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Crude Oil Export and its Impact in Developing Countries: A Case of Nigeria

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This study examines crude oil export and its impact in a developing country: A case of Nigeria. The ultimate objectives of the study centered on an empirical investigation of crude oil export and its impact on growth of the Nigerian economy. In order to achieve these objectives, the study used ordinary least squares regression method, Augmented Dickey Fuller unit root, co-integration test and the short run dynamics. Data was collected mainly from secondary sources, such as central bank of Nigeria bulletin, Bureau of statistics, Journals and Textbook. The unit root test revealed that crude oil export, gross domestic product and investment were stationary at levels but exchange rate of the Nigerian economy became stationary after taking the first difference. The short run result showed that there is a significant relationship between crude oil export of the Nigeria economy. The study recommends that caution should be placed on macroeconomic policy to boost manufactured export of other commodities via investment.

Keywords: crude oil, export, economic growth

INTRODUCTION

The oil boom of the 1970s led Nigeria to neglect its strong agricultural and light manufacturing bases in favour of an unhealthy dependence on crude oil. In 2000 oil and gas exports accounted for more than 98 % of export earnings and about 83 % of federal government revenue. New oil wealth, the concurrent decline of other economic sectors, and a lurch toward a static economic model fueled massive migration to the cities and led to increasingly widespread poverty, especially in rural areas. A collapse of basic infrastructure and social services since the early 1980s accompanied this trend. By 2000 Nigeria's per capita income had plunged to about one-quarter of its mid-1970s high, below the level at independence. Along with the endemic malaise of Nigeria's non-oil sectors, the economy continues to witness massive growth of "informal sector" economic activities, estimated by some to be as high as 75 % of the total economy.

Nigeria's proven oil reserves are estimated to be 35 billion barrels; natural gas reserves are well over 100 trillion ft³ (2,800 km³). Nigeria is a member of the

Organization of Petroleum Exporting Countries (OPEC), and in mid-2001 its crude oil production was averaging around 2.2 million barrels (350,000 m³) per day. Poor corporate relations with indigenous communities, vandalism of oil infrastructure, severe ecological damage, and personal security problems throughout the Niger Delta oil producing region continue to plague Nigeria's oil sector. Efforts are underway to reverse these troubles. In the absence of government programs, the major multinational oil

Companies have launched their own community development programs. A new entity, the Niger Delta Development Commission (NDDC), has been created to help catalyze economic and social development in the region. Although it has yet to launch its programs, hopes are high that the NDDC can reverse the impoverishment of local communities. The U.S. remains Nigeria's largest customer for crude oil, accounting for 40% of the country's total oil exports; Nigeria provides about 10% of overall U.S. oil imports and ranks as the fifth-largest source for U.S. imported oil. The United States is

Nigeria's largest trading partner after the United Kingdom. Although the trade balance overwhelmingly favors Nigeria, thanks to oil exports, a large portion of U.S. exports to Nigeria is believed to enter the country outside of the Nigerian Government's official statistics, due to importers seeking to avoid Nigeria's excessive tariffs. To counter smuggling and under-invoicing by importers, in May 2001 the Nigerian Government instituted a 100 % inspection regime for all imports, and enforcement has been sustained. On the whole, Nigerian high tariffs and non-tariff barriers are gradually being reduced, but much progress remains to be made. The government also has been encouraging the expansion of foreign investment, although the country's investment climate remains daunting to all but the most determined. The stock of U.S. investment is nearly \$7 billion, mostly in the energy sector. Exxon Mobil and Chevron are the two largest U.S. corporate players in offshore oil and gas production. Significant exports of liquefied natural gas started in late 1999 and are slated to expand as Nigeria seeks to eliminate gas flaring by 2008. Oil dependency and the allure it generated of great wealth through government contracts, spawned other economic distortions. The country's high propensity to import means roughly 80 % of government expenditures is recycled into foreign exchange. Cheap consumer imports, resulting from a chronically overvalued Naira, coupled with excessively high domestic production costs due in part to erratic electricity and fuel supply, have pushed down industrial capacity utilization to less than 30 %. Many more Nigerian factories would have closed except for relatively low labor costs (10 % - 15 %). Domestic manufacturers, especially pharmaceuticals and textiles, have lost their ability to compete in traditional regional markets; however, there are signs that some manufacturers have begun to address their competitiveness. Nigeria's official foreign debt is about \$28.5 billion, about 75 % of which is owed to Paris Club countries. A large chunk of this debt is interest and payment arrears. In August 2000 the International Monetary Fund (IMF) and Nigeria signed a one-year Stand-by Arrangement (SBA), which to a debt rescheduling agreement in December between Nigeria and its Paris Club creditors. By August 2001, despite continued dialogue with the IMF, Nigeria had been unable to implement many of the SBA conditions. The IMF consented to extend its SBA by a few months and seek out revised targets and conditions for a new agreement. As of September 2001, only a few of Nigeria's creditor governments had signed bilateral rescheduling agreements. Another obstacle to debt restructuring involves World Bank classification. Any long-term debt relief will require strong and sustained economic reforms over a number of years.

In the light of highly expansionary public sector fiscal policies during 2001, the government has sought ways to head off higher inflation, leading to the implementation of stronger monetary policies by the Central Bank of

Nigeria (CBN) and under spending of budgeted amounts. As a result of the CBN's efforts, the official exchange rate for the Naira has stabilized at about 112 Naira to the dollar. The combination of CBN's efforts to prop up the value of the Naira and excess liquidity resulting from government spending led the currency to be discounted by around 20 % on the parallel (nonofficial) market. A key condition of the Stand-by Arrangement has been closure of the gap between the official and parallel market exchange rates. The Inter Bank Foreign Exchange Market (IFEM) is closely tied to the official rate. Under IFEM, banks, oil companies, and the CBN can buy or sell their foreign exchange at government influenced rates. Much of the informal economy, however, can only access foreign exchange through the parallel market. Companies can hold domiciliary accounts in private banks, and account holders have unfettered use of the funds. Expanded government spending also has led to upward pressure on consumer prices. Inflation which had fallen to 0 % in April 2000 reached 14.5 % by the end of the year and 18.7 % in August 2001. In 2000 high world oil prices resulted in government revenue of over \$16 billion, about double the 1999 level. State and local governmental bodies demand access to this "windfall" revenue, creating a tug-of-war between the federal government, which seeks to control spending, and state governments desirous of augmented budgets preventing the government from making provision for periods of lower oil prices.

Statement of the problem

Oil is a major source of energy in Nigeria and the world in general. Oil being the mainstay of the Nigerian economy plays a vital role in shaping the economic and political destiny of the country. Although Nigeria's oil industry was founded at the beginning of the century, it was not until the end of the Nigeria civil war (1967 - 1970) that the oil industry began to play a prominent role in the economic life of the country. Nigeria can be categorized as a country that is primarily rural, which depends on primary product exports (especially oil products). Since the attainment of independence in 1960 it has experienced ethnic, regional and religious tensions, magnified by the significant disparities in economic, educational and environmental development in the south and the north. These could be partly attributed to the major discovery of oil in the country which affects and is affected by economic and social components. Crude oil discovery has had certain impacts on the Nigeria economy both positively and adversely. On the negative side, this can be considered with respect to the surrounding communities within which the oil wells are exploited. Some of these

communities still suffer environmental degradation, which leads to deprivation of means of livelihood and other economic and social factors. Although large proceeds are obtained from the domestic sales and export of petroleum products, its effect on the growth of the Nigerian economy as regards returns and productivity is still questionable, hence, the need to evaluate the relative impacts of crude oil export on the economy. In the light of the study, the main objective of this paper is to assess the impact of petroleum export on the Nigerian Economy.

Given the fact that the oil sector is a very crucial sector in the Nigeria economy, there is the dire need for an appropriate and desirable production and export policy for the sector. In Nigeria, though crude oil has contributed largely to the economy, the revenue has not been properly used. Considering the fact that there are other sectors in the economy, the excess revenue made from the oil sector can be invested in them to diversify and also increase the total GDP of the economy.

Objectives of the study

The main aim (objectives) of this paper work is to provide econometric evidence on the impact of petroleum exports and Nigeria's economic growth. The specific objectives are:

- i. Examine the impact of crude oil export on economic growth (GDP).
- ii. Examine the impact of crude oil export on inflation.
- iii. Examine the impact of crude oil export on exchange rate.
- iv. Examine the impact of crude oil exports on Investment.

Hypotheses of the study

The paper is aim at testing the following hypotheses based on the objectives above. The following Null hypotheses are made:

- i. There is no significant relationship between crude oil export and economic growth (GDP).
- ii. There is no significant relationship between crude oil export and Inflation.
- iii. There is no significant relationship between crude oil export and exchange rate.
- iv. There is no significant relationship between crude oil exports Investment.

Significance of the study

Nigeria economy is basically an open economy with international transactions constituting an important proportion of her aggregate economic activities. Over the years, the degree of openness of the economy has

grown considerably.

Before Nigeria gained her political independence in 1960, agriculture was the dominant sector in the economy, which provides both cash crops and food crops to the economy and accounted for the largest part of the foreign exchange of the country. But, the discovery of crude oil production in commercial quantities changed the structure of the Nigerian economy. This led to the neglect of agricultural product, making the economy to depend heavily on production of crude oil. In 2000, oil and gas export accounted for more than 98% of export and about 83% of federal Government Revenue. (Odularu, 2008). Nigeria's proven oil reserves are estimated to 35billion barrels, Natural gas reserves are 1000 trillion fti (2,800kmi) and its crude oil production was around 2.2million barrels (350,000mi) per day. (Odularu2008). Furthermore, the oil and natural gas export generated huge revenue to the government and have a surplus balance of payment over the years. It was reported that 80% of Nigeria's revenue goes to the government, 16% spent on administrative expenses and 4% go to investors. The huge revenue from oil export only benefit 1% of the population due to corruption in Nigeria. (Odularu 2008). Mismanagement over the years back hindered economic reforms from achieving its full economic potentials. However, Nigeria Gross Domestic Product at purchasing power parity became more than doubled from \$170.7billion in 2005 to \$374.3 billion in 2010, with informal sector putting the actual numbers greater than \$374billion. The Gross domestic Product per capita doubled from \$1,200 per person in 2005 to an estimated \$2,500 per person in 2009, with the informal sector included, the Gross Domestic Product per capita was estimated around \$3,500 per person. (Nigeria Economy).

Furthermore, the united states remains Nigeria's largest customer for crude oil export accounting for 40% of the country total oil exports, providing about 10% of overall united state oil imports and ranked as the fifty-largest source for united state imported oil.(Odularu 2008).

Going by the research conducted by some scholars or economists such as Akanni (2007), Idowu (2005), Hadi et. Al., (2009), Mohammed and Amirahi (2010), Odularu (2008), and Samad (2011), for instance, provides an sight on the contributions of petroleum exports to economic growth in the country. However, in view of this, the project work tried to research on how oil export sector have contributed to economic growth in Nigeria by knowing the rate of real growth domestic product compared to the volume of oil export.

Literature review

Export: can be defined as surplus goods and services of a country that are sent to other countries in the world for

sale. There are two Types of Export: visible export and invisible export.

Visible export: consists of commodities that are tangible and can be seen and touched. They appear in a country balance of trade. Such as crude oil, coal, tin, columbite, palm oil, cotton, rubber etc.

Invisible export: consists of intangible commodities that can not be seen or touch, such as services. The services are calculated in terms of money. They are insurance, civil aviation, banking services, and tourism, audio-visual services e.t.c.

Crude oil export: Can be defined as the surplus of crude oil of a country that are sent to other countries in the world and the various types are Bonny light oil, Farcodos crude oil, Quaibo crude oil, and Brass river crude oil.

Economic growth: can be defined as an increase in value of goods and services produced in a country. Growth implies an increase in real GNP per unit of labor input. This refers to changes in labor productivity over time. Economic Growth is conventionally measured as the rate of increase in Gross Domestic Product (GDP). Growth is usually calculated in real terms (netting out the effect of inflation on the price of the goods and services product). Growth improved the standard of living of the people in that particular country.

Types of growth

Growth in output can be divided into two major categories:

1. Growth through increased input. That is: labor and capital inputs cannot be increased indefinitely without encountering diminishing marginal returns.

2. Growth through improvements in productivity. That is: technological progress is needed to increase the standard of living in the long-run.

Growth domestic product: Can be defined as all products that are produce in a country irrespective of the nationals that produce it. For example, all goods and services produced in Nigeria regardless of the nationality. If a Ghanaian based in Nigeria produced output it is usually included in the GDP of Nigeria. GDP is calculated without deductions for depreciation.

Types of gross domestic product

1. **Nominal GDP:** (GDP at current factor cost) equal GDP at current market price less indirect taxes net or subsidies.

2. **Real GDP** or GDP at 1990 constant prices equals GDP at 1990 market prices less indirect taxes net of subsidies. It measures the performance of a country and it takes care of inflation.

3. **GDP at current market prices** equals GDP at current factor cost plus indirect taxes net of subsidies. This is GDP valued at the market prices which purchasers pay for the goods and services they require or use.

4. **GDP at 1990 market prices** equal 1990 factor cost plus indirect taxes net of subsidies.

5. **Oil rent;** is defined as the price of crude oil in the international market multiplied by the quantities of oil.

6. **Rentier states;** are economics that derive a large portion of their revenues from external rents. Such rents accrue directly to the state and its leaders. (Beblawi and Luciani, 1987).

Theoretical literature

Export and economic growth

The relationship between export performance and economic growth is an area that has been gives much attention by development economists. This has broadly classified economists into two: that is: those that support the hypothesis that export growth has a positive impact on economic growth and those that reject the hypothesis that there is no positive impact on the economic growth. Exports are engine of growth. Awokuse (2008) argued that an increase in foreign demand for domestic exportable products can cause an overall growth in output via an increase employment and income in the exportable sectors. Balassa (1978), Esfahani (1991), Rodrik (1999), exports can provide foreign exchange which is critical to imports capital and intermediate goods that in turn raise capital formation beneficial for meeting expansion of domestic production and thus stimulate output growth. According to (Helpman, Krugman, (1985), Boomstorm (1986)) international trade promotes specialization in production of export products which in turn boosts the productivity level, and causes the general level of skills to rise in the export sector.

According to (Feder (1982), Lucas (1988), Edwards, (1992)), export leads to re-allocation of resources from the inefficient non-trade sector to the trade sector and dissemination of the new management styles and production techniques through the whole economy. (Giles, Williams, (2000a, 2000b), the entire economy would benefit due to the dynamic spillover of the export sector growth. Chenery, Strout (1996), an increase in exports improves the balance of payment and enlarges the foreign monetary reserves, which enables the increase of investment goods import and facilities necessary for the domestic production growth.

Jung and marshal (1985), argue that growth in real exports tends to cause growth in real gross national product (GNP) for three reasons: first, export growth may represent an increase in the demand for the country's output and thus serve to increase real GNP.

Second, an increase in exports may loosen a binding foreign exchange constraint and allow increases in productivity intermediate imports and hence result in the growth of output. Third, export growth may result in enhanced efficiency and thus may lead to greater output.

Export led economic growth.

The notion of trade as an engine of growth is given much emphasis by many economists. The ideal that international trade brings economic growth increases the welfare of a nation started during the 17th century by a group of merchants, government officials and philosophers who advocated an economic philosophy known as mercantilism. For a nation to become rich and powerful, it has to export more than it imports where the resulting export surplus is used to purchase precious metals like gold and silver. The government in its power has control imports and stimulates the nation's exports. Adam Smith attacked the main mercantilist's views and proposed the classical theory of international trade based on the concept of absolute advantage model. According to him, stock of human, man-made and natural resources rather than stock of precious metals were the true wealth of a nation and argued that the wealth of a nation can be expanded if the government would abandon mercantilist controls. In addition, he showed that trade can make a nation better off without making another worse off. (Debel 2002).

A model of comparative advantage was later articulated by David Ricardo to replace the principle of absolute advantage. According to this model, a country will specialize in the production of which it's had in abundant and export the commodity. That is: the commodity that it can produce at the lowest relative cost.

Also, J.S. Mill formulated a theory, the principle of reciprocal demand and later developed by Edgeworth and Marshall. Both demand and supply conditions which determine the terms of trade and hence trade between countries.

The proponents of the traditional theory of trade argue that trade can contribute largely to the development of primary exporting countries. However, other economists strongly believe that the accrual of the gains from international trade is biased in favour of the advanced industrial countries and that foreign trade has inhibited industrial development in poor nations. These economists contend that international trade as being irrelevant for developing nations and the development process.

There are two policies adopted by many developing countries namely, import substitution and export promotion.

Proponents of the view that trade brings development policies encourage outward looking development policies (Export promotion). According to Todaro (1994), the outward looking development policies "encourage

not only free trade but also free movement of capital, workers, enterprises and students, the multinational enterprises, and open system of communication".

In contrast, opponents of the traditional view advocate an inward-looking development policy. This policy stresses the need for less developed countries to implement their own styles of development and adopt indigenous technologies appropriate to their resource endowment. The factor endowment theory of Eli Hecksher and Bertil Ohlin (H-O), of external trade evolved. According to this theory, different relative proportions and countries have different endowments of factors of production. Some countries have large amounts of capital (capital abundant) while others have little capital and much labour (labour abundant). This theory argued that each country has a comparative advantage in that commodity which uses the country's abundant factor. Capital abundant countries should specialize in the production and export of capital-intensive goods while labour abundant countries should specialize in the production and export of labour-intensive commodities. This theory encouraged third world countries to focus on their labour and land intensive primary product exports.

However, it was argued that by exchanging these primary products for manufactured goods of the developed countries, third world nations could realize enormous benefits obtained from trade with the richer nations. (Debel 2002)

Economic growth theory

Economic growth is generally regarded as a necessary component of any development strategy and given population growth, economic growth is necessary just to maintain the material quality of life at existing levels. Harrod-domar theory is used to explain economic growth which is the main essential features of economically growing without a corresponding economic development. The theory shows that there is a positive relationship between saving and growth while there is a negative relationship between growth capital/output ratio. Growth can be mathematically expressed as $G = s/k$, where k = incremental capital output, s = the average propensity to save. Also, Solow's theory of economic growth shows that growth is based on output, that is: the combination of labor and capital. When inputs is doubled, then there will be increase in production too. It can be mathematically written as $y = af(l,k)$. The Solow growth model assumes that the marginal product of capital decreases with the amount of capital in the economy. In long run, when an economy accumulates more capital, the capital stock (gk) approaches zero and the growth rate is determined by technical progress and growth in the labor force. While in the short-run, an economy that accumulates capital faster will enjoy a higher level of output.

Furthermore, the traditional neoclassical growth theory assumes that output growth occurs from three factors namely: first, increase in labor quality and quantity, that is: through population growth and education. Secondly, increase in capital that is: through saving and investment. Thirdly, improvement in technology (Odularu 2010).

Empirical literature

The contribution of export growth to economic growth has been tested by different economists using different econometric techniques. Akanni (2007), examines if oil exporting countries grows as their earnings on oil rents increases, using PC-GIVE10, (ordinary least squares regression). The result shows that there is a positive and significant relationship between investment and economic growth and also on oil rents. In conclusion, oil rents in most rich oil developing countries in Africa do not promote economic growth. Idowu (2005), a causality approach examines that there is a relationship between exports and economic growth in Nigeria. Using Johansens multivariate co-integration technique. The result shows that there is stationary relationship between exports and gross domestic product (GDP). There is feedback causality between exports and economic growth. Hadi, et al (2009), investigate the impact of income generated from oil exports on economic growth in Iran. Using cobb-douglas production function, the economy of Iran adjusts fast to shocks and there is progress in technology in Iran. Oil exports contribute to real income through real capital accumulation. Mohammed and Amirahi (2010), examines if factors such as oil price, world oil supply and demand, production capacities enhanced export growth in Iran using Error Correction Version of ARDL. It was found that there is an inverse relationship between oil products consumption and oil export revenues. Iran had a significant positive growth in its oil revenues. Odularu (2010), used Harrod-Domar theory and solow's theory of economic growth used Ordinary Least Square regression and cobb-douglas production function were employed to test the impact of crude oil on Nigeria economic performance. The result shows that crude oil production contributed to economic growth but have no significant improvement on economy growth of Nigeria. Samad (2011), tested the hypothesis that there exist relationship between exports and economic growth in Algeria, using VEC Granger causality and block exogeneity Wald test. Augmented Dickey-Fuller test was used to run the regression. The result shows that the variables are non-stationary. It was concluded that there is causal relationship between economic growth, exports and imports. Khaled, et al (2010), tested if export enhanced economic growth in Libya Arab. Using co-integration with granger causality. The results show that income, exports, and relative prices are co integrated. It

was concluded that both export and growth are related to each other. Muhammad, Sampata (1997), investigate if there is clear proved that exports led to economic growth, through the use of granger(1969)causality, ADF is used test for co-integration. The result shows that unidirectional causality from exports to GDP with positive relationship between the two variables are found. Rahmaddi (2011), examine the exports and economic growth nexus in Indonesia employing vector autoregressive (VAR) model. The findings indicate the significance of both exports and economic growth to economy of Indonesia as indicated in GIRF analysis. It was concluded that exports and economic growth exhibits bidirectional causal structure, which is Export Led Growth in long-run and Growth Led Export in short-run. Gemechu (2002), using co integration and error correction approaches in the regression analysis examine the policies and test for the relationship between exports and economic growth. The result shows that export significantly affected economic growth in the short-run. There is causality runs from exports to economic growth.

History of crude oil in Nigeria

Oil was first discovered in Nigeria in 1956 at Olobiri in Niger Delta, after half century of exploration. The discovery was made by shell-BP. The Nigeria joined the oil producer in 1958 and produce 5100bdp. After 1960, exploration rights in onshore and off shore areas adjoining the Niger Delta were extended to other foreign companies. In 1965, the EA was discovered by shell in shallow water south east of warri. In 1970, the end of the Biafran war coupled with the rise in world oil price, made Nigeria rich from its oil production. Nigeria joined the Organization of Petroleum Exporting Counties (OPEC) in 1971 and established the Nigeria National Petroleum Company (NNPC) in 1977 a state owned and controlled company which is a major player in both the upstream and downstream sectors. Production started in 1958 from the oil field in olobiri in the Eastern Niger Delta. By Sixties, and early seventies, Nigeria had produce over 2million barrels of Crude oil a day. The production Figure dropped in eighties due to economic Slump, 2004 regain the oil Production figure back to 2.5million barrels per day. Current development strategies are aimed at increasing Production to 4 million barrels per day in 2010. The production of oil had pushed the initial export sector and major source of government revenue which is agriculture of the country in the early fifties and sixties to the background. (Odularu, 2008).

The performance of oil sector to GDP in Nigeria

There are three main oil sectors in Nigeria namely:

upstream sector, downstream sector and gas sector. The downstream sector is the most problematic because it is the distributor and connector to the final consumers of refined petroleum products in the domestic economy. In 2003, government took a decision of deregulating the downstream sector for efficient production and reduction in price of oil. Meanwhile, the way of its implementation has been controversial because it ignores the economic realities in Nigeria.

The oil production by the JOINT VENTURE (JV) companies accounted for about 95% of Nigeria's crude oil production. One of the joint venture is shell with 55% government interest through Nigeria National Petroleum Corporation (NNPC) produces about 50% of Nigeria crude oil. Others like Exxon mobile, chevron, Texaco, ENI/Agip and total final operate the others JV's, in which the NNPC has 60% stake.

However, as a member of the Organization of Petroleum Exporting Countries (OPEC), Nigerian oil attracts very huge buyers in the international market because the oil is of high quality and mostly environmentally friendly relative to oil from other countries. Nigeria's export blends are light, sweet crude's and have low sulphur contents of 0.05 to 0.2%.

The place of oil in the mind of the average Nigerian as becomes more profound since the initiation of deregulation of downstream segment of the Nigeria oil industry in 2003. The recent rise in crude oil prices at the global markets makes the country to earn more but also increased the expense burden on imported refined petroleum products. At present, Nigeria had four refineries with a combined installed refining capacity of 445,000 barrels per day. These are:

1. The first Port Harcourt refinery was commissioned in 1965 with an installed capacity of 35,000bpd and increased to 125,000bpd in 1986.
2. The Warri refinery was commissioned in 1978 with an installed refining capacity 100,000bpd, and upgraded to 125,000bpd in 1986.
3. The Kaduna refinery was commissioned in 1980 with an installed refining capacity of 100,000bpd, and upgraded to 110,000bpd in 1986.
4. The second Port Harcourt refinery was commissioned in 1989 with 150,000bpd processing capacity. It was designed to supply the domestic market and exporting its surplus.

The combined capacities of these refineries exceed the domestic consumption of refined products, chief of which is premium motor spirit (Gasoline) whose demand is estimated at 33million litres daily. The refineries are operating far below their installed capacities as they were more or less abandoned during the military era. To assess the performance of oil sector in Nigeria we will underscore two periods which are discussed below.

The boom period

After independence in 1960, agriculture was the domi-

nate sector of Nigeria economy. Agriculture provided the high level of employment for the economy and the needs of the household. The proportion of GDP accounted by agriculture was 67.0% and petroleum accounted for 0.6%. By 1970, petroleum stood at 23.4% and agriculture stood at 45.5% of GDP while in 1980, there was a declined to both sectors, proportion of agriculture was 15.5% and petroleum was 28.0% of GDP. In 1990, agriculture was 30% and petroleum was 12.8% of GDP. In 2000, agriculture stood at 24.6% and petroleum at 51% of GDP. In 2006, agriculture was 50.78% and petroleum was 66.21% of GDP. (Bullion publication of CBN, volume 32, No.2, April-June 2008). Since early 1990s, the economy had depended solely on oil earnings, neglecting the non oil sector of the economy, which leads to the declined contribution of the non oil sector to gross domestic product despite the increase in prices of oil over the years. In 1973, the price of crude oil was \$20 per barrel and risen to \$36.6 per barrel in 1980. In 2005, the price rose to \$55.4 and by 2007, the price had risen to \$135.00 per barrel. This rise in oil prices was as a result of the Arab-Israeli war and energy crisis and depression in the industrial countries, resulted in increased oil revenue and boom for Nigeria and other oil exporting countries.

The enormous increase in the oil revenue created unplanned wealth for Nigeria. As a result of this, government embarked on elephant task projects which were not productive to the economy. They invested in socio-economic infrastructure across the country especially in urban areas and services sector grew. The relative attractiveness of the urban center made youths in Nigeria to migrate from rural to urban areas leaving their farmland so as to partake in the growing and prosperous oil driven. This created social problems such as congestion, pollution of the environment and air, unemployment and crimes.

The non-boom period and policies responses

The oil boom of the 1970s led to the neglect of the agricultural sector since the nation had access to cheap money to import all sorts of things including foodstuffs, raw materials and manufactured goods. The economy witnessed structural changes in the 1980s which was attributed to a slow growth of the output in all sectors of the economy. The manufacturing sector suffered from the declined of output mostly as a result of a drastic reduction in capacity utilization due to shortage of raw materials. By 1986, the overall average capacity utilization of the Nigerian manufacturing sector, an index of economic performance in the sector stood at 38.8% as against 77.4% ten years back. However, with the remarkable reforms in the 1990s, capacity utilization has increased to 57.8% in 2005.

The over-reliant on petroleum oil is clear in the external sector trends. The desire for imports reflects in

the current account balanced, whose oil component expanded by an annual average of 57.7% during 1971 to 1980, 43.0% in 1981-1990 and 40.3% in 1991-1998. (Bullion publication of CBN, volume 32, No.2, April-June, 2008).

The current account balance grew with the oil revenue trends reflecting import expansion as oil earnings grew. In 1982, showing the crash in oil earnings and the tight rein on international trade through the stabilization act implementation, current account balances dropped by 22.7% in 1982 and further by 14-6% in 1983. (Bullion publication of CBN, volume 32, No.2, April-June, 2008).

Another critical economic issue was the foreign exchange crisis. As a result of dwindling foreign exchange earnings from crude oil, the nation had experienced shortfall in foreign exchange. This manifests in terms of balance of payments problems, rising external debt and debt servicing burden as well as the inability of the nation to import crucial capital and intermediate goods to execute her development projects. The inability of the country to pay for its import and the dwindling foreign reserves, the country accumulated trade arrears during the period 1980 and 1986, coupled with external borrowing leading to a mounting external debt and debt servicing burden.

The 1980's saw Nigeria plagued by the twin problems of high inflation rate and high unemployment rate. During this period, both high inflation rate and high unemployment rates co-existed giving rise to stagflation. The high inflation was particularly caused by undervaluation of the naira due to the operation of the foreign exchange market. The government has to introduce some measures to tackle the problems which include the followings:

1. Economic stabilization measures of April 1982. In 1982, the external reserves fell to the lowest level that it could hardly finance one month's importation. In order to correct the balance of payment and revamp the economy, the government introduced the economic stabilization act which aimed at rationalizing overall balance and equilibrium in the external sector. These measures were implemented through administrative controls which included a strong import controls, imposition of exchange restrictions on international transactions substantial increases in customs tariffs, introduction of an advance import deposit scheme and ceilings on total central bank foreign exchange disbursements. The increase in oil price at that time was belief to solve the economic problem but the oil price did not recover the economic problem as soon as expected.
2. The Structural Adjustment Programmed of 1986. Another alternative to reform the economy was the programme SAP introduced in 1986. The aim of the SAP was to effectively alter and restructure the consumption and production patterns of the economy as well as eliminate price distortions and heavy dependence on the export of crude oil and imports of consumer and prod-

ucer goods. The SAP was intended to last for two years but later extended.

3. National Economic Empowerment Development Strategy (NEEDS) is another attempt to chart a sustainable growth path for the economy. The primary objectives of NEEDS agenda was to reinvigorate the economy and return it to the path of sustainable growth, development and poverty reduction. It focuses on people, job creation and employment for the private sector to generate job opportunities. It is also meant to enable Nigeria turn around and adopt aboard based market oriented economy that is private sector-led and in which people can be empowered to afford the basic needs of life. Thus, it is a pro-poor development strategy which in line with the new focus of both the International Monetary Fund (IMF) and World Bank.

However, the disappointing results of the adjustment effort were linked to two major factors: product of misguided

policies under the SAP and incoherent implementation of SAP policies.

Contribution of oil industry

About two decades now, the oil sector had contributed in a numerous ways to the growth of Nigeria economy. These are:

1. **Creation of employment opportunities:** The first area of contribution by the oil sector is job opportunity. In the construction of the refineries, Nigerian were employed for such job like building of roads and bridges, the clearing of drilling sites, transportation of materials and equipment, building of staff housing and recreational facilities. Also, there were employments for seismic and drilling operations, supervisory and managerial function.
2. **Contribution to gross domestic product:** The gross output of the petroleum sector consists of the proceeds from oil exports, local sales of natural gas. GDP less factor payments made abroad. The industry' value added can be obtained by adding together the various payments to the government in form of rents, royalties, profit taxes, harbor dues, the wages and salaries of employees paid locally and any net retained earnings.
3. **Contribution to government revenue:** Huge amount of money paid to the government by the oil sector serves as a major source of income to the economy. The increase in government receipts from the crude oil production is as a result of three factors which are: increased in crude oil prices and the more favorable fiscal arrangements obtained as a result of improvement bargaining position over the years.
4. **Contribution to foreign exchange reserves:** The oil industry had contributed a lot to the foreign exchange reserves. the oil has substantial foreign exchange reserves and is in the healthy position of being able to

finance the foreign exchange cost of her development programmes.

5. **Contribution to energy supply:** Another achievement of the oil sector to the Nigeria economy is the provision of cheap and readily available source of energy for industry and commerce through the operations of the local refinery and the utilization of locally discovered natural gas.

Challenges in the oil sector

Despite the numerous contributions of oil sector to the economy. There are some problems facing the sector, they includes:

1. Public control and bureaucracy: The Nigeria National Petroleum Corporation (NNPC) is controlled by the ministry of petroleum resources. It lacks autonomy, the NNPC is characterized by inefficiency distribution and marketing.
2. Poor funding of investments: the federal government's delays in the payment of cash calls for its joint ventures operations in the upstream sub-sector, focusing more on maintenance rather than growth.
3. Communal disturbances: from the area which the oil is extracted.
4. Smuggling and diversion of petroleum product: smuggling of petroleum products across the borders in quest for foreign exchange and to take undue advantage of the lower domestic prices from neighboring countries prices.
5. Fraudulent domestic marketing practices: some marketers hoard products in periods of scarcity in order to sell in the black market at higher prices.
6. Relatively low level of investments in the sector compared to its potentials.
7. High technical cost of production: Due to low level of domestic technological development.
8. Restrictions imposed by crisis and production disruptions caused by host communities.
9. Environmental degradation due to the flaring of associated gas.

Nigeria's exports performance

Nigeria's economy was mainly an agrarian economy which the majority part of its foreign exchange comes from the sales of cash crops such as cocoa, groundnut, coffee, cotton, solid minerals and palm produce. Due to the oil boom of 1970s, crude oil then took over from agricultural as the major foreign exchange earner to the country it to 96.8%, while by 2000; it got to 99% (Kareem 2004).

However, the share of non-oil exports in total exports declined from 7.0% in the period 1970-1985 to about 4 between 1986 and 1988. The decline recorded in the non-oil export was due to the problems being

encountered by the agricultural sector which was worsened by inappropriate pricing policies, and the dearth of farm labor caused by rural-urban migration, as well as infrastructural inadequate in the rural areas. The government made efforts to restore the non-oil sector of the economy during the structural Adjustment Programme era. Despite all the measure that were put in place, the performance of the non-oil export sector has remained encouraging as crude oil still remains the major Nigeria's export.

Furthermore, on the trends of the structure of Nigerian economy, her trade exports makes it unlikely that the country will be able to take the advantage of increased liberalization and openness of the economy to achieve trade induced growth. The border of the country had been thrown open since the independence in 1960 with 32% level of openness, which later rose to 48% in 1977 during the import substitution era. It got to 68% in 1992 during the Structural Adjustment Programme period and later increased to its peak of 92% in 2000 due to the oil imports and exports.

Contribution of exports to economic growth

Exports positively contribute to economic growth through various ways:

1. An increase in exports could promote specialization in the production of export commodities that in turn may increase the productivity of the export sector.
2. Export expansion may result in efficient resource allocation since it brings incentives for domestic resource allocation closer to international opportunity costs.
3. Exports that are based on comparative advantage would allow the exploitation of economies of scale that are external in the non-export sector, but internal to the overall economy.
4. Exports expansion benefited from international market also allow greater capacity utilization exploiting increasing foreign demand in world markets.
5. Export may also give access to advanced technological improvement in the economy due to foreign market competition.

METHODS

This paper uses the co-integration and error correction methods to analyze the relationship between crude oil export and economic growth in Nigeria. The framework for the study has its basis on the Keynesian and endogenous growth models. The Keynesian model states that expansion of government expenditure accelerates economic growth. Although, endogenous growth models do not assign any important role to government in the growth process, authors like Barro, (1990), Barro and Sala (1992), and Easterly and Rebelo

(1992) emphasized the importance of government (activity) policy in economic growth. Moreover, some authors focused on the components of government expenditure that are productive or unproductive Kneller and Bleaney (1999), while others submitted that composition of government expenditure might exert more influence compare to the level of government

Research methodology

This study set up an econometric model to test the long run relationship between crude oil export and economic growth in Nigeria. The study uses annual time series data from 1970 to 2011. The sources of these data central Bank of Nigeria statistical bulletin, several issues, Bureau of Statistics, journals etc. A majority of the macroeconomic time series are characterized by a unit root so that their first differences are stationary (Engel and Granger, 1987); Nelson and Ploser, (1982). Ahmed and Harnhirun (1995) opine that if a statistical test like co-integration establishes co-movements in these time series, then the residuals from the regression can be used as error correction terms in the dynamic first difference equation. Thus, given two time series that are integrated of order 1, that is: I(1), and co-integrated, then there exist granger causality in at least one direction in the I(0) variables (Engel and Granger, 1987) and hence a VAR model can be set up with an error correction terms for doubled co-integrated I(0) time series to cover the short run dynamics and to decrease the chance of observing spurious regression in terms of the level of data or their first difference. Therefore, often estimating the multiple regression models, the study test for the stationary co-integration and error correction model so as to know the long run reliability of the model.

Data analysis

In estimating the model for the study, We used three steps methodology; these steps include:
 1. Univariate statistical analysis of time series (test for unit root) it ascertain the stationarity and non-stationarity status of the data series.
 2. Co-integration analysis and the estimation of long-run equilibrium models on government expenditures, public debt service, Health, Education and its impact on growth using Johansen co-integration test.
 3. Short run analysis using the ordinary least squares regression method to see the impact of the independent variables on the depended variable. Eravwoke and Imide (2013).
 Therefore, this study specifies the following multiple regression equation using aggregate data for the variables.
 $GDP=f(CRUOIL,EXR, INVS, INF).....(1)$

In econometrics equation (1) can be transformed as:

$$GDP = \alpha_0 + \alpha_1CRUOIL + \alpha_2EXR + \alpha_3INVS + \alpha_4INF + \hat{\delta}_t.....(2)$$

Where GDP is the Gross Domestic Product of the economy, CRUOIL is the crude oil export of the Nigerian government, EXR is exchange rate, INVS foreign direct investment, and INF is inflation. α_0 is the constant and $\alpha_1, \alpha_2, \alpha_3,$ and α_4 are co-efficient while $\hat{\delta}_t$ is stochastic or error term.

The a priori expectation of the model is that, we expect that inflation (INF) and exchange rate (EXR) to have inverse relationship with Growth of an economy, while crude oil export, and foreign direct investment of the people should have a positive relationship with growth. Also, the study tests for the order of integration of the variables, that is:the stationarity of the variables. Augmented Dickey Fuller (ADF) test for stationarity is applied to know the order of interpretation of the variables in the model. We specify ADF test as follows:

$$\Delta EXR = \alpha_1 + \alpha_2t + \delta EXR_{t-1} + \alpha \sum_{i=1}^m \Delta EXR_{t-1} + \hat{\delta}_t3$$

$$\Delta INVS = \alpha_1 + \alpha_2t + \delta INVS_{t-1} + \alpha \sum \Delta INVS_{t-1} + \hat{\delta}_t4$$

$$\Delta INF = \alpha_1 + \alpha_2t + \delta INF_{t-1} + \alpha \sum \Delta INF_{t-1} + \hat{\delta}_t5$$

Where $\hat{\delta}_t$ in the four equations are assumed to be identical independently distributed random variables. The null hypothesis for their test is that $\delta = 0$ or $P = 1$ that is, unit root exist.

The Johansen Test for the following econometric model;

$$y_t = U_{yt} + \hat{\delta}_{yt}.....(7)$$

$$Z_t = U_{zt} + \hat{\delta}_{zt}.....(8)$$

Co-integrated variables share common stochastic trends. Each of the U's us random walk and that e is stationary. Given that (yt) and (zt) are co-integrated of order (I,1) there must be non zero values of α_1 and α_2 for which the linear combination $\alpha_1y_t + \alpha_2x_t$ is stationary. Thus: $\alpha_1y_t + \alpha_2z_t = \alpha_1(\mu_{yt} + \hat{\delta}_{yt}) + \alpha_2(\mu_{zt} + \hat{\delta}_{zt}) = (\alpha_1\mu_{yt} + \alpha_2\mu_{zt}) + \alpha_1\hat{\delta}_{yt} + \alpha_2\hat{\delta}_{zt})..... (9)$

This is stationary only if $(\alpha_1\mu_{yt} + \alpha_2\mu_{zt})$ vanishes so that;
 $\alpha_1\mu_{yt} + \alpha_2\mu_{zt} = 0v_t.....(10)$

The parameters of the co integrating equation must be such that they purge the trend from the linear combination of the variables.

Furthermore, another test involves the treatment of error term in the test above as equilibrium error. It uses thus error term to tie the short run behavior of the GDP_t to its long run value. (Kareem 0 2005). This test is called Error Correction Model (ECM), which was popularized by Engel and Granger (1987) the specification goes thus:

$$\Delta GDP = \alpha_0 + \alpha_1CRUOIL_{t-1} + \alpha_2EXR_{t-1} + \alpha_3INVS_{t-1} + \alpha_4INF_{t-1} + \alpha_5ECT_{t-1} + \hat{\delta}_t(11)$$

Table 1: Multiple Regressions

Variable	Coefficient	T-statistics	Prob	R ² =0.762882
LOG(CRUOIL)	-2.115947	3.394312	0.0017	AdjR2=0.736536
LOG(EXR)	0.081705	0.329442	0.7437	F.stat=28.95586
LOG(INVS)	0.332956	2.996031	0.0049	D.W.stat. 0.596315
LOG(INF)	0.417288	2.996031	0.0049	

Table 2: ADF Unit Root Result

Variables	Level	First Difference	Integration Order
CRUOIL	-6.113728		I(0)
EXR	-0.021346	-3.858500	I(1)
GDP	-4.204969		I(0)
INF	-3.835526		I(0)
INVS	-3.085838		I(0)

1% critical value -3.6067, 5% critical value -2.9378 10% critical value -2.6069

Table 3: Result of Johansen Co-integration Test Result: Test assumption: Linear deterministic trend in the Data
Series : GDP CRUOIL EXR INVS INF
Lags Interval: 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent critical value	1 Percent critical value	Hypothesized CE(S)	No. of
0.630536	80.56717	68.52	76.07	None***	
0.364434	40.73912	47.21	54.46	At most 1	
0.314473	22.60953	29.68	35.65	At most 2	
0.160701	7.506823	15.41	20.04	At most 3	
0.012405	0.499314	3.76	6.65	At most 4	

*** Denotes rejection of the hypothesis at 5%(1%) significance level
L.R test indicates 1 cointegrating equation(s) at 5% significance level.

where Δ is the first difference and ECT_{t-1} is the error correction term lagged by one period while ∂t is the error term.

EMPIRICAL FINDINGS

The short run result in table 1 shows that there is an inverse relationship between crude oil exports on Economic Growth in the Nigerian economy, given the coefficient of -2.115947, which is statistically significant with a t value of -3.623380. This implies that crude oil exports are a significant factor that can transform the growth of an economy. When a country exports more of its commodities it will help to lessen or lowers the price of its product that is it will equally reduce inflation than the one which relies heavily on imports.

The coefficient of determination (R²) indicates that over 76 percent changes in the Gross Domestic Product are explained by Crude oil exports (CRUOIL), Exchange

rate (EXR), Investment (INVS) and Inflation (INF) taken together. This is a nice fit as the unexplained variation is just 24 percent.

The Adjusted coefficient of Determination (R²) is 0.73 and this shows that 96 percent variation is Gross Domestic Product (GDP) is caused by variation in Crude oil exports (CRUOIL), Exchange rate (EXR), Investment (INVS) and Inflation (INF). This model as specified is statistically significant given its F-test to be 28.95586. Thus, in order to ensure reliability of result, we present the Augmented Dickey Fuller (ADF) unit root test result in table 2. The result shows all the variables are stationary at levels except one that is crude oil exports, gross domestic product, inflation and investment, they are interpretation of order zero (i.e.) I(0). Exchange rate became stationery at first difference that is: 1(0).

Table 3 shows the Johansen is integration test based on Eigenvalue statistics. The test statistics indicate that they are above the critical value of 5 percent at one levels, meaning that we have one co-integrating vectors

Table 4: Summary of Over Parameterized ECM Model

Dependent Variable: GDP				
Method: Least Squares				
Date: 11/15/13 Time: 00.45				
Sample(adjusted): 1973 2011				
Included observations: 39 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CRUOIL	-0.135561	0.071495	-1.896098	0.0718
CRUOIL(-1)	0.300058	0.105305	2.849415	0.0096
CRUOIL(-2)	0.161736	0.089900	1.799056	0.0864
CRUOIL(-3)	-0.115004	0.073935	-1.555464	0.1348
EXR	52.76287	504.4794	0.104589	0.9177
EXR(-1)	281.4704	676.5980	0.416008	0.6816
EXR(-2)	273.1758	686.5742	0.397882	0.6947
EXR(-3)	347.8970	528.6088	0.658137	0.5176
INVS	-0.036382	0.026260	-1.385418	0.1805
INVS(-1)	-0.014357	0.006774	-2.119360	0.0461
INVS(-2)	-0.010641	0.011030	-0.964734	0.3457
INVS(-3)	0.181270	0.116504	1.555913	0.1347
INF	172.8222	393.8383	0.438815	0.6653
INF(-1)	146.5584	450.2523	0.325503	0.7480
INF(-2)	244.6759	465.4877	0.525634	0.6046
INF(-3)	66.64864	441.0121	0.151127	0.8813
ECM(-1)	0.808850	0.121449	6.660001	0.0000
C	111860.7	56630.69	1.975266	0.0615
R-squared	0.987292	Mean dependent var		295566.5
Adjusted R-squared	0.977004	S.D. dependent var.		207845.1
S.E. of regression	31518.58	Akaike infor criterion		23.85858
Sum squared resid	2.09E+10	Schwarz criterion		24.62638
Log likelihood	-447.2423	F-statistic		95.96797
Durbin-Watson stat.	2.142938	Prob(F-statistic)		0.000000

at 5 percent level of significance this implies that the variables are co-integrated, then there would be no loss of information and there exists a long run relationship between crude oil exports and economic activities in Nigeria.

The result of the over parameterized and the parsimonious error correction model are presented in table 4 and 5 below. The over parameterized model reports the initial over-parameterized error correction of Real Gross Domestic Product in Nigeria. All the variables were lagged equally (3 lags) taking into cognizance the number of observations. The difficulty perceived in interpreting the over-parameterized regression necessitated the simplification of the model into a more parsimonious form. This was achieved by

eliminating the insignificant terms. The result of the parsimonious model is reported in table 5.

The parsimonious regression result in table 5 is preferred to that of over-parameterized regression result in table 4 since it has more robust significant regressors, lower Schwarz Criterion (SC) and lower Standard Error (SE).

The parsimonious regression result which relates the changes in GDP to the change in CRUOIL, EXR, INVS and INF as well as the equilibrating error in the previous period. From the result Δ CRUOIL, Δ EXR, Δ INVS, and Δ INF captures the client of the error correction term (ECTt-1) is statistically significant, then the disequilibrium in the GDPt in each period is adjusted in the following period.

Table 5: Parsimonious Error Correction Model

Dependent Variable: GDP				
Method: Least Squares				
Date: 11/17/13 Time: 00.08				
Sample(adjusted): 1972 2011				
Included observations: 40 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CRUOIL	0.397102	0.372E-13	1.07E+12	0.0000
CRUOIL(-1)	1.20E-13	4.08E-13	0.294405	0.7704
CRUOIL(-2)	1.95E-13	3.07E-13	0.634651	0.5303
EXR	-6.01E-10	1.23E09	-0.489331	0.6281
INVS	-1.40E-14	2.69E-14	-0.521590	0.6057
INVS(-1)	2.17E-14	2.58E-14	0.840784	0.4069
INF	-4.36E-10	1.60E-09	-0.272509	0.7870
ECM	1.000000	3.33E-13	3.00E+12	0.0000
C	32620.55	2.14E-07	1.53E+11	0.0000
R-squared	1.000000	Mean dependent var		288299.6
Adjusted R-squared	1.000000	S.D. dependent var.		210247.9
S.E. of regression	1.60E-07	Akaike infor criterion		-28.25879
Sum squared resid	7.97E-13	Schwarz criterion		-27.87879
Log likelihood	574.1758	F-statistic		8.38E+24

CONCLUSION

Adopting the short run dynamic test, the study reveals that a crude oil export is a significant factor that can transform the growth of an economy. It is equally of note that when a country exports more of its commodities it will lessen the price of its products that is it controls price.

The study recommends that cation should be placed on macro economic policy to boost manufactured exports of other commodities via investment and anchored beyond export promoting exchange rate to strengthening the supply side of the economy if effective crude oil export is to be sustained.

The paper also estimates an error correction model of growth using the parsimonious ECM. The result suggests that crude oil exports, exchange rate and inflation captures the client of the error correction term and is statistically significant.

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