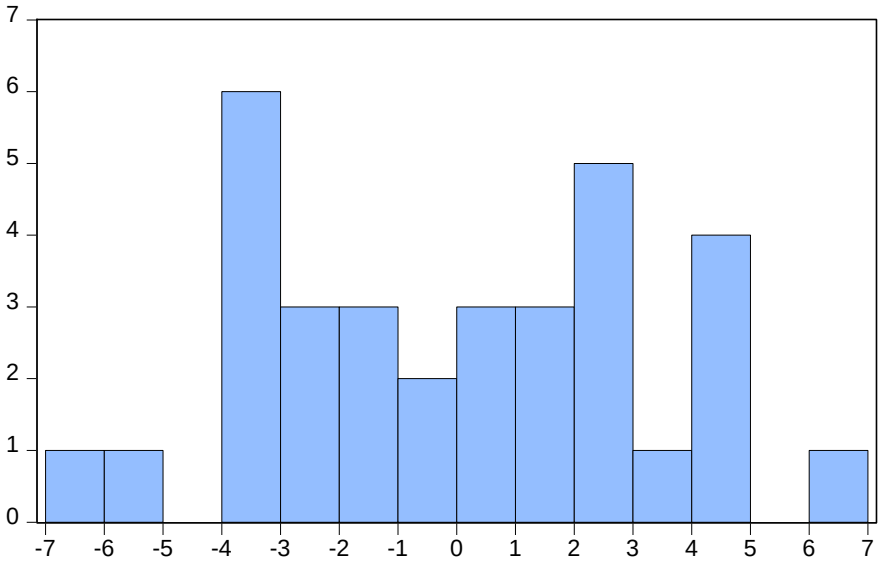
Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXCHANGE RATE)	0.111972	0.062323	1.796628	0.0875
D(INTEREST RATE)	0.271620	0.033554	8.094986	0.0000
D(INFLATION_RATE)	-0.000060	0.043769	-0.001378	0.9989
D(UNEMPLOYMENT R...	-2.214750	0.516604	-4.287133	0.0004
D(AGRICULTURAL_EX...	0.001413	0.002023	0.698801	0.4927
D(CRUDE OIL RENT)	0.144419	0.086562	1.668396	0.1108
D(AGRICUTURAL OUT...	-0.683991	0.141761	-4.824979	0.0001
CointEq(-1)	-1.391797	0.119810	-11.616695	0.0000

Cointeq = GDP - (0.0789*EXCHANGE RATE + 0.2027*INTEREST RATE + 0.0751*INFLATION_RATE -0.0021*UNEMPLOYMENT_RATE -0.0046 *AGRICULTURAL EXPORT + 0.1120*CRUDE OIL RENT + 0.2350 *AGRICUTURAL OUTPUT -13.3107)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXCHANGE RATE	0.078860	0.025783	3.058617	0.0062
INTEREST RATE	0.202734	0.055718	3.638587	0.0016
INFLATION_RATE	0.075123	0.044481	1.688872	0.1068
UNEMPLOYMENT RATE	-0.002150	0.226283	-0.009499	0.9925
AGRICULTURAL EXPORT	-0.004551	0.002354	-1.933707	0.0674
CRUDE_OIL_RENT	0.112006	0.065043	1.722018	0.1005
AGRICUTURAL OUTPUT	0.235014	0.178885	1.313771	0.2038
C	-13.310654	7.463409	-1.783455	0.0897



Series: Residuals	
Sample 1982 2014	
Observations 33	
Mean	-1.48e-15
Median	0.022435
Maximum	6.963001
Minimum	-6.984004
Std. Dev.	3.370785
Skewness	0.036616
Kurtosis	2.270605
Jarque-Bera	0.738897
Probability	0.691115

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.150824	Prob. F(2,18)	0.3386
Obs*R-squared	3.741293	Prob. Chi-Square(2)	0.1540

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 06/20/16 Time: 11:35
Sample: 1982 2014
Included observations: 33
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	0.128414	0.168064	0.764079	0.4547
EXCHANGE_RATE	-0.020063	0.042016	-0.477508	0.6387
INTEREST RATE	0.005181	0.060758	0.085279	0.9330
INFLATION RATE	0.015273	0.067437	0.226485	0.8234
INFLATION_RATE(-1)	-0.004239	0.057073	-0.074275	0.9416
UNEMPLOYMENT RATE	0.347304	0.726449	0.478084	0.6383
UNEMPLOYMENT RATE(-1)	-0.225065	0.595615	-0.377869	0.7099
AGRICULTURAL_EXPORT	-0.000823	0.003678	-0.223839	0.8254
AGRICULTURAL EXPORT(-1)	0.000372	0.003725	0.099755	0.9216
CRUDE_OIL_RENT	0.004713	0.116383	0.040498	0.9681
AGRICUTURAL OUTPUT	-0.002491	0.192863	-0.012918	0.9898
AGRICUTURAL OUTPUT(-1)	-0.014552	0.188129	-0.077354	0.9392
C	-0.184666	8.782646	-0.021026	0.9835
RESID(-1)	-0.419587	0.279106	-1.503325	0.1501
RESID(-2)	-0.007498	0.269678	-0.027805	0.9781

R-squared	0.113373	Mean dependent var	-1.48E-15
Adjusted R-squared	-0.576227	S.D. dependent var	3.370785
S.E. of regression	4.231949	Akaike info criterion	6.026157
Sum squared resid	322.3690	Schwarz criterion	6.706388
Log likelihood	-84.43160	Hannan-Quinn criter.	6.255034
F-statistic	0.164403	Durbin-Watson stat	2.068108
Prob(F-statistic)	0.999325		