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Economic Growth of Nigeria: Does Oil Revenue Matters?

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Abstract: Oil, a very versatile and flexible non-productive, depleting, natural (hydrocarbon) resource is a fundamental input to modern economic activities providing about 50 percent of the total energy demanded in the world apart from the former centrally planned economy. The countries dealing with oil exploiting in the world depend heavily on oil revenue for foreign exchange earnings and for the government budget, in most cases, reaching 90percent or above. Few studies have been carried out in this regard yet there is no conclusion as to the key factors that determine economic growth. This study determines the influence of Oil revenue on economic growth of Nigeria. The study uses domestic consumption and export as proxies for Oil revenue, and represents economic growth with real gross domestic product. Using 33 years time series observations, the study used Ordinary least square method. The study covers the period from 1980 to 2013. Secondary data source was acquired from the central Bank of Nigeria (CBN) Statistical bulletin. The study found that both domestic consumption and export has positive and significant influence on economic growth of Nigeria. The study recommends that, the domestic consumption and crude oil export sales should be increased in order to have the gross domestic product increased as this will put the country on a better scale. But this will have to be done by balancing the domestic consumption with the export of oil.

Keywords: Oil revenue; Economic growth; Harrod-Domar model; Nigeria.

1. Introduction

The backbone of every nation is usually its economy. Nigeria, like other development countries of the world is paying more attention on how to accelerate the rate of development through the various sections of the economy. Oil is a natural resource, it is a very versatile and flexible non-productive, depleting, natural resource which is a fundamental input to modern economic activities providing about 50% of the total energy demanded in the world excluding the former centrally planned economy. In most cases, 90 percent or above of Oil exploiting countries of the world depend heavily on oil revenue for foreign exchange earnings and for the government budget.

Petroleum or crude oil is known as hydrocarbon because it consists of a mixture of many substances but mainly carbon and hydrogen. It also contains a very small amount of sulphur, nitrogen, and oxygen which are non-hydrocarbon element. Petroleum industry controls the exploration and production of crude oil as well as its refining, marketing and servicing. Explicit policy objectives with respect to petroleum and mining are as follows: Active government participation in mining operations, diversification of mineral products, the organization and regulation of the development of mineral resource so as to optimize their contribution to the overall national development effort, the conservation of the countries mineral resources, research into efficient extraction methods and wider application and use of mineral manpower development of internal self sufficiency in the supply and effective distribution of petrol industry products, gas commercialization and the control of the problems (environmental) of oil production (Obadan, 1987).

The present significant position of oil in the natural economy was not assumed until the early 1970's. It is not a novel revelation that it has since become the mainstay of contemporary Nigerian economy. Petroleum products such as petrol, diesel, fuel, oil, lubricant or petro-chemical makes Nigeria's economy wheel go round.

Petroleum has transformed many nations which were once poor into rich nation, it transformed bankrupt nations into creditors and desert into watersheds. Specifically, using Nigeria as an example, there is no gain saying that the oil sector has undergone tremendous transformation over the years. (Anyanwa, 1997). No other resources in Nigeria has played such a towering role over the national economy as crude oil. This industry has emerged from being merely the "supportive" economic sector it was in the 1960's into the predominant source of foreign exchange and

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most viable access to international investment opportunities in the 80's and 90's,. The Nigeria government used the revenue derived from oil through tax and royalties to carry out development projects in the country (Iyoha, 2000).

The major source of energy in Nigeria is oil and the world at general. Oil being the mainstay of the Nigerian economy plays an important role in shaping the economic and political destiny of the country. Although, Nigeria's oil industry was founded at the beginning of the century, but not until the end of the Nigeria civil war (1967 - 1970) that the oil industry began to play a prominent role in the economic life of the country. Nigeria can be categorized as a country that is primarily rural and depends on primary product exports (especially oil products). Since the attainment of independence in 1960, Nigeria has experienced ethnic, regional and religious tensions, magnified by the significant differences in economic, educational and environmental development in the south and the north. These could be partly attributed to the major discovery of oil in the country which affects and is affected by economic and social components. Crude oil discovery has had certain impacts on the Nigeria economy both positively and negatively. On the negative side, this can be considered with respect to the surrounding communities within which the oil wells are exploited. Some of these communities still suffer environmental degradation, which leads to deprivation of means of livelihood including economic and social factors. Although large proceeds are obtained from the domestic sales and export of petroleum products, its effect on the growth of the Nigerian economy as regards returns and productivity is still questionable, hence, the need to evaluate the relative impacts of crude oil on the economy.

GDP is usually used as an indicator of the economic health of a country, as well as to gauge a country's standard of living. Critics of using GDP as an economic measure say the statistic does not take into account the underground economy, for example, some transactions that, for whatever reason, are not reported to the government while others say that GDP is not intended to gauge material well-being, but serves as a measure of a nation's productivity, which is unrelated.

The decision to focus on the Oil and Gas sector stems from the fact that this sector is one of the vibrant sectors within the economy; therefore, there is paucity of studies in this area. Also, the size of the Nigerian economy as measured by the country's GDP has increased by a compound annual growth rate (CAGR) of 20.68%.The increasing contribution of the oil sector, crude oil export and domestic consumption to the nation's GDP is a noticeable trend in the economy's growth pattern. There is thus, the need for adequate focus on such sector. Furthermore, the global financial scandals that have exposed many companies of their opportunistic behaviour in a bid to secure larger part of the market has really put the financial statement of companies into question of which the Chemical and Paint firms may not be exonerated. It is to this end that the study sought to establish if Possession Formation variables can assist in mitigating the opportunistic behaviour by managers.

There have been advocations by some scholars for the shifting of emphasis from the oil industry to other sectors owing to their belief in the negative fallouts of the oil industry; some others opined that the sectors should be promoted and developed for its benefits. These opposing views have created the problem of acceptance or otherwise of the oil industry in Nigeria.

The empirical investigation of this relationship between crude oil production and gross domestic product has produced very vast literature that used different samples, covered many time-periods and revealed mixed results. There are various divergent views about the role of crude oil production (Domestic consumption and Crude oil export). Some are of the view that crude oil productions to a greater extent have positive influence on gross domestic product of Nigeria, while others have contrary view. Available literatures in this area are mixed and inconclusive, there is no study that has attempted to resolve the mixed result especially in Nigeria to the best of our knowledge,

In Nigeria, studies in this area have ignored the separation of the variable crude oil production into domestic consumption and export. Some study only used total of crude oil production irrespective of domestic consumption or export as one independent variable. Therefore this study is splitting the variable into two, Domestic consumption and export. Also, the non-use of the variables independently will not show the individual contributions of these variables to gross domestic product and thus threatening the internal validity of their works which may bring about doubt in their inferences and conclusions drawn.

The works of Odularo (2008) study period was between 1970-2005. Apart from the fact that the study period was too short, the research work that was published in 2008 can be regarded as not too current as a lot of activity such as the changes in the policies of the Oil Sector by Nigeria national petroleum corporation must have been overtaken by this changes. Similarly, the works of Ojiakor (2010) study period is not too current as their research stopped in 2007. The study has proven to be different in Nigeria because researches in this area are few and also unique considering the domain of the study i.e. the Nigerian National Petroleum Corporation (NNPC).

The main objective of this study is to assess the impact of crude oil on the Nigerian economy. Given the fact that the oil sector is a very crucial sector in the Nigeria economy, there is the dire need for an appropriate and desirable production for the sector including export policy. Though, in Nigeria, crude oil has contributed largely to the economy, but the revenue has not been properly used. Considering the fact that there are other sectors in the economy, the excess revenue made from the oil sector can be invested in them in order to diversify as well as increase the total GDP of the economy.

1.1. Objective of the Study

The major objective of this study is to observe the extent to which crude oil influences gross domestic product of Nigeria. The specific objectives are as set forth:

i. To examine the impact of domestic consumption of crude oil on gross domestic product of Nigeria;
ii. To determine the effect of crude oil export on gross domestic product of Nigeria.

1.2. Research Hypotheses

Based on the highlighted objectives, the following hypotheses are formulated in null form:

Ho_1: Domestic consumption of crude oil has no significant influence on gross domestic product of Nigeria

Ho_2: Export of crude oil has no significant imppact on gross domestic product of Nigeria

2. Review of Empirical Literature

It was gathered from CBN statistical bulletin that the petroleum sector contributes significantly to government revenue and Nigeria's GDP. It showed that oil revenue rose from N17.070 million in 1961/62 to N96.390 million in 1970/71 and to N4183.816 million 1974/75. In terms of presenting contribution, oil revenue's sharp was only 7.46% in 1961/62 and 9.06 in 1965/66. In 1970/71, its share rose to 95.99% therefore, oil revenue becomes the most dominant revenue (petroleum profit tax, mining rents and royalties), NNPC earnings etc (statistical bulletin, no 1 vol9, 1998). In 1975 oil revenue as a percentage of total government revenue was 78.70% and rose to 82.30% in 1979/80 and then 97.24% in 1990. The principal factors that accounted for the dominance of oil revenue in the 1970's were particularly rapid rising oil prices and production, increase government participation in oil exploration and changes in fiscal arrangements. In 1974, the federal government of Nigeria has acquired 55% equity participation in all the companies producing crude oil. This then increased to 60% in 1979, the changes are reduction in 1966 and 1971 in the rate of allowable depreciation of investment, the substitution, the substitution of posted prices, realized the definition of royalties as a cost of production rather than as offsets against profit tax and the rising of tax rate, from 50% in 1975.

All government share of crude oil produce apart from what is processed for domestic consumption is sold by the NNPC and proceed from it are paid into the federal account. The NNPC sells to its customers directly including some of its joint venture partners at the official selling prices. Government revenue from oil include other sources apart from direct crude oil sales. Various taxes are levied on oil companied such as the petroleum profit tax, which is about 85% of the taxable oil income, royalties, rents (being taxes on non-producing concession and excise duties in filling activities, "The total revenue accruing from oil sector amount to about 80% of the Nation's total export earning" (Iyoha, 1999).

In several ways, oil has been the engine of Nigeria economic growth. It is quite glaring that the nation's economy is heavily dependent on the oil industry. Crude petroleum's GDP rose from N0.43billion in 1960 – 69 to N12.86 billion in 1995, the highest contribution period being 1975-1979 at n17.91 billion. Thus, the percentage share of crude petroleum Nigeria's GDP rose from 1-6% in 1960 to 17.4% in 1970-74 period and to a peak of 24.3% in 1975 -79 period. It was 22% in 1980, falling to 15.06% in 1985 and to 12.90% in 1990, in 1997; it had further fallen to 12.4. Crude petroleum has remained the main engine of economic growth in Nigeria in spite of the volatility of the world oil market and its declining share in GDP (AgbeJule, 1987).

Commenting on the opportunities available for Nigerian entrepreneurs in the petroleum industry, Iyoha noted that oil industries in Nigerian have created opportunities for Nigeria Entrepreneurs. He drew attention to the fact that the Nigeria National Petroleum Corporation represents all aspects of the industry. According to Iyoha, the corporation is an integrated international oil company involved in both upstream and downstream operations. This means that virtually all business man confined something of interest in the Nigeria national petroleum corporation group, either in the upstream or in the downstream sector.

Investment opportunities are available in areas of survey and mapping, these surveys are necessary before meaningful exploration work can take place. (Iyoha, 1999). There are also opportunities in civil engineering works, particularly in the area of drilling location (preparation), pits construction and stabling or concrete gabs at register. Business men can also supply such items as cement, and pipeline. These are areas where Nigerian can harvest alone or in partnership with foreigners. Attention is also drawn to the immense investment opportunities that exist in the important areas of exploration and production. Although oil exploration and production. Although oil exploration started in Nigeria over 53 years ago not up to half of the sedimentary business of the country have been seriously explored.

The Dahomey, Anambra, Sokoto and parts of the Chad basins have hardly been investigated for the purpose of finding oil or gas. Also, the Niger –Delta basin, which has been appreciably explored activities are only limited to the onshore areas. A lot of people do not know that about 405 of the offshore areas of the Niger basin (up to 200 meters water depth) are currently under active exploration (Iyoha, 2000). One of the basic social needs of the citizens of social atmosphere is the presence of employment opportunities in any given country which will be characterized by individuals who will seek to contribute meaningfully to the development of their nation. The three core values that should serve as a conceptual basin and practical guideline for understanding the inner meaning of development are life sustenance, self – esteem and freedom for servitude According to Goulet (1971).

The first of the core values, Life sustenance, is characterized by the availability of food, shelter, wealth and protection. These basic needs and other core values will only be realized when individuals are gainfully employed. According to Seer (1969) he recognized the importance of employment as a feature of economic development when he posed the basic question about development of a society. He declared thus: "The questions to ask about a country's development are what has been happening to poverty? What has been happening to unemployment? What has been happening to equality? If all three of those have declined from levels, then beyond reasonable doubts, this has been a period of development for the country concerned. If either one or two of these central problems have been growing worse, especially of all three, it would be odd to call the result development even if per-capital income double".

Oladele (1991) posits that provision of employment opportunities is one of the positive sides of oil industry. Therefore, employment opportunities have been created in Nigeria by the presence and activities of the oil industries. The reason of the education programme is to train young men and women who can compete for job in industries. Over 57 % of the work force in the oil companies are from the oil producing States viz Rivers and Delta state. If staffs are added from the other parts of the country such as (Imo, Abia, Akwa-Ibam and Edo States) which have oil operations on their land, the percentage rises to about 69 % of the job creation by the oil industries in Nigeria. (Oladele, 1991). The various oil companies in Nigeria have possesses contractors who handle most community projects (total contractors, other areas of contract award are security (clearing up oil equipment as well as supplies. (Source; Petroleum Exploration and Development in Nigeria).

2.1. Theoretical Framework

The growth theory has evolved over the years as a major feature of development economics. One of the earliest attempts to model economic growth is commonly called the 'Harrod-Domar' Model associated with Sir Roy Harrod, an English economist, and American Economist, Evsey Domar. The model is an early attempt to show that growth is directly related to savings and indirectly related to the capital per output ratio. According to the model, growth (G) can be written symbolically as:

$G = s/k$,

where

k = incremental capital-output ratio and;

s = the average propensity to save.

The model indicated that saving affect growth directly, while the incremental capital per output ratio affects growth indirectly or inversely. Solow's model of economic growth is based on the premise that, the output in an economy is produced by a combination of labour (L) and capital (K), under constant returns, such that doubling input results in doubling output. Modern versions distinguish between physical and human capital. Thus, the quantity of output (Y) is also determined by the efficiency (A) with which capital and labour is used.

$Y = A f(L, K)$.

3. Research Methodology

The study adopts the causal-comparative design. Causal-comparative design which is otherwise called the Ex-post facto design according to Denga and Ali (1986) is a design which helps to investigate possible cause and effect relationship by first identifying some existing consequence and searching back by analyzing data to establish possible causal factors. The study was limited to Nigerian National Petroleum Corporation. The justification for choosing Nigeria National Petroleum Corporation to the best of our knowledge is premised on the fact that, it is still an area with paucity of studies especially on this topic. This study used secondary sources of data. Data was extracted from the Published Statistical Bulletin of Central Bank of Nigeria. The data span across the period of 1890-2013. This period under review is considered appropriate because it falls within the period that Nigeria experience Oil boom and doom at the same time. The data was quantitative and panel in nature.

Panel Fixed effect and Random effect model were conducted to test the model of the study. Longitudinal panel data was used to account for individual heterogeneity of the sample firms. One step regression was used in determining the level of domestic consumption and export's influence on gross domestic product of Nigeria. Fixed and Random effect Regression model was estimated using Stata 10 as a tool of analysis. Various tests were conducted, ranging from normality test, stationarity test, hausman specification test, and langrange multiplier test.

3.1. Model Specification

We specify our model in an attempt to ascertain the effect of crude oil production mainly on economic growth in Nigeria. The model to be used can be explicitly specified as follows:

$RGDP_{it} = \beta_{0it} + \beta_1 DC_{it} + \beta_2 E_{it} + \mu_{it}$

Where:

RGDP = Gross Domestic Product

DC = Domestic Consumption

E = Export

$\beta_{1} - \beta_2$ = Coefficient of explanatory variables

β_o = Constant or Intercept

μ = Error Term

4. Results and Discussion

This section presents the analysis of the data and tests of hypotheses expressed in section one of the work. The summary of Regression Result table, the policy implications as well as Recommendations are made and extract from the findings of the study.

4.1. Summary of Regression Result

This table shows the regression result of the endogenous variable (RGDP) and the exogenous variables of the study (DC and E). The presentation is followed by the analysis of the relationship and contribution of all the independent variables to the dependent variable of the study and also the cumulative analysis.

Table-4.1. Summary of Regression Result

Variable	Coefficient	t-values	P-values	Tolerance	VIF
Constant	-48665.38	-0.58	0.567		
DC	3.022185	8.96	0.000	0.887149	1.13
E	0.4709657	4.04	0.000	0.887149	1.13
R2					0.7243
Adj R2					0.7066
F-Stat.					40.73
F-Sig					0.0000
Mean VIF					1.13

Extracted from SPSS 15 output file

The cumulative correlation between the endogenous variable and all the exogenous variables is 0.7243 showing that the association between real gross domestic product and Oil Revenue used in the study is 72% which is positively, strongly and statistically significant. This implies that for any changes in Oil revenue of listed Nigerian National Petroleum Corporation (NNPC) in Nigeria; their real gross domestic product will be directly affected.

The cumulative Adjusted R2 (0.7066) that is, the multiple coefficient of determination gives the proportion of the total variation in the endogenous variable explained by the exogenous variables collectively. Hence, it signifies 71% of the total variation in real gross domestic product of Nigeria is caused by their domestic consumption and crude oil export of Nigerian national petroleum corporation.

The F-statistics value of 40.73 shows that the model of this study is fit and the exogenous variables are properly chosen, combined and used. The significance value of 1% further buttresses the fact that the inferences to be drawn from this research are not due to mere chance. The mean VIF value of 1.13 is implying that there is absence of multicolinarity among the independent variables of the study.

i. Domestic consumption and Real gross domestic product

From the table above, crude oil domestic consumption has a t-value of 8.96 and a beta value of 3.022185 which is 1% level of significance. This signifies that crude oil domestic consumption has positively, strongly and significantly impacted on the real domestic product of Nigeria. It therefore implies that for every 1% increase in the amount of crude oil domestic consumption, the real gross domestic product of Nigeria will increase by ₦3.02.

This provides an evidence of rejecting null hypothesis one of the study which states that domestic consumption has no significant impact on real gross domestic product of Nigeria.

ii. Crude oil export and Real gross domestic product

From the table above, crude oil export has a t-value of 4.04 and a beta value of 0.4709657 which is significant at 1%. This signifies that crude oil export has significant influence on the real gross domestic product of Nigeria. It therefore implies that for every 1% increase in the amount of crude oil export, the real gross domestic product will increase by its coefficient value of ₦0.47.

This provides an evidence of rejecting null hypothesis two of the study which states that crude oil export has no significant effect on real gross domestic product of Nigeria.

5. Conclusions and Recommendations

5.1. Conclusions

As a result of the foregoing discussion and analysis in the previous chapter, the study concludes as stated below:

The positive influence of domestic consumption on real gross domestic product of Nigeria will result to increase in Nigeria economic growth. Therefore, the study concluded that domestic consumption has effect on Nigeria economic growth.

The positive effect of crude oil export on real gross domestic product means that the crude oil export is anticipated to increase the real gross domestic product of Nigeria. Therefore, it can be concluded that, crude oil export has impacted positively on the economic growth of Nigeria.

5.2. Recommendations

The recommendations of this study are made based on variety of people/organizations that are involved directly or indirectly with Oil revenue and economic growth processes in Nigeria.

The responsibility for monitoring the compliance of Oil revenue domestic consumption and crude oil export in Nigerian is vested with the Nigerian National Petroleum Corporation (NNPC). Therefore, NNPC should ensure as much as possible that:

- **i.** The domestic consumption of crude oil should be increased consistently by making available the fuel to all Nigerians as this will go a long way in generating more revenue to federal government and eventually increase the economic growth of Nigeria especially now that Nigerian majorly depend on oil revenue to finance its annual budget.
- **ii.** The crude oil export has been identified as an important medium of increasing economic growth of Nigeria. Therefore, Nigeria should also strive to increase its Oil revenue export sales in order to increase its gross domestic product as this will put the country on a better scale. But this will have to be done by balancing the domestic consumption with the export of oil.

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Appendix

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. su rgdp dc e, detail

                            rgdp
-------------------------------------------------------------
      Percentiles      Smallest
 1%       295255         295255
 5%       313390         313390
10%       343954         342208       Obs                  34
25%       378058         343954       Sum of Wgt.          34

50%       431731                      Mean           483872.4
                        Largest       Std. Dev.      143349.3
75%       571854         683786
90%       683786         749202       Variance       2.05e+10
95%       798496         798496       Skewness       .8893809
99%       848219         848219       Kurtosis       2.966696
```

```
                             dc
-------------------------------------------------------------
      Percentiles      Smallest
 1%        14655          14655
 5%        21236          21236
10%        23752          22199       Obs                  34
25%        50815          23752       Sum of Wgt.          34

50%        90060                      Mean           83523.09
                        Largest       Std. Dev.      42540.32
75%       109800         142220
90%       142220         164200       Variance       1.81e+09
95%       164250         164250       Skewness       .1823772
99%       164250         164250       Kurtosis       2.257888

                              e
-------------------------------------------------------------
      Percentiles      Smallest
 1%       390514         390514
 5%       392031         392031
10%       435797         401658       Obs                  34
25%       490810         435797       Sum of Wgt.          34

50%       610600                      Mean           594768.6
                        Largest       Std. Dev.      123253.6
75%       674930         736822
90%       736822         795710       Variance       1.52e+10
95%       807685         807685       Skewness        .034285
99%     846179.7       846179.7       Kurtosis       2.149259
. pwcorr rgdp dc e, star (0.05) sig

             |     rgdp       dc        e
-------------+---------------------------
        rgdp |   1.0000 
             |
             |
          dc |   0.7608*  1.0000 
             |   0.0000
             |
           e |   0.1037  -0.3359   1.0000 
             |   0.5596   0.0521
             |
. reg rgdp dc e

      Source |       SS       df       MS              Number of obs =      34
-------------+------------------------------           F(  2,    31) =   40.73
       Model |  4.9118e+11     2  2.4559e+11           Prob > F      =  0.0000
    Residual |  1.8693e+11    31  6.0301e+09           R-squared     =  0.7243
-------------+------------------------------           Adj R-squared =  0.7066
       Total |  6.7812e+11    33  2.0549e+10           Root MSE      =   77654

------------------------------------------------------------------------------
        rgdp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          dc |   3.022185   .3373701     8.96   0.000     2.334114    3.710256
           e |   .4709657   .1164415     4.04   0.000     .2334818    .7084496
       _cons |  -48665.38   84136.01    -0.58   0.567    -220261.9    122931.1
------------------------------------------------------------------------------

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity 
         Ho: Constant variance
         Variables: fitted values of rgdp

         chi2(1)      =     7.31
         Prob > chi2  =   0.0069

. vif

    Variable |       VIF       1/VIF  
-------------+----------------------
          dc |      1.13    0.887149
           e |      1.13    0.887149
-------------+----------------------
    Mean VIF |      1.13
```