

Dependence on Oil Income Earnings and Diversification of the Economy – The Nigerian response

John Okey Onoh (Ph.D)¹ . Obianuju Edith Ndu-Okereke (Ph.D)²

1. Department of Banking and Finance, Abia State University, PMB 2000, Uturu, Nigeria
2. Department of Banking and Finance, University of Nigeria, Nsukka, Enugu campus, Nigeria

Abstract

This study looked at the contributions of oil export earnings and non oil export earnings independently to the totality of exports for Nigeria from 2007 to 2016. Nigeria economy being mostly dependent on oil export earnings stand a great risk of being vulnerable to price shocks and foreign exchange volatility. To understand why the problem persists we set out to find out the direction and magnitude of dependence of the economy on earnings from petroleum products and non-petroleum products for Nigeria for the ten-year period. The review of past work in related area was looked at as well. The data collected was from OPEC statistical bulletin from 2007 to 2016. To test the hypotheses, we adopted the linear regression model in line with existing studies in this area of finance, for instance, the works of Arumugam (1997), Berument and Kiymaz (2001) and Rahman (2009), Guha Deb and Mukherjee (2008), regression is a statistical technique used in measuring the impact of one or more variables (otherwise known as independent variables or regressors) on another variable (the dependent variable or the regressand). To perfect robustness of the research methods the statistical package used employed is the SPSS (version 16.0). The data collected was secondary data consisting of the gross export earnings, oil export earnings and non-oil earnings. The R² for the first hypothesis showed 93.5% of the variations in the total export can be explained by the changes in the oil export earnings unlike the R² of the second hypothesis which could only be explained with 12.4%. The condition Index also indicates that the factor 2 has a higher value (6.063) than factor 1 (1.000) which indicates a near linear dependence of the gross exports on oil exports. The residual statistical distribution in table 4.7 reveals that there is no significant difference in value between the standard predicted value and the standard residuals this suggests that conditions for normality has been met since the residuals closely follow the conditions for a true normal distribution. The variance inflation factor and tolerance level for both hypothesis was 1 which means that the incidence of collinearity or multicollinearity is very low, an indicator of the model's strength. So it is not significant enough to affect the reliability of the methodology in use and shouldn't invalidate the results obtained. Nigeria's economy depends mainly on oil revenue, the non-oil sectors have been left largely untapped. The petroleum refineries have been operating far below their previous capacity as Nigeria has been importing refined petroleum for many years now. This has exacerbated imbalances in the economy. The failure to diversify the economy is strongly evident in years of not investing oil revenues in multi-sector economic growth rather the funds have been used to lavish on unsustainable import reliance, poorly sustained policies and corruption. The banking and foreign exchange reserves to the capital market and the mortgage sector are very vulnerable the intrigues of oil price volatility in the Nigerian economy. The government should pay more attention to diversifying away from oil to other viable sectors including the agricultural sector. In addition to the potential food sufficiency this can lead to economic prosperity. Given the size of the agricultural value chains in production, inputs and mechanization, processing, marketing and finance, research and development. The jobs and wealth creation expected from this development would lead to sustainable economic growth.

Macro-economic stability and supportive regulatory and institutional frameworks are key prerequisites for economic diversification by insulating the economy from the impact of oil price volatility is necessary to lay a sound foundation for economic diversification. It requires sound fiscal policy and framework, effective liquidity management and prudent monetary policy, supportive financial sector policies and a fairly valued exchange rate.

Keywords: Dependence, oil income earnings, diversifications and Nigerian

1.0 Introduction

Before 1960, Nigeria's major export earnings were cash crops like palm oil, cocoa, groundnut etc. But with the emergence of oil these non-oil exports were largely neglected making the country to rely mainly on oil for much of its income. There were indications in the mid 1970s however that there were dangers in the non-diversification posture of Nigeria's treasury base. Despite the direct and indirect monetary and fiscal policy applications and even direct intervention the implications of too much dependence on oil was felt during the oil glut of the early 1980s leaving the government with little choice than to implement restrictive monetary and fiscal measures popularly called 'austerity measures'. The Nigerian petroleum industry in the last few years has been providing competitive policies and regulation to facilitate smooth operations. Although the activities of militants in the oil producing areas of the country has cost the country and the multinationals billions of dollars in damage to oil installations, the government has done a lot to create an attractive environment to accelerate

income streams and an investment drive that promotes opportunities across the value chain. The Nigerian government has implemented the gas commercialization plan which will see that gas will be especially useful in improving power generation rather than wasting it, this sense of prudence would encourage more investment in establishing gas infrastructure while reducing gas flaring. There have been many projections in the past regarding expanding the local production capacity but in recent years concerted efforts are being made in that direction but Nigeria as at the end of the last quarter of 2017 is still heavily reliant on imported fuel. Nigeria hopes to cut importation of fuel by 60% before the end of 2018 and achieve net exporter status by 2019. As far as the industry's response is concerned, operators eagerly await to see if concrete measures will be taken in the key areas of industry reforms, security, transparency and efficiency. Ninety percent of our foreign exchange earnings is attributable to crude oil sales and eighty percent of the government revenue is derived from these oil exports. This is unsustainable and could turn out to be dangerous in the long run if this dependency persists. The recession of 2015 and 2016 being the worst since 1987 crippled virtually all sectors of the economy. That development once again calls to question our revenue generation strategies as well as the overall economic policies as a nation. No country that depends on crude oil earnings alone can achieve sustainable economic development.

Nigeria relies heavily on earning of oil exports to finance its budget which leaves the country's treasury vulnerable to shocks in the price of oil and the exchange rate of the dollar to the Naira (Nigeria's currency). Many countries (OPEC members included) are beginning to diversify their export earnings away from oil in response to the scientific breakthroughs by many technologically developed countries. This paper is to explore the Nigerian preparedness to these changes in energy needs and market price of oil. Of recent, the Nigerian government is spending a lot of money to explore oil in the Lake Chad basin and Benue Trough in the northern part of the country. Encouraged by the hydrocarbon potentials found in commercial quantities in the northern part of the country, NNPC and Shell has been unable to pursue aggressive exploration because of security problems. The justification for these explorations by the Nigerian government is that it is strategic to diversify the country's oil prospects away from the troubled Niger Delta region and to increase oil supply to the Kaduna refinery which will aid distribution to the northern states and reduce the opportunity costs of transportation, security and logistics of utilizing pipelines which had been subject to increased vandalization over the years.

But for all the investments being put into exploring new areas in the oil sector, there remains the question of how much efforts has Nigeria made towards growing alternative revenue base away from oil. Africa has massive energy resources but many countries are not able to access them. New business models incorporating the appropriate technology and comparative advantage would enable these countries attain their energy potentials. Nigeria has coal in abundance; even solar energy technology is largely untapped for big industrial use in the country. The emphasis here has been on profit than about value creation in terms of infrastructure and creating alternatives to the oil and gas sector. Europe, United States, China and Japan are making headways in the area of diversifying their energy sources especially in the light of the fragile global climate challenges and higher rates of energy consumption. In adopting new energy policies geopolitical considerations are analyzed by concerted efforts of the world energy stakeholders. OPEC countries are optimistic that gas will play an increasingly influential role in the new energy mix as a means to reduce emissions in carbon dioxide.

The world is making a dramatic transformation in the energy markets, with the emphasis being on developing of a more diverse resource base, including wind and solar energy, which are the least expensive to produce. The challenges to the storage and supply of these resources are decreasing with the advancement in science and technology. The costs for renewal energy production are progressively decreasing with more investment in new technology. The international community emphasized the dire need to transition to low or no carbon energy in order to mitigate the effects of climate change and eventually attain the goal of zero-net emissions by 2050 as called for in the Paris climate talks. A World Bank report of 2016 that many countries including Nigeria depends on commodities are not serious with the diversification of their economies. Shocks from collapsed commodity prices and tighter financial conditions, exacerbated by domestic pressures arising from policy uncertainties, adverse weather conditions, and political and security concerns, have taken their toll on the continent. Recently, the current government has made concerted efforts at increasing the local domestic production of rice through the CBN's Anchor Borrowers Programme, whose successful implementation has put the country on the road to self-sufficiency in rice production while creating jobs and enormous wealth for farmers.

1.1 Statement of research problem

It is no longer considered prophetic to say that oil shocks affect oil producing countries more than oil importing countries especially in cases of heavy over dependence of oil by countries like Nigeria. OPEC as a cartel has been largely successful in influencing oil price and international politics over the years, prior to the formation of OPEC it was the multinational companies that enjoyed that privilege. However in recent years the emergence of

the Russian federation as oil producing power, policy disagreements among member nations over production levels, increased costs of production and distribution caused by currency problems and increased funding of alternative energy sources and improved technology by the countries that buy the most of the oil has become a source of worry to oil exporting states like Nigeria. This is especially so given the danger of non diversification of Nigeria's revenue base away from oil. Volatility of oil prices and exchange rate affects components of aggregate demand and for countries with greater oil and technology dependence the future of oil as a major source of revenue to fund household, government expenditure and businesses looks certainly bleak.

1.2 Objectives of research

- To find out the direction and magnitude of dependence of the economy on earnings from petroleum products and non-petroleum products for Nigeria for the period in question

1.3 Research hypotheses

H₁ That the earnings from petroleum product exports have a significant impact on the gross export earnings of Nigeria

H₂ That the earnings from non-petroleum product exports have a significant impact on the gross export earnings of Nigeria

2.0 Literature review

There are political and economic perspectives to the coming of multinational oil companies in Nigeria. Multinationals always try to influence the policies of their host government and developing nations are most vulnerable, although their ability to that is further curbed by OPEC and the indigenization policy. Onoh J.K (1983) opined that there are no correct statistics of the number of multi nationals operating in developing nations and their levels of operations. This makes it easy for multinationals to take advantage of their host communities who lack the required experience in contract bids, tax laws, profit repatriation and agreement preparations. He further observed that economic disadvantages created by these multi nationals range from contract finance to suppliers of credit. The high and exorbitant interest rates charged by the contractor – financiers can increase the national debt especially as the local currency falls in its exchange rate value to the dollar thereby putting more pressure on the country's external reserves.

Nigeria's policy on oil over the years included the amendment of Colonial Mineral Ordinance of 1914 by enacting the Petroleum Decree (Act) No. 51 of 1969. This Act made extensive elaborations on ownership and control of oil, mining licenses, and prospecting licenses. The Nigerian equity participation in the oil industry was increased in the early 1970s by the indigenization policy and the entry into OPEC. Nigeria made further attempts to improve the joint oil venture relationship with the oil companies by entering into production sharing contracts and risk service contracts. Because there were few Nigerians employed in the professional, technical and supervisory positions in the oil industry, reluctance of the multi nationals to indigenize their operations and transfer oil technology to Nigerians. Furthermore, Nigerians were not involved in the data processing, planning and designing of oil equipment and facilities of the multi nationals. The oil companies were the ones involved in the importation of equipments and materials. There were suggestions by many experts to establish Nigeria's own oil company to market the Federal Government's share of crude oil direct to international oil consumers and not through intermediaries as it had been before 1971. Decree No. 18 of 1971 established the Nigerian National Oil Corporation (NNOC) in 1971, the same year Nigeria joined OPEC. On entry into OPEC, Nigeria responded to the OPEC resolution No. XVI. 90 of 1968 which obligated members to acquire 51 per cent of the equity interests of foreign oil companies operating in their countries and to participate actively in all aspects of oil operations.

The NNOC was not in itself an operating company, but a holding company under the ministry of mines and power and provided guidelines for its subsidiaries and implemented government decisions and intentions. As Nigeria's participation in the oil industry grew in scope and complexity, it became important to set up the Nigerian National Petroleum Corporation (NNPC) by decree no. 33 of 1st April 1977. This company took over the assets and liabilities of the NNOC. In the first three years of establishing NNPC, the organization was accused of inefficiency in marketing of crude oil and keeping oil production records.

Economic diversification can be defined and measured in various ways. Beyond simpler measures of sectoral diversification, this paper measures diversification through four specific indicators from the literature:

Economic Complexity Index: This index measures the number of products made by an economy and controls for the likelihood that the same product is also made by others. Countries that produce goods or services that are not made elsewhere receive higher complexity scores than countries whose products are widely manufactured. For example, Germany and Japan have high scores, because they manufacture a wide array of products that very few countries can make. Like the IMF indices (described below), the Economic Complexity Index relies on international trade data. It is based on the assumption that countries will export most high quality products, and

thus, trade data will reflect overall production within the economy.

IMF Export Diversification Index: The IMF Export Diversification Index is calculated using trade data and is a combined measure of the 'extensive' and 'intensive' dimensions of diversification (also available as separate indices). Extensive export diversification reflects an increase in the number of export products or trading partners. Intensive export diversification considers the shares of export volumes across active products or trading partners. A country is less diversified when export revenues are driven by only a few sectors, trading partners, and/or total market share is low. Countries with a large number of exports and trading partners improve their extensive diversification, which in turn provides resilience to market or trading-partner shocks. Claiming greater market share (by product or country) increases intensive diversification, which confers greater pricing power and integration into supply-chains. The Theil index, a measure of inequality, is calculated for the intensive and extensive components of each country/year pair and summed to create a synthetic indicator.

IMF Export Quality Index: This index describes the average quality within any product category. The baseline methodology (see Henn et al., (2013) for more details) estimates quality based on trade price, which is calculated in turn based on three factors: product unit value relative to market prices; exporter income per capita (as a proxy for differences in production technologies); and the distance between importer and exporter.

Manufacturing Value-Added Gini: This is a Gini index constructed on the relative value-added of different manufacturing industries within an economy. The data come from the 2015 UNIDO INDSTAT4 Industrial Statistics Database, which provides manufacturing data disaggregated at the ISIC 3-digit level, including the total value added of each industry classified. A score of 0 indicates complete equality between industries' value-added within an economy, while a score of 1 indicates the complete dominance of only one industry.

In trying to foster more inclusive economic growth and create employment, OPEC member nations face similar challenges regardless of their differences in size, demographics and wealth. The non-oil private sector is not significantly contributing to the economic growth of OPEC member states according to Chauffour (2012)

For OPEC member states that have large government expenditure, their oversized public sector is chiefly financed from oil receipts while many of the OPEC countries have a fast-growing domestic labour force. Chauffour (2012) concludes that new revenue channels need to be explored since there is empirical evidence to support the conjecture that in the near future, hydrocarbon resources in the middle east could be depleted. An inversely, non-oil activities in many OPEC member states are significantly dependent on finances on oil revenues. The challenge in the face of this is the ability of OPEC member states to diversify their earnings away from oil. Nevertheless, nations like Saudi Arabia with larger oil reserves can only promote intergenerational equity by investing a larger share of their oil export earnings in the non-oil sector.

OPEC bulletin (2016) mentions that the problems associated with macroeconomic volatility is prolonged by the stagnant growth in the non-oil sector and because of wasteful public spending causing problems in fiscal management which grows worse from over-reliance on oil export earnings. Many scholars agree that greater economic diversification would unlock job-creating growth, increase resilience to oil price volatility while widening the base of government revenue by reducing the reliance on oil and making the economy more resilient to oil price shocks. Oil revenues are a major source of finance for hydrocarbon and government activities account for the majority of GDP in many OPEC countries, except in Algeria, Bahrain, Yemen and the U.A.E unlike Libya. Many scholars are near unanimous in agreement in concluding that economic diversification is generally low among oil exporting members of OPEC. The United Arab Emirates for instance has initiated concrete diversification moves to support a diversified economy by restructuring industrial sectors; Algeria and Kuwait in their efforts at diversification engage the private sector.

Even OPEC countries understand that market characteristics determine policy and investment choices. Having this in mind, renewable energy, efficient use of energy, cleaner fossil-fuel technology are areas that they have to be conscious of hence the Paris climate agreement of 2016. To deepen proper understanding and increasing the confidence of stakeholders regarding the goals of policy, there were steps to enhance the producer-consumer dialogue among energy sector stakeholders. Many African nations lack the access to energy and hence are further constrained in industrial development. More dialogue has been encouraged amongst OPEC member nations and non-OPEC member nations now realize that in the global energy. New ways are being fashioned out by OPEC member states on how to improve on conditions for investment and innovation in advancing the use of new technologies for use by both the countries producing and those that pay. Many experts suggest that many African countries have limited access to energy in commercially sufficient terms hence their productive capacity is greatly under-utilized. Hakura, D. and A Billmeier, 2008 recommended that new business models be developed since the western models have not met the expectations of energy output by the emerging economies.

3.0 Methodology

The estimation of the empirical model specified was done using country level panel data. There are strong possibilities that the economic variables included in the model may be correlated with country specific

characteristics or bilateral characteristics that each country's level of dependence on earnings of oil exports and by extension economic growth. Again, the research takes into consideration endogeneity problems from factors such as measurement errors and sample selectivity. To perfect robustness of the research methods the statistical package used employed is the SPSS (version 16.0). The data collected was secondary data consisting of the gross export earnings, oil export earnings and non-oil earnings. The data was collected from OPEC statistical bulletin from 2007 to 2016.

To test the hypotheses, we adopted the linear regression model in line with existing studies in this area of finance, for instance, the works of Arumugam (1997), Berument and Kiymaz (2001) and Rahman (2009), Guha Deb and Mukherjee (2008), Chaudhury (1991), Goswami and Anshuman (2000), Lumsdaine and Ng (1999) and Woolridge (1991), etc. According to Onwumere (2009), regression is a statistical technique used in measuring the impact of one or more variables (otherwise known as independent variables or regressors) on another variable (the dependent variable or the regressand). The general linear regression model according to Koutsoyiannis (2006) and Onwumere (2009), is:

$$Y = \alpha_0 + \alpha_1 X + \mu \quad (i)$$

Where Y is a function of X independent variable and μ is the error term, α_0 being the constant and α_1 being the coefficient of the independent variable.

4.0 Data presentation

Gross Export Earnings (\$'million)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Algeria	63,455.00	82,035.00	48,522.00	57,090.00	73,390.00	77,107.00	69,649.00	65,227.00	34,566.00	29,054.00
Angola	44,396.00	63,914.00	40,828.00	50,595.00	65,689.00	71,093.00	68,247.00	59,170.00	33,181.00	25,935.00
Ecuador	14,321.00	18,511.00	13,799.00	17,369.00	22,292.00	23,765.00	24,848.00	25,732.00	18,366.00	16,744.00
Gabon						10,331.00	9,715.00	9,346.00	6,473.00	5,871.00
IR Iran	97,668.00	101,289.00	87,534.00	101,950.00	130,544.00	131,305.00	140,562.00	102,796.00	76,793.00	97,386.00
Iraq	40,448.00	63,726.00	42,405.00	54,599.00	85,635.00	94,392.00	89,742.00	84,506.00	49,403.00	43,890.00
Kuwait	62,498.00	87,446.00	53,974.00	67,036.00	103,490.00	114,515.00	114,093.00	100,658.00	54,089.00	46,261.00
Libya	46,970.00	61,950.00	37,055.00	48,935.00	16,463.00	61,026.00	46,018.00	23,726.00	13,943.00	11,986.00
Nigeria	66,969.00	86,967.00	52,657.00	77,844.00	108,296.00	96,905.00	97,818.00	82,596.00	45,888.00	34,704.00
Qatar	41,491.00	55,727.00	48,306.00	72,790.00	107,095.00	142,485.00	144,115.00	139,845.00	92,038.00	72,459.00
Saudi Arabia	233,174.00	313,462.00	192,296.00	251,143.00	360,092.00	388,401.00	375,873.00	342,433.00	203,537.00	179,575.00
UAE	178,606.00	239,180.00	191,776.00	212,262.00	252,556.00	359,728.00	371,028.00	343,085.00	300,496.00	298,653.00
Venezuela	69,980.00	95,021.00	57,603.00	65,745.00	92,602.00	97,877.00	88,753.00	74,714.00	37,236.00	26,473.00
	959,976.00	1,269,228.00	866,755.00	1,077,358.00	1,418,144.00	1,668,930.00	1,640,461.00	1,453,834.00	966,009.00	888,991.00

Source OPEC statistical bulletin 2007 -2016

Oil - Export Earnings (\$'million)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Algeria	44,481.00	53,706.00	30,584.00	38,584.00	51,405.00	48,271.00	44,462.00	40,628.00	21,742.00	18,638.00
Angola	43,004.00	62,457.00	39,803.00	49,352.00	64,434.00	69,954.00	66,652.00	57,250.00	31,929.00	25,935.00
Ecuador	8,329.00	11,643.00	6,965.00	9,649.00	14,023.00	13,792.00	14,107.00	13,276.00	6,660.00	5,442.00
Gabon						8,922.00	8,044.00	7,720.00	4,913.00	4,198.00
IR Iran	69,248.00	89,855.00	55,746.00	72,228.00	114,751.00	101,468.00	61,923.00	53,652.00	27,308.00	41,123.00
Iraq	39,433.00	61,111.00	41,668.00	52,290.00	83,006.00	94,090.00	89,359.00	84,303.00	49,249.00	43,753.00
Kuwait	59,006.00	82,672.00	48,914.00	61,754.00	96,724.00	108,534.00	107,543.00	94,324.00	48,444.00	41,461.00
Libya	42,852.00	60,199.00	36,966.00	46,115.00	11,823.00	60,188.00	44,445.00	20,357.00	10,973.00	9,313.00
Nigeria	51,170.00	74,305.00	44,732.00	65,674.00	86,204.00	95,620.00	90,546.00	78,053.00	41,818.00	27,788.00
Qatar	22,817.00	28,156.00	19,134.00	31,474.00	44,751.00	65,065.00	62,519.00	56,912.00	28,513.00	22,958.00
Saudi Arabia	205,452.00	280,998.00	161,914.00	215,385.00	318,480.00	337,480.00	321,888.00	284,558.00	152,810.00	134,373.00
UAE	73,816.00	102,073.00	52,871.00	66,864.00	104,543.00	86,016.00	85,640.00	88,855.00	53,836.00	45,559.00
Venezuela	62,652.00	89,034.00	54,201.00	62,317.00	88,131.00	93,569.00	85,603.00	71,731.00	35,136.00	25,142.00
	722,260.00	996,209.00	593,498.00	771,686.00	1,078,275.00	1,182,969.00	1,082,731.00	951,619.00	513,331.00	445,683.00

Source OPEC statistical bulletin 2007 -2016

Non-Oil Export Earnings (\$'million)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Algeria	18,974.00	28,329.00	17,938.00	18,506.00	21,985.00	28,836.00	25,187.00	24,599.00	12,824.00	10,426.00
Angola	1,392.00	1,457.00	1,025.00	1,243.00	1,255.00	1,139.00	1,595.00	1,920.00	1,252.00	0.00
Ecuador	5,992.00	6,868.00	6,834.00	7,720.00	8,269.00	9,973.00	10,741.00	12,456.00	11,706.00	11,302.00
Gabon	28,420.00	-	-	-	-	1,409.00	1,671.00	1,626.00	1,560.00	1,673.00
IR Iran	28,420.00	11,434.00	31,788.00	29,722.00	15,793.00	29,837.00	78,639.00	49,144.00	49,485.00	56,263.00
Iraq	1,015.00	2,615.00	737.00	2,309.00	2,629.00	302.00	383.00	203.00	154.00	137.00
Kuwait	3,492.00	4,774.00	5,060.00	5,282.00	6,766.00	5,981.00	6,550.00	6,334.00	5,645.00	4,800.00
Libya	4,118.00	1,751.00	89.00	2,820.00	4,640.00	838.00	1,573.00	3,369.00	2,970.00	2,673.00
Nigeria	15,799.00	12,662.00	7,925.00	12,170.00	22,092.00	1,285.00	7,272.00	4,543.00	4,070.00	6,916.00
Qatar	18,674.00	27,571.00	29,172.00	41,316.00	62,344.00	77,420.00	81,596.00	82,933.00	63,525.00	49,501.00
Saudi Arabia	27,722.00	32,464.00	30,382.00	35,758.00	41,612.00	50,921.00	53,985.00	57,875.00	50,727.00	45,202.00
UAE	104,790.00	137,107.00	138,905.00	145,398.00	148,013.00	273,712.00	285,388.00	254,230.00	246,660.00	253,094.00
Venezuela	7,328.00	5,987.00	3,402.00	3,428.00	4,471.00	4,308.00	3,150.00	2,983.00	2,100.00	1,331.00
	266,136.00	273,019.00	273,257.00	305,672.00	339,869.00	485,961.00	557,730.00	502,215.00	452,678.00	443,318.00

Source OPEC statistical bulletin 2007 -2016

4.1 Analysis of data and discussions of findings

Test of hypothesis one

Table 4.1

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	Oil Export ^a		. Enter

a. All requested variables entered.

b. Dependent Variable: Gross Exports

Table 4.2

Descriptive Statistics

	Mean	Std. Deviation	N
GrossExports	74.3000	24.43608	10
OilExport	65.1000	23.26872	10

Table 4.3

Correlations

		GrossExports	OilExport
Pearson Correlation	GrossExports	1.000	.967
	OilExport	.967	1.000
Sig. (1-tailed)	GrossExports	.	.000
	OilExport	.000	.
N	GrossExports	10	10
	OilExport	10	10

Table 4.4

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5029.742	1	5029.742	116.849	.000 ^a
	Residual	344.358	8	43.045		
	Total	5374.100	9			

a. Predictors: (Constant), OilExport

b. Dependent Variable: GrossExports

Table 4.5

Coefficient Correlations^a

Model			OilExport
1	Correlations	OilExport	1.000
	Covariances	OilExport	.009

a. Dependent Variable: GrossExports

Table 4.6

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	OilExport
1	1	1.947	1.000	.03	.03
	2	.053	6.063	.97	.97

a. Dependent Variable: GrossExports

Table 4.7

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	35.5917	104.6774	74.3000	23.64023	10
Residual	-8.67738	12.46631	.00000	6.18563	10
Std. Predicted Value	-1.637	1.285	.000	1.000	10
Std. Residual	-1.323	1.900	.000	.943	10

a. Dependent Variable: GrossExports

Table 4.8

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0.967431	0.935923	0.927913	6.560848	0.935923	116.8492	1	8	4.73E-06	1.838843

a. Predictors: (Constant), OilExport

b. Dependent Variable: GrossExports

Table 4.9

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error				Beta	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance
	1 (Constant)	8.160623	6.4607204			0.96743098	1.2631135	0.242117	-6.737825	23.05907	0.9674	0.9674
OilExportEarnings	1.0159659	0.0939867		10.80968	4.73E-06	0.799232	1.232699					

a. Dependent Variable: GrossExportEarnings

Test of hypothesis two

Table 4.10

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	NonOilExports ^a		Enter

a. All requested variables entered.

b. Dependent Variable: GrossExports

Table 4.11

Descriptive Statistics

	Mean	Std. Deviation	N
GrossExports	74.3000	24.43608	10
NonOilExports	9.0000	6.27163	10

Table 4.12

Correlations

		GrossExports	NonOilExports
Pearson Correlation	GrossExports	1.000	.352
	NonOilExports	.352	1.000
Sig. (1-tailed)	GrossExports	.	.159
	NonOilExports	.159	.
N	GrossExports	10	10
	NonOilExports	10	10

Table 4.13

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	667.220	1	667.220	1.134	.318 ^a
	Residual	4706.880	8	588.360		
	Total	5374.100	9			

a. Predictors: (Constant), NonOilExports

b. Dependent Variable: GrossExports

Table 4.14

Coefficient Correlations^a

Model		NonOilExports
1	Correlations	NonOilExports
	Covariances	NonOilExports
		1.000
		1.662

a. Dependent Variable: GrossExports

Table 4.15

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	NonOilExports
1	1	1.834	1.000	.08	.08
	2	.166	3.326	.92	.92

a. Dependent Variable: GrossExports

Table 4.16

Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	63.3169	92.1475	74.3000	8.61020	10
Residual	-3.61814E1	32.68305	.00000	22.86890	10
Std. Predicted Value	-1.276	2.073	.000	1.000	10
Std. Residual	-1.492	1.347	.000	.943	10

a. Dependent Variable: GrossExports

Table 4.17

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0.3524	0.1242	0.0147	24.2561	0.1242	1.13403	1	8	0.318	0.84073

a. Predictors: (Constant), NonOilExports

a. Dependent Variable: Gross Exports

Table 4.18

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
		1	(Constant)	61.944			13.909		4.454	.002	29.870	94.018	
	NonOilExports	1.373	1.289	.352	1.065	.318	-1.600	4.346	.352	.352	.352	1.000	1.000

a. Dependent Variable: GrossExports

5.0 Discussion of findings

In table 4.1 the variables used are indicated that shows the description of the independent variables and the dependent variable that used to run the tests. Table 4.2 shows the mean and standard deviation of the independent and dependent variable. The distance between both means and their attendant standard deviations is narrow indicating that the data points are close to the mean also meaning that the data points are spread out over a narrower range of values. In table 4.3 it is apparent that the level of correlation between the oil export earnings and the gross earnings for the ten years under review is positive and very significant at 96.7%.

The essence of the Analysis of Variance (ANOVA) is the F test and complemented with significance or probability value. The sum of squares is derived by calculating the mean of the dependent variable which is then squared. The residual sum of squares is the difference between actual and estimated sum of squares. The probability and the F-test all prove the null hypothesis is rejected and the model is well fitted. The equality of variance have been established by the P value. The coefficient correlation (r) which measures the strength and direction of a linear relationship between variables. The +1 shows a very strong and significantly positive relationship between the two variables. In the collinearity diagnostics the proportion of the variance accounted for by factor 1 in the eigenvalue is 97.35% calculated by $1.947 / (1.947 + .053)$.

The condition Index also indicates that the factor 2 has a higher value (6.063) than factor 1 (1.000) which indicates a near linear dependence of the gross exports on oil exports. The residual statistical distribution in table 4.7 reveals that there is no significant difference in value between the standard predicted value and the standard residuals this suggests that conditions for normality has been met since the residuals closely follow the conditions for a true normal distribution. In table 4.8 the model summary shows the coefficient of determination R^2 and the Adjusted R^2 and estimated standard error. The R^2 and the adjusted R^2 measures the proportion of the total variability in the dependent variable that is explained by the independent variable. If there were a large discrepancy between the R^2 and the Adjusted R^2 it would suggest that some of the independent variables included in the regression is redundant but this is not the case here.

In table 4.9, the standardized coefficients for Beta are 0.987431, almost 1 and it measures the variances of the variables. The tolerance level for the variables is 1 meaning that the incidence of collinearity or multicollinearity is very low, an indicator of the model's strength. So it is not significant enough to affect the reliability of the methodology in use and shouldn't invalidate the results obtained. In table 4.10 the variables used are indicated that shows the description of the independent variables and the dependent variable that used to run the tests. Table 4.11 shows the mean and standard deviation of the independent and dependent variable. The distance between both means and their attendant standard deviations is broad indicating that the data points are far to the mean also meaning that the data points are spread out over a wider range of values. In table 4.12 it is evident that the level of correlation between the non-oil export earnings and the gross earnings for the ten years under review is positive and not significant at 35.2%.

On table 4.13 the sum of squares is derived by calculating the mean of the dependent variable which is then squared. The residual sum of squares is the difference between actual and estimated sum of squares. The F test is the essence of ANOVA and is complemented by the probability variance which showed that the model is well fitted at significance value of 0.318 and the F test value at 1.134. The equality of variance has been established by the P value. On table 4.14 the coefficient correlation (r) measures the strength and direction of a linear relationship between variables. The +1 shows a very strong and significantly positive relationship between the two variables. In the collinearity diagnostics the proportion of the variance accounted for by factor 1 in the eigenvalue is 92%. On table 4.15 the condition Index also indicates that the factor 2 has a higher value (3.326) than factor 1 (1.000) which indicates a not so near linear dependence of the gross exports on oil exports. The R^2 shown on table 4.17 is 0.1242 adjusted R^2 value is 0.147. This indicates that the proportion of the total variability in the dependent variable that is explained by the independent variable is low but there were no large discrepancy between the R^2 and the Adjusted R^2 so it suggests that independent variable in the regression is not redundant. In table 4.18 the variance impact factor and the tolerance level is up to 1. This implies that the incidence of collinearity or multicollinearity is very low, an indicator of the model's strength. So it is not significant enough to affect the reliability of the methodology in use and shouldn't invalidate the results obtained.

6.0 Conclusions

Despite the political stability and steady growth in GDP between in the mid 2000s which wasn't related to increases in the oil prices at the global market, the billions of petrodollars accrued to Nigeria were not utilized in diversifying their economy. Nigeria's economy depends mainly on oil revenue, the non-oil sectors have been left largely untapped. There has been a significant decline of human development indicators, naira exchange value and decaying infrastructure in both oil and non – oil sectors. The petroleum refineries have been operating far below their previous capacity as Nigeria has been importing refined petroleum for many years now. This has exacerbated imbalances in the economy. The failure to diversify the economy is strongly evident in years of not investing oil revenues in multi-sector economic growth rather the funds have been used to lavish on unsustainable import reliance, poorly sustained policies and corruption. The banking and foreign exchange reserves to the capital market and the mortgage sector are very vulnerable the intrigues of oil price volatility in the Nigerian economy. Over the years the non oil export earnings are largely not significant. It is not out of place that many investors in different sectors remain surprised that with all the potentials for diversification Nigeria has done little to reinvent and diversify their economic profile to reduce dependency on oil and take advantage of the other potentials that would yield more income and reduce risk of oil price shocks.

Countries such as Saudi Arabia, with 13% of the global supply of oil are working assiduously towards diversifying their economy away from oil, Nigeria however producing 3% of global supply has not made any noticeable effort towards this ideal. Before the advent of oil, the agricultural sector was contributing 70% to our GDP but now contributes barely 30%. Experts agree that Nigeria's oil reserves are estimated to run out by the year 2030 and even with the exploration of other reserves like the ones in the Benue trough and Lake Chad basin the eventual decline of Nigeria's oil driven economy is a matter of time. Nigeria can be saved the economic unpleasantness resulting from the eventual decline of its oil dependent economy if only the government can ensure the path to a prosperous future by successfully achieving a revolutionized multi-faceted and interdependent enterprising economy.

7.0 Policy recommendations

Many writers are of a near unanimous opinion that with abundant natural resources, mineral deposits, fertile land and enormous human capital that Nigeria has a wide range of incentives to diversify its economy. The government must understand that the private sector drives the economy and studies have shown that business expansion in small and medium scale enterprises will transform the economy by creating jobs, conserving foreign exchange, ensure optimal utilization of resources and equitable resource distribution. Privatization of government owned companies and joint participation of the government and private sector will enhance efficiency of resources for greater output and will reduce government expenditure.

The government should pay more attention to diversifying away from oil to other viable sectors including the agricultural sector. In addition to the potential food sufficiency this can lead to economic prosperity. Specifically speaking, a lot of things can be done by providing high yielding seeds, facilitating easier access to credit to farmers, subsidizing the costs of inputs and machines, developing the capacity to export and market commodities. Given the size of the agricultural value chains in production, inputs and mechanization, processing, marketing and finance, research and development. The jobs and wealth creation expected from this development would lead to sustainable economic growth. The successes recorded in the local rice production in creating jobs, wealth for farmers and conserving foreign exchange should be replicated in other commodities.

Macro-economic stability and supportive regulatory and institutional frameworks are key prerequisites for economic diversification by insulating the economy from the impact of oil price volatility is necessary to lay a sound foundation for economic diversification. It requires sound fiscal policy and framework, effective liquidity management and prudent monetary policy, supportive financial sector policies and a fairly valued exchange rate.

Strong regulatory and institutional frameworks are also needed to unlock private sector potential. Also improving the business environment, including streamlining procedures, strengthening economic governance and transparency, and reducing regulatory barriers to competition are needed for the private sector to grow. Labor market reforms and better access to finance are also necessary.

The public sector should enable, not compete with, the private sector to support economic diversification. Public employment and wage policies need to be tailored to improve incentives and help raise the supply of highly-skilled labor for the private sector. Public spending needs to focus on investment in infrastructure and human capital to improve competitiveness. Reducing excessive monopoly rents in the non- tradable sector by increasing competition and enhancing bidding procurement processes would also help boost the private sector. Policies and strategies to foster the emergence of dynamic new tradable sectors could accelerate economic diversification. Economic diversification requires innovation in processes (to enhance productivity), products (to sustain growth in new sectors), and organizations (to produce more efficiently). Strategies could involve seeking to foster horizontal and vertical diversification, diversifying manufacturing away from oil production, further integrating into the global value chain, and attracting FDI into the non-oil sector.

References

- Asian Development Bank (ADB), 2010, "The Rise of the Middle Class. Key Indicators for Asia and the Pacific 2010" (Mandaluyong City: ADB).
- Asian Development Bank (ADB), 2013, "Beyond Factory Asia Fueling Growth in a Changing World" (Mandaluyong City: ADB).
- Asian Development Bank (ADB), 2013, "Asia's Economic Transformation: Where to, How, and How Fast" (Mandaluyong City: ADB).
- Chauffour, J. P., 2012, "Trade Integration as A Way Forward for the Arab World: A Regional Agenda. World Bank Policy Research, Working Paper 5581 (Washington: World Bank).
- Chenery, H., S. Robinson, and M. Syrquin, 1986, "Industrialization and Economic Growth" (New York: Oxford University Press).
- Dasgupta, S., and A. Singh, 2006, "Manufacturing, Services, and Premature De-industrialization in Developing Countries: A Kaldorian Empirical Analysis" Center for Business Research, University of Cambridge.
- Eichengreen, B., and P. Gupta, 2013, "The Two Waves of Service Sector Growth" *Oxford Economic Papers*,

- 65(1): 96–123.
- Groningen Growth and Development Centre (GGDC). 10-Sector Database. www.ggdc.net
- Hakura, D. and A Billmeier, 2008, “Trade Elasticities in the Middle East and Central Asia: What is the Role of Oil?” IMF Working Paper 08/216 (Washington: International Monetary Fund).
- Haraguchi, N., and G. Rezonja, 2010, “In Search of General Patterns of Manufacturing Development,” Development Policy and Strategic Research Branch, Working Paper 2010/02 UNIDO.
- Hausmann R., and others, 2011, “The Atlas of Economic Complexity: Mapping Paths to Prosperity” (New Hampshire: Puritan Press).
- Imbs, J., and R. Wacziarg, 2003, “Stages of Diversification,” *American Economic Review* Vol. 93, pp. 63–86.
- International Finance Corporation, 2013, “IFC Jobs Study—Assessing Private Sector Contributions to Job Creation and Poverty Reduction” (Washington).
- International Labor Organization (ILO). LABORSTA Internet. [http://laborsta.ilo.org/International Monetary Fund](http://laborsta.ilo.org/International%20Monetary%20Fund), 2006, *Exchange Rates and Trade Balance Adjustment in Emerging Market Economies*, prepared by Policy Development and Review Department (Washington)
- International Monetary Fund, 2011, *Regional Economic Outlook: Sub-Saharan Africa, “The East African Community: Taking Off?”* April (Washington).
- International Monetary Fund, 2012, *Regional Economic Outlook: Sub-Saharan Africa —Structural Transformation in Sub-Saharan Africa*, October (Washington).
- International Monetary Fund, 2013, “Economic Prospects and Policy Challenges for the GCC Countries,” paper prepared for the Annual Meeting of Ministers of Finance and Central Bank Governors.
- International Monetary Fund Background Note, 2014, Thematic Session 4: Improving the Business Climate. This note was written as a background note for the “Jobs, Growth, and Fairness” conference, which took place in Amman on May 11-12, 2014.
- International Monetary Fund, 2014, “Economic Diversification in the GCC: Past, Present, and Future,” IMF Staff Discussion Note.
- International Monetary Fund, 2015, “Global Value Chains: Where Are You? The Missing Link in Sub-Saharan Africa’s Trade Integration” African Department Regional Economic Outlook (Washington)
- International Monetary Fund, 2016, “Investment and Growth in the Arab World: A scoping Note” IMF Staff discussion Note.
- Isard, P., and H Faruquee, 1998, *Exchange Rate Assessment: Extensions of the Macroeconomic Balance Approach*, IMF Occasional Paper No. 167 (Washington).
- Rocha, R., and others, 2011, “The Status of Bank Lending to SMEs in the Middle East and North Africa Region: Results of a Joint Survey of the Union of Arab Bank and the World Bank,” World Bank Policy Research Working Paper 5607 (Washington: World Bank).
- United Nations Industrial Development Organization, 2012, *Industrial Statistics Database 2-Digit Level, ISIC Revision 3 (INDSTAT2)* (Vienna).
- World Bank, 2012, *World Development Report 2013: Jobs* (Washington).
- World Economic Forum, *Global Competitiveness Report*, 2014-15