

Impact of Crude Oil Price Volatility on Economic Growth in Nigeria (1980 -2014)

Ifeanyi O. Nwanna (Ph.D)¹, Ayenajeh Manasseh Eyedayi²

¹*Department of Banking & Finance, Nnamdi Azikiwe University, Awka*

²*Department of Banking & Finance Federal Polytechnic, Nasarawa, Nigeria*

Abstract: *The recent shock in crude oil prices which started in July 2014 has adversely affected Nigeria, especially in the areas of foreign reserves, currencies crisis, declining government revenue, and ultimately, threat in terms of ability to meet financial obligations as at when due. Oil price changes, volatility have been a very controversial topic among different scholars. The main objective of this study is to investigate the impact of crude oil price volatility on economic growth of Nigeria. The study utilizes secondary data from various sources and covers a period of 1980 to 2014. Multiple regressions were used as a tool for data analysis and the findings revealed that there is a positive and significant relationship between oil price and economic growth. Based on the findings the researchers hereby conclude that oil price volatility does not have a positive impact on the economy (contrary to the findings of some earlier studies) but oil price itself does. In the light of the above findings, the researchers hereby recommend that, the country should diversify its export revenue base as a means of minimizing reliance on crude oil and petroleum products, Such as fiscal prudence, reform in budgetary operations, export diversification, revival of the non-oil sector of the economy, accountability and corporate governance.*

Keywords: *Corporate Governance, Export Diversification, Shocks, Volatility*

I. Introduction

1.1 Background of the Study

Crude oil as an energy source since its discovery in the 1800's has been vitally important to the world economy. According to Hathaway (2009)[1] the importance of oil has risen to the extent that in a world suddenly without oil, all the major distribution systems that allow economic transactions on a more than local basis would fail and the world economy would collapse.

Crude oil is a major source of foreign exchange earnings and the dominant source of revenue for the Nigerian government. According to Yuan ,Liu and Huang (2014) [2] oil price shocks have had an attendant multiplier effect on crude oil and economic activity. The Nigerian economy has been completely reliant on oil and the basis upon which government budgeting, revenue distribution and capital allocations are determined. Volatility is an upward and downward movement of oil prices globally. This assertion thus translates that these oil prices are exogenous because it's determined by external influences that somewhat stagnate the Naira and Nigeria cannot moderate the causes of these oil price slides. Nigeria's exports of oil at a time of peak prices – 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% cover operational costs, and the remaining 4% go to investors (Atukeren 2003).[3] However, the World Bank has estimated that as a result of corruption 80% of energy revenues benefit only 1% of the population.

According to Ujunwa (2015)[4] the recent oil price shock (large fall in oil prices) has been attributed to factors such as higher than expected supply, weakness in global demand for oil, driven largely by improvements in production technology, particularly the shale technology in the United States, steady rise in production of countries not belonging to the Organization of Petroleum Exporting Countries (OPEC), the faster than expected recovery of production in some stressed OPEC producers (Iran for instance); OPEC's November 2014 decision to maintain production level despite the sharp decline in prices, which clearly shows that the trend might not abate soon.

Oil price changes, volatility have been a very controversial topic among different scholars. External shocks can be defined as a large unanticipated change in world economic conditions which impacts upon a national economy. Shocks could come in different forms such as a shift in the terms of trade, a slowdown in the growth of world export demand and an increase in interest rates set by world financial markets. Oil shocks are of great concern to most economies because a sudden hike in prices has been found to cause a fall in global output. Oil price shocks could also be defined as a large boost in the relative international price of oil. Nordhaus (2007)[5], defined oil-price shock as an inward shift in the supply curve for crude oil that is triggered by political events exogenous to the oil market and the macro economy.

An oil price shock may have real effects, as a higher oil price may affect output through the aggregate production function by reducing the net amount of energy used in the production. In addition, aggregate demand, of which investment is a major part, may also change in response to energy price changes. An oil price increase will typically lead to a transfer of income from the oil importing countries to the oil exporting countries. This reduction in income would cause rational consumers in oil importing countries to cut back on their consumption spending and investment, hence, reducing aggregate demand and output. However, to the extent that the increase in income in the oil exporting country will increase demand from the additional income transferred to them from the oil importing country, the global effect would be minimized (Bohi, 1989[6] and Mork, 1994)[7]. The level of demand may also change due to actions taken by government in response to change in oil prices. To illustrate this point, to offset the increase in the general price level that might have been observed after the second oil price shock, several countries pursued tight monetary policy, which may itself have lowered real activity (Bjornland, 2000)[8]

The current declining oil price and the daunting challenges it poses to the Nigerian economy, has brought to the fore, the need to reconcile theory with practical realities. Given the empirical literature on the recent shocks, this study fills an important research gap by clarifying our understanding of the of declining oil prices on Nigerian economic indicators in terms of magnitude of the impact, the permanent/transitory nature of the shock and most importantly, the symmetry of the shock.

II. Statement Of Problem

The recent shock in crude oil prices which started in July 2014 has adversely affected Nigeria, especially in the areas of foreign reserves, currencies crisis, declining government revenue, and ultimately, threat in terms of ability to meet financial obligations as at when due. Brent oil price declined by 24 percent to a four-year low of USD81 as at November 11, 2014. The price of Brentfell from USD114.91 on January 31 to USD102.12 on May 31, and stood at USD57.8 and 67.6 on March 31, 2015.

The resultant effect has been a large out pour of policies among policy makers and contributions from the academia. These policy prescriptions have spurred the need to diversify the economy towards once thriving sectors in the economy, removal of subsidy, the war on corruption and reduction of government activities and government related cost (as at the time of this work the budget had not been released for this reason).

This study identified two basic research problems. First is the need to determine when agents believe that the effects of shocks will be permanent, shocks feed into their expectations, and the persistence of shock is thus large. In the same vein, when agents believe that the effects of shocks are only temporary, prices quickly return to their initial position. Secondly, the research problem is the need to understand the effect of oil price volatility on four fundamental economic variables (total government revenue, capital importation, exchange rate and foreign exchange reserves) in Nigeria. Based on this, the researcher intends to know the relationships that exist between oil price, GDP and Per-capita Income.

III. Objectives Of The Study

In order to achieve the broad objective of the study, the following specific objectives were investigated. The broad objective of the study is to examine the economic impact of oil price volatility in Nigeria. To achieve this objective, the study strived to;

- a. Determine whether there are attendant positive significant relationship exist between crude oil price and economic growth.
- b. Examine the effects of crude oil price volatility on government revenue, foreign exchange rate, capital importation and foreign external reserves.

3.1 Research Questions

The study is tailored to provide answers to the following questions;

- a. What is the magnitude and direction of crude oil price volatility on economic growth?
- b. What are the attendant effects of crude oil volatility on government revenue, foreign exchange rate, capital importation and foreign external reserves?

3.2 Research Hypotheses

To achieve the above objectives and provide answers to the research questions, the following hypotheses were formulated and stated in a null form;

- a. There is no positive and significant relationship between oil price and economic growth”.
- b. There is no positive effect of crude oil volatility on government revenue, foreign exchange rate, capital importation and foreign external reserves

3.3 Scope of the Study

The focus of the study is Nigeria, and it estimates the impact of crude oil prices on Nigeria's Economic Growth. The study covered the period 1980 to 2014 for some variables and April 2004 to July 2015. The yearly figures on GDP, Per-capita Income and Crude oil prices and the monthly average prices of Brent, West Texas Intermediate (WTI) and OPEC basket were used as proxies for crude oil prices, while foreign exchange rate, foreign external reserves, government revenue and capital importation were used to proxy economic indicators.

3.4 Significance of the Study

The recent crashing of global oil prices is attracting heated debate among policy makers and academics because of the effect on global output, inflation and economic stability. Nigeria represents a good case study for exploring the effect of exogenous oil price shock on oil exporting countries because of her dependence on crude oil earnings, and the challenges currently confronting the government.

The significance of the study therefore is its contribution to literature as well as methodology and the economic importance of oil price uncertainty to growth for oil exporting countries like Nigeria. Thus, the findings of this study are beneficial to the government, policy makers, the private sector and academia.

IV. Review Of Related Literature

4.1 Theoretical Framework

For the purpose of this study, the Structuralist Theory will be used.

The Structural Theory: argues that structural shocks such as sudden large changes in the prices of food and oil could be attributed to macroeconomic fluctuations (Sommer, 2002)[9]. However, there is a sharp disagreement among the structuralist theorists on the amplitude effect of structural shocks. One school argues that supply shocks are in the short-run and have only transitory effect on the macro-economy (Ball and Mankiw, 1995)[10]. They further argue that since the role of policy makers is to ensure favorable economic environment in the long term, policy makers should not respond to adverse pressures from food and oil prices that are highly volatile in the short-run, in order not to drive the economy into recession (Armando, 2009)[11]. They opine that policy makers should rather, focus on mitigating "the second round effect", which is likely to be more prolonged and could result in economic recession (Inflation Report, 2006)[11a]. Fischer (1985)[12] argues that as long as there is no real wage resistance by workers, supply shock by themselves do not require policy response.

Another school documented extensive evidence from Latin America and developing countries to show that structural shocks could be persistent, and are rooted in bottlenecks of inelastic supply in the agricultural and oil sectors (Watcher, 1979)[13]. In their view, agriculture, oil, foreign trade, and government sectors suffer from institutional rigidities that cause prices to rise with economic developments. They advocated for the elimination of such institutional rigidities by the fiscal authorities as a measure for curbing the adverse effects of structural shocks.

The above views have been counteracted by some scholars using the rational expectation theory. They argue that the amplitude of supply-side is contingent on behaviour of expectation (Sommer, 2002)[9]. For instance, when agents believe that the effects of shocks will be permanent, shocks feed into their expectations, and the persistence of shock is thus large. In the same vein, when agents believe that the effects of shocks are only temporary, economic fundamentals quickly return to their initial position Ujunwa (2015)[4]. This theory essentially influenced the theoretical framework for this study.

4.2 Conceptual Framework

4.2.1 Nature of Oil and the Oil Market

Crude oil is a naturally occurring substance which is found in widely differing amounts in various countries throughout the world. Oil is not used directly for any important purpose, rather it is refined and split into different products which are either used directly for final consumption or are in turn further processed. Different crude oils yield different proportions of these refined products, and since the value is related to the end uses, those crude oils yielding higher proportions of valuable by-products (petroleum motor spirit, diesel fuels, jet fuels, petroleum gas etc.) will tend to sell at a premium relative to other crude oils.

4.2.2 What Drives The Price of Oil?

a) Supply Side

The supply of crude oil is divided into two main categories, OPEC and non-OPEC suppliers. OPEC (Organization of the Petroleum Exporting Countries) is a permanent, intergovernmental organization, established in Baghdad, Iraq, in September 1960. OPEC now comprises twelve members: Algeria, Angola, Ecuador, Islamic Republic of Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela. The Organization has its headquarters in Vienna, Austria. Its objectives are to coordinate and unify

petroleum policies among member countries in order to secure a steady income to the producing countries; establish an efficient, economic and regular supply of petroleum to consuming nations; and generate a fair return on capital to those investing in the petroleum industry. OPEC is in many ways a cartel, a group of producers that attempts to restrict output in order to raise prices above the competitive level (Zycker 2008)[14]. Decision-making by OPEC occurs at a conference, comprising national delegations at the level of oil minister, which meets twice each year to decide overall oil output and thus prices and to assign output quotas for the individual members. The quotas set upper limits on the amount of oil each member is allowed to produce. The conference also may meet in special sessions when deemed necessary, particularly when downward pressure on prices becomes acute.

The main non-OPEC oil producers are; Russia, the United States, China, Mexico, Canada, Norway, and Brazil. Oil producers operating outside OPEC are responsible for producing sixty percent of the world's oil, yet they don't have much power over oil pricing⁴. This is because non-OPEC oil reserves are only 18.67% of the world crude oil reserve therefore their current production level is deemed unsustainable in the long run due to their relatively small reserves and it is expected to decline sharply in the future.

As countries develop, industrialization, rapid urbanization, and higher living standards increase their demand for oil (Dunlap, Swan and Fowler 2009)[15] currently oil demand growth is highest in developing countries. Nonetheless, the United States remains the world's largest oil consumer. According to the US Energy Information Agency (EIA), transportation accounts for two third of oil consumed in the US. The second largest oil consumer is China. China's oil consumption growth accounted for half of the world's oil consumption growth in 2011 (EIA). China oil consumption is distributed between power generation, transportation sector shifts, economic growth and trade, and refining capabilities. This suggests an oil addiction on the part of these economies. In fact, more than the need for transportation purposes, this addiction is partially explained by their industrial needs. Industrial demand for oil to produce chemicals, manufacture plastics, and for power generation affects demand for oil. Most advanced economies are built on a substantial industrial sector and rely heavily on transportation powered by internal combustible engine; hence, why they have higher oil demand than less industrialized economies. Finally, factors such as Population growth, subsidies, taxes and other regulations play a role in the overall demand for petroleum. Investors, traders, hedgers, speculators also affect oil demand.

b) Geopolitical and Other Considerations

Oil prices are always vulnerable to short-term disruption caused by the weather, strikes or conflict. For example, the combination of the Iranian revolution and the Iran-Iraq War more than doubled crude oil prices from \$14 per barrel in 1978 to \$35 in 1981. Thirty-five years later, Iran's production is only two-thirds of that achieved under the Shah. When Iraq invaded Kuwait in 1991, oil cost \$21 per barrel. Five months later, it peaked at \$44. The average price during the conflict increased one-third to \$28. Before the 2002-2003 Iraq war, the price of oil had fallen to around \$17 per barrel – thanks to slow economic growth following the 9/11 terrorist attacks. But it rose by 40% to \$26 per barrel during the war in Afghanistan. Since then there have been major effects from Libya's crisis and more recently in relation to Yemen. There have been major crises that, because of their location, have not had direct effects on oil prices.

4.23 The Dutch Disease Syndrome

One of the impacts of oil price shocks on economic growth and performance of an oil exporting countries like Nigeria is the Dutch Disease Syndrome. Windfalls from sharp surge in oil price cannot sweep through a developing economy that is yet to be diversified and large enough to absorb the inflow without causing inflation. Resource pull effect and spending effect result when large inflow from oil export hits a less diversified economy (Mieiro and Ramos, 2010)[16]. The booming export sector (trading internationally) experiences rise in marginal productivity and thus pay factors employed relatively more than other sectors do. As a result, factor inputs/resources are pulled to the booming sector (oil/export sector) at the expense of other tradable sectors (agriculture and manufacturing) and the non-tradable sector. This results in direct de-industrialization of the economy.

4.3 Empirical Review

Ogbonna and Ebimobowei (2012)[17] examined the impact of oil revenue and the Nigerian economy during the period of 1970-2009. They used Pearson correlation to analyze primary and secondary and descriptive statistics to explain evidence and events. The results of the analysis show that oil revenue positively affected the gross domestic product and per capita income of Nigeria. However, the relationship between petroleum revenue and inflation rate was negative. They suggested proper utilization and management of oil revenue to achieve long-run growth and development of the country.

Torben and Mideksa (2012)[18] investigated the economic impact of oil resource endowment using quantitative comparative method and focusing on the Norwegian economy. The study results indicated that on

average, about 20% of the growth in GDP per capita since 1974 has been due to the petroleum endowment. In Sudan, a few studies examine the impact of oil production in economic growth.

Hassan Ali (2010)[19] highlighted the case of Oil, Peace and Development. The author attempted to describe how oil is a core player on the national economy, peace and development issue(Gadkarim 2010)[20].

Nour(2013) [21]and Mehdi (2007)[22] also evaluate the prospective impact of oil revenues on the Sudan economy. The authorhighlights the difficulties faced by the government in policy designing principally, allocation of oil revenues, diversification of the output and export structure.

From an economic point of view, Baumeister and Peerman (2009)[23] explain that oil price shocks results from low price elasticity of demand and supply. The result of this is that large price variation is required to clear the market, that is, to restore the market to equilibrium. Hamilton (2008)[24] and Fattouh (2007)[25] agree that crude oil price elasticity is very low especially in the short run. This is due to technology lock-up; that is, it takes some time before energy-consuming appliances/capital stocks are replaced with more energy-efficient substitutes. However, substitution takes place in the long run and price elasticity is thus much larger. Notwithstanding, price elasticity is yet less than one (Hamilton, 2008)[26]. Baumeister and Peerman (2009)[23] further explain that the demand function is recently getting less elastic (probably due to increasing growth in demand from emerging economies, relative to availability of substitutes such as bio-fuels and green energies), and this explains higher shocks in oil prices. Similarly, supply of crude oil is price inelastic. This results from time lag between exploration and production activities, making supply less responsive to price changes (Fattouh, 2007)[25].

V. Research Methodology

5.1 Research Design

Research design according to Onwumere (2005)[27] is a kind of blue print that guides the researcher in his or her investigation and analysis.The study utilized the Ex post facto design is a quasi-experimental study examining how an independent variable, present prior to the study, affects a dependent variable.A good research design must be able to control independent variables that are extraneous to the study and may influence the dependent variables in the study (Asika, 2006)[28]. In view of the above the study adopted the OLS regression

5.2 Nature and Sources of Data

The study relied firstly on the yearly secondary data covered from 1980 – 2014 and monthly secondary data that covered April 2004 to July 2015. Crude oil prices were collated from Bloomberg database. Foreign external reserves, real exchange rate (USD/Naira) and capital importation were collated from Central Bank of Nigeria statistical database, while total government revenue was collated from the Office of the Accountant General, Ministry of Finance. The oil prices include monthly closing spot prices of the Brent (USD/barrel); monthly closing spot prices of the West Texas Intermediate Cushing (USD/barrel) and OPEC basket monthly average crude oil prices (USD/barrel). The economic variables are real exchange rate, foreign external reserves, capital importation (which is made up of foreign direct investment in the form of equity and other capital; foreign portfolio investment in the form of equity, and other investments such as trade credits, loans, currency deposits and other claims) and government revenue.

5.3 Description of Research Variables

The variables for the study are classified into dependent and exogenous variables. The independent variables are the volatility series of the three reference crude oil prices (Brent, West Texas Intermediate Cushing (USD/barrel)and OPEC basket. The other variables are real GDP, Per-Capita Income,real foreign exchange rate, the natural logarithm of government revenue, the natural logarithm of external foreign reserves and the natural logarithm of capital importation.

5.4 Techniques of Analysis

The study utilizedmultiple regression techniques to be usedas tool of analysis to ascertain the nature of the relationship that exist between the variables. This was utilized because of the nature of the data so as to relevantly identify the amount of change in the dependent variables that are associated with changes in the independent variables.

5.5 MODEL SPECIFICATION

To estimate theimpact crude oil price volatility on economic growth the following models were formulated

$$Y = b_0 + b_1 + b_2 \dots \dots \dots \text{equation(1)}$$

Where Y = GDP

b_0 = constant

b₁= Per Capita
 b₂= Oil price
 GDP= f(Per Capita , Oil price

$$GDP = b_0 + b_1 \text{Per Capita} + b_2 \text{Oil price}$$

$$Y = b_0 - b_1 + b_2 + b_3 + b_4 + b_5 + b_6 \dots \dots \dots \text{equation(2)}$$

Where Y = Natural logarithm government Revenue

- b₀= constant
- b₁= WTI
- b₂= Brent
- b₃=Opec Basket
- b₄=ExpR
- b₅=Logarithm of Capital importation
- b₆=Foreign external reserves

$$\text{Natural logarithm government Revenue} = b_0 + b_1 \text{WTI} + b_2 \text{Brent} + b_3 \text{Opec} + b_4 \text{ExpR} + b_5 \text{LnCapital Importation} + b_6 \text{Foreign external reserves}$$

VI. Data Presentation And Analysis

6.1 Data Presentation

Table 6.1 Showing Real GDP, Per Capita Income and Oil Price

YEARS	Real GDP	Per Capita	OIL Price	% Δ in real GDP	%Δ in Per-capita	% Δ in OIL PRICE
1980	9,622.42	885.243	75			
1981	11,627.57	885.273	79	17.24478975	0.003388785	5.063291139
1982	11,505.11	745.789	95.44	-1.064396603	-18.70287709	17.22548198
1983	10,924.05	491.541	113.65	-5.319089532	-51.7246781	16.02287725
1984	10,703.21	347	81.05	-2.063306242	-41.65446686	-40.22208513
1985	11,594.02	331.052	63.35	7.683357455	-4.817370081	-27.94001579
1986	10,579.06	254.845	101.43	-9.594047108	-29.90327454	37.5431332
1987	9,441.63	263.86	74.48	-12.04696647	3.416584552	-36.18421053
1988	10,153.77	284.384	67.07	7.013552602	7.217002363	-11.04815864
1989	10,810.43	266.904	55.69	6.074318968	-6.549171238	-20.43454839
1990	12,190.49	347.625	38.13	11.32079186	23.22071197	-46.05297666
1991	12,408.73	311.542	28.66	1.758761775	-11.58206598	-33.04256804
1992	12,764.52	279.692	25.04	2.787335521	-11.38752628	-14.45686901
1993	13,347.10	172.483	24.23	4.364843299	-62.15627047	-3.342963269
1994	13,794.87	196.938	28.42	3.245916779	12.41761367	14.74313863
1995	14,085.68	400.997	18	2.064579062	50.88791188	-57.88888889
1996	15,147.42	497.885	12.62	7.009378495	19.45991544	-42.63074485
1997	15,949.20	381.612	19.33	5.027085998	-30.46890559	34.71288153
1998	16,779.27	352.037	21.16	4.946997098	-8.401105566	8.648393195
1999	17,267.34	384.358	17.26	2.826550007	8.409087361	-22.59559676
2000	18,626.27	495.434	16.25	7.295770973	22.41993888	-6.215384615
2001	20,635.14	469.911	17.41	9.735189584	-5.431454041	6.66283745
2002	25,610.95	627.362	19.61	19.4284476	25.09731224	11.21876594
2003	28,942.66	715.675	20.11	11.51141602	12.33981905	2.486325211
2004	32,781.76	926.262	23.85	11.71108568	22.73514405	15.68134172
2005	35,386.67	1,179.77	18.3	7.36127474	21.48791714	-30.32786885
2006	38,495.22	1,523.62	15	8.075158422	22.56796314	-22
2007	42,176.78	1,761.52	18.39	8.728878781	13.50538172	18.43393148
2008	45,783.59	2,177.74	14.46	7.877953651	19.1124744	-27.17842324
2009	50,156.59	1,770.84	27.75	8.718694792	-22.97779585	47.89189189
2010	55,469.35	2,395.62	28.14	9.577829919	26.08009618	1.385927505
2011	58,180.35	2,612.12	29.54	4.659648833	8.288286909	4.739336493
2012	60,670.05	2,835.29	33.29	4.10367224	7.87115251	11.26464404
2013	63,942.85	3,082.49	36.18	5.1183205	8.019490736	7.987838585
2014	68,397.10	3,416.49	36.98	6.512337511	9.776115253	2.163331531

Data Source: International Monetary Fund (IMF) and Researchers Computation (2015)

6.2 Data Analysis

The general objective of the study is to examine the impact of crude oil price volatility on Economic growth in Nigeria. As stated in chapter one the two specific hypotheses are analyzed. The regression results are analyzed below.

6.3 Test of Hypotheses

H₀1: There is no positive and significant relationship between oil price and economic Growth To validate the above hypothesis, the researchers used two-stage least square multiple regression, while relying on simple OLS regression for robustness test. Below is the model used:

$$1. \text{ GDP} = b_0 + b_1\text{oilpx} + b_2\text{capita}$$

Where: GDP is the percentage change in the GDP

Oilpx = percentage change in oil price (representing oil price fluctuations)

Capita = percentage change in per capita income (representing the net effect on the individuals)

Simple OLS regression where $\text{GDP} = b_0 + b_1\text{oilpx}$ or $\text{Per capita} = b_0 + b_1\text{oilpx}$.

In all the “b” represents the coefficients and parameters.

For hypothesis one: There isa positive and significant relationship between oil price and economic growth

$$Y = b_0 + b_1 + b_2$$

$$Y = 5.299 + 0.225(\text{Per Capital}) + 0.029(\text{Oil Price})$$

Where Y = GDP

b₀= constant

b₁= Per Capita

b₂= Oil price

Table 6.3 Regression Result

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.974 ^a	.948	.945	1.4872887
a. Predictors: (Constant), OILPRICE, PERCAPITA				

Source: SPSS Printout of Multiple Regression Computed from table 6.1 above

TABLE 6.31 Regression Co-effecient

Co-efficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.299	.359		14.770	.000
	PERCAPITA	.225	.041	.861	5.429	.000
	OILPRICE	.029	.040	.116	.734	.468
a. Dependent Variable: GDP						

Source: SPSS Printout of Multiple Regression Computed from table 6.1 above

R= 0.974; that is the GDP, Per Capital and Oil price has 97.4% positive relationship which means that there is positive and significant relationship between oil price and economic growth.

R² = 0.945; that is independent variables (Per Capital and Oil price) can determine the dependent variable (GDP) with 94.5%. This means that there is positive and significant relationship between oil price and economic growth.

6.4 Hypothesis Two

There is no positive effect of crude oil volatility on government revenue, foreign exchange rate, capital importation and foreign external reserves Economic (foreign exchange rate, foreign external reserves, government revenue and capital importation) impact of Crude oil price volatility is positively significant.

Natural logarithm government Revenue = WTI, Brent, Opec, ExpR and natural logarithm capital importation

$$Y = b_0 - b_1 + b_2 + b_3 + b_4 + b_5 + b_6$$

$$Y = 3.731 - 0.005(\text{WTI}) + 0.008(\text{Brent}) + 0.008(\text{Opec}) + 0.006(\text{ExpR}) + 0.030(\text{LnCapital Importation})$$

Where Y = Natural logarithm government Revenue

Table 6.4 Regression Result

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.785 ^a	.615	.601	.27082
a. Predictors: (Constant), LnCAPITALIMP, EXPR, WTI, OPEC, BRENT				

Source: SPSS Printout of Multiple Regression Computed from variables inhypothesis two above

Table 6.41 Regression Co-efficient

Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.731	.789		4.729	.000
	WTI	-.005	.005	-.250	-.988	.325
	BRENT	.008	.009	.461	.867	.388
	OPEC	.008	.009	.446	.895	.373
	EXPR	.006	.001	.303	4.365	.000
	LnCAPITALIMP	.030	.042	.049	.718	.474

a. Dependent Variable: LnREVENUE

Source: SPSS Printout of Multiple Regression Computed from variables in hypothesis two above

R = 0.785; that is the Natural logarithm government Revenue, WTI, Brent, Opec, ExpR and natural logarithm capital importation has 78.5% positive relationship which means that Economic impact of Crude oil price volatility is positively significant

R2 = 0.615; that is independent variables (WTI, Brent, Opec, ExpR and natural logarithm capital importation) can determine the dependent variable (Government Revenue) with 61.5%. This means that Crude oil price volatility significantly impact on the economy of a country (Government revenue).

VII. Summary Of Findings

The findings from this study revealed that the current negative global oil shock has significant negative impact on the Nigeria economic growth. Specifically, the results revealed that the current shocks result in USD/Naira exchange rate depreciation, serious depletion of Nigeria’s external foreign reserves, steep downward trend in government revenue, and reduction in capital inflows. These findings clearly show that Nigerian economy is extremely vulnerable to global commodity price shocks as a result of over-dependent on oil. Growth theorists have steadily identified a causal relationship between crude oil shocks and economic growth addressed under two streams;

- (1) oil price shocks hinder economic growth; and
- (2) a circular relationship such that oil price shocks could hinder or stimulate economic growth. The first line argued that oil shocks increase uncertainties, which could adversely affect economic planning and projections, thus hindering economic growth (Narayan and Liu, 2014[29]; Shahbaz, Tiwari, Ozturk and Farooq, 2013[30]). That is, since the events are unpredictable, they could cause large-scale private sector defaults, trigger distressed assets sales, high bank insolvency, depletion of external reserve, currency crisis and loss of market confidence. In contrast, the second line argued that oil price shocks could hinder or promote growth depending on whether the country is an oil importer or oil exporter. In their view, increasing oil price stimulates oil exporting economies and hurts oil importing economies, while decreasing oil price could stimulate the economies of oil importing countries and hurt oil exporting economies.

VIII. Conclusion

The nation is yet to succeed at breaking the chain of poverty despite her abundant endowment of oil resource. The problem is caused by many factors. However, the focus of this research is identification of the impact of oil price volatility on the growth of the Nigerian economy.

This study finds that oil price volatility does not have a positive impact on the economy (contrary to the findings of some earlier studies) but oil price itself does. While increase in price positively affect the economy through its contribution to export revenues (and government revenues), surges in oil price induce or worsen uncertainty in the economy through its effect on fiscal instability and vulnerability of budget implementation. This negatively affects the economy, The reason for this is that, in spite of numerous problems facing the nation (locally and globally - among the global factors is the fluctuations in oil prices arising from global events), the country’s GDP has been, virtually always, on the rise; and the Nigeria’s economic growth has suffered severely leading to poor standard of living.

IX. Recommendations

Notwithstanding, the country should diversify its export revenue base as a means of minimizing reliance on crude oil and petroleum product. Some of these include; fiscal prudence, reform in budgetary operations, export diversification, revival of the non-oil sector of the economy, accountability and corporate governance. This will further shield the economy from the impact of oil price shocks on the economy, and thus prevent the negative effect of the shocks from attaining a statistical significant level. Some other recommendations are as follows:-

- i. **Need for Structural Reforms:** The reform should be targeted at eliminating structural rigidities, enhance production, and promote global competitiveness. Such reforms should aim at fashioning institutions to prevent politicians from violating inter-temporal budget constraints, and more generally, from engaging in short-sighted, time inconsistent policies that in the end stymie economic growth.
- ii. **Tax Authorities Must Retrieve Their Legitimacy from Economic Agents in Order To Augment Government Revenue Sources:** Increasing income tax (as currently practiced in some states of the federation) and the clamor to increase value-added-tax (VAT) is a wrong approach. It is counterfactual to increase the burden during an economic recession.
- iii. **Need for A National Technology Development Plan:** The need for a national technology development plan. Apart from the undiversified structure of the Nigerian economy and declining oil prices, a critical technology gap predisposes the country to external shocks. Concerted effort towards mass skills acquisition in the form of technology transfer is imperative for global competitiveness.

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APPENDIX

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	OILPRICE, PERCAPITA ^b	.	Enter
a. Dependent Variable: GDP			
b. All requested variables entered.			

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.974 ^a	.948	.945	1.4872887
a. Predictors: (Constant), OILPRICE, PERCAPITA				

Co-efficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.299	.359		14.770	.000
	PERCAPITA	.225	.041	.861	5.429	.000

	OILPRICE	.029	.040	.116	.734	.468
a. Dependent Variable: GDP						

Regression

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	LnCAPITALIMP, EXPR, WTI, OPEC, BRENT ^b	.	Enter
a. Dependent Variable: LnREVENUE			
b. All requested variables entered.			

Table 4.5 Regression Result

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.785 ^a	.615	.601	.27082
a. Predictors: (Constant), LnCAPITALIMP, EXPR, WTI, OPEC, BRENT				

Table 4.6 Regression Co-efficient

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
1	(Constant)	3.731	.789	Beta	4.729	.000
	WTI	-.005	.005	-.250	-.988	.325
	BRENT	.008	.009	.461	.867	.388
	OPEC	.008	.009	.446	.895	.373
	EXPR	.006	.001	.303	4.365	.000
	LnCAPITALIMP	.030	.042	.049	.718	.474
a. Dependent Variable: LnREVENUE						