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Oil Export and Economic Growth: Descriptive Analysis and Empirical Evidence from Nigeria

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Abstract: It has been a major concern among researchers to investigate the impact of oil export revenue on economic growth, especially in oil exporting countries. Employing an Error Correction Model, this study examines the effect of oil export revenue on economic growth in Nigeria between the period of 1975 and 2009 given concentration to both short-term and long-term effects. The empirical analysis suggests that oil export revenue has a significant positive effect on economic growth both in the short-term and long-term. The extension of this study concentrates on the trend analysis of prices, export (barrels) and revenue from oil industry. The findings established that the primary determinant of foreign exchange earnings in Nigeria is changes in the world crude oil prices.

Key words: Economic growth, oil export revenue, short-term effects, long-term effects, cointegrating regression, Error Correction Model

INTRODUCTION

Export sector reflects the economic transactions between the residents of an economy and the rest of the world. Many Less Development Countries (LDCs) embark on export as the means for generating foreign exchange earnings for the smooth running of economic activities. These revenues from exports are expected in the short-run to result in economic growth and in the long-run to economic development (structural changes). In line of this, it was however argued that the rate of growth and successful transformation of a developing country depend not only on the character and success of its export sector but also in the manners in which export income is employed (Douglas, 1990). From this argument, it is observed that growth of LDCs never depend on how huge the income from export is but also on the effective spending of the proceeds from exports.

As in the Heckscher-Ohlin Model, examining the different components of export, the essential elements that dictate what a country is likely to export is the natural endowment of the country. The model emphasizes that a country should export the goods in which its production is intensive in the factor that is relatively more abundant in that country, the nature of production function of the export industry and changes in technology. Exports in Nigeria can be divided into two different sectors: oil sector and non oil sector. The oil sector comprises all products from crude oil and non oil sector comprises other activities other than crude oil such as agriculture, manufacturing and services.

The significance of natural resources endowment in a developing country like Nigeria cannot be overemphasized. This is because the lives of people in such country revolve largely around exploration and exploitation of such resources. Like Nigeria, agriculture in her early stage of development; say till first two decades of independence (1960s and 1970s) and mining, basically oil extraction, getting its dominance in the past three decades till date. Thus, Nigeria is well endowed with agriculture and mineral resources where the exploration and exploitation of these resources has of one time or the other contributed significantly to economic growth. Prior to the mid 1970s, agricultural exports were the main sources of foreign exchange to Nigeria. Throughout this period, Nigeria happened to be a major exporter of agricultural products such as cocoa, groundnuts, rubber, palm-oil, palm kernel and cotton. During this period, government revenue also depended on taxing the export commodities.

However, from the mid 1970s, attention shifted from agriculture to oil in Nigeria which caused a drastic decline in agriculture production and exports. As a matter of fact, Nigeria began to import some of those agricultural products she previously self sufficient. For example between 1970 and 1982, Nigeria lost >96.6% of her agricultural exports in nominal terms (Oyejide, 1986). This was as a result of the oil boom caused by the oil price shocks of 1973-1974 and 1979. From the period of the first oil boom till date, Nigeria has neglected agriculture and solely depended on oil. However, according to Pinto (1987), the oil boom that started from the 1970s afflicted

the Nigerian economy with the so called Dutch Disease (Dutch Disease called the resource curse or the curse of oil is the damaging effect of an economy as a result of the exploitation and export of natural resources. The claimed mechanism is that an increase in revenue from natural resources will make a given nation's currency stronger compared to that of other nations resulting in the nations other exports becoming more expensive for other countries to buy making manufacturing sector in particular less competitive). To this present time, debates among professionals in the country are really heightened on whether oil is a blessing or curse to Nigeria.

As observed from the above brief history, the most significant of the natural resources in Nigeria, especially in the last three decades is oil. Oil in this study, refers to petroleum or crude oil (the word petroleum is derived from two Latin word Petral (rock) and Oleum (oil) while crude oil refers to oil and gas in the unrefined state with all its impurities). Oil operation entails the exploration and exploitation of hydrocarbons for the supply of energy and petrochemicals. Apart from its economic benefits to a nation, the advent of oil has contributed immensely to the development of the global economy (In Nigeria, crude oil discovery and exploitation has positively influenced the economy. According to World Bank 2008 in the last 4 years, the growth statistics of several low income and low to middle income economies have been buoyed by exports of oil and natural gas. For example, GDP of oil exporters grew by an average of 8%, compare to just 6% of importers). But on the opposite, we are not unaware of its negative impact on the economy in terms of environmental degradation to the surrounding communities within which the oil wells are exploited and also the world effect of climate change as a result of CO_2 emission from the usage of oil as a source of energy.

It is important to appreciate the fact that oil export among other means of revenue within the Nigerian economy has recently been a major source of revenue to the Nigerian government, accounting for between 71 and 89% in the period between 1999 and 2008 (Table 1).

Table 1: Total government revenue, total oil export revenue and total government expenditure (1999-2008) ₦ million

Years	Total government revenue	Total oil export revenue	Total government expenditure	Percentage of oil export in total Govt. expenditure
1999	949,188	724,423	947,690	76
2000	1,906,160	1,591,676	701,059	84
2001	2,231,600	1,707,563	1,018,026	77
2002	1,731,838	1,230,851	1,018,156	71
2003	2,575,096	2,074,281	1,225,966	81
2004	3,920,500	3,354,800	1,426,200	86
2005	5,547,500	4,762,400	1,822,100	86
2006	5,965,102	5,287,567	1,938,003	89
2007	5,715,600	4,462,910	2,450,897	78
2008	7,866,590	6,530,630	3,240,820	83

CBN statistical bulletin, December 2008

Basically, over the years, oil exports have served as a major source of foreign exchange earnings and a primary source of increasing the supply of money in the Nigerian economy. The relationship between revenue from oil and government expenditure as shown in Table 1 is also positive, meaning the revenue from oil in Nigeria has really determined the size of the Nigerian government. Therefore because of the volatility feature of the oil price and revenue, macroeconomic dynamism in Nigeria has been dominated in the past by fiscal instability: there have been at a time, a strong unanticipated deficit and another, surplus as the case may be stemming from government revenue instability through oil price fluctuations.

This poses a serious threat both to the sustainability of the country's budget and to its macroeconomic stability. 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 (Odularu, 2008). Nigeria exported on the average approximately 780 million barrels of crude oil (worth approximately US$36 billion) per year between 1999 and 2008 and still can't transfer this into notable growth: per capita income today is almost at par with the 1960's level. Hence, it is a fair assumption that for most Nigerians living standards have actually not improved. As a result, it is a major concern of this study to investigate evidently what the impact of oil export is in Nigeria's economic growth experience.

This study is motivated by the fact that Nigeria relies heavily on the proceeds from crude oil representing >90% of total export earnings and on average about 80% of government revenues in annual budgets. This has severe implications on the economy as this resource (oil) on its own is non-renewable in the long run making its availability unsure after a while. Also, considering the wide range research carried out everyday to find a perfect substitute for oil as a source of generating energy, even when oil is still available, it may not be as lucrative as it is now in the future because demands will surely be lower than its supplies as a result of adequate substitute. Consequently, the objective of this study is in two folds: to descriptively analyse the trend in export, price and revenue from oil in Nigeria in relation to what may happen in the future and to evaluate the impact of oil export revenue on economic growth in Nigeria.

Background to the study

Structure and trend of the Nigerian export sector: The Nigerian economy is a middle income, mixed economy emerging market with well-developed financial, legal, communications, transport and entertainment sectors. It is ranked 31st in the world in terms of GDP (Purchasing

Power Parity, PPP) as of 2009. Nigeria's major source of revenue is petroleum and is the 15th largest producer of petroleum in the world. Nigerian economy is struggling to leverage the country's vast wealth in fossil fuels in order to displace the crushing poverty that affects about 57% of its population. Economists refer to the coexistence of vast wealth in natural resources and extreme personal poverty in developing countries like Nigeria as the resource curse (resource curse (paradox of plenty) is a term used by economists to mean that resource rich countries tend to perform poorly when compared with economies that are not well endowed with natural resources. They believe the abundance of natural resources fuels official corruption resulting in a violent competition for the resource by the citizens of the nation). According to the CBN (2000) publication, the structure and trend of the Nigerian export sector has remained the same since the end of colonialism till date. This is seen from the dominance of one export commodity. Nigeria was prior to independence in 1960 and after into the mid 1970s, a major exporter of agricultural commodities. On the average, agriculture contributed >60% to GDP in the early 60s. By the turn of the 1960s, the percentage contribution of agriculture had fallen <50%. The decline was more dramatic in the 1970s reaching an all time low level of 23% in 1980 showing that the role of agriculture in terms of its contributions to the GDP has been declining. Agriculture has suffered from years of mismanagement, inconsistent and poorly conceived government policies and the lack of basic infrastructure. Still, the sector accounts for >26.8% of GDP and two-thirds of employment.

With the discovery of petroleum in large commercial quantities in 1956 and the oil boom of 1973-1974 and 1979, Nigeria became a major exporter of crude oil till today from which it derived substantial foreign exchange earnings (In the past one decade, precisely from 2003-2008, the government has been steadily building up its reserves owing largely to improved oil export earnings and its greater commitment to saving windfall oil revenue under its new fiscal regime. Foreign exchange reserves grew for example by 16.4% from US$51.3 bn in 2007 to an estimated US$59.7 bn in 2008. Reserves reflected a comfortable import cover of almost 16.1 months. However, the crash in world crude oil prices made the country's reserve to fall by US$6 bn in 2009 where it later got to US$68.7 bn in early 2011 as a result of the gradual recovery of the world crude oil price). The windfall from oil was so great that attention was shifted from agricultural commodities with the consequences that earnings from the agricultural sector declined and the economy became almost entirely dependent on earnings from crude oil exports. Nigeria's exports of oil and natural gas have enabled the country to post merchandise trade and current account surpluses in recent years. Reportedly, 80% of Nigeria's energy revenues flow to the government, 16% covers operational costs and the remaining 4% go to investors. Oil revenue in Nigeria accounts for >90% of total export earnings and on average about 80% of government revenues in annual budgets. However, the World Bank has estimated that as a result of corruption 80% of energy revenues benefit only 1% of the population. Over the years from independence to date, Nigeria has attempted many times to mitigate the problems of corruption and reduce the dependence on oil as the only major source of foreign exchange in the country. The unexpected and undesirable phenomenon between 1977 and 1979 in the world oil market that characterized sharp decline in oil prices for the first time in the history of Nigeria in 1978 sent a ripple of shocks through the economy.

It soon became clear to the government of the day that the foreign exchange being generated, mainly by crude oil could not adequately provide for the development needs of the country. However, instead of adopting an export-oriented development strategy to complement the import-substitution strategy, the country decided to take a restrictive measures, the so called low profile or austerity measures to conserve the oil generated foreign exchange earnings. In addition, Government did not go further than merely revamping the existing export marketing system by creating commodity boards and granting them greater autonomy over export sales of Nigerian agricultural commodities. This gave birth to the six boards namely: the cocoa, rubber, groundnut, cotton, palm produce and grain boards which dominated the export scene of Nigeria until 1986.

The Obasanjo administration in 1979 made the first significant move in Nigeria to remove the anti-export bias in the economic system by the introduction of a far reaching export incentive package. Unfortunately, owing to the fact that these export incentive measures in the package were not given the force of law before the exit of the administration late in 1979, they could not be implemented. They were thereafter overtaken by the short-lived recovery in the oil market of 1980/81 which heralded the coming into power of Shagari administration. During the period immediately preceding the introduction of the Second-Tier Foreign Exchange Market, SFEM (from 1984-1986), successive military administrations gave serious consideration to the urgent need to find or develop other methods of sourcing foreign exchange in addition to measures adopted to conserve what was already earned. This was as a result of the mounting obligation of the country to settle trade arrears, provide

for debt servicing and meet current trade billls. By 1984, Nigeria found herself with huge foreign debts in addition to being in serious arrears in the settlement of foreign trade bills incurred mainly on irrevocable letter of credit. Thus, it became clear to policy makers in Nigeria that additional effort had to be made by the nation to earn more foreign exchange. Since, oil could no longer fulfil this role adequately, non-oil exports readily became an obvious option.

It was for this reason that the administration under the leadership of General Ibrahim Babangida adopted in 1986, an export-oriented development strategy as a major cornerstone of the Structural Adjustment Programme (SAP).

This involves the introduction of a comprehensive law, the export (Incentives and Miscellaneous Provision) Decree No. 18 of 1986 to encourage exports. The provisions of the decree were shortly after its introduction, strengthened by the provisions of the SFEM Decree of September 1986. The general policy objectives of SAP and SFEM Decree recognized the need to strengthen the institutional framework for export promotion within the country, liberalize the export sub-sector and deregulate the foreign exchange sector.

Up until June 2003, there was no clear economic direction. Weak institutions and legal environment stymied the benefits that would have accrued from oil earnings which had started to firm up. The entire scenario changed in 2003-2007 with the formal announcement and presentation of the Federal Government's Economic Agenda, tagged the National Economic Empowerment and Development Strategy (NEEDS). A related initiative on the state level is the State Economic Empowerment Development Strategy (SEEDS). http://medwelljournals.com/ams/newfiles/10492/oil and growth/Economy_of_Nigeria.htm - cite_note-LOCprof-5#cite_note-LOCprof-5 NEEDS is a medium-term strategy that seeks to implement series of reforms that would lay a solid foundation for a diversified Nigerian economy by 2007. It sets specific goals in major growth indices as wealth creation, employment generation, institutional reforms and social charter.

Oil activities in Nigeria: The advent of the oil industry can be traced back to 1908 when a German entity named the Nigerian Bitumen corporation began exploration activities in Araroni area of the present Ondo State, Western Nigeria. These pioneering efforts ended abruptly with the outbreak of the first World War in 1914. The dry shallow oil wells they discovered then were not big enough for commercial purposes. Oil prospecting effort resumed in 1937 when Shell D'Arcy (the forerunner of Shell Petroleum Development Company in Nigeria) was awarded the sole concessionary right in 1936 covering whole territory in Nigeria. Their activities were also interrupted by the second World War in 1939. Oil activities later resume in Nigeria in 1947 when shell D'Arcy teamed up with British Petroleum to form Shell-BP Unit in Nigeria.

Concerted efforts after several years and an investment of >30 million ₦, led to the first commercial discovery in 1956 at Oloibiri in the Niger Delta. In 1958, production was at the rate of 5100 barrel day^{-1} (bpd) which was mostly exported. The discovery opened up the oil industry. In 1961, other companies join in the exploration efforts both in the offshore and onshore areas of Nigeria.

In 1971, Nigeria joined the Organization for Petroleum Exporting Country (OPEC) and after a while the government undertook an ambitious program to develop the petroleum industry. Effective April 1, 1977 the two agencies responsible for regulating Nigerian oil production, the National Oil Corporation and the Ministry of Petroleum Resources were dissolved and reconstituted into a single entity, the Nigerian National Petroleum Corporation (NNPC). The oil activities are majorly categorized into two: the upstream and downstream. The upstream refers to all activities relating to oil and gas exploration and production.

This involves all activities that are carried out in order to discover the deposit (existence) of oil and gas as well as to extract the product from beneath the earth surface in its crude form, before it is processed into consumable production. Hence, the investment opportunities in the upstream sector includes: surveying, seismic data acquisition and interpretation, geological activities, drilling operations, production and crude oil transportation and storage.

The downstream, the more problematic of the two sub-sectors refers to all activities that go on from the point of refining, compressing (gas) to the point of distribution and marketing product to the final consumers for utilization. Investment opportunities in the downstream sector include: gas treatment, crude oil and gas conversions into refined and petrochemical products and fined chemicals, transportation and marketing of the products and gas utilization: Liquefied Petroleum Gas (LPG), Natural Gas Liquids (NGLs), Liquefied Natural Gas (LNG) and Compressed Natural Gas (CNG). Because of the problem peculiar to this sub-sector in the area of

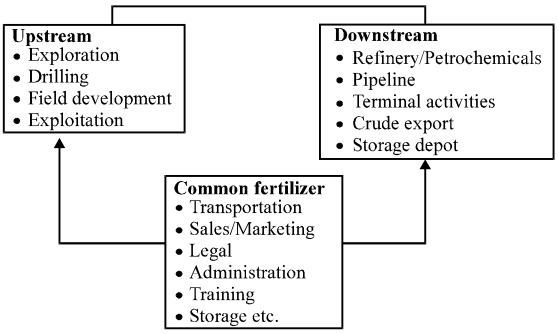

Fig. 1: Oil and gas management; Fig. 1 represents the major activities in the upstream and downstream sectors including the common services and their interconnectivity). Wangonet; WangoNET (West African NGO Network) is an electronic community of civil society organisation

incessant crisis in the supply of products to the retail outlets, the government in 2003 deregulate the downstream sub-sector. Oil and gas upstream and downstream activities are closely related, it is a complementary process. Hence, the more synthesized of both activities is found in oil and gas management (Fig. 1). Oil and gas management is a whole gaunt of events and activities which involves both downstream and upstream with a lot of common services. Petroleum is by far the most dynamic sector in Nigeria today. Production of crude oil has increase rapidly since, the first commercial discovery in 1956 and has reached a level of 1 million bpd in 2008 (the figure of 1 million bpd is accounted for the production in 2008 where the scope of this article covers. The figure as at 2011 when this article is written is 2.6 million bpd due to the improvement in post-amnesty programme as announced by president Goodluck Jonathan in an address at the official opening of Nigerian oil and gas conference in Abuja). According to Oil and Gas Journal (OGJ), Nigeria has an estimate of 36.2 billion barrel of proven oil reserves as of January 2009. The majority of reserves are found along the country's Niger River Delta and offshore in the Bight of Benin, the Gulf of Guinea and Bight of Bonny. Current exploration activities are mostly focused in the deep and ultra deep offshore with some activities planned in the Chad Basin, located in the Northeast of the country.

The major foreign producers in Nigeria are Shell, Chevron, Mobil, Total, Eni/Agip, Elf, ADDAX, TEXACO, NAOC, etc. Recent developments in the upstream sector include: the start up of the Chevron-Operator field in September 2008 with expected peak production of 250,000 bpd by the end of 2009. Nigeria's crude oil type is basically categorized into eleven, these are: Forcados blend, Bonny light, Bonny medium, Brass blend, Escarvos light, Rennigton light, Anten blend, Oduda blend, IMA, Qua-Iboe light and Oso condensate. Most of these oil grades, according to the Energy Intelligence Group's International Oil Market Handbook are light, sweet crudes with gravities ranging from API 29-47 degrees and low sulfur contents. Consequently, the light, sweet quality of Nigeria's crude oil makes it preferred gasoline feed stock. This represents a major advantage for Nigeria's crude oil over all major producers except Libya and Indonesia whose oil is also low in sulphur.

It is important to appreciate the happenings to world oil prices and revenue. Global Gross Domestic Product (GDP) is the key determinant of economic growth in the world and it is also the determinant for oil market. The period 1999 through 2008 witnessed the best global economic growth and this was a fundamental driver of oil prices over this period. The emerging markets of China, India and Brazil added further force to the growth of oil demand and high oil prices, owing to the level of development these countries were attaining. The outcome of the high demand for oil and a low reserve capacity in the world led to demand shock. Likewise, the unexpected storm of economic disaster that hit the world in late 2008 made the price of crude oil to crash from its record high of $141.26 in July 2008 to a low of $45.45 in December same year.

Other factors that contributed to high oil prices are: Hurrican Katrina in 2005 which rendered almost 1 m bpd of refining capacity in United State unusable for several months; series of geopolitical incidents added to both supply and market psychology; disruption in the Middle East was a continuing feature in the oil market and also the Iran's nuclear programme was a major factor that made oil prices to keep rising. One other factor that influences the rise of oil was that there were no major oil well discovery in this period and also, the cost inflation for developing oil (and natural gas). This was as a result of shortages in terms of people, equipment, skills and inputs. These cost fed into the price environment. Speculation by investors also contributed to the price of oil to reach a record high of over $141 barrel^{-1} in July 2008. It is vital at this point to identify the important characteristic of the Nigerian oil export sector in the area of its trade direction within the world economy.

Figure 2 shows that Nigeria exported 47% of her oil production to the United States in 2008. This made United States the highest importer of Nigeria's oil. India followed by importing 12% and other Europe 11% while other Asia is the lowest with a 2% import.

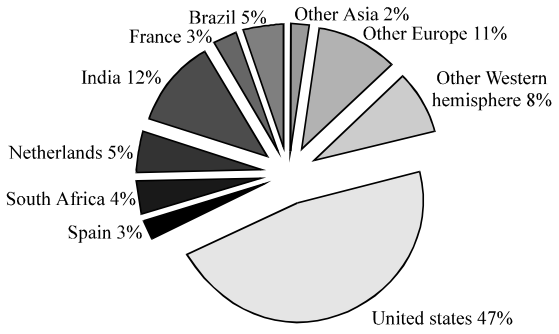

Fig. 2: Breakout of Nigeria oil exports, 2008; Energy Information Administration (EIA) and NNPC statistical bulletin

Review of some empirical literature: The importance of exports on economic growth has been an important subject of concern among economists in the world for long. This concern in recent years, especially for countries that depend on primary goods or natural resources as a source of export earnings has extended to examining the various components of export; thereby trying to separate the effect of individual component. In the quest for establishing how important export is to any economy, most of the early development economists resolved on the concept of Export-Led Growth (ELG) hypothesis and of more recent time, the argument has been extended to Endogenous Growth (EG) Theory which emphasizes the role of exports on long-run growth through technology innovation and learning from abroad.

The ELG hypothesis postulates that export growth is one of the key determinants of economic growth. It holds that the overall growth of countries can be generated not only by increasing the amounts of labour and capital within the economy but also by expanding exports (Medina-Smith, 2001). According to its advocates (Robertson, 1938; Nurkse, 1961; Feder, 1982). Robertson (1938) was the first to use the phrase engine of growth to describe the role of international trade in primary products in the growth process of an economy. Nurkse (1961) argued export (trade) is the engine of growth, particularly for countries like Argentina, Australia, Canada, New Zealand, South Africa and the United States. This claim was challenged a decade later by Kravis (1970) that Nurkse's claim is an exaggeration of the importance of export. In his own claim, he argued that Trade expansion should be seen as a handmaiden of successful growth rather than an autonomous engine of growth), exports perform as an engine of growth. Beforehand, many scholars have explored empirically the relationship between oil export revenue and economic growth. Different methodologies employed have resulted in different results, some contradictory to past evidences where some in support as the case may be. A number of empirical literature carried out, more particularly the early studies is to examine the short term effects, thereby focus on the Dutch Disease syndrome first experienced in Netherlands (Krugman, 1987). However, with detailed concentration about what might be the effects in the long-run, recent empirical studies focuses on Long-Run Growth Model where different scholars at the end of their studies concluded on different results; depending primarily on the variables considered and methodologies employed.

Some are in support of the natural resource curse hypothesis originally provided by Sach and Warner (1995) who concluded that there exist a negative relationship between the different measures of resource abundance and real GDP growth per capita while some concluded a contrary view that in the long-run, natural resource curse hypothesis does not exist. For example, Cavalcanti *et al.* (2011) claim that it is volatility in commodity prices that drives the resource curse hypothesis rather than resource abundance and Mehrara *et al.* (2011a, b) claim what causes curse or blessing of oil resources is the institution qualities of the countries; the lower the institution quality, the more negative effect of the oil revenues on the economic growth. Among others that also account for institutions effect in their studies are Sach and Warner (1995), Mehlum *et al.* (2006), Beland and Tiagi (2009), Collier and Hoeffler (2009) and Bhattacharyya and Hodler (2010). In the following, researchers will review some selected related recent empirical literatures where as we will see shortly, the literature is still far from concensus.

Odularu (2008) analyses the relationship between crude oil sector and Nigerian economic performance employing a flexible empirical methodology of Ordinary Least Square (OLS) after cochrane orcutt iterative estimation. He employed crude oil export to capture the crude oil sector and Real Gross Domestic Product (RGDP) to capture Nigeria economic performance. The results of his study established that crude oil production has contributed to economic growth in Nigeria. Primarily, the result shows that an increase in any of the variables (labour, capital and crude oil export) employed as independent variables will lead to an increase in RGDP. Esfahani *et al.* (2010) in their examination of the Iranian economy between 1979 and 2006 developed a Long-Run Growth Model using quarterly data and empirical methodology of Vector Error Correction Model (VECM).

They derived conditions under which oil revenues are likely to have a lasting impact on growth and per capita income. They established that real output in the long run is shaped by oil exports through their impact on capital accumulation which contradicts the standard literature on the dutch disease and the resource curse which primarily concentrates on short-run implications of a temporary resource discovery. They also extend their

research to accommodate the experience of two (Saudi Arabia and Norway) other major oil exporting economies of very different development experience and political systems and show that the long-run output equation derived in the study applies equally to them. However, in the research of Mehrara *et al.* (2011a) in their study of the Iranian economy between the year 1959 and 2008 using annual data diffentiate between linear and non-linear estimates.

The results for the linear specification which according to them is misleading is consistent with the evidence found by many studies in the past (Spatafora and Warner, 1995; Yang and Lam 2007; Berument *et al*., 2010; Esfahani *et al.*, 2010). It suggests a positive relationship between growth and oil revenues. But using the structural breakpoint methodology (non-linear estimates) proved that this relation tend to be positive just below a threshold for the growth rate of oil revenues equal to 22%. After this point the effect tends to be negative. Acccording to them, this threshold level should be point at which oil exporting countries should begin to worry about oil revenues growth. In concluding their study, they put it forward that modest oil boom can be a blessing but an excessive boom (where oil revenues increase above the threshold level) turns to be a curse to the oil exporting countries.

This result is contrary to the results of many scholars in the past especially those who have concentrated on examining the long-run effect of oil revenue on economic growth. Recent study by Mehrara *et al.* (2011b) extended the idea of developing a non-linear methodology to take into consideration the effect of institutions in oil exporting economies. The study shows that oil rich countries are not the losers of the economic growth rate. Their Linear Model is consistent with the evidence found in 43 countries that suggest a positive relationship between growth and oil revenues. However, using the Non-Linear Model, result shows that this relation tends to be negative just below a threshold for the institutional index equal to 0.3. After this point the effect tends to be positive. This finding clearly shows that oil as one of the most important natural resources, constitutes a major source of income for many countries and depending on the institutions of the country can contribute to the long term economic growth of that country or lead to the poor long run economic performance.

MATERIALS AND METHODS

In this study researchers investigate descriptively the trend of prices, export (barrels) and revenue from oil industry in Nigeria on one part and on the other, examine the impact of oil export revenue on economic growth in Nigeria. For descriptive analysis, the period 1999-2008 is chosen as it marks the time Nigeria started enjoying the dividends of democracy and to capture the period when world oil prices experience most frequent fluctuations. In examining the impact of oil export revenue on economic growth, the period of 1975-2009 is chosen to capture the period when oil became the major export in Nigeria.

Trend analysis of prices, exports and revenue from oil export in Nigeria (1999-2008): This study appreciates the volatility (movement) in prices and revenue from oil and makes a cross examination of the relationship that exists between revenue and export (barrels) using data and graphical presentation. The relationship between revenue from oil and government expenditure in Nigeria is also given a focus to know if revenue from oil truly determines the size of government expenditure in Nigeria. That is does government expenditure increases with an increase in oil revenue or does it contracts as oil revenue reduces? According to the findings, it is evidenced that the major driver of earnings from oil export (being the major export the country relies on) in Nigeria is price changes. Although, crude oil export as shown in Table 2

Table 2: Quarterly estimated price ($) export (barrels) and revenue ($) from oil in Nigeria (1999-2008)

Years	Prices	Export	Revenue
1999	11.12	58419961	653314870
	15.38	59105469	909265034
	20.31	57858789	1175095714
	24.44	60180274	1471990693
2000	27.31	60783531	1661373821
	26.64	64292268	1711385856
	29.75	68862984	2045578259
	30.39	69260077	2107389929
2001	25.81	67014940	1721504515
	27.52	64621534	1779218622
	25.38	64712223	1642936057
	19.57	62043236	1216906562
2002	20.78	54044775	1122149404
	24.93	51812204	1291627205
	26.92	55764144	1502178883
	27.20	59510002	1622095438
2003	31.33	63677305	1885639659
	26.02	64212900	1669651436
	28.38	67526570	1917155801
	29.33	69911385	2050618960
2004	31.60	74701885	2361662442
	35.63	72461568	2582346757
	40.57	75539523	3064195596
	43.77	69989473	3065177753
2005	47.58	66796959	3186699469
	52.53	68879380	3723683107
	63.12	71770152	4519562724
	58.61	73937342	4328225325
2006	62.95	68060505	4285101392
	71.13	65674437	4669810406
	72.77	68239337	4975163828
	61.83	70691078	4274719746
2007	59.65	64436991	3837226014
	70.85	62611016	4434949124
	77.44	68114356	5281004246
	89.83	68779810	6179761974
2008	98.71	59892514	5911626235
	124.30	57203243	7111143044
	121.44	60701775	7339198588
	61.87	63605733	3982951782

NNPC annual statistical bulletin in 2008

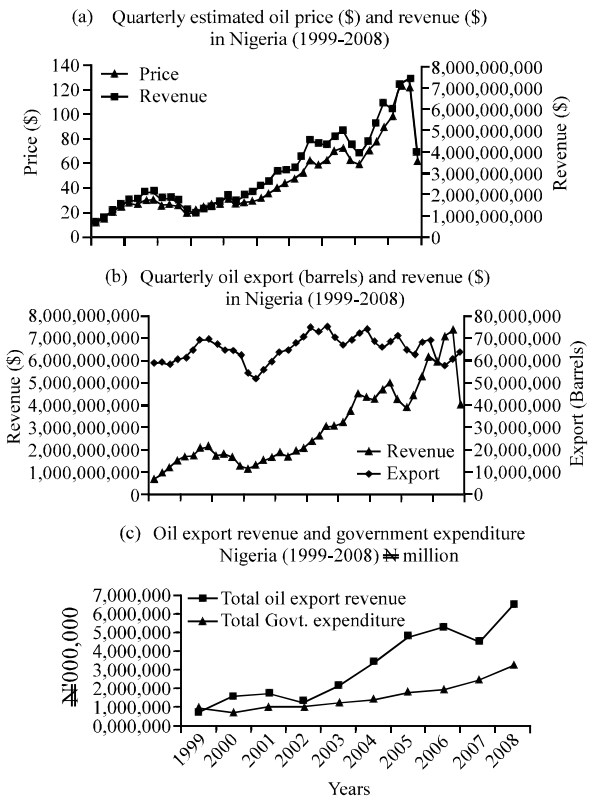

Fig. 3: Price, export, revenue from oil and government expenditure in Nigeria (1999-2008); a) computed from Table 2; b) computed from Table 2; c) computed from Table 1; a and b are quarterly data while c are yearly data

and Fig. 3b has not been stable but the deviation of the yearly export from their mean has shown a narrow gap as oppose to the price column which has been on the upward trend from 1999-2008 (Table 2 and Fig. 3a).

From Table 3, exports of crude oil within the year of coverage hit its lowest in the year 2002 with 663, 393 and 375 barrels and hit its highest in the year 2004 with 878, 077 and 349 barrels. After 2004, the export of crude oil has been fallen gradually till 2008 where it got to 724, 479 and 796 barrels. As observed from above, year 2004 suppose to mark the year with highest revenue from crude oil but surprisingly because of the upward trend in price, year 2008 marked the highest in revenue. This was as a result of increase in crude oil price when it hit its peak in July (141.26 for Bunny light and 141.37 for Forcados). Figure 3a where quarterly data is used for computation, it is clearly shown that oil revenue graph is a mirror of the oil price graph. Meaning that to a larger extent, the effect of fluctuations in oil export (barrels) on oil revenue is little compared to the effect of price movements (note that this analysis does not establish the significance level of oil export on revenue as the scope only centers on description). Therefore, the movement in prices determines the direction of oil revenue in Nigeria. What does this clarify? Or what happens to Nigeria if there is a sudden permanent crash in the price of crude oil (evidence of possible happenings can be observed from the present situation in Nigeria as Annual budgets are prepared based on the present and projected price of crude oil. It means sudden or unprepared permanent crash in crude oil price may cripple the Nigerian economy). Given the exhaustible characteristic of this resource and efforts by the global world to get a substitute for oil as the major source of power generation, we think it is the high time Nigeria diversify her economy from depending on oil as her major and almost, the only source of foreign exchange (accounts for >90% of total export earnings in Nigeria). From Fig. 3c which presents the positive relationship between oil revenue and government expenditure, it is shown that as oil revenue increases as a result of price increase, government expenditure also increase. It is important to refer to the steepness of the slopes of the two graphs: government expenditure graph has a gentle slope compared to the more steeply slope of the oil revenue graph. It therefore follows that as Nigeria experience boom (oil price increase), the economy experiences foreign reserves accretion. On the other hand as oil revenue falls, it does not become obvious that there is a reduction in government expenditure. This is because of the lag factor that comes into play whenever there is bust in revenue and reduction in government expenditure. What the government does in situation like this is to withdraw from the huge reserves generated during boom to finance its project in a time of oil bust and later increase savings when there is another surplus as a result of oil boom (to see the movements in Nigeria's foreign exchange reserves,we recommend that the reader should consult Central Bank of Nigeria.

This situation is evidenced by the recent experience in Nigeria following the bust in the oil prices resulting from the world financial crisis: foreign reserves dropped from US$53 billion in 2008 to US$46 billion in 2009 and later to US$33 billion in 2010. Therefore, it will not be nonsense to say oil exports revenue in Nigeria has really determined the size of the government in recent years and foreign reserves serve as the variable that smoothen government expenditure in Nigeria. In conclusion, according to the description of the tables and graphs, the relationship between price and revenue of crude oil is extremely positive. That is as price increases revenue increases not minding what happen to export (barrels)

Table 3: Monthly estimated price ($) export (barrels) and revenue ($) from oil in Nigeria (1999-2008)

Years	Months	Prices	Export	Revenue	Years	Months	Prices	Export	Revenue
1999	Jan.	11.13	57,508,864	640,073,656	2000	Jan.	25.41	59,584,042	1,514,030,507
	Feb.	10.24	52,921,179	541,912,873		Feb.	28.04	59,773,674	1,676,053,819
	Mar.	12.00	64,829,840	777,958,080		Mar.	28.48	62,992,877	1,794,037,137
	Apr.	15.05	59,232,630	891,451,082		Apr.	22.93	64,412,125	1,476,970,026
	May	15.45	58,335,443	901,282,594		May	27.45	65,564,644	1,799,749,478
	Jun.	15.65	59,748,334	935,061,427		Jun.	29.53	62,900,036	1,857,438,063
	Jul.	18.38	58,639,048	1,077,785,702		Jul.	28.75	69,982,824	2,012,006,190
	Aug.	20.38	56,560,165	1,152,696,163		Aug.	27.86	70,033,721	1,951,139,467
	Sep.	22.18	58,377,154	1,294,805,276		Sep.	32.65	66,572,408	2,173,589,121
	Oct.	22.70	59,762,318	1,356,604,619		Oct.	30.91	72,292,339	2,234,556,198
	Nov.	24.54	58,384,387	1,432,752,857		Nov.	32.43	69,054,318	2,239,431,533
	Dec.	26.07	62,394,116	1,626,614,604		Dec.	27.82	66,433,575	1,848,182,057
	Total	-	706,693,478	12,628,998,933		Total	-	789,596,583	22,577,183,596
2001	Jan.	25.10	72,723,164	1,825,351,416	2002	Jan.	19.63	57,284,626	1,124,497,208
	Feb.	27.76	58,619,463	1,627,276,293		Feb.	20.14	51,015,787	1,027,457,950
	Mar.	24.56	69,702,192	1,711,885,836		Mar.	22.56	53,833,912	1,214,493,055
	Apr.	25.41	63,839,139	1,622,152,522		Apr.	24.99	50,552,697	1,263,311,898
	May	28.59	65,871,650	1,883,270,474		May	25.81	52,706,783	1,360,362,069
	Jun.	28.56	64,153,812	1,832,232,871		Jun.	23.98	52,177,133	1,251,207,649
	Jul.	24.89	62,581,831	1,557,661,774		Jul.	25.77	53,453,914	1,377,507,364
	Aug.	25.36	66,896,170	1,696,486,871		Aug.	26.52	56,530,296	1,499,183,450
	Sep.	25.90	64,658,669	1,674,659,527		Sep.	28.46	57,308,222	1,629,845,834
	Oct.	20.68	66,537,511	1,375,995,727		Oct.	28.44	58,414,515	1,661,308,807
	Nov.	19.19	61,734,194	1,184,679,183		Nov.	24.37	57,415,035	1,399,204,403
	Dec.	18.84	57,858,003	1,090,044,777		Dec.	28.80	62,700,455	1,805,773,104
	Total	-	775,175,798	19,081,697,271		Total	-	663,393,375	16,614,152,791
2003	Jan.	30.83	63,927,693	1,970,890,775	2004	Jan.	30.81	75,326,188	2,320,799,852
	Feb.	32.33	64,213,985	2,076,038,134		Feb.	30.47	73,082,052	2,226,810,124
	Mar.	30.83	62,890,237	1,609,990,067		Mar.	33.52	75,697,415	2,537,377,351
	Apr.	25.60	62,068,333	1,588,949,325		Apr.	33.14	72,073,593	2,388,518,872
	May	25.01	67,533,578	1,689,014,786		May	37.87	73,105,924	2,768,521,342
	Jun.	27.46	63,036,788	1,730,990,198		Jun.	35.87	72,205,187	2,590,000,058
	Jul.	28.36	64,221,785	1,821,329,823		Jul.	36.64	75,792,843	2,777,049,768
	Aug.	29.40	70,581,872	2,075,107,037		Aug.	42.88	76,725,509	3,289,989,826
	Sep.	27.37	67,776,052	1,855,030,543		Sep.	42.18	74,100,218	3,125,547,195
	Oct.	29.42	68,273,106	2,008,584,779		Oct.	48.81	71,407,315	3,485,391,045
	Nov.	28.93	68,883,971	1,992,813,281		Nov.	43.96	68,135,235	2,995,224,931
	Dec.	29.63	72,577,078	2,150,458,821		Dec.	38.55	70,425,870	2,714,917,283
	Total	-	795,984,478	22,569,197,569		Total	-	878,077,349	33,220,147,647
2005	Jan.	44.01	67,456,297	2,968,751,631	2006	Jan.	63.26	71,062,565	4,495,417,862
	Feb.	45.43	62,778,435	2,852,024,302		Feb.	62.83	66,829,351	4,198,888,123
	Mar.	53.30	70,156,144	3,739,322,475		Mar.	62.77	66,289,600	4,160,998,192
	Apr.	53.30	63,695,905	3,394,991,737		Apr.	71.58	63,576,883	4,550,833,285
	May	49.88	75,223,196	4,092,141,862		May	71.84	65,258,457	4,688,167,551
	Jun.	54.40	67,719,039	3,683,915,722		Jun.	69.96	68,187,970	4,770,430,381
	Jul.	58.15	75,770,411	4,406,049,400		Jul.	75.35	72,460,015	5,459,862,130
	Aug.	64.63	70,382,521	4,548,822,332		Aug.	76.36	67,340,856	5,142,147,764
	Sep.	66.57	69,157,525	4,603,816,439		Sep.	66.60	64,917,141	4,323,481,591
	Oct.	60.74	68,979,056	4,189,787,861		Oct.	60.69	70,966,162	4,306,936,372
	Nov.	57.52	74,118,223	4,263,280,187		Nov.	60.36	70,727,123	4,269,089,144
	Dec.	57.57	78,714,746	4,531,607,927		Dec.	64.43	70,379,949	4,248,133,722
	Total	-	844,151,498	47,274,511,875		Total	-	817,996,072	54,614,386,117
2007	Jan.	56.58	70,552,458	3,991,858,074	2008	Jan.	94.62	56,793,954	5,373,843,927
	Feb.	59.23	58,955,150	3,491,913,535		Feb.	95.35	63,301,288	6,035,777,811
	Mar.	63.13	63,803,365	4,027,906,432		Mar.	106.16	59,582,300	6,325,256,968
	Apr.	70.31	63,456,666	4,461,638,186		Apr.	111.45	54,376,043	6,060,209,992
	May	70.15	63,129,755	4,428,552,313		May	124.67	62,968,369	7,850,266,563
	Jun.	72.08	61,246,627	4,414,656,874		Jun.	136.79	54,265,316	7,422,952,576
	Jul.	78.53	70,740,161	5,555,224,843		Jul.	141.26	57,147,639	8,110,815,685
	Aug.	74.77	63,249,478	4,729,163,470		Aug.	119.26	60,596,105	7,226,691,482
	Sep.	79.01	70,353,429	5,558,624,425		Sep.	103.79	64,361,582	6,680,088,596
	Oct.	82.98	68,214,009	5,660,405,935		Oct.	83.60	68,072,988	5,690,901,797
	Nov.	93.46	65,930,520	6,161,866,399		Nov.	56.56	61,136,734	3,457,893,675
	Dec.	93.04	72,194,901	6,717,013,589		Dec.	45.45	61,607,478	2,800,059,875
	Total	-	791,826,519	59,198,824,075		Total	-	724,479,796	73,034,758,947

NNPC annual statistical bulletin in 2008

size. Therefore, the findings establish that export of crude oil (barrels) is relatively stable compared to the price of crude oil and this leaves us to the fact that crude oil export is not the primary determinant of oil revenue in Nigeria but changes in prices of crude oil.

Oil export and economic growth in Nigeria (1975-2009)

The Empirical Model: The Endogenous Growth Model is adopted in this study as it emphasizes the role of exports on long-run growth through technological innovation and learning from abroad. The intuition behind this is to establish beyond the view of resource cause hypothesis (short-run analysis) to capture the long-run relationship between oil resource abundance and economic growth in Nigeria. Thus, relationship among the variables of concern in this study is presented as:

$$Y = F(GFCF, Im, Oxr, Gex, Noxr) \quad (1)$$

Where:

Y = Economic growth measured by the Gross Domestic Product (RGDP)
GFCF = Gross Fixed Capital Formation
Im = All imports into the Nigerian economy
Oxr = The oil export revenue
Gex = Government expenditure
Noxr = Non-oil export revenue in Nigeria

All variables are expressed in real terms. Data are mainly secondary and are sourced from the Central Bank of Nigeria (CBN) and Nigerian National Petroleum Corporation (NNPC). Incorporating the variables in the Eq. 1 into a Cobb-Douglass production function, researchers have:

$$Y = GFCF^{\beta_1} Im^{\beta_2} Oxr^{\beta_3} Gex^{\beta_4} Noxr^{\beta_5} \quad (2)$$

Equation 2 is transformed into an Empirical Model as:

$$\log Y_t = \beta_0 + \beta_1 \log GFCF_t + \beta_2 \log Im_t + \beta_3 \log Oxr_t + \beta_4 \log Gex_t + \beta_5 \log Noxr_t + u_t \quad (3)$$
$$\beta_1, \beta_3, \beta_4, \beta_5 \succ 0; \beta_2 \prec 0$$

Equation 3 is referred to as the cointegrating regression. The constant term is represented by β_0 while β_1-β_5 are the coefficients to be estimated and u_t is the stochastic error term. A priori expectation is that β_1, β_3, β_4, β_5>0 and β_2<0 meaning all the variables under investigation except import is expected to have a positive relationship with real output growth. In order to avoid the misleading characteristics of time series macroeconomic variables which in most cases exhibit non-stationarity in regression analysis, this study examines the time series characteristics of all the variables under investigation using the Augmented Dickey Fuller, ADF in 1979 and Phillip Perron, PP in 1988 tests. Having established the unit root properties of the variables, the combination of two or more nonstationary variables could however be stationary if these series share a common long-run equilibrium relationship. In this case, these variables are said to be cointegrated in other words each series deviates from its long-run mean value in response to a shock but all series will tend to move toward the common long-run equilibrium as the effect of the shock dies out. Thus, given the presence of nonstationarity in all the variables, this study further investigates if these variables are cointegrated employing the Johansen cointegration test. After establishing cointegration among variables, this study examines the relationship among variables under investigation using the Error Correction Model (ECM) technique. The Error Correction Model (ECM) specification for this model is shown:

$$\Delta y_t = \sum_{i=1}^{n} \beta_i \Delta x_t + \alpha \varepsilon_{t-1} + u_t \quad (4)$$
$$\alpha \prec 0$$

Where:

Δ = Denotes the first difference operator
y_t = The dependent variable (GDP)
x_t = The vector of explanatory variables
ε_{t-1} = The one-period lagged value of the error from the cointegration regression in Eq. 3
u_t = A random error term

The ECM equation states that Δy_t depends on Δx_t and also on the equilibrium error term. α from the ECM equation is expected to be negative (<0). This condition is necessary because when α positive, it means the model is out of equilibrium that is y cannot adjust back to its equilibrium value. Therefore, this makes the model to lack the strength to predict what happens to the dependent variable as a result of variation in the explanatory variables. The absolute value of α decides how quickly the equilibrium is restored.

RESULTS AND DISCUSSION

All variables in this study reported by the Augmented Dickey Fuller and Philip Perron tests shown in Table 4 are found to be non-stationary at levels but stationary at 1% when they are first differenced. It follows that all the variables in the model follow an I (1) process. Having established the unit root properties of the variables under investigation, this study further established the long-run relationship of the variables.

Table 4: Results of unit root tests

	ADF				PP				
	Without trend		With trend		Without trend		With trend		
Variables	Level	First diff.	Level	First diff.	Level	First diff.	Level	First diff.	Decisions
Log(Y)	-1.77	-5.87***	-2.36	-5.91***	-2.04	-6.01***	-2.07	-6.67***	I (1)
Log(GFCF)	-2.58	-5.11***	-2.91	-5.03***	-2.30	-9.35***	-2.59	-9.31***	I (1)
Log(Im)	-1.97	-6.75***	-3.35*	-6.73***	-2.01	-10.97***	-3.06	-16.40***	I (1)
Log(Oxr)	-1.62	-7.10***	-2.94	-7.09***	-1.94	-11.00***	-2.72	-17.80***	I (1)
Log(Gex)	-1.49	-7.71***	-3.41	-7.60***	-1.15	-9.93***	-3.41	-9.18***	I (1)
Log(Noxr)	-0.74	-6.16***	-2.57	-6.18***	-0.07	-8.18***	-2.37	-10.70***	I (1)

* and *** implies significance at 10 and 1% level, respectively; Critical values for ADF and PP tests are the following: in the model without trend: level form; -3.639 (1%), -2.951 (5%) and -2.614 (10%); first difference: -3.646 (1%), -2.954 (5%) and -2.615 (19%); in the model with trend: level form: -4.252 (1%), -3.548 (5%) and -3.207 (10%); first difference: -4.263 (1%), -3.553 (5%) and -3.210 (10%)

Table 5: Johansen Cointegration test

Hypothesized No. of CE (s)	Trace statistic	Critical value (trace) at 5%	Prob.** (trace)	Max-eigen statistic	Critical value (eigen) at 5%	Prob.** (eigen)
None*	99.94434	95.75366	0.0249	42.44257	40.07757	0.0266
At most 1	57.50177	69.81889	0.3200	23.48255	33.87687	0.4939
At most 2	34.01922	47.85613	0.5008	17.54740	27.58434	0.5332
At most 3	16.47183	29.79707	0.6787	10.19659	21.13162	0.7260
At most 4	6.275237	15.49471	0.6630	4.377852	14.26460	0.8175
At most 5	1.897385	3.841466	0.1684	1.897385	3.841466	0.1684

The variables included in the regressions are: gross domestic product, gross fixed capital formation, import,oil export revenue, government expenditure and non-oil export revenue, lag interval (in first difference) is 1-1. The linear trend assumption is Intercept + trend in CE,-Trace and Maximum Eigen value tests indicate 1 cointegrating equations at the 0.05 level; *denotes rejection of the hypothesis at the 0.05 level; **Mackinnon-Haug-Michelis p-values

Using the Johansen Cointegration test shown in Table 5, it is established that there is one cointegrated equation for gross domestic product, gross fixed capital formation, imports, oil export revenue, government expenditure and non-oil export revenue in Nigeria. The standard statistics used in the interpretation of the test are the trace statistic and the maximum eigenvalue at given level of significance. Therefore, it is established that all the variables in the study are cointegrated. That is they have a long-term equilibrium relationship where a deviation of each series from its long-run mean value in response to a shock will tend to move toward the common long-run equilibrium as the effect of the shock dies out. The cointegrating regression (Eq. 3) for this study shows that there is a long-run positive relationship between oil export revenue and economic growth in Nigeria. This result is consistent with the findings of Odularu (2008), Esfahani *et al.* (2010) and Cavalcanti *et al.* (2011). The summary of the cointegration regression is expressed:

$$\log Y_t = 1.60 + 0.27\log GFCF_t + 0.09\log Im_t +$$
$$t = (3.60)\ (2.93)\qquad (0.77)$$
$$0.35\log Oxr_t + 0.26\log Gex_t + 0.07\log Noxr_t + u_t$$
$$(3.26)\qquad (2.90)\qquad (0.96)$$
$$R2 = 0.9768;\qquad d = 1.2687$$

From the result, among the explanatory variables, Gross Fixed Capital Formation (GFCF), Oil export revenue (Oxr) and Government expenditure (Gex) are statistically significant and have the expected positive relationship with economic growth. A 1% change in each of them will cause a respective long-run effect of 0.27, 0.35 and 0.26% change in economic growth. This is consistent with theory as it is expected of the mentioned variables to cause a boost to economic growth as a result of an increase in each of them. While imports (Im) and non-oil export revenue (Noxr) are statistially insignificant. This means that in Nigeria, the long-term effects of both import and non-oil export revenue in period covered in this study are not different from zero. This result can be traced to the dominance of oil export in total export in Nigeria and differently on the import side, mass importation of consumables into the country will only boost the economy of the exporting countries as resources is being transfered from Nigeria to the trading country.

This shows the reason why Nigeria should increase the contribution of non-oil export to total export earnings and encourage indeginous manufacturing sector, so as to boost their production to meet up with the local demands of their products, especially the imported ones. The significance level used in this study is 5% level of significance. The ECM employed in this study to investigate the impact of oil export revenue on Nigerian economic growth shows the short-run dynamics in the variables under concern. The summary of the regression is:

$$\Delta \log Y_t = 0.03 + 0.37\Delta \log GFCF_t - 0.03\Delta \log Im_t + 0.24\Delta \log Oxr_t +$$
$$t = (1.35)\ (5.33) \qquad (-0.72) \qquad (3.30)$$
$$0.14\Delta \log Gex_t + 0.14\Delta \log Noxr_t - 0.46\varepsilon_{t-1} + u_t$$
$$(1.91) \qquad (2.30) \qquad (-2.97)$$
$$R^2 = 0.9081 \qquad d = 1.7384$$

The result shows that short-run changes in oil export revenue has a significant positive impact on short-run changes in economic growth in Nigeria. This result is consistent with the result from the cointegrating regression. One can interpret 0.24 in the ECM equation as the short-run impact and 0.35 in the cointegrating equation as the long-run impact of oil export revenue on economic growth in Nigeria. All other variables in the model exhibit the a priori sign. During the period covered in this study, 1% variation in each of GFCF, Im, Oxr, Gex and Noxr caused a respective 0.37, -0.03, 0.24, 0.14 and 0.14% change in gross domestic product (Y). In this regression, GFCF, Oxr and Noxr are all statistically significant where Im and Gex are not statistically significant. Comparing this to the cointegrating regression which represent the long term relationship, Noxr has its significance on economic growth in the short-term but this importance disappear as the analysis considers long-term effects. However, considering Gex, it shows an insignificant effect in the short-term but very significant in the long-term the reason for this may be linked to the lag between the time when government makes some spending and time when the spending really brings effect, especially in the case of capital projects. ε_{t-1} which is the one-period lagged value of the error from the cointegrating regression has the negative expected sign (-0.46). This shows that when gross domestic product is above its equilibrium value, it will start falling in the next period to correct the equilibrium error and vice versa. It is important to note that the absolute value of the error term shows the rate of adjustment of gross domestic product during disequilibrium. As the result shows, 0.46 of the discrepancy in the equilibrium value of the model in the previous year is eliminated this year. It means that it took approximately 2 years and 2 months for gross domestic product to adjust to equilibrium whenever there is disequilibrium during the period covered in this study.

CONCLUSION

This study investigates descriptively the trend of prices, export (barrels) and revenue from oil industry in Nigeria between 1999 and 2008 on one part and on the other, examine the impact of oil export revenue on economic growth in Nigeria between 1975 and 2009. The empirical analysis in this study is carried out by employing Error Correction Model (ECM). The result of the empirical analysis draw comparison from both the Cointegrating Regression and Error Correction Model where it is established that oil export revenue in Nigeria is a vital determinant of economic growth both in the short-term and long-term. Other variables considered in this study are gross fixed capital formation, import, government expenditure and non-oil export revenue.

From the descriptive analysis, the findings established that export of crude oil (barrels) in the period covered is relatively stable compared to the price of crude oil which is extremely volatile. There is evidence that at times, years of lower oil export in barrels ends up generating higher foreign exchange than years of higher oil export in barrels. This leaves us to the conclusion that crude oil export in barrels is not the primary determinant of oil revenue in Nigeria but changes in the world crude oil prices. Therefore, the question that demands a thoughtful answer in Nigeria is what happens to the Nigerian export sector if there is a permanent crunch to world crude oil market?

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