REPUBLIC OF TURKEY
ISTANBUL GELISIM UNIVERSITY
INSTITUTE OF GRADUATE STUDIES

Department of Economics and Finance

THE CRUDE OIL PRODUCTION IN NIGERIA AND
THE BOOM OR CURSE IMPLICATION

Master Thesis

Samuel Oyesola OLUDIMU

Supervisor
Ass. Prof. Dr. Ebru Gül YILMAZ

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DECLARATION

I hereby declare that in the preparation of this thesis, scientific ethical rules have been followed, the works of other persons have been referenced in accordance with the scientific norms if used, there is no falsification in the used data, any part of the thesis has not been submitted to this university or any other university as another thesis.

Samuel Oyesola OLUDIMU

…/…/2021

DEDICATION

I dedicate this thesis to God and to every Nigerian youth who are deeply dedicated to the struggles to make our nation Nigeria great again, especially to all the youth who lost their lives on October 20th, 2020 in Lekki Toll Gate Lagos, Nigeria during the End SARS protest. A protest led by the peaceful Nigerian youth, against bad governance and police brutality. May their souls continue to rest in peace. We will continue to amplify our voices in every opportunity to support the movement against bad leadership in Nigeria, so that our children can live in a country they can call HOME.

SUMMARY

A reflection on supposed oil exporting states constantly reminds of the invariably of the resources curse hypothesis and environmental consequences of oil exploration. In Africa, especially the case of Nigeria, the argument has remained whether the countrys abundance and voluminous deposit of crude oil has positively affected the livelihood of the people. In view of this, the study examined the impact of crude oil production, square of crude oil production, oil rent and population on the per capita income over the period of 1990-2016.

While the study revealed that oil production is an essential ingredient in sustaining a growing income level in the country, the study discovered that a doubled output of the economy's oil production capacity is draw back to economic progress. Thus, the implication of an inverted the U-shape relationship between oil production and income level is that individual well being is adversely affected at a certain level oil output, thus suggesting a potential curse resulting from the countrys natural resources explanation. Furthermore, the countrys oil rent and population explosion especially in the long run exerts a negative and significant impact on the individual income level. Generally, this study significantly presents a relevant policy for the government of Nigeria and other oil exporting and natural resources abundant states. Hence, to achieve the desired objective of the study, there is need to incorporate the square of crude oil production in the model such that relevant inferences are provided from the turning point evidence. Furthermore, the current study revealed important policy guide for Nigeria. The government should intensify the diversification attempt of the country's economy such that the agriculture sector should be reformed and restructured, as this is going to serve as an added value to the GDP of the country. More so, all stakeholders in the oil sectors, and the community leaders especially in the oil producing communities should further engage in inclusive dialogue to foster peace and end the history of militancy, oil bunkering and disruptions across the country. Possibly, the government could begin to consider the liberalization and privatization of the country's oil industry. In the aspect of population, the country's population explosion especially with the relatively lower economic growth posits a serious concern. Thus, there should be a deliberate attempt from the side of the government to carefully inform the populace gains of having a moderate family size.

In this case, more awareness should be carried out in addition to the government effort to improve the quality of life of the people through serious cut down of corruption and political crisis in oil region states within Nigeria.

Key Words: Crude oil, Production

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ABBREDIVATIONS

ADF   :Augmented Dickey-Fuller

ECT   :Error correction term

GDPincome   : Gross Domestic Product per capital

H   :Heteroscedasticity

LogGDPIncome   : Logarithm of Gross domestic Product per capital

LogOilP   :Logarithm of Crude oil Production

LogRent   :Logarithm of Rent

LogP   : Crude oil Production with its Square root

OilRent   :Rent

P   :Country Total Population

P-Value   :Probability value

SR LM   :Serial correlation

X^2 :Chi-square

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PREFACE

Every accomplishment in life is because of the contribution of many individuals who both directly and share gifts, talents, and wisdom with us all, this thesis is no exception. First, I want to appreciate God the almighty for His love and guidance through the process of my academic's proceedings till this present time, may His name alone be exalted.

All thanks to the doer of all thing's exception of nothing, God Almighty for His unending grace and strength throughout my course of study.

I sincerely appreciate my supervisor, **Assistant Professor Ebru Gul Yılmaz** for her courage, support, and effort to bring out the best in me from the beginning of this thesis and to the completion, indeed she is one of the best.

I sincerely appreciate my beloved wife for her support and courage from the beginning of my master's program till the end, may the good lord continue to be with her, AMEN.

I am grateful for the gift of family; The Oludimu's, Alola's, Awoniyis and all my friends who encouraged and supported me.

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I also want to appreciate all my lecturers in Istanbul Gelisim University for giving me their absolute best and support, may the good Lord be with you.

CHAPTER ONE

INTRODUCTION

Crude oil is a natural resource to nations that can possess it, especially if such nation is naturally endow with it in a larger quantity in which Nigeria is one of the gifted nations that has crude oil in larger quantity. The nation is so blessed to the point that, it serves as her major source of income and over the years, it serves a good advantage for her gross domestic product (GDP). The above resources have remained Nigerian major source of commercial exportation to an extent that other sectors in the economy such as agriculture has drastically been ignored in the nation of Nigeria. In-spite of the economy advantage of having a crude oil, Nigerian economy has been lacking behind in terms of economy progress, yet the nation possesses crude oil in larger percentage.

Independence came to Nigeria fifteen years too early under the British colony in October 1, 1960. The Nigerian nation obtained her independence from the British colonial master under the supervision of Queen Elizabeth II of the Great Britain. It was a great celebration for all the indigenous people of Nigerian because freedom came to the land without a major war. This Independence came with a divers of natural resources scatter across the nation in which crude oil was among them, with a believe that the nation will soon become the pride of Africa continent and pave ways for other African nation to swim and have major stand in the world economies.

Furthermore, within the space of a decade from 1960-1970, The nation experience oil boom, but prior before the oil boom of 1970, agriculture was a major source of Nigerian economy, Nigerian economy GDP from agriculture proceedings was 65% and 70% respectively (Dinar et al, 2012) of total export and the economy was really booming and this afford the nation to get a quick international recognition as one of the fastest emerging economy in the world.

Graph 1. Crude Oil Production for OPEC and non-OPEC Country trend of 1960-2008
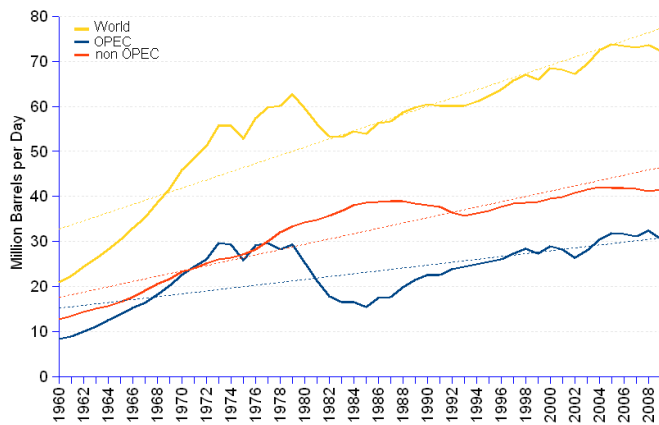
Resource:

www.researchgate.net%2Ffigure%2FNigeria-Crude-Oil-Production-Model

Graph 2. Crude oil production rate in Nigeria
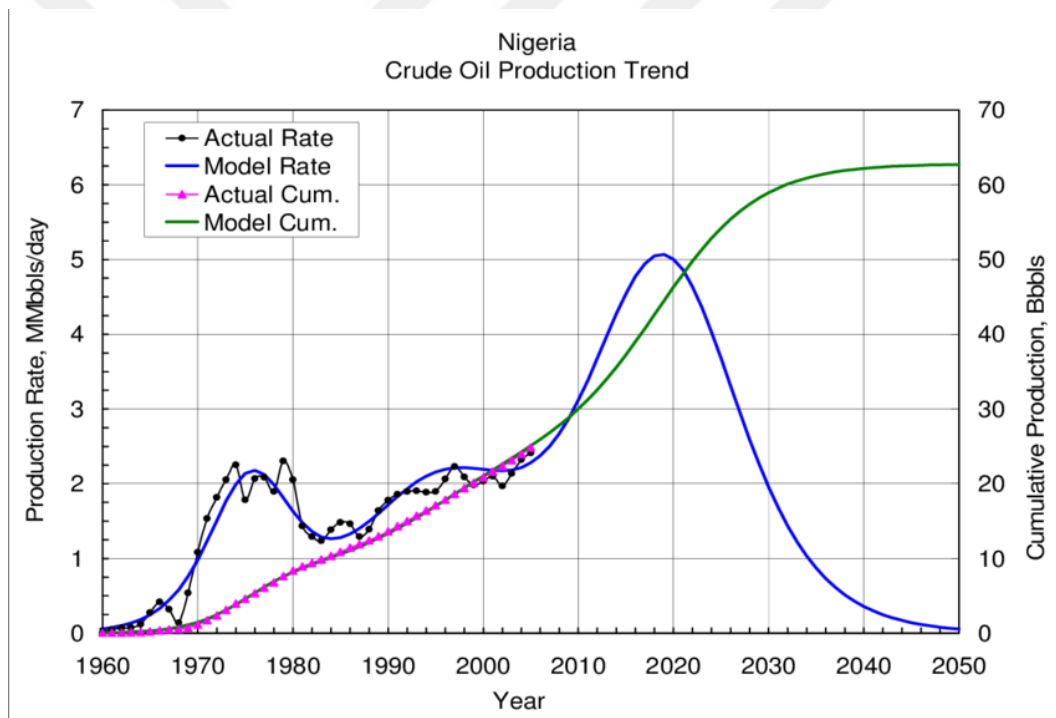
Resource: www.researchgate.net%2Ffigure%2FNigeria-Crude-Oil-Production-Model

Hence, it was a catalyst for economy growth in Nigeria especially for the foreign exchange that was adopted in importing raw materials and capital goods (Alola & Alola, 2018). The nation of Nigeria was then a main player of agriculture proceedings and main exporter of the products such as Palm oil, cocoa, timber, and rubber over two decades. However, the decline in 65% GDP from this sector started

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after the oil boom of 1970, when agriculture was substituted for crude oil. Although, it is important to note that the decline in the economy was not obvious to the rest of the world then, because the Nigerian crude oil provided 90% GDP (Kasara, 2007) for the economy and since then its agriculture sector continue to decline drastically and oil become Nigerian major economy strength. The 65% GDP from agriculture of 1965 began to drop from 1975 at 47% and this decline continue from 1975 to 1985 until it hit the unbearable point of 14% in 2008, that was when it became so obvious that, the attention of has been shifted away from agriculture to crude oil and this was the beginning of economy downgrading in Nigeria. Nevertheless, every other resource is left unused, and attention were drifted to crude oil and this make agriculture sector of the country to be a dormant and latter cripple the sector (Khan & Ahmad, 1994). The Nigerian state is among the biggest economy in Africa, and this is due to her calculated rate of exporting crude oil and gas with a 98% earning from commercial exportation and revenue in the year 2020. This shows that the purchasing power was tripled within the space of 5years say 2005 and 2010, respectively.

It was discovered that despite the natural endowment of Nigerian crude oil, the rate of poverty is extremely high in the country and this is so because the country human capital and standard of living are still very far behind compared to the other oil region states, such as Saudi Arabia and Qatar. It was discovered that the revenue from crude oil has been within the circle of the elite and this make the masses to live in an abject poverty, currently out of the population of over 150million people 45% are living in abject poverty due to the rate of corruption in the system and political instability. According to the World Bank, it was discovered that only 2% benefit from the 80% revenue on energy. Furthermore, considering the study of (Ogbeidi, 2012) he submitted that 26% GDP from agriculture proceeding faced a serious decline due to years of not reckoning with and this has partially destroyed the sector of the economy. More so, the recent decline in the global oil sector has affected the economy outlook of the nation and cause a dread in the standard of living in the nation.

1.1. Aim of the study

The study aims at examining the impact of oil production on the income level in Nigeria. Especially, by cogitate on the natural resource's abundance and economy growth through the study of (Sachs and Warmer 1995,1997). This current study will

further expatiate whether the output of oil production could have adverse effect on the per capital income of the people. Furthermore, this study also examines the per capita income in Nigeria by considering the motivated objective of the study, it is crystal clear that the abundance of crude oil deposit which is (Natural Resources) In Nigeria could be detrimental to the country's economic boom. Another contribution of the current study is that its presents in clear term, statistically that the country's population explosion is a potential danger for its economic progress. Additionally, by offering significant policy insight from the implication of the country's crude oil production capacity, oil rent and population outlook, the current study demonstrates a significant contribution to extant literature.

1.2. Research Question

The main aim of the thesis is to find an answer to the question of 'To be an crude oil producer is boom or curse for Nigeria?' With this main question the model is set and the hypothesis at part 7.4 was defined.

1.3. Hypothesis

Hypothesis One: There is a positive and statistically significant relationship between Crude Oil Production and Per Capita Income

Hypothesis Two: There is a positive and statistically significant relationship between Oil Rent and Per Capita Income

Hypothesis Three: There is a negative and statistically significant relationship between Population and Per Capita Income

Dependent variables employed is the Gross Domestic Product per capita (income) while independent variables are Crude Oil Production (OIL), Oil Rent (Rent) and Population (P).

1.4. Importance of the study

The study reflect on some supposed oil exporting states constantly reminds of the invalidity of the resource curse hypothesis and environmental consequences of oil exploration. In Africa, especially the case of Nigeria, the argument has remained whether the countrys voluminous deposit of crude oil has positively affected the

livelihood of indigenous people of Nigeria. Hence, the study is important such as it will serve as a compass for the government on how to channel the abundance deposit of the crude oil to an extent of originators of full satisfaction for both economy growth and development within Nigeria and positively increase the standard of living of people within the country.

It will further expose the weakness of Nigerian economy and help the government to adjust especially in per capital income so that the resources in the nation can benefit both the elite and the masses and helps in destroying abject poverty within the country.

CHAPTER TWO

2.1. Literature Review

Gisser et al (1986), in his research work, it was discovered that the global economic outburst of the Post World-War II initiated the attention of the globe over crude oil price which led to the offensive movement on the world economy since the Organization for Petroleum Exporting Countries (OPEC) engagement of 1973. To this effect, many scholars has devoted effort and series of time to examine the effect of the violence movement on emerging economies and aim at making an adjustment in their literatures and to this effect. However, as important as crude oil is, the current air strike on Saudi Arabia region contributed to the recent fall of crude oil in the market and this has makes exporter nations to have negative GDP and led to poor revenue generation. Hence, a country like Nigeria that solely depend on the exportation of the crude oil to boost her economy may go into recession that will last for the next decade. Importantly, availability of crude oil causes a shift in an economy growth and create more favorable balance of payment.

Furthermore, it is well known that the discovery of crude oil in Nigeria has not really have positive effect on the economy development of the country, considering the research work of Soremekun and Obi (1993), argues that the discovery of crude oil in the monoculture and as the domestic economy has increase the economic fuse and contradiction that is causing ethnic fight among the nationalities of some segment part of the country. More so, according to the frame work of Azaiki & Shagary (2007), It was discovered that the revenue within the space of 9years accurately the year 2000 to 2009 is equal to ₦34.2 trillion however other resources that is not oil related was ₦7.3 trillion, considering this on percentage indicate that 82.7% was generated from crude oil production while 17.6% was generated from other non-oil related product. This simple indicates that, crude oil production in Nigeria has positive effect on economy of the country, despite this an average Nigeria live dwells in abject poverty. Although crude oil in Nigeria had certain and tremendously impact in the country economy proceedings positively, however on the negative side it has cause more damages to the communities surrounding within which oil drill ae exploited. The study expatiate that the community still suffer environmental degradation, which has often led to the clash with Nigerian government in several ways. Furthermore, article

released by the Central Bank of Nigeria (World Bank 2011) where it was discovered that the income value of crude oil production in Nigeria for the period of 10years is amounted to ₦3.42trillion while non-oil related is said to be amounted to ₦732.2 billion deliquescence's production 832.866.75, a barrel from the year 2000 to 2009. Considering the literature, it is evident that crude oil production in Nigeria immensely contributes to the economy development in Nigeria. the revenue generated from the crude oil in Nigeria has not been properly used in favor of the economy development of the country, the analysis of the world bank concluded that the revenue generated from the crude oil production in Nigeria has not been channel to developed other sectors in Nigeria to generate more GDP.

More so, according to Forrest (1995), in his work, share the same sentiment in which he analyses that the robust windfall from the crude oil production had a huge figure of unintended consequences on the Nigeria, nation, he concluded by using ordinary least square regression technique and concluded that despite the robust GDP generated from crude oil from 1980-2010 found that the abundant oil production in Nigeria has no positive effect on her economy growth. Many hoped that the discovery of crude oil in Nigeria would probably turn Nigeria to the economy power in Africa and a prosperous nation within the Africa, however many were disappointed to see that the discovery of crude oil in Nigeria has no impact in the daily living of the indigenous people of Nigeria, the revenue generated from crude oil has been a blessing to the rich and the class of Nigerian elite, the citizen has not benefitted anything from the crude oil proceedings. However, Aiyegoro 1997, extensively buttress the view when he argues that crude oil production in Nigeria despite the abundant of the commercial resources is the source of corruption in the governmental sector in Nigeria, he compared the abundant resources of the commodity with the income per capital of indigenous people of Dubai using multivariate (VAR) model using the year trend of 1960 to 2009. His research shows that oil production practically has adverse effect on the manufacturing sectors. Moreover, the outline of the current study is presented in a careful pattern. The empirical study utilizes the time series data that is balanced for the case of Nigeria over the experimental period of 1990 to 2016. In Nigeria of today, there is an economy disability, corruption, and political instability. Tribalism is on a high side in Nigeria and the academic sector of the country is poor and yet Nigeria is

a crude oil production nation, the study concluded that the abundant deposit of crude oil in Nigeria cannot be categorize as blessing.

Kimbrell (2020), concluded that discovery of crude oil in Nigeria led the country to abandon her commercial goods of agriculture in favor of an unhealthy dependance on crude oil. More than 2 decades ago, crude oil and exportation of gas has been accounted for 98% GDP export earnings and it was discovered that 83% federal revenue. This led to the collapse of agriculture sector in Nigeria. The sector performance became extremely poor due to substitution of crude oil for agriculture proceedings. The study concluded that the cocoa house in Ibadan was the base for agriculture proceedings in which the whole world come to trade in cocoa and timber with Nigeria, however after the discovery of crude oil, the government give no attention to the industry and this gradually destroy the tentacle of agriculture in Nigeria. The GDP from this sector was severely affected and that led to the collapse of the industry.

Furthermore, it is important to consider the literature of Kilian (2009), in this study, it was discovered that the effect of negative price movement have negative effect on US economy but can also be felt and seen across the global economies, especially in emerging economies such as Nigeria. Although, the US economy has not come out boldly to say the nation is an oil region nation, but research shows that they have enough crude oil in their reserves as a commercial commodity. It is important to pay attention to the great windows of economy boost and commercials opportunities that crude oil could play in economic growth and economy development, the natural resources serve as a Cushing for economy stability and thus the challenge of ensuring the commercial commodity leads to economy growth and development is still the major issue that many countries of the world are facing and this has led to economy curse rather than economy blessing and Nigeria as a State is not lacking in this curse resource of this commercial commodity. The major question is, why is crude oil commercial rich nations such as Saudi Arabi, Norway, Kuwait, and Qatar stand to be more successful in making use of this natural resources both in economy development and economy growth and others are performing badly in making use of this resources and a good example is Nigeria.

(Zhang and *et'al* 2010). Surprises to the entire world and claim for industrial supplies, specific to the current unpredictability of the crude oil suggest different effect on real price market of crude oil commodity, depending on the underlying cause of increase and decrease in the price of crude oil. More so, an increase in preventive global demand for oil might cause volatility in price of crude oil. Hence, an increase in the aggregate demand of crude oil in the globalization market especially for exporters nations sustained an increase in the real price of oil that is so substantial and crude oil production disruptions cause a small and increase in the real price of oil.

Parvaresh & et al (2014), In his findings he analyzed the effect of crude oil production in Nigeria using square of crude oil production, oil rent and population on the per capital income over a period of 1990 to 2016 showing the robust economy with a poor performance as per the capita income of an individual living below average. This among others cannot be considered as a boom resources despite the abundant deposit of the crude oil, compare to other crude oil deposit nation in other country, hence the study concluded that the oil deposit in the Nigeria have no effect on the population.

Sakashita et al (2016) indicates that economies that strive on crude oil, especially when attention is strictly on the oil importers nation, found that such economies might be prone to oil price volatility and the result of this might be very delicate to an oil region nation that solely depends on crude oil as their major commercial resources revenue such as Nigerian economy and it can cause economy downturn which might later lead to recessions. Recently, there was a global fall of crude oil across the globe where the price of crude oil fall to about less than $1 per barrel, to this effect there was a negative price of crude oil, this negative price can serve as an economy boom out of recession to any nation that have excess crude oil in her reserves by manipulating exchange rate fluctuation, which will strengthen the national currency against speculative. Despite the negative fall of the price of crude oil to minus $1 in April, 2020 the United State of America agreed to flood the crude oil market and buy all the surplus in other to give commercial value to the commodity. However, the current situation of the global trend could not afford US to flood the market and buy all the surplus as said, because the current pandemic (Covid-19) drastically affects their economy. Thus, it is important to locate the vulnerability of OPEC players to see to oil price volatility, through their national reserves.

Olanipekun et al (2017), the study concluded that the organization of Petroleum Exporting Countries (OPEC) has played a major role in strengthening and displaying a controlling power over this natural resource by the name crude oil since the year 1970s, the body curbs the volatility of price in the oil market. The study use data covering from the period of year trend of 1980 to 2011 and discovered that there is a strong relationship between oil revenue and economy growth. The study further stretches that Crude oil is an important commercial commodity in every nation that possess it especially in a larger quantity, also a good source of income for many emerging economies like Nigeria. Many times, nations that are naturally endow with this resource make the best use of it while it is curse casualty for other nations, such as the Nigerian state.

According to (Alola & et'al 2019) Scholarly discovered that countries whose solely dependence on crude oil gone together with a bad macroeconomics performance and growing inequality among her citizens. Giles, D.E.A. (1999) The rate of corruption in Nigeria is alarming and it has drastically destroyed the growth and livelihood of an average Nigerian. Despite the nation is an oil region zone, with an abundant crude oil as a commercial goods, the average citizen still swims in poverty that is, leaving below $1. The revenue from the crude oil that supposed to be for the developmental purpose has often been shared among the politician who are criminally connected to corruption.

Eregha, et'al (2020). In his research work, concluded that the nexus among energy and economy growth is the basis for a wide frame of literature and his investigation led in believing in the following cases which are (a)Conservative hypothesis (b)growth hypothesis(c)feedback hypothesis and (d)neutrality hypothesis. He further explains that crude oil is a catalyst for energy production in a nation that is naturally endow with it, hence a nation with it should have abundant energy. However, Nigeria state seems to be lacking in this contest because energy sector in Nigeria has been performing below average which has led to many organizations to relocate their businesses from Nigeria to another country.

More so, according to the literature of Johnson & et al (2020), he argues that population growth often has positive contribution to a faster economy development, he further links his theory to the growth per capita income in China. The population

growth in Nigeria has no effect on the growth of the economy, the country has more than 150million population in which larger percentage of them have no job and solely depend on government to provide for their daily life, the study concluded that the nation has not been using the population to push the economy, considering china with abundant supply of population to produce goods and services. He stresses his research work by agreeing to the research conducted by Adefemi (2020), that crude oil production in the years past have extensively contributes to per capita income of an individual in an oil region states, using Qatar as the base year. An average individual in Qatar lives above individual income in Nigeria, and both nation are oil region country, yet we cannot trace any good standard of living to Nigeria. Furthermore, considering the scholar article by Okowa & et al (2020), he discovered that that crude oil, a commercial commodity in Nigeria with a numerous mineral resource which is an economy catalyst for Nigeria nation, despite this majority still wallow in abject poverty as they live below \$1 per day, and the study concluded that crude oil production in Nigeria is a curse resource. More so, like other countries such as Qatar, Kuwait, Saudi Arabia, Iran, and China Abomaye (2020), stated crude oil production is a source of emitting energy in a nation that is naturally endow with it, hence Nigeria rig below the expected energy level which made the country to live in 70% energy shortage and who could not find enough energy emission to power their production, and this have drastically affected the nation production of gas. More so, considering the literature of Ayadi et al (2000), in his study, he attempted to observe the model between the correlation of a diversity of macroeconomics indices, representing income per capita of an individual with the economy output of the Nigerian economy. The study concluded that crude oil production has no positive influence on the daily lifestyle of an average citizen of Nigeria, hence argues that the crude oil production in the country is a curse resource compared to the nations that posses' same commercial goods as Nigeria, taking Kuwait and Qatar as the basis. This study employed the growth model where dependent variable employed is the Gross Domestic Product per capita (GDPC). Accordingly, the crude oil production (OILP) with its square value (OILPsq), the oil rent (OILRENT), and the countrys total population (POP) were employed as the explanatory variable.

CHAPTER THREE

MATERIAL AND METHODS

3.1. Variable description

This empirical study employed the time series data that is balanced for the case of Nigeria over the experimental period of 1990 to 2016. The study employed the growth model of where the dependent variable employed is the Gross Domestic Product per capita (GDPincome). Accordingly, the crude oil production (OIL) with its square value (OilSquare), the oil rent is (RENT), and the countrys total population (P) were employed as the explanatory that is Independent variables. In table 1 (Panel A), Additional information and description of the dataset is accordingly illustrated. The correlation evidence among the examined variables is illustrated in Panel B of Table 1.

Table 1.Variable Description

<u>Name</u>	<u>Code</u>	<u>Unitof</u> <u>Measurement</u> <u>Source</u>
Gross Domestic Product per capita Currency	GDP Income	United State
WDI		
Crude oil Production	OIL	Million tonnes
BP		
Oil Rent	RENT	Share of the GDP
WDI		
Total Population	POP	Millions of people

Table 2. Correlation Between Variables

Probability	logGDPIncome	logOIL	logRENT
logP			
LogGDPIncome	1.000		
LogOIL	0.562[A]	1.000	
LogRENT	-0.560[A]	0.070	1.000
LogP	0.922[A]	0.572[A]	1.000

3.2. Model Presentation

In attempt to examine the factors that influence and responsible for the expansion of the economic and income level, several energy related factors have consistently been corroborated in the literature (Apergis & Payne, 2010; Ozturk, Aslan & Kalyoncu,2010; kose, Bekun & Alola, 2020). However, considering the case of Nigerian economy and oil exporting nation is expected to post an interesting argument. More so, from the study of the scholar by the name Sachs & Warner (1995-1997), the current study aims at analysing and examine the relationship from crude oil production capacity and when such capacity doubled on the income level of people. Hence, the augmented carbon function model derived for the study is presented below.

GDPIncom= f (OIL, OILPsq, RENT, P)

Thus, the series is transformed to natural logarithm to attain direct elasticities and to have an empirical equation in the form of

$$LnGDPIncome_t =$$

$$\gamma_o + \gamma_1 InOIL_t + \gamma_2 InOILPsq_t + \gamma_3 InRENT_t + \gamma_4 InP_t + \varepsilon_t$$

Where γ_0 is the constant **intercept** and $\gamma_1, \gamma_2, \gamma_3, \gamma_4$ are the coefficient that quantify the respective elasticities for each period t=1990….,2016 and given that ε is the error term that is expected to be normally distributed with zero mean and constant variance.

3.3. Empirical Methods

3.3.1. Preliminary tests

Having considered the above analysis, to be sure about the stationarity of the series, unit root method of (ADF) Augmented Dickey-Fuller (1979) has been implemented this can be seen in (Table 2) that will be shown later in this chapter. However, the unit root result from the ADF indicates that all the series are stationary at least at the first that is I (0). However, space constant has made it impossible to provide the step-by-step procedure for the Dickey and Fuller (1979). Considering the mentioned evidence, Johansen and Juselius in their research work of (1990) cointegration test is adopted to further test the evidence of long run relationship as observed in the Figure 1. Thus, the result of cointegration identified in Table A of the appendix implies that there is a statistically significant evidence of one (1) cointegration equation among the examined series, hence providing the basis for applying further econometrics techniques.

Table 3.Common statistic and Unit root test with ADF and KPSS

Variable	Mean	Median	Maximum	Minimum	Std-Dev	Skewness	Kurtosis	Jarque-Bera
GDP Income	3917.931	3619.140	5516.387	2901.768	950.887	0.451	1.648	2.969
OIL	104.503	105.740	122.096	87.487	10.203	0.260	1.924	1.605
RENT	14.218	15.170	26.430	2.803	5.277	-0.206	3.338	0.320
P	14.35E+08	1.32E+08	1.86E+08	95212450	27573616	0.280	1.884	1.752
Observation	27	27	27	27	27	27	27	27

ADF	With Intercept	Intercept& trend	With intercept	Intercept&trend
IGDPIncome	-1.873	-0.539	-1.723	-6.079^A
IOIL	-2.274	-1.597	-4.437^A	-4.586^A
IRENT	-0.963	-1.927	-5.898^A	-6.280^A
LP	-1.031	-3.246	-6.280^A	-3.015

Note: The Adf (Augmented Dickey-Fuller). The ^{A} Is The Statistical Significant At 1%. The Igdpincome, Ioil, Ioilpsq, Irent And

Ip Are The Logarithms Value Of Gross Domestic Product Per Capita, The Crude Oil Production, The Square Of The Crude Oil

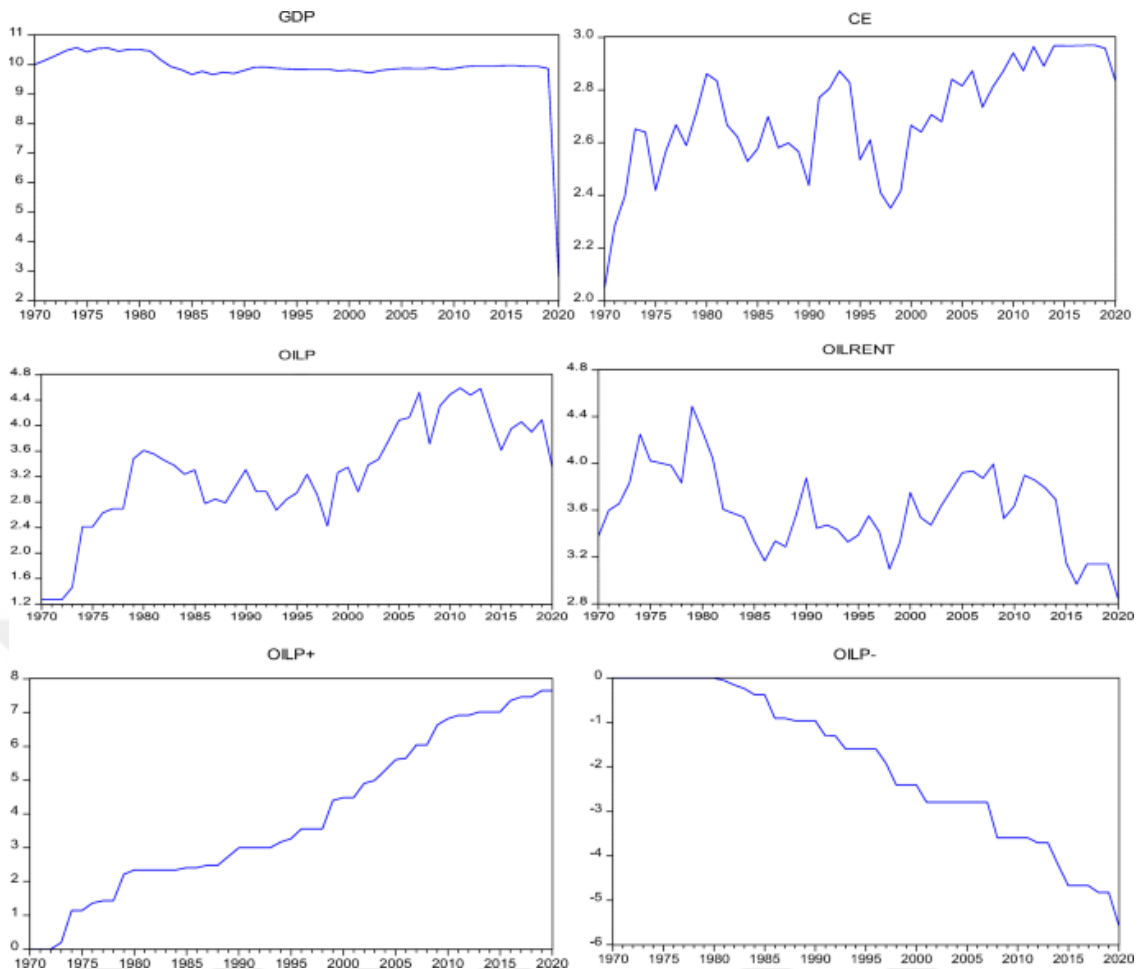Production, The Oil Rent And The Total Population Respectively.

Figure 1. Gross Domestic Product Per Capita

The World Bank (2020). The World Bank In Nigeria. https://www.worldbank.org/en/country/nigeria/overview.

3.4. Short run and Long Run Estimation

To get the short run and the and long run estimation, I adopted the merits of the ARDL approach to analyse the effect of the explanatory variables on the independent series. The ARDL is considered needed in this case because it is appropriate in estimating both the small and large sample shape is a merit. Furthermore, ARDL suitable for the recent case since the technique is adequate for examine the short and long run correlations. More so, it is important to put into consideration the elasticity of lag selection by the ARDL approach, thus rendering it an additional merit as regards other cointegration techniques. The ARDL approach is also found suitable for any order of integration techniques say either I (0) or I (I) of the variables except for 1(2). In view of this, the short run and the long run are

simultaneously adopted by using the unrestricted ARDL method of Pesaran & Et al (2001). Putting in check the unrestricted error correction model, the above equation (2) is metamorphosed such that

$InGdpIncome_t = \lambda_0 + \lambda_1 lnOil_{t-1} + \lambda_2 lnOilpsq_{t-1} + \lambda_3 lnrent_{t-1} + \lambda_4 lnP_{t-1} + \sum_{i-0}^{q} \theta_1 \Delta InGdpIncome_{t-1} + \sum_{i-0}^{q} \theta_2 \Delta InOil_{t-1} + \sum_{i-0}^{q} \theta_3 \Delta InOilpsq_{t-1} + \sum_{i-0}^{q} \theta_4 \Delta Rent_{t-1} + \sum_{i-0}^{q} \theta_5 \Delta P_{t-1}$

given that the difference operator Δ is $\Delta x_t = x_t - x_{t-1}$, the $\lambda_1, \ldots \lambda_4$ and $\theta_1, \ldots \theta_4$ are the impacts of the independent variables in the long and short periods respectively while λ_0 is the constant term i.e., the long-run intercept. But, regarding the equation 3 above, the speed of adjustment of the energy carbon emissions (especially when there is a shock on the independent variable) from short run to long run equilibrium level as presented through the ECM known as Error Correction Model with the below analysis

$\Delta InGdpIncome = a + \sum_{i=0}^{q} \theta_1 \Delta InGdpIncome + \sum_{i=0}^{q} \theta_2 \Delta InOil_{t-1} + \sum_{i=0}^{q} \theta_3 \Delta InOilpsq_{t-1} + \sum_{i=0}^{q} \theta_4 \Delta Rent_{t-1} + \sum_{i=0}^{q} \theta_5 \Delta P_{t-1} + \chi ECT_{t-1} + \mathcal{E}_t$

where ECT_{t-1} is the lag of the residuals. Subsequently, the ARDL bound testing approach by Pesaran, Shin and Smith (2001) is employed such that the null hypothesis of the test is given as $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_3 = 0$ and the alternative is that $\lambda_1 \neq \lambda_2 \neq \lambda_3 = \lambda_4 = 0$. Then, the null hypothesis H0 for the test is given as H0: $\lambda_0 = 0$ against the alternative of H1: $\lambda < 0$. In addition, the Granger causality approach (Granger, 1969) is employed to reveal the causal nexus between the examined variables.

CHAPTER FOUR

4.1. Findings and Discussion

As illustrated in Table 3, which is shown below, the changes in the real income per capita in Nigeria from the perspective of crude oil production in the country is provided. A 1% increase in the country's oil production is responsible for a significant increase of the real income per capita by 9.07% and 39.63% in the short-run and long-run, respectively.

The implication is that oil production improves the country's revenue thus also positively affecting the individual income of the Nigerians both in the immediate and long period of term. Accordingly, this results resonant the similar outcome from the extant studies that supported economic boom arising from crude oil production and revenue in other oil dependent nations (Kasara, 2007; Dinar et al 2012). However, the study found that a continuous increase in oil production will expected yields more economic boom until a turning point or threshold is attained. In specific, a 1% increase in the square of crude oil production (OILPsq) is responsible for a significant decline in the country's real income per capita by 0.96% and 4.16% in the short-run and long-run, respectively.

In this case, the result implies that the crude oil production becomes detrimental to the individual income level of the people especially after a certain level of income is attained. This situation is tenable for the case of Nigeria where grievous and long years of corruption and mismanagement of the oil revenue could be the likely justification for this result. Thus, the resource curse hypothesis in Nigeria, implying that the crude oil production could be hampering to the people's welfare, is valid.

Table 4. ARDL Estimate

Model A	IOil	IOilpsq	IRent	IP	C
ECT(-1)					
Long Run 87.707[b]	39.634[b]	-4.158[b]	-0.022[a]	-0.230[a]	-
Short run 0414[a]	9.067	-0.962	-0.004[a]	100124[a]	-

Robustness evidence

			10 bound	11 bound
Bound test	F-statistics=8.1140[c] (K=4)		1% 3.74	5.06
Wald test	F-statistic	5.275[a]	$\chi2$	26.373[a]

Table 5. Residual diagnostics

Breusch-Godfrey SR LM test		**Breusch-Pagan-Godfrey H test**
X^2 (p-value)	0.890(0.641)	10.394(0.239)
Normal (Jargue-Bera)	1.377(0.502)	
Skeweness	0.390	Kurtosis 2.374

Note: The (p-value) is the probability value $\chi2$ is the chi-square, SR LM is serial correlation Lagrange Multiplier, H is Heteroscedasticity, and ECT is Error Correction Term. The 10 and 11 are lower and upper bound of the bound test respectively, Also,a,b, and c are the 1%, 5% and 10% significant level respectively. IGdpIncome, IOil, IOilpsq, Irent, and IP are the logarithmic value of gross domestic product per capita, the crude oil production, square of crude oil production, oil rent and the total population, respectively.

Moreover, the result also found that oil rent in Nigeria is detrimental to the income level of the people. In specific, a decline of 0.004% (short-run) and 0.022% (long-run) in the real income per capita is caused by a 1% increase in the oil rent. The negative impact of oil rent on the country's real income per capita could be attributed to the high cost of crude oil production due to the inefficiency of the nation's oil refineries, sporadic disruption of oil production by militants and pirates, and other country-specific factors.

Due to the reasons, Nigeria exports its crude oil for processing into final product before being imported back to the country for final consumption, thus the negative impact of the country's oil rent is expected. Importantly, because the country is largely oil dependent, it makes the economy more volatile to global oil price fluctuations (United States Energy Information Administration, 2020). In addition, the impact of the country's population on the real income per capita is presented. **In Table 3**, there is a significant positive (negative) impact of the country's population on the income level of the people in the short-run (long-run). The negative impact of the country's population on the real income per capita further support the argument that the growth rate of the country's population is alarming, thus supporting the graphical illustration in **Figure 1 (iv).** This argument is based on the recent evidence that the population growth rate (about 3.75% per year) is significantly higher than the economic growth in recent time (about 2% per year) (The World Bank, 2020).

4.2. Diagnostic and Robustness Evidence

Additional evidence from the bound test (long-run) and the Wald test (short-run) of Table 3 offers a robustness diagnostic to the results. Moreover, as a residual diagnostic evidence, the serial correlation test by Breusch-Godfrey and heteroscedastic test by Breusch-Pagan-Godfrey approaches revealed that there is no serial correlation and heteroscedastic concern in the model, respectively. However, in general, the series employed are largely normally distributed, skewed, and significantly peaked. The standard Granger causality by Granger (1969) offers additional robustness to the study **(see Table 4).** The result showed a significant Granger causality from both oil production and the square of oil production to the real income per capita, but without feedback. In addition, there is a significant bidirectional Granger causality between population and real income per capita in the country.

Table 6. Granger Causality Tests		W-Stat	Prob
IOIL does not Granger Cause IGDPIncome	26	5.663^B	
0.026			
IGDPIncome does not Granger Cause IOIL	26	0.007	
0.934			

IOILPRODSQ Does Granger cause IGDPincome	26	0.585[B]
0.027		
IGDPCPP Does Granger cause IOILPROSQ	26	0.005
0.942		
IRENT Does not Granger Cause LGDPincome	26	0.004
0.953		
IGDPIncome does not Granger causeIRENT	26	3.343
0.081		
IP does not Granger Cause IGDPIncome	26	8.458[A]
0.008		
IGDPIncome does not Granger Cause LP	26	29.509
2.E-05		

CONCLUSION AND POLICY IMPLEMENTATION

There has been a consistent argument by different researchers about the validity of the resource curse hypothesis especially for the cases of the oil producing or the resource-endowed states. By making offering a significant contribution to the literature, the current study examined the role of crude oil production, oil rent, and population in the real income per capita in Nigeria.

To achieve the desired objective of the study, there is need to incorporate the square of crude oil production in the model such that relevant inferences are provided from the turning point evidence. In addition, oil rent and population were employed as additional explanatory variables. Importantly, the study revealed that crude oil production triggers the growth of the real income per capita in both the short- and long-run. However, the evidence showed that there is a turning point when the crude oil production is doubled such that oil production will rather begin to cause a decline in the per capita real income.

Furthermore, the country's oil rent does not improve the individual income but rather responsible for the declining per capita income in both the immediate and long-run. Similarly, the population explosion in Nigeria has an endangering long-run effect, although the short-term effect is yet desirable. In general, the current study revealed important policy guide for Nigeria. The government should intensify the diversification attempt of the country's economy.

In doing such, the endangering effect of having an oil-reliant economy can be over-tuned, thus improving the country's long-run economic overview. In addition, the government, all stakeholders in the oil sectors, and the community leaders especially in the oil producing communities should further engage in inclusive dialogue to foster peace and end the history of militancy, oil bunkering and disruptions across the country. Possibly, the government could begin to consider the liberalization and privatization of the country's oil industry. In the aspect of population, the country's population explosion especially with the relatively lower economic growth posits a serious concern. Thus, there should be a deliberate attempt from the side of the government to carefully inform the populace gains of having a moderate family size. In this case, more awareness should be carried out in addition to the government effort to improve the quality of life of the people.

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