NEAR EAST UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
ECONOMIC DEPARTMENT
MASTER'S PROGRAMME

MASTER'S THESIS

THE IMPACT OF OIL PRICE INSTABILITY ON ECONOMIC GROWTH (A CASE OF NIGERIA)

ABDULLAHI BUKAR NUHU

NICOSIA
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NEAR EAST UNIVERSITY

GRADUATE SCHOOL OF SOCIAL SCIENCES

Economics Master's Program

Thesis Defence

The Impact of Oil Price Instability on Economic Growth (A Case of Nigeria)

Prepared by Abdullahi Bukar Nuhu

(20157003)

We Certify the Thesis Is Satisfactory for the Award of the Degree of Master of Science in Economics

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ABSTRACT

This study assessed the impact of oil price instability on the Nigerian economic growth using the VAR model. 1981 to 2015 annual time series data was utilized in the study and it was obtained from the CBN statistical database. While cointegration test confirms the existence of a long-run relationship, test for unit root indicated that all the variables were non-stationary at level but stationary at first difference. The Granger causality result shows that oil price Granger caused economic growth and exchange rate, while exchange rate Granger caused inflation. Moreover, the variance decomposition result indicated that oil price instability is the largest source of variation in economic growth and exchange while the largest source of variation in the inflation rate is exchange rate followed by oil price. Hence, it is concluded that oil price instability significantly influences economic growth and exchange rate of Nigeria but indirectly affects inflation. This study finally recommended the diversification of Nigerian economy.

Keywords: Economic Growth, Oil Price Instability, Vector Error Correction Model, Granger Causality Test, Impulse Response, Variance Decomposition.

ÖZ

Bu çalışma petrol fiyat istikrarsızlığının Nijeryalı ekonomik büyüme üzerindeki etkisini VAR modelini kullanarak değerlendirdi. Çalışmada 1981-2015 yıllık zaman serisi verileri kullanılmış. Eşbütünleşme testi, uzun dönemli bir ilişkinin varlığını teyit ederken, birim kök testi, tüm değişkenlerin durağan olmadığı fakat ilk farkta durağan olduğunu gösterdi. Granger nedensellik sonuçları, Granger'ın petrol fiyatının ekonomik büyümeye ve döviz kuruna neden olduğunu, Granger döviz kuru Granger'ın enflasyona neden olduğunu göstermektedir. Ayrıca, varyans ayrışma sonucu, petrol fiyatının istikrarsızlığının ekonomik büyüme ve değişimdeki en büyük değişim kaynağı olduğu ve enflasyon oranındaki en büyük değişim kaynağı döviz kuru ile petrol fiyatının izlendiğini ortaya koymuştur. Dolayısıyla, petrol fiyat istikrarsızlığının Nijerya'nın ekonomik büyüme ve döviz kurunu önemli ölçüde etkilediği, ancak dolaylı olarak enflasyonu etkilediği sonucuna varılmıştır. Bu çalışma Nijerya ekonomisinin çeşitlenmesini önerdi.

Anahtar Kelimeler: Ekonomik Büyüme, Petrol Fiyat İstikrarsızlığı, Vektör Hata Düzeltme Modeli, Granger Nedensellik Testi, Cevabı örtmek, Varyans Ayrışması.

ACKNOWLEDGEMENTS

In the name of Allah, the Most Gracious, the Ever Merciful. All praise be to Allah (SWT) alone, the Lord of the worlds, who in His infinite mercy created me and gave me the opportunity to study up to this level. Peace and blessings of Allah be upon our holy Prophet Muhammad (SAW), his family, his companions and those who follow his path until the Last Day.

First and foremost, I would like to express my profound gratitude and appreciation to my supervisor Assist. Prof. Dr. Ergin Akalpler for his guidance and support during my studies here in Near East University, Turkish Republic of Northern Cyprus. Working with such a respected and inspirational person has been a privilege.

My appreciation is extended to the entire staff of Near East University, particularly Prof. Irfan Civcir, Prof. Dr. Erdal Yavuz, Assoc. Prof. Dr. Hüseyin Özdeşer, Mr. Ali Malik, Mr. Aresh Shargi and Mr. Vur Yektaoğlu for their valuable and commendable efforts.

I would like to express my profound gratitude and appreciation to my beloved parents Alhaji Nuhu and Hajiya Halima for their affection, caring, support, prayer and encouragement. May the Almighty Allah (SWT) reward them with Al-Jannatul Firdausi Al-A'alaa. Amen. Also, I would like to express my special thanks to my brother and sisters: Abubakar, Usman, Mustapha, Maryam, Aisha, Sulemain, Salamatu and Amina for their caring and support. May Allah reward them abundantly.

I would like to express my deep appreciation to my uncles and aunties particularly Sen. Engr. Mustapha Bukar for their caring, support, prayer and encouragement. May the Almighty Allah reward them abundantly.

Lastly, I wish to express my appreciation to all my kith and kin, well-wishers, and course mates (Umar, Kabiru, Johnson, Akinjide and all others whose name are not mentioned) for their support, encouragement and prayers. May the Almighty Allah (SWT) reward them abundantly.

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ABBREVIATIONS

ADF	Augmented Dickey-Fuller
CBN	Central Bank of Nigeria
GDP	Gross Domestic Product
GNI	Gross National Income
INF	Inflation Rate
LINF	Log Inflation Rate
LREER	Log Real Effective Exchange Rate
LRGE	Log Real Government Expenditure
LRGNI	Log Real Gross National Income
LROILP	Log Real Oil price
MEND	Movement for the Emancipation of the Niger Delta
NEEDS	National Economic Empowerment and Development Strategy
OLS	Ordinary Least Square
OPEC	Organization of Petroleum Exporting Countries
REER	Real Effective Exchange Rate
RGE	Real Government Expenditure
RGNI	Real Gross National Income
ROILP	Real Oil price
SAP	Structural Adjustment Programme
VAR	Vector Autoregression
VECM	Vector Error Correction Model

CHAPTER ONE

INTRODUCTION

1.1 Study Background

Oil has not generally been as significance as it is presently. Starting with the twentieth century, the significance of oil has expanded hugely; it overtook coal as the main source of energy. Crude oil is a dark, evil-smelling, vicious liquid consists of a blend of various chemical item largely carbon and hydrogen subsequently; it is named hydrocarbon. In the last 50 years, the total world consumption of oil has increased fourfold and presently, oil and gas account for about 70% of the global energy consumption. The energy evolution from coal to oil was mostly a reaction to technological advancement.

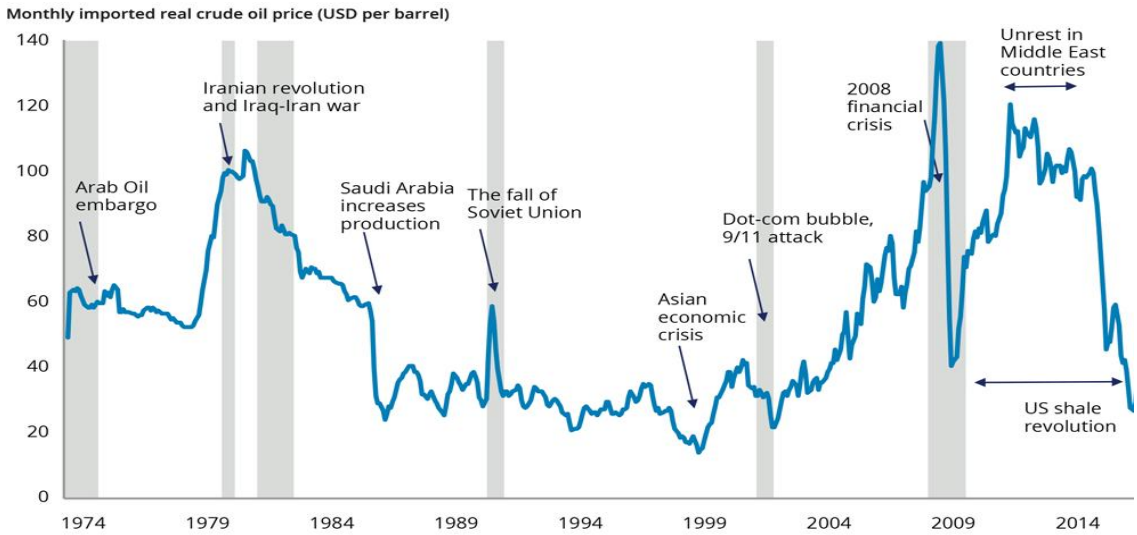
Oil is a natural asset that is paramount in the worldwide economy as it is the main source of energy for both industrial and domestic uses. Due to this, the pricing of the product became very responsive to the market forces of demand and supply thereby leading to an occurrence called oil price instability. Nevertheless, matters in oil price instability and its consequences on economic growth have kept on creating contentions among economist and policy makers. As some (for example, Akpan (2009) and Olomola (2006)) contend that it can advance growth, others (for example, Darby (1982)) are of the perspective that it can restrain growth. The former contend that a rise in the price of oil will increase the foreign earnings of oil exporting nations thereby affecting its national income positively. Though, the latter refer to the instance of net oil importing nations (which knowledge inflation, decreased non-oil demand, bigger input costs, lower investments) in moving forward their contention. On the opposite hand, the extreme decline in the prices of crude oil collapses the economy of net exporting nations

(diminishes national income and raises budget deficits). For example, the crude oil price drops in 2014 from $110 to less than $60 per barrel and later drops to less than $40 per barrel in 2015 (CBN, 2015). This implies more than 60% decline in the national income of the net exporting nations.

In this sense, the impact of oil price instability on a nation relies on the type of such economy and obviously, the nature of the variation in price. Nevertheless, the Nigerian economy is exclusively an oil exporting and importing nation since it both exports unrefined oil and imports refined one. Creating a final and legitimate proclamation on the influence of instability in oil price on the Nigerian economy is consequently complicated (Oriakhi & Osaze, 2013).

Presently, Nigeria depends deeply on revenues generated from crude oil export which speaks to around 90% of the aggregate export earnings, about 80% of the annual government budgets revenue and 14% of its Gross National Income (GNI). Before the advent of oil, Nigeria was not relying on the oil as the main source of revenue; agriculture has been the support of the Nigeria economy. In fact, somewhere around 1960 and 1966, Agriculture is the main source of revenue and it employed more than 90% of the country's labor force. Nevertheless, taking after the finding of oil and the ensuing oil boom in the 1970s, agribusiness lost its famous position to mining and particularly oil. Oil export earnings contributed about 59% to the Nigeria economy in 1970. Therefore, a little oil price fluctuations would have a great effect on the economy (Umar & Abdulkhakeem, 2010). Although given the instability nature of the price of crude oil, it is consequently essential to study the likely impacts of these changes on the economy of Nigeria.

Figure1.1: Historical Price of oil



Source: Energy Information Administration, 2016.

1.2 Statement of Problem

Instability in oil prices have assumed a vital role in leading nations into recessions and downfall in administrations. According to Majumdar (2016), instability in oil prices is regularly disclosed by stuns to oil demand and supply emerging from financial crisis, new fields sighting, geopolitical elements, or innovations. For the past years, oil price has perceived an interplay of all these elements which brings about outrageous oil price instability and subsequently leads nations into recessions and downfall in administrations.

Both the empirical and theoretical studies have confirmed that there are instabilities in international oil prices and it has various effects on different nations but depending on how greatly the economy relies on oil. As the 7th biggest exporter of cured oil, Nigeria depends deeply on revenues generated from crude oil export which speaks to around 90% of the aggregate export earnings and about 70% of the annual government budgets revenue. Therefore, it is consequently essential to study the likely impact of this instability on the Nigerian economic growth.

However, most of the researches carried out do not focus on the effect of instability in oil price on the main macroeconomics variable. For example, Arinze (2011) study the

effect of instability in oil price on the growth of Nigerian economy. The study concentrates more on the price of petroleum products rather than showing the precise direction of the relationship between the macroeconomic variables. Therefore, this research will fill the space by investigating the effect of instability in oil price on Nigerian economic growth using the key macroeconomic variables.

Furthermore, major gaps were found in most of the previous analysis precisely in the estimation procedures. For example, Oriakhi and Osaze (2013) found their variables non-stationary at level but stationary at differences. Nevertheless, they ignored the order of integration in their estimations for variance decomposition and Granger causality by stating the variables in level forms. Therefore, this research hopes to fill this gap.

Another deficiency is the selection of estimation method. For example, Arinze (2011) study the effect of instability in oil price on the growth of Nigerian economy using Ordinary Least Square (OLS). The OLS method of estimation used in the research is not the best as it does not explain much about instability (shock). Moreover, the lag length determination in most past analyses are subjective due to the absence of a clear standard for determination of the optimal lag length (For instant, Akpan, 2009). Therefore, this research will look into it by selection of the most appropriate technique of estimation, and specify a clear standard for determination of the optimal lag length

1.3 Research Objectives

The target of this research is to assess the impact of instability in oil price on the growth of Nigerian economy between 1981 to 2015.

1.4 Research Questions

- What is the impact of instability in oil price on economic growth of Nigeria?
- To what extent does instability in oil price influence the Nigerian economic growth?
- What is the causal relationship between economic growth and oil price instability?
- What are the policy implications of oil price instability on the economic growth of Nigeria?

1.5 Research Hypothesis

To achieve the objective of this study, the following hypotheses are formulated:

Ho: oil price instability has no significant impact on the Nigerian economic growth.

Hi: oil price instability has a significant impact on the Nigerian economic growth.

1.6 Research Scope and Limitation

Using annual time series data, this research will assess the implications of oil price instability on the economic growth of Nigeria between 1981 and 2015. The data are obtained from the statistical database of the Central Bank of Nigeria (CBN).

This study is constrained by several factors such as the issue of inadequate data, which has become a phenomenon in most research works that used Nigeria as a case study. Nigeria's statistical data is not only complicated to obtain but unreliable since the management and storage system is still underdeveloped. However, efforts are made to optimize the data available by prudently studying the applicable data despite the unreliability of the available data.

Furthermore, this study wishes to use monthly data because it gives more information than the annual data. However, the annual data was utilized in this study due to the absence of the monthly data.

1.7 Research Significance

Oil price has a great influence on the political and economic activities of many countries particularly oil-dependent nations such as Nigeria. Also, Empirical studies have confirmed that there are volatilities in international oil prices and these oil prices instabilities have various effects on different nations depending on how greatly the economy relies on oil.

The economy of Nigeria dependent largely on oil as the main source which contributes a large part of the countries revenue. Therefore, the study of the implications of oil price instability on the growth of the economy is significant as it helps government and

individuals in planning for the future particularly in the diversification of the economy with the hope to prevent further risk of over-dependence on oil income as the primary source of foreign earnings.

1.8 Research Methodology

This study will adopt quantitative technique of analysis to assess the correlation between economic growth and oil price instability. With the existing accomplishment and development in econometric analysis software, the Vector Autoregression (VAR) technique will be utilized to examine the correlation and significance between the variables. The following is the unrestricted VAR model for this study:

$Y_t = \alpha + \beta_1 Yt\text{-}1 + \ldots\ldots\ldots + \beta_p Y_{t-p} + \varepsilon_t$

Y = (RGNI, ROILP, RGE, REER, INF)

Where:

RGNI =Real Gross National Income,

ROILP = Real Oil price,

RGE = Real Government Expenditure,

REER = Real Effective Exchange Rate,

INF = Inflation Rate,

Y_t is the vector of endogenous variables, α is the vector of constant, β is the matrix of coefficients, p is the length of the lag, ε_t is the white noise process vector.

1.9 Research Organization

This research is organized into six sections to achieve the research objective. The introduction makes up chapter one as chapter two contains the related literature reviews (theoretical and empirical). While chapter three contains the details of oil and Nigerian economy, chapter four encompasses the methodology of the study. The empirical analysis and discussion of the empirical results are enclosed in chapter five, whereas chapter six encompasses the research recommendations and conclusion.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

As oil dominates the global economy, the literature on the instability of oil price and its effect on growth of the economy are very wide and keep on expanding. Adelman (2000) stated that oil price has been more unstable than any other product price. He examines that oil price fluctuations have always take placed largely because of seasonal demand variation, such fluctuations were little. For instance, in 1948 to 1970, oil prices varied between 2.50 dollars and 3 dollars per barrel. He further cites this instability of oil prices to the conflict in the Middle East and prices fixation by the OPEC cartel in different periods. Nevertheless, Osije (1983) observe that oil subjected to price instability because, oil like other product in the market is determined basically by market trends.

The saying that all countries economic aggregates are significantly influence by oil price instability is certain. Nevertheless, it is the network which conveyed the influence and the influence significances that has been debated. Gounder and Bartleet (2007) contend that the demand side effects of crude oil disaster propose that oil price stun can bring about unemployment and sophisticated inflation rate in the meantime. In a related study, Olaokun (2000) landed at some remarkable conclusions; He demonstrated that oil price increments exercise an adverse impact on the economies of Ghana and Nigeria, however positively affects Russia, which also an oil producing nation like Nigeria. This result brings up a lot of issues. Furthermore, Olomola (2006) examine that oil price instability is crucial in clarifying GNI growth and unemployment in Nigeria.

Freeman and Tobel (1980) complain about the constant over dependence oil income for the budget of Nigeria. Freeman and Tobel observed that at the time of oil price fluctuations particularly prices drop have required huge adjustments in budget statistics and, offices and states allocations. Relinquishments of strategies and projects have likewise described such circumstances; this has real implication on the economic growth of Nigeria. Along the same line, Damilola (1982) reasoned that reviewing the increase in salary, employment, savings, and private and public investments in Nigeria during the oil boom of the 1970s; rapid economic growth was expected in Nigeria. However, Olaokun (2000) stated that the economy did grow as expected. Contrary, a crash overwhelmed the world economy and the years 1978 to 1982 saw the most profound worldwide recession as far back as that of the 1930's. Subsequently, the potentials for Nigerian economic development were dashed due to the instability of oil prices.

Some people asked why Nigeria in the times of oil prices hike still reported unremarkable growth rate such as huge fiscal deficit. Nigeria was characterized by Duncan (2008) as an oil importer and exporter. Duncan (2008) further expressed that oil price instability have a tendency to exercise an encouraging impact on an oil-exporting nation’s economic growth rate and a negative effect on the economic growth rate of an oil importing nation. Base on this, the condition of Nigeria's economy is obviously strange. The literature on the instability in oil price and its outcomes on Nigerian economic growth are intensifying and will keep on if Nigerian budget still relies heavily on oil revenue. However, this study is a commitment to the current literature.

2.2 Oil Price Evolution

The issue of oil prices is of primary concern to producers as well as to the purchaser and the final consumers. The main responsibility of Organization of Petroleum Exporting Countries (OPEC) has consistently been how to make oil price steady. OPEC members are truly influenced by the unsteadiness in oil prices. Oil prices increased from low level to higher level in 1973 and 1981 oil prices peak times. Subsequently, oil price began to decline. The situation kept on intensifying, and by 1994, oil price had tumbled to a 57.85% decline compared with price in 1981. This does not outrage well for the economic prosperity of member nations most of whom rely heavily on oil. International

oil market advancement has since the second half of the 1980s exhibited the standard way of thinking in economic that, competitive production and pricing techniques between producer when huge excess ability describes the business will not only depend on the size and use of existing ability but also on the impression of the market as regard the unevenness between demand and supply (Iwayemi, 1992). Below is the historical development of oil prices.

2.2.1 Oil Price (Before 1970)

Since the discovery of oil, the oil industry is dominated by a couple of companies. The governments do not partake in the pricing or production of oil, the government just acted as contending dealers of oil licenses, and in return, the government received an inflow of incomes in the form of taxes. Therefore, the oil market is described as a market where the oil cartel took upon itself the responsibility of the division of market and price, and it comes at the detriment of the interests of the State (Fattouh, 2011).

2.2.2 Oil Price (After 1970)

The oil market has noticed some advancement where OPEC cut production in 1982 to keep high price level. Also, OPEC reduces prices in 1982 due to continuing instability, but instability continued to force a production ceiling. Hence, in 1986 OPEC indicated that individual states conferred by members from breadths were incorporated and this lead higher price (Gold, 2014).

2.3 Factors Influencing Oil Price

Many direct and indirect factors extending from economic to political problems assume a powerful role in the development of oil price, whether increase or decrease. Relevant organizations are set up by the international community to guarantee that the barely visible hand is given reasonable opportunity to decide the international price of oil from one perspective, while a reasonably counter deal is the organization that politically defends the interests of producers by fixing counterfeit price (Ruta and Venables 2012).

2.3.1 Demand and Supply

Lutz, (2009) stated that change in demand and supply could influence the oil market by either increasing or decreasing oil prices. World oil suppliers adjust free market activity. If supply surpasses demand, the excess is stored for future. When demand exceeds supply, the stored excess can be used to take care of the excess demand, and the relationship between oil price and oil suppliers considers remedies in either direction. Even though the non-OPEC producers supply60% of oil in the world, they do not have required reserves to control price. They can just react to international market discrepancies. Nevertheless, the oil market prices are basically controlled by OPEC particularly when the non-OPEC countries supply diminishes.

2.3.2 Speculative Buying

Speculative Demand generates a changing price for oil as speculators purchase and trade future contracts on the open market. Speculation in the oil market will make investors buy more contracts. In various situations, speculative demand distress is illustrated by external legislative issues as in the Middle East which are vital based on their influence on projected, future production instability with little concentration regarding their effect on oil production (Lutz, 2009). For example, speculators were bidding up prices of oil and making an unsound price level in 2008, but price level cut down in late 2009 as a result of the absence demand for oil to sustain the inflated price.

Figure 2.1: Price of Oil and Speculative Buying Effect.

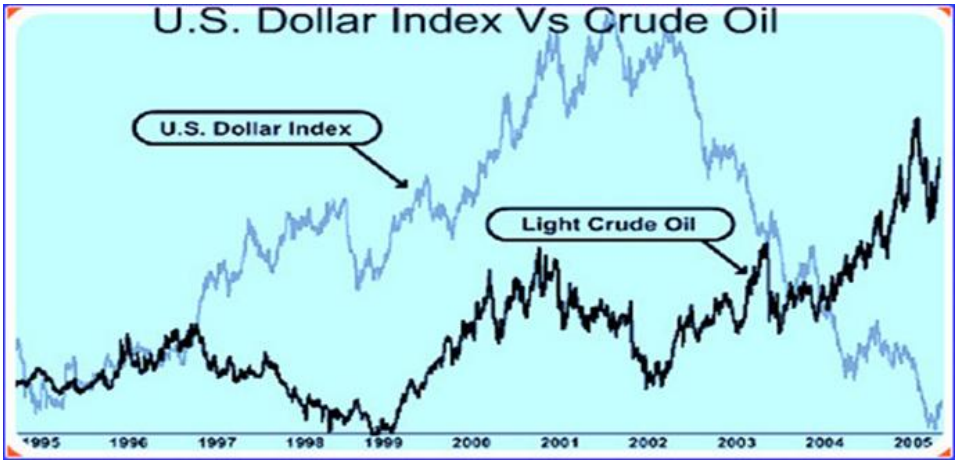
Source: Oilprice.com, Rakesh Upadhyay (2016).

2.3.3 Foreign Exchange Rate

US dollar is the currency used in global Oil exchanged market. Dollar devaluation has a tendency to boost oil demand and lift the oil price. whereas, rise in dollar rate will decreases consumer's real income in nations, diminishing the demand for oil and bringing the price down.

Given the connection between the value of dollar and oil price, where the majority of the oil trades are done with the dollar currency, this will influence the economies of the oil-exporting nations positively or negatively.

Figure 2.2: U.S. Dollar Index and Oil price

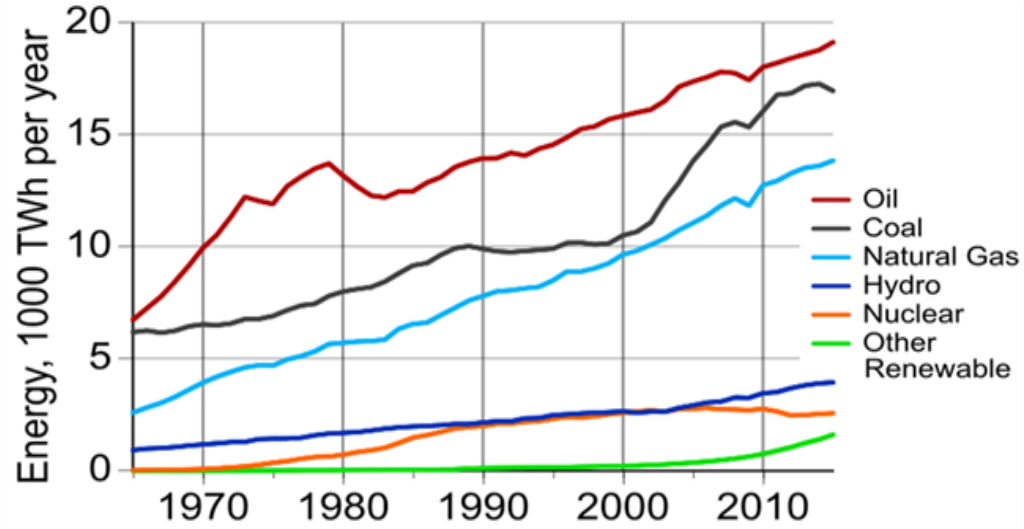


Source: Forexkarma.Com, Dollar-Oil Correlation (2006)

2.3.4 The Price of alternative commodities

Due to the high expenses and the complexity of oil exploration, industrialized nations are searching for alternatives sources of energy such as coal and solar power. The higher the price of oil, the greater the demand for less expensive alternative sources of power. As demand for alternative sources of energy increases, the demand for oil will reduce thereby resulting into price fall.

Figure 2.3: World Energy Demand



Source: BP Statistical Review of World Energy (2016).

2.3.5 Global Financial Crises

Global financial crises and other economic crises such as the 2008 global financial crisis can destabilize the control of investment, resulting in decreasing in demand for oil and fall in oil price. A huge downfall by financial institutions contributed to oil price collapse.

Figure 2.4: Price of Oil and Financial Crisis

Source: U.S. Energy Information Administration (EIA), Thomson Reuters (2016).

Oil markets play a vital role in global economy and always had an unstable procedure. High volatilities portrayed oil prices, particularly in the global financial crisis eras. Besides, oil prices are portrayed by great instabilities and have long recall effects during the global financial crisis.

2.3.6 Political Resolutions and Restriction

International Political Resolutions and Restriction can also influence oil price. For example, the threat of war or the imposition of trade and industrial sanction on the oil producing nations like the sanction on Iran and Iraq by America.

As government organizations control most of the oil production and reserves in the world, the international oil market is intensely politicized, and its performance is at distant from that of a competitive market. Oil policies in oil-exporting nations affect the price of oil. If administration prohibits oil explorations in an area with confirming reserves (for example, the Gulf of Mexico), oil markets stamp it as a disaster in oil supply, and oil price goes up as a result.

2.3.7 Organization of Petroleum Exporting Countries Oil (OPEC) Activities

Oil price is significantly influences by the activities of OPEC. Oil price instability is largely due to OPEC activities as it supplies 40 percent of oil in the international market and sets strategies for its member nations (Nigeria included) to meet worldwide demand. OPEC largely manipulate oil price through expanding or decreasing supply among its member nations. OPEC decrease in supply allocation in 2006 is responsible for the 2007 and 2008 increment in oil price (Fattouh 2011).

2.3.8 Political Unrest

If an oil-rich province turns out to be politically unbalanced, oil producer's markets may respond by bidding up the price of oil with the goal that supplies are still accessible to the top bidders. In this example, just the view of scarcity in supply can raise the price even when the supply levels remain steady.

Nigerian oil production is politically unbalanced due to the Niger-Delta crisis. The crises in the region have been the consequence of supposed material scarcity, request for more

controls over oil assets and psychological dissatisfactions borne out of dependence in the oil communities (Gboyega, Minh, Shukla, & Soreide, 2011).

2.4 Economic Growth

Unlike economic development, economic growth is an expansion of the national income, and it includes the investigation, particularly in quantitative terms with a focal point on the current relations between the endogenous variables; it simply entails the increase of the national income, gross national income and gross domestic product. Perkins, Radelet and Lindauer (2006) stated that economic growth comprises of an expansion of goods and services over the wide front of the economy joined by an increment in income per head. Osinubi (2005) further explain that such an adjustment in output ought to demonstrate larger volumes in the present year when contrasted with the past one.

However, development is regarded by Remenyi (2004) as a procedure whose primary goal is the improvement of the quality of life revolved around the increased size on self-sustenance by countries, which basically mirrors the requirement for global collaboration as a condition to their prosperity. This explanation gives a reasonable description that development includes growth among other crucial segments. Frankel (2005) classifies the components of economic development as economic growth, disposable income, income distribution, sustainability, extra cash, maintainability, democracy and human rights.

Abiola (2005) specified that a country could achieve economic growth without apprehending the essential development. He further expresses that the economic development demands qualitative wonders as the innovation of productive part and transforming it from conventional to modern, broadening consumers' alternatives and the establishment of a safe and free environment.

Economic growth of a nation is attained by resourceful utilization of the accessible resources and intensifying the capability of production. This encourages redistribution of incomes among populace. The collective impacts, the little variation of the increase rates, turn into large for a time interval of one or more decades. Redistribute the income in a vibrant growing economy is easier than in a stationary one (Haller, 2012).

2.4.1 Economic Growth Parameters

Economic performance is evaluated by a process of growth in aggregate output or income. Gross National Income (GNI) and Gross Domestic Product (GDP) are the instruments used to measure economic growth (Cypher and Dietz, 2004).

Cypher and Dietz (2004) regarded GDP as the aggregate value of income originating within a country from goods and services regardless of where they are consumed finally. He further viewed GNI as the aggregate value of income created by the resident producer of a country regardless of the income source (whether domestic or international). According to Sweeney (1999), GNI is the best economic growth indicator it comprises GDP itself, and remuneration of workers and property wage from abroad but excluding domestically earned incomes by non-residents. Therefore, this research will make use of GNI as a proxy for economic growth.

2.5 Relationship between Oil Price and Inflation

In Nigeria, high prices of oil in the previous years have led to a bigger spending on projects, increasing money supply and high liquidity in the nearby market which leads to inflation. What's more, high prices in combination with the increase in spending as a consequence of normal size, the more the national income in a nation.

Inflation manifest when the general demand for goods and services rise rapidly than the supply, causing a decline in the quantity of idle productive resources. The short-run Phillips curve was used to depict the relationship between inflation and a measure of economic loose, alongside different factors that influence the price level. Oil prices are incorporated into the Phillips curve to assess the suggestion that oil prices are not just significant production, but they are also indications of inflationary pressures which may surpass its significance as a productive input. (Leblanc and Chinn, 2004).

There are internal and external reasons for inflation, but in Nigeria, the reasons for inflation might be more of external issues considering the level of government spending. This can be measured from what occurred during the first oil boom in Nigeria, where the explanation behind the high rates of inflation is high government spending on projects, inability to meet the supply of the growing demand for goods due to the extraordinary

renaissance that was occurring in Nigeria, and the high rate of money supply (Adenuga, Hilili and Evbuomwan, 2012).

2.6 Oil Price Instability and the Nigerian Economy: Import Vs Export

Nigeria is one of the most complex economies in the world with large export and import. Nigeria exported 104.8 billion dollars and imported 70.8 billion dollars in 2014. This lead to a positive trade balance. The Nigeria leading export is crude oil which signifies 74.3% of the overall exports while its largest import is refined oil which signifies 15% of the entire imports (EIA, 2016). This means that oil export has more significant effect on the economy than the import. Therefore, can be stated that oil price instability effect Nigerian economy more as an oil exporting nation than as an oil importing nation.

Nigeria as an importer of refined oil and exporter of crude oil, oil price instability has different kinds of influence on nation's economy. Nigeria as an oil importing country, an increase in the price of oil will increases production cost and subsequently leads to inflation and brings down economic growth rate (Mordi and Adebiyi, 2010). Though, an increase in oil price is more advantageous to Nigerian economy as an oil exporting nation because it rises the fare receipt from oil export. Whereas, a decrease in oil price has an undesirable consequence on oil exporting nations as it leads to decline in export earnings (Deaton, 1999).

As an oil-exporting nation, increases in oil price will yields extra income but, it may be restricted as a result of the Dutch disease syndrome. This irregularity is as a result of limitations on the firms' alteration to instability in oil price by the impact of resources reallocation. As the price of oil increases, production in oil-intensive sectors increases, while production in less oil dependent sectors decreases. The stimulated resources reallocation combined with market limitation compels inverse alteration when the price of oil declines. Notwithstanding declining price of oil and production cost, factors of production do not willingly transfer between sectors. Therefore, the sectors might not fully advance in response to a decline in oil price by a unit as much as they did when there is a unit increase in oil price. This indicates that fluctuations in oil price will lead to a great loss in output of nation (Coady, Mati, Baig, and Ntamatungiro, 2007).

2.7 Dutch Disease Syndrome

One of the effects of oil prices instability on economic growth and execution of oil exporting nations like Nigeria is the Dutch Disease Syndrome. The Dutch-Disease is a perception utilized to clarify possibly destructive impact on a nation's manufacturing activities by a boom in natural resource. The Dutch disease syndrome utilization and theoretical study were initiated by Corden and Neary (1982) in their investigation of how the small open nation might experience the ill effects of de-industrialization taking after a boom in natural resource. The study depends on the supposition that nations with natural resource have two segments and they are the tradable and non-tradable segments. The boom of the natural resource will influence the nation's economy using the resource development impact and the expenditure impact. The resource development impact is the inclination for booming industry to decreasing productivity in the non-tradable industry by moving labor far from the industry. The expenditure impact involves increment in government consumption supported by a boom, which rises domestic assimilation and correspondingly appreciation exchange rate (Corden and Neary, 1982).

According to Mieiro and Ramos, (2010), benefits from oil price boom cannot clear through a developing economy that is yet to be expanded and sufficiently huge to retain the inflow without bringing about inflation. Resources pull impact and expenditure impact result when expansive inflow from oil export hits a less expanded economy. The export sectors boom encounters an increase in marginal productivity and subsequently pays variables utilized more than other areas. Subsequently, resources are pulled to the booming export segment at the detriment of other tradable divisions (farming and manufacturing) and the non-tradable segment. This leads to indirect de-industrialization of the economy.

2.7.1 Nigerian Experience of Dutch Disease Syndrome

The nation's poor strategy plan brings about the structural disparity of the economy. This irregularity alludes to a circumstance where the non-oil sector decreases whereas the oil sector booms. This experience is named the Dutch Disease Syndrome. Nigeria has been displaying this observable fact since the 1970s. The relative oil boom supported

extravagant government spending, and this brought about inflation and exchange rate rises (Budina and Wijnbergen, 2008).

The incredible increase in world oil prices in the early 1970s brought on an unexpected surge of wealth. A significant part of the income was proposed for investment to enhance the economy, yet it likewise incited inflation and highlighted disparities in distribution. The production cut down sharply in early 1975 as an after-effect of the rapid decline in world demand which translated to a sharp decrease in prices until late 1975 when OPEC mediated to increase prices (Romanova, 2007).

The 1970s-oil boom assisted the country to recuperate quickly from its civil war and at the meantime gave awesome driving force to the administration's plan of rapid industrialization. Many industries bounced up, and the economy comes at a fast rate of growth of around 8% for each year, which made Nigeria the biggest African economy by 1980 (Pinto, 1987).

This period had its issues. Primitive aggregation strengthened as corruption, and other deceitful practices exist. The government itself widens the gap between the poor and the rich significantly. Also, the government turned out to be directly participating in almost all the economic activities, particularly as foreign exchange was no longer assumed to be an imperative to development. Regardless of the oil boom, the private sector continued to be weak. The prevailing economic strategies kept on boosting consumption instead of production. However, the economy turns into the recession as oil prices drop suddenly thereby necessitating further adjustment measures to reverse the unwelcome condition (Pinto, 1987).

2.8 Empirical Review

Oriakhi and Osaze (2013) utilized the VAR method to study the significances of instability in oil price on Nigerian economic growth from 1970 to 2010. The estimation comprises the test for unit root, Variance Decomposition and Granger causality. Government expenditure, oil price, inflation, GDP and money supply were the variables employed. The study revealed that oil price instability has a direct impact on the real exchange rate, real government expenditure and real import. However, real GDP,

inflation and real money supply are indirectly related to oil price instability; they are related to real government spending. By suggestion, changes in oil price regulate government spending, which subsequently determines the economic growth thus emulating the current role of the Nigerian government.

Ebele (2015) analyzed the effect of oil price instability on Nigerian economic growth from 1970 to 2014. The research used aggregate demand context that hypothetically links analytical variables, instead of just discussing output performance by oil price and a swarm of individual variables as done by other researchers. The research implemented Engel-Granger cointegration test and Granger Representation formula in examining the long term and short term relations between oil price instability and the growth of the economy. The outcome indicated that the instability in oil price has a negative impact on growth of the economy whereas other variables, for instance, oil revenue and oil reserves have a positive impact on the economy of Nigeria.

Akpan (2009) investigated the relationship between stuns in oil price and Nigerian macro economy with the VAR technique. The analysis comprises the test for unit root, variance decomposition and cointegration. government expenditure, oil price, inflation, GDP, money supply and real effective exchange rate were the variables employed. The review shows the asymmetric effects of stun in oil price; such as, the significant effect of shock in oil price to inflation rate which in turn affects the national income. The result of the review indicates a solid positive relationship between fluctuation in oil price and government consumptions. Surprisingly, the outcome further indicated a negligible effect of a change in oil price on the growth of industrial output.

Alley, Asekomeh, Mobolaji and Adeniran (2014) analyses the effect of oil price stuns on the Nigerian economy from 1981 to 2012 with the use of the general method of moment. The analysis discovers that stun in oil price insignificantly obstruct economic growth whereas economic growth is significantly enhanced by oil price itself. The significant impact of oil price on the growth of the economy affirms the perceptions that increase in oil price is advantageous to an oil producing nation such as Nigeria. However, Stuns lead to instability and destabilize fiscal management of oil income.

Umar and Abdulhakeem (2010) studied the effect of fluctuations in oil price on Nigerian macroeconomic by making use the VAR technique. The estimation comprises the test for unit root, Granger causality, VECM, cointegration and impulse response. oil price, unemployment, consumer price index, GDP and money supply were the variables employed. The outcomes demonstrate that GDP, unemployment and money supply are significantly affected by oil prices while consumer price index is not significantly affected. The result suggested that instability in oil price significantly affect three main macroeconomic indicators in Nigeria. Therefore, macroeconomic management will become difficult as the macroeconomic performance is unstable. To minimize the outcomes of the volatility, economic diversification is required.

Adamu (2015) discovered the impact of oil prices drop at the international market to the Nigerian economy. The study utilized the Ordinary Least Squire (OLS) technique which included the T-test to figure out if there is a significant difference between oil income Nigeria generated before the decrease and during the decrease of oil price in the international market. The result uncovered that the decrease in international oil prices significantly affects Nigeria's oil income and prices. It is suggested that the income contributed by the oil business ought to be diverted towards economic growth and development.

Olusegun (2008) analyzed the consequences of shocks in oil price on the Nigeria macroeconomic performance with the use of VAR technique. The estimation comprises the test for unit root, Variance Decomposition and cointegration. Government recurrent expenditure, real gross domestic product, oil revenue, consumer price index, money supply, government capital spending and oil price are utilized to assess this model. The analysis revealed that oil price shock is a vital source of inconsistency in oil revenue and output. Also, the study states that oil price shock does not have significant impacts on real money supply, government expenditure and consumer price index. Therefore, this study revealed that the Nigerian domestic economy could stabilize efficiently after an oil shock with the use of fiscal policy.

Olomola (2006) analyzed the consequence of oil price stun on Nigerian economic activities from 1970 to 2003 using quarterly data. The study utilized the VAR technique

which comprises the test for unit root, variance decomposition and cointegration. Unpredictability was measured as the restricted variance of the oil price percentage change. The five variables utilized for the research were real gross domestic product as an intermediary for real effective exchange rate, inflation rate, oil price and money supply. The conclusions disclosed that oil price significantly affects exchange rate, but it does not have a significant influence on output and inflation.

Ayadi (2005) study the impact oil price fluctuations on the Nigerian economy from 1980 to 2004 utilizing the VAR technique. The estimation comprises the test for unit root, Variance Decomposition and VAR. Inflation, oil price, interest rate, industrial production index, exchange rate and money supply were the variables employed. The center of this research is mainly on the correlation between fluctuation in oil price and development of the economy through industrial activities. The outcomes specify that real exchange rate is significantly affected by oil price fluctuations which sequentially, influence industrial activities. Though, this indirect influence of industrial activities by oil prices is statistically insignificant. Consequently, the outcomes of this research confirm the absence of a significant correlation between oil prices and industrial activities in Nigeria. This means that oil price to do not influence industrial activities.

2.9 Theoretical Framework

The Linear/Symmetric relationship theory offers analytical backgrounds on which this research base its analysis. The theory perceives the impact of oil price instability on economic growth. The Linear/Symmetric relationship theory is more certain in decisions and has econometric face that captured the channels through which oil price instability affect economic growth. However, the other theories assessed in this research are still at their rough stage base on the nature of their study, uncertainty in decisions and nonappearance of an empirical expression. This is not detached to the origin of the advocates of the models as numerous of them are environmental economist and natural scientist

Conventional theories of growth concentrate more on basic inputs (for instance, land, labor and capital) though neglecting to perceive the impact of basic energy sources (for

instance, oil). Notwithstanding, some researchers have endeavored at advancing a few theories which perceive the impact of instability in oil price on economic growth, thereby integrating the relation between oil incomes (its accessibility and unpredictability) and rate of economic growth.

2.9.1 Linear/Symmetric Relationship Theory

The Linear/Symmetric relationship theory of growth which has its advocates such as Hamilton (1983), Hooker (1986) and Laser (1987) proposed that oil price instability determine the volatility in growth of the economy. They based their assumption on the 1948 to 1972 activities in the oil market and its effect on oil importing and exporting nations respectively. Hamilton (1983) examined the impact of oil price instability on U.S macro-economy between 1948 to 1972. He stated that oil price instability is a causal cause in some U.S economic recessions. Therefore, he concluded that oil price instability has a significant impact on the macroeconomy.

Hooker (2002) made thorough empirical analyses, and he established that between 1948 to1972, oil price and its fluctuations has a significant impact on GNI growth. Laser (1987) prove the symmetric relationship between economic growth and oil price instability. After her econometric investigation, she presented that an increase in oil prices would lead to a fall in GDP, although the influence of a fall in oil price on GDP is uncertain since its impacts differed in various nations.

2.9.2 Asymmetry-In-Effect Theory

The U.S economy was utilized by the Asymmetry-in-effect concept of growth for a contextual analysis. This study postulated that the relationship between U.S economic performance and fluctuation in price of oil is considerably diverse and possibly zero. Also, Mark, Olsen and Mysen (1994) analysis of some African nations established the asymmetry in effect of instability in oil price on economic growth. Furthermore, Ferderer (1996) clarified the asymmetric instrument between the consequence of oil price instability and economic growth by concentrating on three likely directions: Counter-inflationary money related strategy, uncertainty and sectoral shocks. He discovers a significant connection between the price of oil increments and counter-

inflationary policy reactions. Ferderer was supported by Balke (1996); he proposed that money related policy only cannot adequately describe real impacts of oil price instability on real GDP in an economy.

2.9.3 Renaissance Theory

The theory was a subsidiary of the symmetric and asymmetry in effects theories. A foremost advocate of the theory Lee (1998) endeavored to differentiate between adjustments and instability in oil price. She characterized instability as the standard deviation in a specified time frame. Furthermore, Lee presented that both have a pessimistic influence on economic growth, although in various ways; instability has an immediate adverse and significant influence on economic growth, whereas the effect of oil price adjustments setback until the following year. She finally expresses that it is instability and adjustment in oil prices that has a large impacts economic growth rather than the level of oil price.

CHAPTER THREE

OIL AND NIGERIAN ECONOMIC DEVELOPMENT

3.1 Introduction

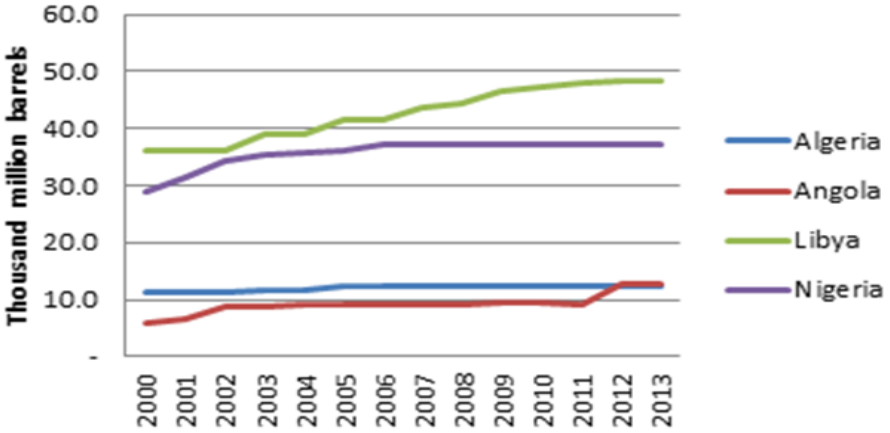
Nigeria is a nation with vast amounts of oil, and it is one of the biggest oil exporters in OPEC. This has produced revenue in billions of dollars since oil was found in Nigeria. In any case, as in most developing nations, the high incomes have not interpreted into an enhanced welfare condition for the general population. This is because of numerous economic issues confronting nations, for example, corruption, inefficiencies, mishandle of natural monopoly powers, smuggling, mismanagement and excessive subsidizing on refined oil products supplied in the nation (Balouga, 2012).

In Africa, Nigeria is one of the states with high oil reserve (37.1 billion barrels). Likewise, oil is the major economic item that accounts for about 14% of the nation's GNI, around 85% of government revenue and more than 90% of export earnings. (Gboyega, Minh, Shukla, & Soreide, 2011).

According to Lukeman (1989), the effect of petroleum on the general economy of Nigeria is great to the point that when oil prices drop, the country not only the economy alone definitely faces great problems such as a recession. This has turned out to be more pronounce in view of the over-reliance of the economy on oil. In the 1970s-oil boom ear, the government extravaganza on consumption and carrying out of white elephant projects, and the outcome had been a persistent budget deficit. Nevertheless, since the worldwide excess and ensuing fall oil prices, the government of Nigerian has been finding it hard to adapt to the economy realities of the period. Currently, Nigeria is in a recession which is because of more than 100% drop in oil price. Oil price drops from140

dollars per barrel to less 40 dollars per barrel in late 2015; this leads to a gear decline in the foreign earnings of the country and subsequent economic recession.

Figure 3.1: African Proved Oil Reserves



Source: Africa Upstream: Investment Climate, Requier Wait (2014).

The oil sector in Nigeria has been active since the sighting of oil in 1956 by the Shell Group. Nevertheless, the industry was conquered by international companies until the early 1990s when firms own by Nigerians commenced making an expedition into the sector. The involvement local firms in the sector started with the establishment of Nigerian National Oil Cooperation (KPMG, 2014).

The study of Nigerian oil exploration goes back to 1908 with the coming of a German company known as the Nigeria Bitumen Corporation whose activities ended in 1914 with the eruption of the First World War; Shell-BP continued with the exploration in 1938. Until 1955, Shell was the only company that had the permit to explore oil in various parts of the nation. Later, more companies started to participate in the exploration for oil, and they include Mobil, Texaco, Chevron, Agip, Total, Ashland, Phillips, Tennessee, Nigerian National Oil Cooperation and Henry Stephens which is owned by both Nigeria and Japan. Since the discovery of oil by Shell, production has increased in 1974 from 229 million barrels to 815 million barrels. This increase in oil production has been the consequence of a higher achievement rate in the oil companies' exploration for new oil fields especially after 1965, and the expanded production rate from the current oil fields (Imobighe, 2015).

In 1964, the government of Nigeria constructed a refinery in Port-Harcourt. Before the establishment of an oil refinery in Port-Harcourt, oil produce was all exported. In 1970 to 1978, the country encountered an upsurge demand for refining oil averaging a 23.4% yearly increment. Along these lines in 1978, the Warri refinery was established with an aggregate capacity of 100,000 b/d. More request prompted the establishment of another refinery at Kaduna in 1980 with a potential limit of 260,000b/d. A fourth refinery has been developed in Port Harcourt again (Imobighe, 2015).

However, Nigeria is an underdeveloped nation regardless of the high oil reserves with the majority of its public are living below the poverty line and 30% living in abject poverty. (Gboyega, Minh, Shukla, & Soreide, 2011).

3.2 Economic and Social Development Plans of Nigeria

Frankel (2005) classifies economic growth as a component of economic development in addition to disposable income, income distribution, sustainability, extra cash, maintainability, democracy and human rights. Remenyi (2004) description that development includes growth among other crucial segments. He is regarded development as a procedure whose primary goal is the improvement of the quality of life revolved around the increased size on self-sustenance by countries, which mirrors the requirement for global collaboration as a condition to their prosperity.

To achieve economic growth and subsequent development, each accountable government is required to draw exhaustive plans occasionally through which the welfare of it inhabitant can be improved socially, politically and economically. In developed nations, the objective of such plans could be to encourage growth in the previously mentioned scopes of life while in developing nations, the plans are focused on economic advancement.

Development plans are only accomplished through good coordination and cooperation. However, Nigerian development plans have experienced the absence of support and coordination of the strategies by both the initial government, those ensuring it and the public in general. Moreover, experience demonstrates that this critical job which must draw participation from core areas and be a base up process activates in reverse. These

describe the deprived nature of the articulated plan which likewise adversely influences its implementation (Ibietan and Ekhosuehi, 2013). Below are the main economic development plans of Nigeria from 1981 to date. These time frame signify periods of key socio, political and economic upheaval that necessitated momentary and periodic actions from the current administrations.

3.2.1 Nigerian National Development Plan (1981)

This was fourth national development plan, and it was intended to establish a strong framework for long-term social and economic development of the nation by setting accentuation on more prominent dependence domestic resources, technological development and new national orientation advancement to indoctrinate discipline and boldness towards labor (Edo & Ikelegbe, 2014).

However, Edo & Ikelegbe (2014) further stated other broad intentions of the Program as strengthen the nation's exchange rate, increasing raw material and food production, trade debts refinancing and rearrangement, increasing power generation and supply, reducing unemployment and raising real income level.

The sum of 82-billion-naira investment was predicted under this plan. The sums of 11.5 billion naira are to be accounted by the private sectors, while the remaining 70.5 billion are to be accounted by public sectors. An annual GDP growth of 7.2% was projected from this investment. Also, the average citizen standard of living was expected to rise when the program end (Egonmwan and Ibodje 2001).

However, the plan was portrayed by huge debt which came about because of different the foreign loans got in the earlier years and expanded import bills in the middle of an extraordinary drop in oil price. These factors doubtlessly constrained the level of the objectives achieved (Edo & Ikelegbe, 2014).

3.2.1.1 Implications of Nigerian National Development Plan

The immense potentials of the national development plan were ineffective due to the 1981 sudden oil excess developed in the worldwide market. According to Ibietan and Ekhosuehi (2013), the 1981 sudden oil excess developed in the worldwide market lead

to a great decline in the income need to finance the program's foreign loans got in the earlier years and expanded import bills.

Aside from the oil income precariousness, Ibietan and Ekhosuehi (2013) also stated that the economic adjustment measures of 1982 likewise incurred a significant injury on plan execution. The measures were obviously at change with those expected to comprehend the development targets set for the plan. In fact, with the economic disaster which took after the 1981 decline in the oil price, the plan was crushed and rendered as the miserable plan in the history of Nigerian economy.

3.2.2 Structural Adjustment Programme (1986)

The Structural Adjustment Programme (SAP) was presented as a reform package (short term) that was anticipated to end by 1988. However, it proceeded subsequently until 1994 when it was unrestrained. It was the most progressive way to deal with the enduring Nigeria's economic issues, and it is the most dubious program of adjustment and advancement ever established in the nation (Edo & Ikelegbe, 2014). Edo & Ikelegbe (2014) stated that SAP was introduced base on two main objectives:

- Reformation of total domestic spending and production patterns to reduce reliance on imports of goods and services.
- Diversification of the industrious base of the country to minimize over reliance on the oil and boost non-oil trade.

However, Osifo-Whiskey (1993) confirmed that SAP rested on some specific objectives such as:

- Naira devaluation
- Interest rate deregulation
- Elimination of subsidies on goods and services provided by the government.
- Public sectors privatization and commercialization.

3.2.2.1 Implications of Structural Adjustment Programme in Nigeria

The program failed to accomplish its cardinal targets in term inflation rate minimization, exchange stabilization, considerable decrease in import request file and encouragement

of non-oil export. This lead to it collapse in 2006. A survey of SAP by Edo & Ikelegbe (2014) demonstrated that at first, the program was accomplishing its objectives as it appeared to have dispensed with the degenerate import permit system, encouraged a major increase in modern production, and incited insignificant starts of agricultural harvest export. Osifo-Whiskey (1993) stated that from an equality of one dollar to one naira in 1986, the naira slammed at N18.60 to a dollar in 1992. From that point forward, nothing had continued as before again in the economy, with the dollar exchanging for practically N400.00 today.

With the interest rate deregulation, an administration of as high as 45 to 50% interest rate was established. This horribly influenced sourcing credits and working with financial organizations, industrial sector could not endure it, the economy was shaking, poverty and unemployment rates rise as an after-effect of this strategy (Edo & Ikelegbe, 2014).

3.2.3 National Rolling Plans (1990)

In 1990, the Nigerian economic administration was reorganized to the utilizing of short-term tools as Daggash (2008) declared the period of Rolling Plans which he contemptuously labeled as a period of the rolling stones that accumulated no greenery. He further stated that in an offer to have a long term National plan on which advancement could be secured, a strong endeavor was made in 1996 to express a national vision record and it was known as Vision 2010.

According to Adubi (2002), the rolling plan did not take effect 1990 until 1996 when the then administration set up the Committee for Vision 2010. The focal point of the Committee report to the administration in 1997 was the suggestion that the Vision ought to offer the motivation for all plans (long, medium and annual). The program appeared to have died with the then administration in 1998.

Ugwu (2009) stated that the vision was to be accomplished utilizing multi-level medium term plans that are secured on a fifteen-years point of view plan. He further stated that this advancement exertion had the plan of changing the Nigeria by 2010 into a unified, productive, mindful and God-fearing law based society, focused on making the essential needs of life reasonable for everybody.

3.2.3.1 Implications of National Rolling Plans

The Rolling national plan and Vision 2010 failed to accomplish its targets as it turned out to be tragically miscarried emerging from what Egonmwan and Ibodje (2001) apprehended as the linkage between the national Rolling arrangement, Vision 2010 and the yearly budget plan appears not clear.

The vision 2010 required an earnest formative outlook change and set an obligation on Nigerians attitudinally with a specific end goal. It is suspicious if cognizant endeavors were made to spread these necessities to a wide range of the population, and this has kept on being a discernible obstacle in the formulation of policy with its orderly impacts on implementation and advancement activities (Ibietan and Ekhosuehi, 2013).

3.2.4 National Economic Empowerment and Development Strategy (1999)

The reforms strategy was set up by the government to re-inspire the institutional and structural shortcoming of the Nigerian economy. This approach was uttered to guide Nigeria's advancement in a likely way. It successfully supplanted the past plans in the nation. It acknowledged the difficulties of the nation and consequently recommended procedures for developing the economy. The National Economic Empowerment and Development Strategy (NEEDS) was an enunciation of arranged strategic activities of the government, which was required to be supplemented by both State and local government (Edo & Ikelegbe, 2014). Edo & Ikelegbe, (2014) stated the objectives of NEEDS as follow:

- National values re-orientation
- wealth generation
- Decrease in the rate of poverty
- Employment creation.

To achieve the objectives of NEEDS, the government was testified to have dispensed substantial rate of capital expenditure to medicinal services, agriculture, water resources, education, road, security and energy in its yearly budgets. With the common assertion of unspent assets being returned toward the end of the year by Ministries, Departments and Agencies of government combined with the huge unavoidable corruption, allotting

substantial rate in budgets does not mean reliable execution of projects fit for conveying the facilities to the public (Ibietan and Ekhosuehi, 2013). This huge unavoidable corruption practices have rendered the plan ineffective.

3.2.4.1 Implications of NEEDS

It is irritating that the administration has not understood the perceived intentions of NEEDS. During the time of NEEDS, the Nigerian per capita income drops to one dollar per head even though yearly budget moves into trillions from billions of naira (Ikeanyibe, 2009). In order to educate the public, Nigerians saw a great rise in the number of educational institutions at the time. About forty-nine universities were established between 1999 to 2007. However, it is unfortunate that the number of natives that can access the institutes decrease due to the extremely high cost of education regardless of increment in the number of institutions (Ikeanyibe, 2009). Consequently, education of such inhabitants is offensively hindered.

By 2007, about seven million employment opportunities were expected to be created under NEEDS. However, the strategies implemented by the administration to attain this target were antagonistic to employment creation. So many personnel lost their work in the government effort to reform it establishments. In 2005, The Central Bank of Nigeria alone severed 804 staffs CBN alone were severed with compulsory retirement (Ikeanyibe, 2009). NEEDS have likewise neglected to attain the anticipated goals in term of infrastructural development. Power generation and supply was the main target of NEEDS but it was unfortunate that the program witness a decline in power generation and supply (Ikeanyibe, 2009). Adegboyega (2006) observed that similar past Nigerian development plans, NEEDS did not realize the anticipated outcomes.

3.2.5 Vision 2020 (1999)

Obasanjo administration of 1999 introduced Vision 2020 with the goal of raising the growth level of the economy of Nigerian from its present position of a developing economy to one of the world best 20 developed economies the year 2020, and to make Nigeria the African center of economic decision by the year 2020. The idea is said to be built on the prediction that if Nigeria and some other developing nations can assemble

their assets splendidly, it is anticipated that Nigeria and nations like Egypt would be among world best 20 economies by the year 2025 (Ugwu, 2009).

According to Ugwu (2009), Nigerian GDP growth rate was projected to be bigger than that of Italy by the end of the program. However, Ugwu (2009) observed that some the scales utilized as a part of these measurements are the economic records of growth in GNI and GDP. He further described that Vision 2020 does not have appropriately drawn targets, apart from policy proclamations originating from some central government authorities. Daggash (2008) asserted that Vision 2020 has clear objectives which incorporate creating peaceful, steady and good democratic and economic system by 2020. Convincingly, Daggash (2008) concluded that the objectives are achievable through the support and coordinated effort of all partners. However, the partners which included the Nigerian grassroots were not carried along in the procedures, but their support and coordinated effort are needed. What a funny remark?

3.2.5.1 Implications of Vision 2020

Similar to most other development plans in Nigeria, the Vision 2020 is certainly an ineffective. The program failed to accomplish its targets of making Nigeria the African center of economic decision and one of the world best 20 developed economies by the year 2020. According CBN 2015, Nigerian GDP growth rate per year was estimated at 5.4 for 2103 and 6.3 for 2014 which is far below the estimated 13.8% required for Nigeria to be one of the world best 20 developed economies by the year 2020.

According to Onyenekenwa (2011), Nigerian economy is still categorized as a developing economy in the world with no sign of positive change. Onyenekenwa (2011) further observed that most the citizens are currently living in extreme poverty with no sign of change. They live in the substantial underdeveloped rural areas will less social and economic opportunities. Base on this current state of affairs with less than three years out of the 21 years, the Vision 2020 is a failure.

3.3 Nigeria oil policy

Nigeria oil policy is the aims and targets for oil by the government and how to accomplish them. The standpoint of Nigeria's oil policy is affected by five observations. There are:

- The goals of maximizing oil returns
- The need to guarantee internal self-sufficiency in oil supply.
- Endeavoring to increase oil income
- Enhancement of the energy and monetary base of the economy
- The international structure of Nigeria's oil policy.

The major and serious activities of the Nigerian oil business were under the control of foreign companies with the Nigeria government assuming a little role in the business for so long. The role of government was constrained to the collection of royalties and contribution and taxes from the oil companies. However, this was to change in 1969 when the Nigeria government declared petroleum act of 1969 No. 51 published it as a complement of the official national government periodical No. 62 volume 56 section A, November 27, 1969 (KPMG, 2014).

The law specifies that federal government is approached and endorsement got by the issue of proper licenses before completing key operations in the oil business. The highlight of these laws was the foundation of the Nigerian national oil company as an incorporated oil organization. This marked the start of higher participation of Nigeria government. The organization was later converged with the government Ministry of Petroleum 1977 to frame the present Nigeria nation petroleum corporation. The organization is involved in every aspect of oil business from exploration to refining and distribution of the oil. The initial endeavors in the offer to guarantee Nigeria's self-sufficiency in the supply of oil were made when Nigeria set up four refineries with two in Port Harcourt and the others in Warri and Kaduna. Indeed, some extent of domestically consumes oil is still imported even with these refineries in operation. This has negatively influenced the external reserves of the country. At the peak of the oil emergency in Nigeria, the legislature requested the importation of oil for three months to balance the deficiency. Irrespective of where the item was sourced, industry authorities

scrutinized the claim that it imported fuel at an arrival price of N18 per liter (Imobighe, 2015).

3.4 Prospects and Challenges of Oil on Nigeria Economy

The main importance of oil in the economy of Nigeria is its contribution to public sector's revenue. Obadan (1991) among others have widely talked about the significant roles of oil in the Nigerian economy. This includes:

Oil is the present main source of Nigerian government income as it provides more than 70% of the revenue needed. Oil contribution to the government revenue between the 1960s and 1970s rose from N280, 000 to N3 million of the aggregate budgeted revenue. Oil commitment to GNI ascended from 43 million nairas in the 1970s to about12 billion nairas in 1990s. In Nigeria, Oil has remained the major source of economic growth regardless of the unpredictability nature of the oil market.

Another crucial commitment of oil to the economy of Nigeria is in term of export earnings. Oil export has boosted the export earnings and subsequently enhances the nation's international trade position. The oil export earnings rose from 7% to 92% of the country’s total export between 1958 and 1974. The net impact of this is a significant change in the nation’s balance of payment.

Furthermore, with the increase in export earnings, the nation was able to import sufficiently the essential technologies needed to boost economy. Also, the public sector was able to increase the basic salary of the labor force and consequently to raise the current purchasing power of the labor force which boosted the economy. Oil advent has increased the employment opportunities in the country. The oil industry employs thousands of Nigerians as numerous oil firms are established.

Also, oil is the main source of energy. Oil take over from coal as the main source of energy, and it currently supplies 80 to 90 percent of the Nigerian energy required. There had been some auxiliary changes in world technology, particularly in the oil sector. With the current state of technology, it emerges that oil will keep on maintaining its share in the Nigeria's aggregate energy supply. Furthermore, oil has boosted the international

political status of Nigeria particularly during Angola independence in 1975. Obadan (1991) further explained four linkage effects of oil as stated below:

- Backward linkage effect: it is the national development of required inputs in the industry. For example, raw materials, skilled labor and capital goods.
- Forward linkage effect: it is the utilization of the oil industry's product as input by other industries.
- Final demand linkage effect: it is the improved purchasing power that comes from either the payment of wages or direct purchases by oil firms
- Fiscal linkage effect: it emerges from the utilization of increased oil income to develop different areas of the economy. For example, farming, infrastructure and education.

Nevertheless, some of the challenges of oil in the economy of Nigeria included environmental pollution and landscape destruction of the societies where drilling of oil is carried out. Therefore, oil companies needed to battle with challenging provincial groups who demand development in their living standard. Gas flaring has polluted the air of these societies.

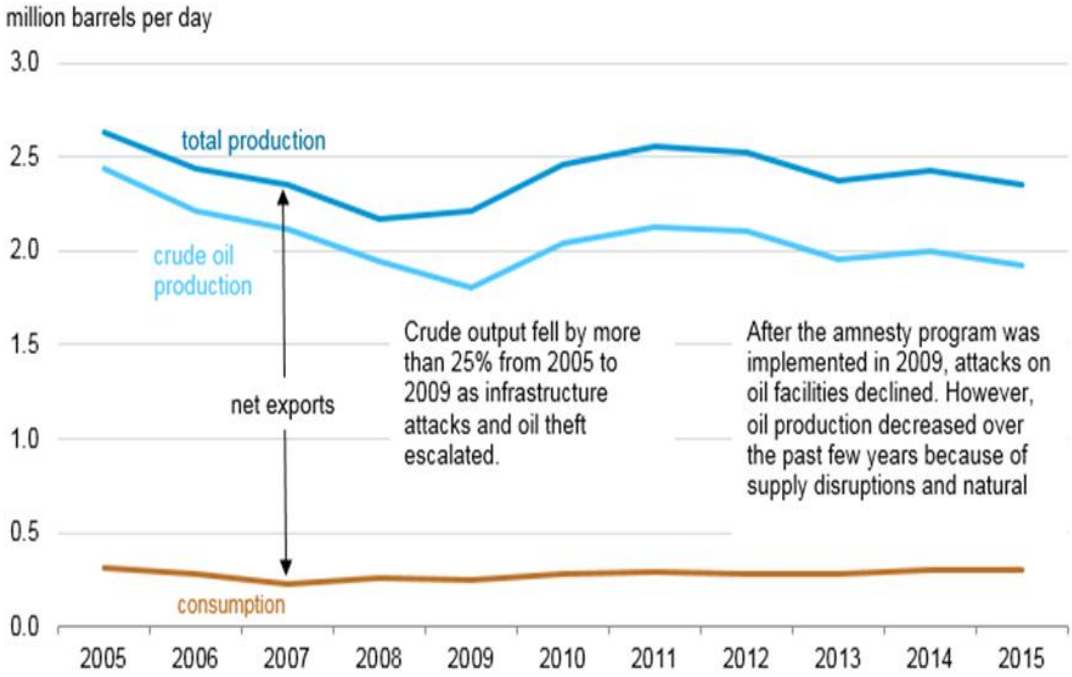
Besides, the coming of oil has in conscientiously transformed the Nigeria economy into a mono-product economy with undesirable consequence to the country. Thus, advancement in the international oil market is directly referred into as insecurity in the economy resulting in unemployment, deficit balance of payment and declining living standard (Anyanwu, 1997).

Imobighe (2015) depicted the advent of oil into the economy of Nigeria as both a gift and a curse. "It was a gift in since it was needed for both internal and external fund to reconstruct the Nigerian economy and infrastructures after the civil war in particular. However, it was a curse due to the fact that oil revenue did not go into the Nigeria treasury; it flowed exuberantly as though fortune was in the war years. Thus, it was wasted. That was the manner by which Nigeria should have scaled to the back of oil to economic power was transformed into one of the greatest indebted countries.

3.5 Nigerian Oil Production and Consumption

Oil Production in Nigeria began to decline significantly from its 2005 topmost of 2.44 million b/d to 1,750,000 b/d in 2015 as a result of the increase violence from the armed militants which compelled several companies to pull out their staffs and shut down production.

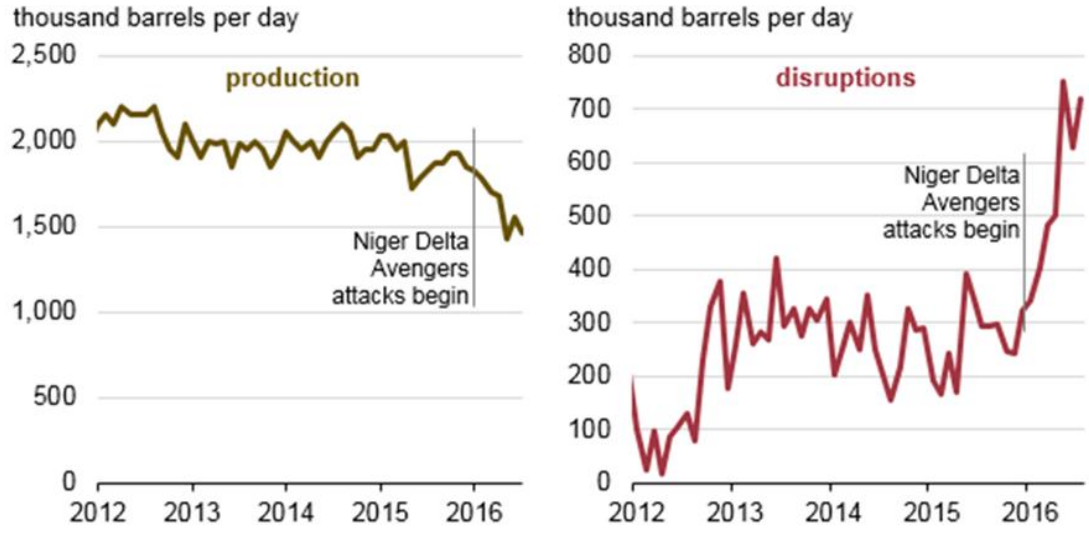
Figure 3.2: Oil Production and Consumption in Nigeria



Source: U.S. Energy Information Administration (EIA) 2016.

Nigeria produces the light, sweet oil. The oil is largely exported to international market. Nigerian oil production in 2005 reached the topmost of 2.44 million b/d, yet it started to decrease significantly as armed militant violence flowed, compelling several companies to pull back their staff and shut down production. According to Hanson (2007), the crises in the Niger Delta region has a substantial influence on oil production rate. In places controlled by armed MEND, federal government representatives have driven off bays where the pipelines pass and export terminals. This lead to unrecorded lifting of oil even by licensed operators. The vicious activities either directly aiming oil facilities or indirectly disturbing operations of oil production processes have caused some oil fields to be shut down.

Figure 3.3: Nigerian Oil Production and Disruptions Level



Source: U.S. Energy Information Administration, Short-Term Energy Outlook (2016).

The socio-economic state in the foremost oil-producing region of Niger Delta has for quite long been awful with extreme poverty and high unemployment rates. Vicious rebellions among the youth in Niger Delta came in reaction to abject poverty, environmental dilapidation, lack of accountability of governments, significant amounts of youth unemployment and rigged elections. The crises in the region have been the consequence of supposed material scarcity, request for more control over oil assets and psychological dissatisfactions borne out of dependence in the oil communities (Gboyega, Minh, Shukla, & Soreide, 2011).

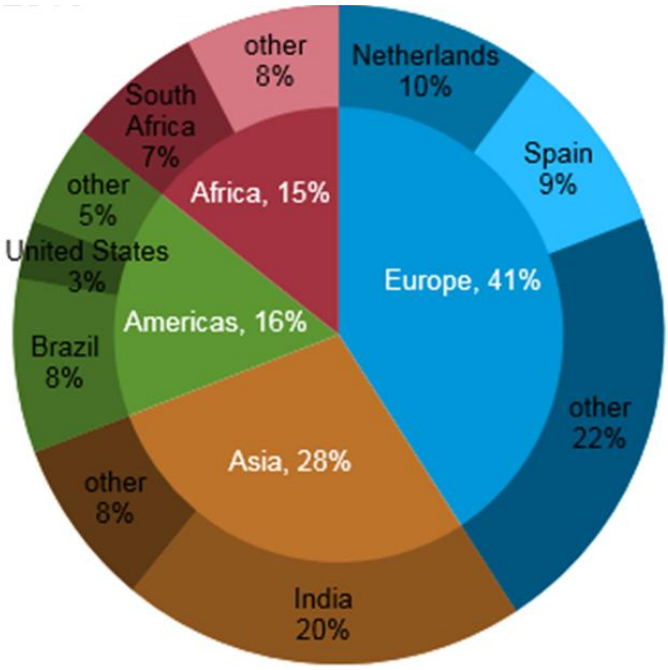
Albeit, a significant portion of Nigeria oil originates from the Niger Delta, yet the general population in the area lives in extreme poverty. Environmental pollution and deprivation are very high. Therefore, the area has remained precarious with intermittent assaults on oil facilities and pipelines.

The Niger Delta leadership is answerable for majority of the underdevelopment in the area. A high level of corruption exists among the leaders in the zone who supported the Movement for the Emancipation of the Niger Delta (MEND) groups (known as militants) to disrupting the development efforts of the central government (Kathryn, 2012).

3.5.1 Geographical Distribution of Nigerian Oil (Export)

In 2010, Nigeria was ranked as the fifth-largest oil importer in the U.S; it delivered about 10% of the total oil imported in U.S. However, Nigeria reduces exports to the US in 2014 as America stop buying Nigeria oil2014 due to the production of sweet oil from the Bakken and Eagle Ford. India is now the main buyer of Nigerian oil while the biggest Nigerian oil regional importer is Europe (EIA, 2016).

Figure 3.4: Nigeria Oil Export by Destination



Source: U.S. Energy Information Administration (EIA), Based on Lloyd's list intelligence (2016).

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

In this study, the research methodology is utilized to assess the impacts of instability in oil price the Nigerian economic growth. The methodology is specified from the examination of the above theoretical and empirical context. This methodology consists of the model, variables definition, estimation procedures as well as the source of data utilized in the research to assess the impact of instability in oil price on the growth of Nigerian economy using annual time series data from 1981 to 2015.

4.2 Model

This research model is specified from the examination of the above theoretical and empirical context. The study employed Vector Autoregression (VAR) model to study the correlation between instability in oil price and economic growth in Nigeria. The VAR method permits us to evaluate the relative significance of a specific variable in the fluctuations of other variables. The VAR technique was developed by Sims (1980) who stated that a set of variables should all be treated with an equal footing as long as there is true simultaneity between the variables set. Therefore, the process evades the issues complicated with the description and assessment of simultaneous structural equations, since all variables are considered as endogenous by the model. The following is the unrestricted VAR model for this study:

$Y_t = \alpha + \beta_1 Yt\text{-}1 + \ldots\ldots\ldots + \beta_p Y_{t-p} + \varepsilon_t$ …… (1)

Y = (RGNI, ROILP, RGE, REER, INF)

Where:

RGNI =Real Gross National Income,

ROILP = Real Oil price,

RGE = Real Government Expenditure,

REER = Real Effective Exchange Rate,

INF = Inflation Rate,

While Y_t is the vector of endogenous variables, α is the vector of constant, β is the matrix of coefficients, p is the length of the lag, ε_t is the white noise process vector.

The general econometrics model for the correlation between the dependent variable (RGNI) and the independent variables can be written in as:

$RGNI_t = \alpha + \beta_1 ROILP_t + \beta_2 RGE_t + \beta_3 REER_t + \beta_4 INF_t + \varepsilon_t$ ……..…….... (2)

Where α is the constant, $\beta_1 \ldots \beta_4$ are the coefficients and ε is the error term.

The above equation can be expressed into log form as follow:

$LRGNI_t = \alpha_0 + \beta_1 LROILP_t + \beta_2 LRGE_t + \beta_3 LREER_t + \beta_4 LINF_t + \varepsilon_t$ ……...…... (3)

4.3 Definition of Variables

This study presumes the following the variables: Real Oil price (ROILP), Real Gross National Income (RGNI), Inflation Rate (INFR), Real Government Expenditure (RGE) and Real Effective Exchange Rate (REER). Gross domestic product and government expenditure data are in constant local currency (naira) while oil price is based on international market currency (US dollar).

A currency is constant when the impacts of instabilities in exchange rate are eradicated while ascertaining monetary performance for several financial reports. Many companies use constant currencies as currency instabilities can cover the true monetary performance of the company.

4.3.1 Real Oil Price (ROILP)

Oil price is the international market price of oil. Price offers a picture of the instability in bonny light oil price. Bonny light is the name Nigerian crude oil at the international market. Also, the price level offers a picture of the nature in which oil price instability influence the economy, and how to review the changes in the economy. As prices increase or decrease, the demand for goods and services is also influenced, this prompts to extensive production measures such as higher gross domestic product. This study employed the annual average price of oil per barrel in US dollars.

4.3.2 Real Gross National Income (RGNI)

GNI is an economic indicator that is utilized in measuring the growth of an economy. GNI is the aggregate value of income accumulated by residents of a country from all final goods and services regardless of the income source (whether domestic or international). Also, it is the total worth added by every single resident producer in addition to taxes of product excluded in the assessment of productivity in addition to disposable earnings of primary income from overseas. The remuneration of workers and property wage from overseas are the primary income. Data of RGNI are in constant local currency in this research.

4.3.3 Real Government Expenditure (RGE)

RGE is the amount of government consumption spending. It is the outflow of incomes from the government to different sectors of the economy. It is categorized into capital and recurrent expenditures. A Higher level of government expenditure is interpreted as the provision of large capital for social and economic development and growth. The data are in constant local currency in this research.

4.3.4 Real Effective Exchange Rate (REER)

It is otherwise called trade-weighted exchange rate. The REER is an index of a nation’s currency regarding its trading associate’s currencies. The extents of trade with other state determine a nation currency weight in the ascertaining the REER. The country’s

REER measures the currency purchasing power and reflects the intensity of the country's trade at the same time

4.3.5 Inflation Rate (INF)

Inflation is a rate of change in the price level in a specified period. Consumer price index is used to calculate inflation. As estimated by the consumer price index of a population, inflation mirrors the percentage change in the price of buying goods and services by the average consumer which may be fixed or altered at stated intervals, for example, monthly.

4.4 Estimation Procedures

The estimation is done with the utilization of econometrics software package called E-Views (version 9.5) to facilitate the data analysis. The empirical study of this research includes tests for stationarity (unit root), cointegration, vector error correction model, impulse response, variance decomposition and test for Granger causality.

4.4.1 Unit Root Test

The test for stationarity (unit root) is conducted on the variables before estimation of VAR model to determine the variables stationarity. The most prevalent test for stationarity is the Augmented Dickey-Fuller (ADF) test. Numerous econometric issues can affect the assessment of parameters in a time series data. Consequently, the unit root test for stationarity is required for each time series data before the model estimation. Furthermore, the unit root test is recommended since most macroeconomic data are probably going to establish a deterministic and stochastic trend. A time series data is stationary if the mean and variance of the data are time invariant, whereas, a data is non-stationary if it has a time-dependent mean.

4.4.2 Co-integration Test

The check for the presence of a long-run relationship is carried out with test for Co-integration on variables that are non-stationary at level. The Johansen approach is popularly used to measure the amount of cointegrating vectors for variables of the same

order (stationary at first difference not at level). The motivation behind the test is to figure out if a group of non-stationary variables is cointegrated or not. In fact, cointegration implies that a linear combination of individual variables might be stationary regardless of the possibility that the variables are non-stationary (Gujarati, 2004). This linear combination is known as cointegration equation. The standard VAR model applies when the variables are not cointegrated. Whereas, in the presence of cointegration among variables, the VAR ought to consider them through the vector error correction model. Therefore, testing for co-integration in the data is an essential phase in VAR analysis as the existence of cointegration may affect the final result. Therefore, a co-integration test should be considered as a trial to avoid false results (Granger, 1969).

4.4.3 Vector Error Correction Model (VECM)

This model is used to evaluate the short-run dynamic relationships. This is done only when variables are stationary at first difference and are co-integrated. Therefore, after variables are found non-stationary at level and there is cointegration among the variables, the VECM should be utilized for modification. The VECM limits the long-term performance of the endogenous variables to merge their cointegrating relationship while taking short-term dynamic modifications into consideration. The equation for estimating VECM is stated below:

4.4.4 The Granger Causality Test

In this research, the test utilized to determine the interdependence between variables is known as the test for Granger causality. The test for causality is a statistical response concept which is utilized in the building of estimating models. The test for Granger causality is a procedure for estimating the significant of one variable to another variable. The causality test help to determine whether the previous value of a variable forecasts changes in another variable. Granger (1969) and Sims (1972) formalized the utilization of causality test in economics (Green, 2012). The Granger causality procedure measures the value given by a variable in clarifying the most recent value of another variable.

4.4.5 Impulse Response

The impulse response function examines the responsiveness of the dependent variables to shocks to each of the variables. It was developed to overcome difficulties of interpreting the VAR model coefficients. The impulse response function studies the response of the dependant variable to shocks in the error terms. Impulse response function explains the responsiveness of the dependent variables to shocks to each of the variables.

4.4.6 Variance Decomposition

The test for variance decomposition of a variable proposes that forces related with one variable have key effects on the assessment of another variable. It describes the amount of the average squared forecast error of the model used by surprise movement related with each of the variables and understanding the relative significance of every variable in the model. Consequently, forces error test is utilized to describe VAR. The equation for moving average representation of the VAR system is utilized to estimate the variance decomposition.

4.5 Data Source

This study employed the data of annual time series from 1981 to 2015 that are obtained from the statistical database of the Central Bank of Nigeria (CBN). The data of all the variables are converted into log form in this research.

CHAPTER FIVE

ANALYSIS AND DISCUSSION OF RESULTS

5.1 Introduction

Using the above methodology, the result analysis and discussions are presented in this chapter. This result analysis and discussions comprise of the unit root result analysis, the test of cointegration result analysis, the result analysis of vector error correction model, the test for Granger causality result analysis and the analysis for variance decomposition test. Lastly, the policy implications of the results are discussed.

5.2 Unit Root Test

The tests for stationarity (unit root) are conducted on the variables before estimation of VAR model to determine the variables stationarity. Non-stationary data has an undesirable effect on estimated model as it leads to spurious results. Base on the ADF test for stationarity result below, all the variables are found to be non-stationary at level. Nevertheless, all the variables were later found stationary at first difference. The unit root test is presented below in Table 5.1:

Table 5.1: ADF Unit Root Test Result (1981-2015)

Unit Root Test at Level				
Variables	**ADF Statistics**	**5% Critical Level**	**Prob.**	**Remark**
LRGNI	-1.885373	-3.548490	0.6400	Non-stationary
LRGE	-1.756510	-3.548490	0.7033	Non-stationary
LINF	-3.060375	-3.548490	0.1317	Non-Stationary
LROILP	-2.233593	-3.548490	0.4569	Non-stationary
LREER	-1.827379	-3.548490	0.6692	Non-stationary
Unit Root Test at First Difference				
Variables	**ADF Statistics**	**5% Critical Level**	**Prob.**	**Remark**
D(LRGNI)	-6.352340	-3.552973	0.0000	Stationary
D(LRGE)	-6.062731	-3.552973	0.0001	Stationary
D(LINF)	-5.685866	-3.552973	0.0003	Stationary
D(LROILP)	-5.112151	-3.552973	0.0012	Stationary
D(LREER)	-5.685866	-3.552973	0.0080	Stationary

Source: Extracted from E-views 9.5 estimation result

5.3 Lag Selection Criteria

The lag selection criterion gives strategies that are utilized to decide the number of lags that will be utilized in conducting Johansen test for cointegration. The choice of the number of lags depends on the perception of selecting the designated lag that has the

possible lowest value. The table below indicated that all the methods are for one lag except Akaike which is for four lags. Therefore, this study will make use of one lag.

Table 5.2: Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	45.60573	NA	5.01e-08	-2.619725	-2.388437	-2.544331
1	153.9029	174.6728*	238e-10*	-7.993733	-6.606003*	-7.541367*
2	175.2602	27.55787	3.45e-10	-7.758723	-5.214552	-6.929387
3	205.9130	29.66404	3.53e-10	-8.123423	-4.422810	-6.917115
4	245.0405	25.24349	3.56e-10	-9.034869*	-4.177815	-7.451590

*specifies the lag order selection by the criterion.

LR: Modified LR Test Statistic (each test at 5% level).

FPE: Final Prediction Error.

AIC: Akaike Information Criterion.

SC: Schwarz Information Criterion.

HQ: Hannan-Quinn Information Criterion.

Source: E-views 9.5 test result

5.4 Cointegration Test

The check for the presence of a long-run relationship is carried out with Johansen test for Co-integration on variables that are non-stationary at level. The motivation behind the Co-incorporation tests is to figure out if oil price, gross national income inflation rate, real effective exchange rate and government expenditure are cointegrated or not. In the Johansen cointegration result below, both Trace statistic and maximum Eigenvaluestatistic specified that there is one cointegrating equation among the

variables. Therefore, at least one cointegration or long run relationship exist among the variables.

Table 5.3: Johansen Cointegration Test Result (Trace)

Sample (adjusted): 1983-2015 Lags intervals (in first differences): 1 to 1				
Hypothesized No. of CE	**Eigen Value**	**Trace Statistic**	**5% Critical Value**	**Prob.**
None	0.688391	73.98641	69.81889	0.0204
At the 0.05 level, Trace test indicates 1 cointegrating equation.				

Source: Extracted from E-views 9.5 estimation result

Table 5.4: Johansen Cointegration Test Result (Maximum Eigenvalue)

Sample (adjusted): 1983-2015 Lags intervals (in first differences): 1 to 1				
Hypothesized No. of CE	**Eigen Value**	**Max Eigen Statistic**	**5% Critical Value**	**Prob.**
None	0.688391	38.47817	33.87687	0.0131
At the 0.05 level, Max Eigenvalue test indicates 1cointegrating equation.				

Source: Extracted from E-views 9.5 estimation result

5.5 Vector Error Correction Model

As the test for cointegration indicates the existence of the long-run relationship, VECM disaggregates the long run relationship to the short run. The VECM is used to evaluate the short-run dynamic relationships. This is done when variables are stationary at first difference and are co-integrated. The dynamics of the speed of adjustment is explained by the error term coefficient of the cointegrating equation. In the table below, the error term coefficient of D(LRGNI) based the cointegrating equation is 0.030580. This implied that the speed of adjustment is approximately 3% in a year as the variable moves

in the direction of re-establishing long equilibrium if a deviation exists. Therefore, there is no strong burden to re-establishing long equilibrium in a year when there is a deviation because the speed of adjustment is very low.

Table 5.5: Vector Error Correction Model Result

Sample (adjusted): 1983-2015 Standard Errors in ( ) & T-Statistic in [ ]				
Variable	**D(LRGNI)**	**D(LRGE)**	**D(LREER)**	**D(LINF)**
CointEq1	-0.030580 (0.04045) [-0.01433]	-0.089170 (0.04045) [-0.54234]	-0.346016 (0.17756) [-1.94870]	-0.046861 (0.25036) [-4.18142]
D(LRGNI(-1))	0.099915 (0.24622) [0.40579]	1.842869 (1.00084) [1.84132]	0.093564 (1.08086) [0.08656]	-0.428384 (0.52399) [-0.93726]
D (LRGE (-1))	-0.048553 (0.05386) [-0.90150]	-0.389079 (0.21892) [-1.77724]	0.155620 (0.23643) [0.65822]	0.282440 (0.33336) [0.84726]
D (REER (-1))	0.023503 (0.06050) [0.38846]	0.027240 (0.24594) [0.32239)	-0.127490 (0.26560) [-0.48001]	0.334351 (0.37449) [0.89281]
D (LINF (-1))	-0.011188 (0.02472) (-0.45262)	0.032239 (0.10047) [0.66418]	-0.052243 (0.10851) [-0.48147]	0.349798 (0.15299) [2.28637]
C	0.017499 (0.00742) [2.35754]	0.020039 (0.03017) [0.66418]	-0.021099 (0.03258) [-0.64755]	0.026492 (0.04594) [0.57665]
D (LROILP(-1))	0.066200 (0.05797) [1.14206]	0.354327 (0.23562) [1.50382]	0.222226 (0.25446) [0.87334]	-0.392059 (0.35878) [-1.09276]

Source: Extracted from E-views 9.5 estimation result

It can be noted that the coefficient of the variables indicated D(LROILP) and D(REER) are positively related to D(LRGNI) whereas, D(LINF) and D(LRGE) are negatively related to D(LRGNI). Theoretically, D(LRGE) is supposed to be positively related to D(LGNI), but it is negatively due to the crowding out effects of Nigerian government expenditure to private investments.

5.6 Granger Causality Test

The presence of a long run association among the tested variables was established by the cointegration test but does not give any evidence about which of the variable cause the other. Therefore, Granger causality test is conducted to determine the interdependence between variables. Consequently, causality test is a statistical response concept which is utilized in the building of estimating models. Granger causality test is a procedure for determining whether one variable is significant in estimating another variable.

In the table below, the direction of causality between D(LROILP) and D(LRGNI) is unidirectional as D(LROILP) do cause D(LRGNI) while D(LRGNI) do not cause D(LROILP). However, the direction of causality between D(LROILP) and D(LRGE), D(LRGNI) and D(LRGE) is bi-directional as they do not cause each other. Furthermore, the direction of causality between D(LROILP) and D(LREER) is unidirectional as D(LROILP) do cause D(LREER), while D(LREER) do not cause D(LROILP). Also, the direction of causality between D(LREER) and D(LINF) is unidirectional as D(LREER) do cause D(LINF) while D(LINF) do not cause D(LREER). Nevertheless, the direction of D(LOILP) and D(LINF) is bidirectional as they do not cause each other. Finally, the direction of causality between D(LRGNI) and D(LINF), D(LRGNI) and D(LREER), D(LRGE) and D(LREER), and D(LRGE) and D(LINF) is bidirectional as they do not cause each other.

Table 5.6: Pairwise Granger Causality Tests Result

Null Hypothesis	Obs	F-Statistic	Prob.
D(LOILP) do not cause D(LGNI)	33	7.18973	0.0118
D(LGNI) do not cause D(LOILP)		0.46198	0.5019
D(LRGE) do not cause D(LRGNI)	33	0.65765	0.4238
D(LRGNI) do not cause D(LRGE)		2.96971	0.0951
D(LREER) do not cause D(LRGNI)	33	0.32353	0.5737
D(LRGNI) do not cause D(LREER)		0.07760	0.7825
D(LINF) do not cause D(LRGNI)	33	0.55160	0.4634
D(LRGNI) do not cause D(LINF)		1.93831	0.1741
D(LRGE) do not cause D(LROILP)	33	2.23605	0.1453
D(LROILP) do not cause D(LRGE)		0.47554	0.4957
D(LREER) do not cause D(LROILP)	33	0.52500	0.4743
D(LROILP) do not cause D(LREER)		9.35788	0.0046
D(LINF) do not cause D(LROILP)	33	0.60483	0.4428
D(LROILP) do not cause D(LINF)		0.25735	0.6157
D(LREER) do not cause D(LGE)	33	0.00025	0.9876
D(LGE) do not cause D(LREER)		0.16499	0.6875
D(LINF) do not cause D(LREER)	33	0.30342	0.5858
D(LREER) do not cause D(LRINF)		0.11730	0.0193

Source: E-views 9.5 test result.

From the table above, the null hypothesis of D(LROILP) does not cause D(LINF) is accepted while that of D(LROILP) does not cause D(LRGNI) and D(LREER) and

D(LREER) does not cause D(LINF) are rejected. This indicates that D(LROILP) does not cause D(LINF) but it does cause D(LRGNI) and D(LREER) and D(LREER) does cause D(LINF). Hence, it can be concluded that D(LROILP) does not cause D(LINF) directly but indirectly through D(LREER). Furthermore, D(LROILP) does not cause D(LRGE). Therefore, the null hypothesis D(LROILP) does not cause D(LRGE) is accepted.

5.7 Impulse Response

The impulse response function examines the responsiveness of the dependent variables to shocks to each of the variables. It was developed to overcome difficulties of interpreting the VAR model coefficients. The impulse response function studies the response of the dependant variable to shocks in the error terms. Impulse response function explains the responsiveness of the dependent variables to shocks to each of the variables. To summary this analysis, the result is divided into three terms (short, middle and long terms) with three periods for each term and the last period of each term is used in this analysis. While the short term represents 1 to 3 periods, the middle term is for 4 to 6 periods, and the long-term is for 7 to 9 periods. The graphical impulse response can be seen in appendix IV.

Table 5.7: Impulse Response of LRGNI

Response of LRGNI					
Period	LRGNI	LROILP	LRGE	LREER	LINF
Short Term	0.028507	0.004338	-0.003850	0.007808	-0.007834
Middle Term	0.025854	0.003950	-0.005303	0.005123	-0.005237
Long Term	0.023558	0.005623	-0.004826	0.007499	-0.004127

Source: E-views 9.5 test result.

The impulse response of result of LRGNI in the table above indicated that a shock of itself has a positive response throughout the periods. Also, a shock in LROILP and LREER has a positive response throughout the periods. However, a shock in LRGE and LINF has a negative response throughout the periods.

Table 5.8: Impulse Response of LRGE

Response of LRGE					
Period	LRGNI	LROILP	LRGE	LREER	LINF
Short Term	0.059100	0.028371	0.105960	-0.002772	-0.014597
Middle Term	0.080979	0.020503	0.089090	-0.027321	-0.005689
Long Term	0.072850	0.017091	0.076504	-0.017343	-0.004883

Source: E-views 9.5 test result.

The impulse response of result of LRGE in the table above indicated that a shock of itself has a positive response throughout the periods. Also, a shock in LROILP and LGNI has a positive response throughout the periods. However, a shock in LREER and LINF has a negative response throughout the periods.

Table 5.9: Impulse Response of LREER

Response of LREER					
Period	LRGNI	LROILP	LRGE	LREER	LINF
Short Term	0.062704	0.009741	-0.011047	0.163347	0.049164
Middle Term	0.066367	0.003584	-0.016320	0.146903	0.030761
Long Term	0.061181	0.008242	-0.018098	0.145193	0.026273

Source: E-views 9.5 test result.

The impulse response of result of LREER in the table above indicated that a shock of itself has a positive response throughout the periods. Also, a shock in LRGNI, LOILP and LINF has a positive response throughout the periods. However, a shock in LRGE has a negative response throughout the periods.

Table 5.10 : Impulse Response of LINF

Response of LINF					
Period	LRGNI	LROILP	LRGE	LREER	LINF
Short Term	-0.049118	-0.086644	-0.019751	-0.151647	-0.090593
Middle Term	-0.004972	-0.81870	-0.004586	-0.052592	-0.025941
Long Term	-0.005238	-0.077663	-0.008167	-0.026927	-0.004305

Source: E-views 9.5 test result.

The impulse response of result of LINF in the table above indicated that a shock of itself has a negative response throughout the periods. Also, a shock in LRGNI, LROILP, LRGE and LREER has a positive response throughout the periods. However, a shock in LRGE and LINF has a negative response throughout the periods

5.8 Variance Decomposition

The test for variance decomposition of a variable proposes that forces related with one variable have key effects on the assessment of another variable. It gives information about the comparative importance of every arbitrary innovation influencing the variables in a VAR. It measures the responsiveness of LRGNI, LROILP, LRGE, LREER and LINF to itself and the other variables in a nine-year generalized collection. To summary this analysis, the result is divided into three terms (short, middle and long terms) with three periods for each term and the last period of each term is used in this analysis. while the short term represents 1 to 3 periods, the middle term is for 4 to 6 periods, and the long-term is for 7 to 9 periods.

Table 5.11: Variance Decomposition of LRGNI

Variance Decomposition of LRGNI					
Period	LRGNI	LROILP	LRGE	LREER	LINF
Short Term	68.00581	18.52133	7.304969	3.044543	3.123353
Middle Term	67.03243	18.68716	7.314627	3.843520	3.122266
Long Term	67.03195	18.68725	7.314841	3.843662	3.122290

Source: Extracted from E-views 9.5 estimation result.

The variance decomposition result of LRGNI in the table above indicates that in short term, LRGNI is responsible for approximately 68.0058% variations (own shock). Whereas in middle and long terms, LRGNI is responsible for approximately 67.0324% and 67.0319% self-variations respectively. Also, approximately 18.5213%, 18.6872% and 18.6873% variations in LRGNI are accountable by LROILP in short, middle and long terms respectively. Furthermore, LRGE is responsible for approximately 7.3049%, 7.3146% and 7.3148% variations in LRGNI in short, middle and long terms respectively. Additionally, approximately 3.0445%, 3.8435% and 3.8437% variations in LRGNI are accountable by LREER in short, middle and long terms respectively. Finally, approximately 3.1234%, 3.1223% and 3.1222% variations in LGNI are accountable by LINF in short, middle and long terms respectively.

Table 5.12: Variance Decomposition of LRGE

Variance Decomposition of LRGE					
Period	LRGNI	LROILP	LRGE	LREER	LINF
Short Term	32.77561	1.937758	63.39925	1.483195	0.404194
Middle Term	32.52915	2.199033	63.16659	1.693052	0.412182
Long Term	32.52912	2.199163	63.16648	1.693044	0.412189

Source: Extracted from E-views 9.5 estimation result.

The variance decomposition result of LRGE in the table above indicates that in short term, LRGE is responsible for approximately 63.3993% self-variations. Whereas in middle and long terms, LRGE is responsible for approximately 63.1666% and 63.1665% self-variations respectively. Also, approximately 32.7756%, 32.5292% and 32.5291% variations in LRGE are accountable by LRGNI in short, middle and long terms respectively. Furthermore, LROILP is responsible for approximately 1.9378%, 2.1990% and 2.1992%variations in LRGE in short, middle and long terms respectively. Additionally, approximately 1.4832%, 1.6931% and 0.4122% variations in LRGE are accountable by LREER in short, middle and long terms respectively. Finally, approximately 0.4042%, 0.4121% and 0.4122% variations in LRGE are accountable by LINF in short, middle and long terms respectively.

Table 5.13: Variance Decomposition of LREER

Variance Decomposition of LREER					
Period	LRGNI	LROILP	LRGE	LREER	LINF
Short Term	5.064977	19.05712	3.118085	70.31481	2.445009
Middle Term	5.091683	19.02034	3.112444	70.34188	2.433659
Long Term	5.091639	19.02029	3.112822	70.34149	2.433765

Source: Extracted from E-views 9.5 estimation result.

The variance decomposition result of LREER in the table above indicates that in short term, LREER is responsible for approximately 70.3148% self-variations. Whereas in middle and long terms, LREER is responsible for approximately 70.3419% and 70.3415% self-variations respectively. Also, approximately 5.0650%, 5.0917% and 5.0916% variations in LREER are accountable by LRGNI in short, middle and long terms respectively. Furthermore, LROILP is responsible for approximately 19.0571% 19.0203% and 19.0202% variations in LREER in short, middle and long terms respectively. Additionally, approximately 3.1181%, 3.1124% and 3.1128% variations in LREER are accountable by LRGE in short, middle and long terms respectively. Finally, approximately 2.4450%, 2.4337% and 2.4338% variations in LREER are accountable by LINF in short, middle and long terms respectively.

Table 5.14: Variance Decomposition of LINF

Variance Decomposition of LINF					
Period	LRGNI	LROILP	LRGE	LREER	LINF
Short Term	2.252462	12.11561	4.316536	13.27346	68.04193
Middle Term	2.471406	12.00770	4.838898	13.44845	67.23355
Long Term	2.471481	12.00835	4.839096	13.44852	67.23255

Source: Extracted from E-views 9.5 estimation result.

The variance decomposition result of LINF in the table above indicates that in short term, LINF is responsible for approximately 68.0419% self-variations. Whereas in middle and long terms, LINF is responsible for approximately 67.2336% and 67.2326% self-variations respectively. Also, approximately 2.2525%, 2.4714% and 2.4715% variations in LINF are accountable by LRGNI in short, middle and long terms respectively. Furthermore, LROILP is responsible for approximately 12.1156%, 12.0077% and 12.0084% variations in LINF in short, middle and long terms respectively. Additionally, approximately 4.3165%, 4.8389% and 4.8391% variations in LINF are accountable by LRGE in short, middle and long terms respectively. Finally, approximately 13.2735%, 13.4484% and 13.4485% variations in LINF are accountable by LREER in short, middle and long terms respectively.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The oil price instability consequences on the Nigerian economic growth between 1981 and 2015 were assessed in the previous chapters of this study. The study assessed the empirical relationship between oil price instability and the economic growth of Nigerian with emphasis on certain macroeconomic variables precisely RGNI which acted as a proxy for economic growth. Therefore, this chapter will offer a brief conclusion and recommendations of the study's findings.

6.2 Summary of Findings

Using the VAR model, this study assessed the impact of oil price instability on the Nigerian economic growth within the time frame of 1981 and 2015. The annual time series data was utilized it in the study and it was obtained from the CBN statistical database. The estimation is done with the utilization of econometrics software package called E-Views (version 9.5) to facilitate the data analysis. The estimation procedures of this study include Unit root test for the variables, cointegration test, vector error correction model, impulse response, variance decomposition test and test for Granger causality.

The assessments of the models in the preceding section produce outcomes that are informative and comprehensive in policy suggestions. Firstly, the existence of a long-run relationship among the variables was established by the cointegration test while the VECM coefficient of the cointegrating equation of LRGNI shows that the speed of

adjustment is very low. This implied that in short run, there is no strong burden to re-establishing long equilibrium when there is a deviation.

Secondly, the result of Granger causality shows that oil price Granger caused economic growth and exchange rate, while exchange rate Granger caused inflation. This implies that oil price is a significant variable in explaining economic growth and exchange, it is also a significant variable in explaining inflation through exchange rate. Therefore, it is concluded that oil price can be used directly to influence economic growth and exchange rate of Nigeria but indirectly to influence inflation through exchange rate. The result confirms the findings of Umar and Abdulhakeem (2010) and Olusegun (2008) which specified that inflation is not affected by a change in oil price. Olusegun (2008) further stated that the result is not astonishing because inflation is measured based on Consumer Price Index and the Consumer Price Index calculation does not comprise oil prices in Nigeria.

Thirdly, the impulse response of result of LRGNI in the table above indicated that a shock of itself has a positive response throughout the periods. Also, a shock in LROILP and LREER has a positive response throughout the periods. However, a shock in LRGE and LINF has a negative response throughout the periods. Furthermore, the impulse response of result of LRGE in the table above indicated that a shock in LRGNI, LROILP and LRGE has a positive response throughout the periods. Nevertheless, a shock in LREER and LINF has a negative response throughout the periods.

Also, impulse response of result of LREER indicated that a shock in LRGNI, LOILP, LREER and LINF has a positive response throughout the periods. However, a shock in LRGE has a negative response throughout the periods. Furthermore, impulse response of result of LINF indicated that a shock in all the variables has a negative response throughout the periods.

Fourthly, the result of RGNI variance decomposition indicated that a change in oil price is the largest source of variation in RGNI apart from self-shock. The contribution of the other variables (government expenditure, inflation and exchange rate) is minimal compared to that of oil price change. This result corresponded with the findings of Olusegun (2008) which indicated that oil price instability is the largest source of

variation in economic growth. However, the result contradicted the findings of Oriakhi and Osaze (2013) which stated that oil price does not affect economic growth directly but indirectly through government expenditure. Also, the result contradicted the findings of Akpan (2009) which stated that there is a marginal effect on the economic growth due to instability in oil price.

Moreover, the variance decomposition result of government expenditure indicated that a fluctuation in RGNI is the largest source of variation in government expenditure. This result contradicted the findings of Akpan (2009) and Oriakhi and Osaze (2013) which stated that a fluctuation oil price is the largest source of variation in government expenditure.

Furthermore, the result of REER variance decomposition explained that variation in oil price is the largest sources of fluctuation in exchange rate apart from self-shock. As a net oil exporter, an increase in oil price will encourage higher inflow of export earnings into the economy of Nigeria. Even though it might sound good, but it has negative consequences on the economy because of the overwhelming dependence on external inputs. The research of Olomola (2006) corresponded with this conclusion. A new exchange rate policy ear in Nigeria was denoted as naira was devaluated with the introduction of SAP in 1980's. The post-SAP era has experienced a persistent devaluation of Naira. The country witnessed relatively very high cost of production as the exchange value of the goods and services imported for production are extremely high in naira. Consequently, the nation has turned into a dumping ground for cheap products made in other countries which are far less expensive than the made in Nigeria products. Base on this reality, the nation has revealed various approaches aimed at safeguarding and endorsing domestic made goods. However, these approaches have failed as the importations of cheap products made in foreign nations have kept on prospering in the economy due to their affordability.

Finally, the result of inflation variance decomposition test indicated that the largest source of variation in inflation rate is a change in exchange rate followed by a change in oil price, while variation in government expenditure and RGNI has marginal effects. However, it may be stated that a variation in oil price through a variation in exchange

rate will cause variation in inflation rate. This is based on the results which indicated that oil price is the largest source of variation in exchange rate while exchange rate is the largest source of variation in inflation rate. It can also be confirmed from the Granger causality test result which explained that oil price does not cause inflation but oil price does cause real effective exchange rate, and real effective exchange rate does cause inflation. Hence, it can be concluded that oil price does not cause inflation directly but indirectly through the real effective exchange rate. The research result contradicted the findings of Oriakhi and Osaze (2013) which stated that oil price directly affects inflation rate.

6.3 Conclusion

Using the VAR model, this study assessed the impact of oil price instability on the Nigerian economic growth within the time frame of 1981 and 2015. The annual time series data was utilized it in the study and it was obtained from the CBN statistical database. The Augmented Dickey-Fuller (ADF) unit root test was conducted on the variables and the result indicated that all the variables were non-stationary at level but stationary at first difference. Also, the Johansen test for Co-integration was carried out on variables due to their non-stationary at level. This checks the existence of a long-run relationship between the variables. The result indicated that at least one cointegration (long run relationship) exists among the variables.

As the test for cointegration indicates the existence of the long-run relationship, the VECM was used to evaluate the short-run dynamic relationships. The VECM coefficient of the cointegrating equation in the result for LRGNI shows that the speed of adjustment is very low. This implied that in short run, there is no strong burden to re-establishing long equilibrium when there is a deviation.

Furthermore, the Granger causality test was conducted to determine the interdependence between variables. The Granger causality result shows that oil price Granger caused economic growth and exchange rate, while exchange rate Granger caused inflation. This implies that oil price is a significant variable in explaining economic growth and exchange; it is also a significant variable in explaining inflation through the exchange

rate. Therefore, it is concluded that oil price directly to influence economic growth and exchange rate of Nigeria but indirectly influence inflation.

Also, the impulse response was carried out to measures the responsiveness of the dependent variables to shocks to each of the variables. The result indicated that a shock in oil price has a positive response to the entire variables except inflation, while a shock in exchange rate has a positive response to economic growth but negative to the other variables. Nevertheless, a shock in government expenditure and inflation has a negative response to the entire variables.

Moreover, the test for variance decomposition was carried out to measures the responsiveness of a variable to itself and the other variables in a nine-year generalized collection. The result of variance decomposition shows that variation in oil price has an insignificant effect on variation in government expenditure. However, the result indicated that oil price instability is the largest source of variation in economic growth. Also, the test indicated that variation in oil price is the largest sources of fluctuation in exchange rate apart from self-shock while the largest source of variation in the inflation rate is a change in exchange rate followed by a change in oil price.

Finally, it is concluded that oil price instability has a significant influence on economic growth and exchange rate of Nigeria while exchange rate has a significant influence on inflation rate. This means that oil price instability significantly influences economic growth and exchange rate of Nigeria but indirectly influence inflation through the exchange rate. However, oil price instability has a less significant influence on Nigerian government expenditure.

6.4 Recommendations

This research presented the following recommendations in relation to the impact of oil price instability on the Nigerian economic growth.

- Policymakers should concentrate on policies that will fortify/balance out the macroeconomic structure of Nigeria with specific emphasis on diversification of the national income base as a means of limiting dependence on oil.

- After an oil shock, appropriate fiscal policy should be utilized to stabilizes Nigerian domestic economy
- As exporter and importer of oil, the government of Nigeria needs to set up more refineries and ensure that the current ones are in great condition of repair to reduce the importation and bend the accumulations of the instability.
- To guarantee the growth desire of Nigeria, appropriate accountability and corporate administration ought to be cultured as center values by all partners.
- Extra inquiries are required regarding suitable Nigerian economic growth and the effect of oil price instability on it.

It is noticeable that if the few suggestions above are set up and addressed, the impact of oil price instability on Nigerian economic growth will be minimized.

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APPENDIX

Appendix I: Lag Order Selection Criteria

VAR Lag Order Selection Criteria
Endogenous variables: LRGNI LROILP LRGE LREER LINF
Exogenous variables: C
Date: 05/15/17 Time: 02:41
Sample: 1981 2015
Included observations: 31

Lag	LogL	LR	FPE	AIC	SC	HQ
0	45.60573	NA	5.01e-08	-2.619725	-2.388437	-2.544331
1	153.9029	174.6728*	2.38e-10*	-7.993733	-6.606003*	-7.541367*
2	175.2602	27.55787	3.45e-10	-7.758723	-5.214552	-6.929387
3	205.9130	29.66404	3.53e-10	-8.123423	-4.422810	-6.917115
4	245.0405	25.24349	3.56e-10	-9.034869*	-4.177815	-7.451590

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Appendix II: Johansen Cointegration Test

Date: 05/15/17 Time: 02:35
Sample (adjusted): 1983 2015
Included observations: 33 after adjustments
Trend assumption: Linear deterministic trend
Series: LRGNI LROILP LRGE LREER LINF
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.688391	73.98641	69.81889	0.0224
At most 1	0.410184	35.50823	47.85613	0.4215
At most 2	0.304539	18.08608	29.79707	0.5597
At most 3	0.112031	6.101138	15.49471	0.6836
At most 4	0.063929	2.180123	3.841466	0.1398

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.688391	38.47817	33.87687	0.0131
At most 1	0.410184	17.42216	27.58434	0.5439
At most 2	0.304539	11.98494	21.13162	0.5492
At most 3	0.112031	3.921015	14.26460	0.8676
At most 4	0.063929	2.180123	3.841466	0.1398

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

LRGNI	LROILP	LRGE	LREER	LINF
6.222425	3.125047	-2.538777	1.501357	5.813625
-3.295874	-3.408399	2.290735	4.419651	-0.892949
-2.747608	11.93344	-5.525706	-0.942583	0.515349
-23.49214	4.310249	7.025855	-0.192943	-0.006903
-9.359014	-0.404395	1.700787	-1.752385	-0.488401

Unrestricted Adjustment Coefficients (alpha):

D(LRGNI)	0.000436	-0.011843	-0.002089	-0.005948	-0.003005
D(LROILP)	0.011545	-0.013334	-0.039257	-0.019779	0.014373
D(LRGE)	-0.001643	-0.008469	0.028514	-0.042564	0.000995
D(LREER)	0.057414	-0.058394	0.027812	0.010426	0.007783
D(LINF)	-0.157184	-0.077328	0.067246	0.018040	0.015036

1 Cointegrating Equation(s): Log likelihood 162.4915

Normalized cointegrating coefficients (standard error in parentheses)

LRGNI	LROILP	LRGE	LREER	LINF
1.000000	0.502223	-0.408004	0.241282	0.934302
	(0.27509)	(0.13926)	(0.10667)	(0.12092)

Adjustment coefficients (standard error in parentheses)

D(LRGNI)	0.002714
	(0.03480)
D(LROILP)	0.071836
	(0.13522)
D(LRGE)	-0.010222
	(0.16835)
D(LREER)	0.357251
	(0.14574)
D(LINF)	-0.978064
	(0.26471)

Appendix III: Impulse Response (Table)

Response of D(LRGNI):

Period	D(LRGNI)	D(LROILP)	D(LRGE)	D(LREER)	D(LINF)
1	0.035231	0.000000	0.000000	0.000000	0.000000
2	0.016150	0.011664	-0.011187	0.010180	-0.003950
3	0.028507	0.004338	0.003850	0.007808	-0.007834
4	0.025068	0.005383	-0.009633	0.007604	-0.004232
5	0.021462	0.008013	0.000532	0.005811	-0.002168
6	0.025854	0.003950	-0.005303	0.005123	-0.005237
7	0.023193	0.007415	-0.003899	0.009718	-0.004446
8	0.025100	0.005892	-0.002407	0.005044	-0.004412
9	0.023558	0.005623	-0.004826	0.007499	-0.004127

Response of D(LROILP):

Period	D(LRGNI)	D(LROILP)	D(LRGE)	D(LREER)	D(LINF)
1	0.017465	0.149573	0.000000	0.000000	0.000000
2	-0.001996	0.078141	0.024853	-0.016288	0.022724
3	0.023999	0.088446	-0.000396	0.000209	0.007794
4	-0.006356	0.104996	0.016844	-0.020944	-0.002406
5	0.011615	0.083572	0.011287	-0.015432	0.010501
6	0.007689	0.098185	0.005539	-0.002445	0.008501
7	0.007438	0.094300	0.016457	-0.015819	0.006766
8	0.007602	0.090698	0.006939	-0.011496	0.006796
9	0.006343	0.096152	0.012556	-0.010745	0.006331

Response of D(LRGE):

Period	D(LRGNI)	D(LROILP)	D(LRGE)	D(LREER)	D(LINF)
1	0.108009	0.032351	0.144837	0.000000	0.000000
2	0.071162	0.010504	0.037017	-0.032579	-0.003680
3	0.059100	0.028371	0.105960	-0.002772	-0.014597
4	0.086308	0.012847	0.072229	-0.034426	-0.001856
5	0.061997	0.023544	0.077797	0.001360	-0.006494
6	0.080979	0.020503	0.089090	-0.027321	-0.005689
7	0.067720	0.016918	0.072166	-0.011815	-0.006459
8	0.074313	0.023432	0.087703	-0.017659	-0.006974
9	0.072850	0.017091	0.076504	-0.017343	-0.004883

Response of D(LREER):

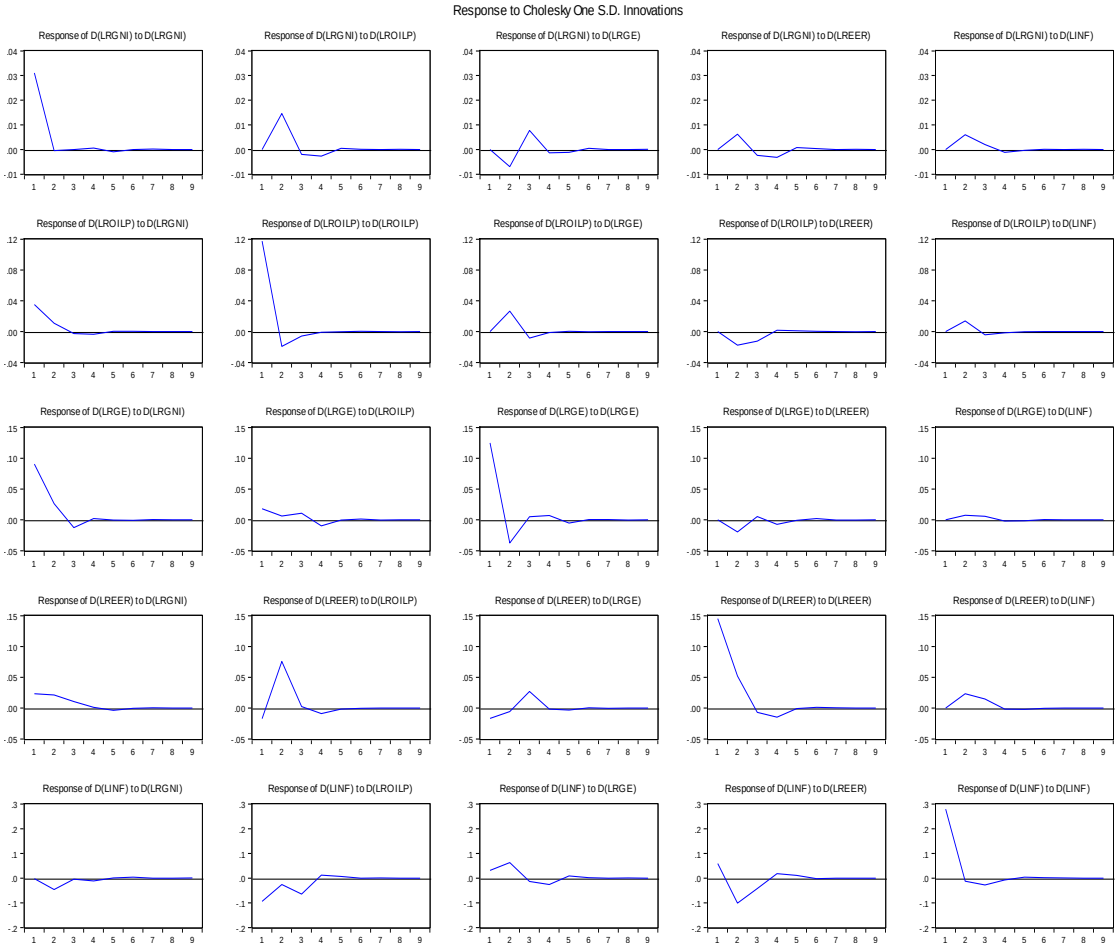
Period	D(LRGNI)	D(LROILP)	D(LRGE)	D(LREER)	D(LINF)
1	0.054206	-0.042624	-0.021461	0.163122	0.000000
2	0.064117	0.053242	-0.020184	0.138834	0.028853
3	0.062704	0.009741	-0.011047	0.163347	0.049164
4	0.074269	0.014774	-0.019329	0.149181	0.023117
5	0.047096	0.012124	-0.011038	0.132418	0.018028
6	0.066367	0.003584	-0.016320	0.146903	0.030761
7	0.062045	0.014208	-0.018368	0.152726	0.029886
8	0.062163	0.008869	-0.011341	0.142781	0.027175
9	0.061181	0.008242	-0.018098	0.145193	0.026273

Response of D(LINF):

Period	D(LRGNI)	D(LROILP)	D(LRGE)	D(LREER)	D(LINF)
1	0.089033	-0.076770	-0.056581	0.137899	0.174694
2	0.038542	-0.068508	0.021631	-0.000537	-0.018245
3	-0.049118	-0.086644	-8.70E-05	-0.151647	-0.090593
4	-0.017957	-0.092171	-0.018209	-0.027518	-0.010342
5	0.028884	-0.065373	-0.012223	0.003104	0.022693
6	0.003045	-0.079094	-0.006459	-0.031442	-0.008783
7	-0.004972	-0.081870	-0.004586	-0.052592	-0.025941
8	-0.003860	-0.079234	-0.011932	-0.037390	-0.012672
9	0.005238	-0.077663	-0.008167	-0.026927	-0.004305

Cholesky Ordering: D(LRGNI) D(LROILP) D(LRGE) D(LREER) D(LINF)

Appendix IV: Impulse Response (Graphs)



Appendix V: Pairwise Granger Causality Tests

Pairwise Granger Causality Tests
Date: 05/15/17 Time: 02:44
Sample: 1981 2015
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
D(LROILP) does not Granger Cause D(LRGNI)	33	7.18973	0.0118
D(LRGNI) does not Granger Cause D(LROILP)		0.46198	0.5019
D(LRGE) does not Granger Cause D(LRGNI)	33	0.65765	0.4238
D(LRGNI) does not Granger Cause D(LRGE)		2.96973	0.0951
D(LREER) does not Granger Cause D(LRGNI)	33	0.32353	0.5737
D(LRGNI) does not Granger Cause D(LREER)		0.07760	0.7825
D(LINF) does not Granger Cause D(LRGNI)	33	0.55160	0.4634
D(LRGNI) does not Granger Cause D(LINF)		1.93831	0.1741
D(LRGE) does not Granger Cause D(LROILP)	33	2.23605	0.1453
D(LROILP) does not Granger Cause D(LRGE)		0.47554	0.4957
D(LREER) does not Granger Cause D(LROILP)	33	0.52500	0.4743
D(LROILP) does not Granger Cause D(LREER)		9.35788	0.0046
D(LINF) does not Granger Cause D(LROILP)	33	0.60483	0.4428
D(LROILP) does not Granger Cause D(LINF)		0.25735	0.6157
D(LREER) does not Granger Cause D(LRGE)	33	0.00025	0.9876
D(LRGE) does not Granger Cause D(LREER)		0.16499	0.6875
D(LINF) does not Granger Cause D(LRGE)	33	0.00139	0.9705
D(LRGE) does not Granger Cause D(LINF)		0.11698	0.7347
D(LINF) does not Granger Cause D(LREER)	33	0.30342	0.5858
D(LREER) does not Granger Cause D(LINF)		6.11730	0.0193

Appendix VI: Variance Decomposition Test

Variance Decomposition of D(LRGNI):

Period	S.E.	D(LRGNI)	D(LROILP)	D(LRGE)	D(LREER)	D(LINF)
1	0.031534	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.037556	71.38735	19.48934	3.472605	2.925941	2.724764
3	0.038528	68.00581	18.52133	7.304969	3.044543	3.123353
4	0.038798	67.07353	18.71791	7.254138	3.839077	3.115346
5	0.038827	67.04042	18.68933	7.310560	3.837262	3.122428
6	0.038830	67.03243	18.68716	7.314627	3.843520	3.122266
7	0.038830	67.03240	18.68700	7.314816	3.843539	3.122245
8	0.038830	67.03201	18.68727	7.314777	3.843656	3.122283
9	0.038830	67.03195	18.68725	7.314841	3.843662	3.122290

Variance Decomposition of D(LROILP):

Period	S.E.	D(LRGNI)	D(LROILP)	D(LRGE)	D(LREER)	D(LINF)
1	0.123161	10.63293	89.36707	0.000000	0.000000	0.000000
2	0.129987	11.77932	81.25998	4.112844	1.554139	1.293716
3	0.130812	11.64591	80.28373	4.454404	2.316700	1.299256
4	0.130887	11.71882	80.21126	4.449620	2.314454	1.305851
5	0.130895	11.71808	80.20908	4.449173	2.314288	1.309383
6	0.130898	11.71750	80.20625	4.450534	2.316371	1.309348
7	0.130899	11.71744	80.20567	4.450757	2.316681	1.309458
8	0.130899	11.71748	80.20555	4.450774	2.316725	1.309467
9	0.130899	11.71748	80.20555	4.450777	2.316733	1.309467

Variance Decomposition of D(LRGE):

Period	S.E.	D(LRGNI)	D(LROILP)	D(LRGE)	D(LREER)	D(LINF)
1	0.152529	33.01013	0.969873	66.02000	0.000000	0.000000
2	0.161601	33.07359	1.140545	64.20320	1.361094	0.221574
3	0.162743	32.77561	1.937758	63.39925	1.483195	0.404194
4	0.163311	32.56083	2.193770	63.16819	1.675280	0.401928
5	0.163401	32.53024	2.197324	63.17631	1.683885	0.412233
6	0.163414	32.52915	2.199033	63.16659	1.693052	0.412182
7	0.163415	32.52917	2.199103	63.16650	1.693045	0.412182
8	0.163415	32.52913	2.199156	63.16649	1.693042	0.412184
9	0.163415	32.52912	2.199163	63.16648	1.693044	0.412189

Variance Decomposition of D(LREER):

Period	S.E.	D(LRGNI)	D(LROILP)	D(LRGE)	D(LREER)	D(LINF)
1	0.146496	2.623532	1.305756	1.253291	94.81742	0.000000
2	0.176955	4.228425	19.72658	0.971010	73.33550	1.738491
3	0.180851	5.064977	19.05712	3.118085	70.31481	2.445009
4	0.181517	5.053751	19.02362	3.099801	70.39547	2.427359
5	0.181590	5.088673	19.01883	3.112696	70.34777	2.432036
6	0.181599	5.091683	19.02034	3.112444	70.34188	2.433659
7	0.181600	5.091624	19.02014	3.112807	70.34169	2.433735
8	0.181600	5.091617	19.02030	3.112791	70.34154	2.433754
9	0.181601	5.091639	19.02029	3.112822	70.34149	2.433765

Variance Decomposition of D(LINF):

Period	S.E.	D(LRGNI)	D(LROILP)	D(LRGE)	D(LREER)	D(LINF)
1	0.296151	9.06E-05	9.302615	0.831260	3.723030	86.14300
2	0.323336	2.142538	8.417492	4.457813	12.56619	72.41597
3	0.335325	2.252462	12.11561	4.316536	13.27346	68.04193
4	0.337259	2.463653	12.00646	4.810192	13.35993	67.35977
5	0.337560	2.459437	12.00882	4.838733	13.45030	67.24270
6	0.337586	2.471406	12.00770	4.838898	13.44845	67.23355
7	0.337588	2.471483	12.00829	4.838923	13.44840	67.23290
8	0.337589	2.471479	12.00831	4.839087	13.44850	67.23262
9	0.337589	2.471481	12.00835	4.839096	13.44852	67.23255

Cholesky Ordering: D(LRGNI) D(LROILP) D(LRGE) D(LREER) D(LINF)

Appendix VII: Data

YEAR	ROILP	RGNI	RGE	RREER	RINF
1981	34.2	1.82716E+13	2.16264E+11	325.4150448	20.81282291
1982	31	1.81857E+13	2.21314E+11	333.7526404	7.697747247
1983	29.9	1.73074E+13	2.26364E+11	395.07733	23.21233155
1984	28.89	1.68231E+13	2.31414E+11	546.0457928	17.82053329
1985	27.77	1.8074E+13	2.36464E+11	489.6103514	7.435344828
1986	14.48	1.60408E+13	2.41514E+11	267.4681052	5.717151454
1987	18.5	1.38739E+13	2.46564E+11	85.21026674	11.29032258
1988	15.11	1.60728E+13	2.51614E+11	85.6272481	54.51122478
1989	18.5	1.58864E+13	2.56664E+11	76.24929019	50.46668812
1990	24.16	1.78708E+13	2.61714E+11	70.74785989	7.364400306
1991	20.55	1.78251E+13	2.64487E+11	59.96911316	13.0069731
1992	19.95	1.76476E+13	2.72095E+11	49.74448437	44.58884272
1993	17.57	1.72584E+13	2.79971E+11	54.50264291	57.16525283
1994	16.21	1.79191E+13	2.83967E+11	100.7952527	57.03170891
1995	17.34	1.86863E+13	2.83801E+11	160.1283959	72.8355023
1996	21.24	1.98814E+13	2.92014E+11	207.635201	29.26829268
1997	19.4	2.055E+13	2.97064E+11	235.9242356	8.529874214
1998	12.77	2.08274E+13	3.02114E+11	272.3436608	9.996378124
1999	18.07	2.05172E+13	3.07164E+11	70.14650556	6.618373395
2000	28.49	1.99132E+13	3.12214E+11	69.86901282	6.933292156
2001	24.5	2.23806E+13	2.74503E+11	77.83401112	18.87364621
2002	25.15	2.30068E+13	2.90367E+11	78.07733199	12.8765792
2003	28.77	2.52199E+13	2.20893E+11	73.19964365	14.03178361
2004	38.27	3.35094E+13	1.47013E+12	74.90702191	14.99803382
2005	55.67	3.43058E+13	1.62404E+12	85.54603842	17.86349337
2006	66.84	4.09607E+13	2.20464E+12	91.49796748	8.239526517
2007	75.14	4.20586E+13	3.45689E+12	89.64501555	5.382223652
2008	100.6	4.44603E+13	4.2871E+12	99.12561424	11.57798352
2009	63.25	4.70774E+13	4.31812E+12	92.13576726	11.53767275
2010	81.07	5.25232E+13	4.83215E+12	100	13.72020184
2011	114.15	5.51376E+13	5.05315E+12	100.307846	10.84079259
2012	113.66	5.77282E+13	4.953E+12	111.3896597	12.21700718
2013	111.36	6.09258E+13	4.44495E+12	118.8137659	8.475827285
2014	100.85	6.58773E+13	4.13316E+12	127.0928916	8.057382626
2015	52.95	6.78896E+13	4.1151E+12	126.0636823	9.017683791