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THE IMPACT OF OIL PRICES ON THE NIGERIAN ECONOMIC GROWTH

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ABSTRACT:
The Nigerian economy has faced numerous oil shocks since discovered the petroleum industry in 1970. The economy of Nigeria has continuously experienced a negative growth after the Iran Nuclear Agreement on June 14, 2015. The aim of this study is to examine the impact of oil shocks on the economic growth of Nigeria by utilizing time series data from 1970-2015. This study used an econometric analysis to test the impact of oil prices on GDP, stock market and exchange rate using Granger-Causality test. The result from these tests confirms that in the presence of oil shocks there is decline in economic growth. Therefore, GDP, stock market and exchange rate are all affected by oil shocks. This study concludes that high oil prices are never sustainable therefore the volatility of oil prices has a negative impact on the economic growth of Nigeria and also recommends that Nigeria should move beyond its complete oil dependency and exploit its already available resources within the country's non-oil sector.

INTRODUCTION:

Nigeria produces about 2.13 percent of the of the world's oil supply [1].Its petroleum industry is the largest in the continent of Africa. Even with its said mixed economy, crude oil is the main stay of the Nigerian economy. Oil also contributes to about 80 percent of the federal revenue as well as majorly contributing to the growth of the country's GDP. The federal annual budget is defined by the projections made on oil prices and quantity of oil sold. Therefore, it plays a vital role in shaping the economic and political destiny of

the country [2]. The Nigerian economy has faced numerous challenges in the past. For decades, the country's oil sector has suffered all forms of oil theft, vandalism, and mismanagement from years of corrupt leadership leaving the country incapable of reaching its full economic potential.In reference to the case study of the Iran Nuclear Agreement that took place in July 14, 2015. The final Iran Nuclear Development Agreement has led to a glut in the global crude oil market which resulted in a massive decline of crude oil prices in Nigeria. In addition, the oil price shock disrupted the exportation of crude oil and affected all macroeconomic variables of the economy. This study aims to investigate the impact of crude oil prices on Nigerian economic growth and also the relationship between oil prices towards GDP, Exchange Rate and Stock Prices. This study help policy makers understand how to shield the Nigerian economy from those shocks and also create their portfolio in the presence of oil shocks and how to take appropriate measures when these incidents take place.

METHODOLOGY

This study will test whether or not oil shocks affect GDP, stock Market, and exchange rate. Granger Causality test is used to investigate the impact of oil prices on relevant variables. These hypotheses will be tested using the Econometric-Views (E-Views) software which capable for a non-stationary time series test as well as granger causality test. The hypotheses tested are as follows:

a) Null hypothesis
   Ho: Oil prices do not affect GDP
   Ha: Oil prices do affect GDP
   If P-values are less than 0.05, reject the Null Hypothesis.

b) Null hypothesis
   Ho: Oil prices do not affect stock market prices
   Ha: Oil prices do affect Stock market prices
   If P-values are less than 0.05, reject the Null Hypothesis

c) Null hypothesis
   Ho: Oil prices does not affect domestic currency's exchange rate.
   Ha: Oil prices does affect domestic currency's exchange rate.
   If P-values are less than 0.05, reject the Null Hypothesis

To perform the Granger Causality, it is a good idea to test the stationarity of the data series involved and to establish the order of integration because stationary data is needed in order to conduct a Granger Causality Test. The Augmented Dickey Fuller (ADF) test is used to detect the presence of unit root in our analysis.

Stationarity Test

The first step was to test for stationarity, as non-stationarity is a common problem with time series data because time series is not independent of time. Therefore, if the data series has unit root or is non-stationary, it will give spurious results in regression analysis. There are 6 variables were tested and only 1 was stationary. The ADF test was conducted to check the stationarity of the series.

Augmented Dickey-Fuller (ADF) Test

In statistics and econometrics, the Augmented Dickey-Fuller (ADF) test is a test for unit root time series. The ADF test guarantees that the null hypothesis is accepted unless evidence provided against it is strong enough to reject in favour of the alternate stationarity hypothesis.

Null Hypothesis: OILM has a unit root

If t-Calculated value falls above the t-table value, reject the null hypothesis

Table 1: Augmented Dickey Fuller (ADF) test results

Variable	P-Values	t-Calculated Values	Comments
OILM	0.2953	-1.980599	Non Stationary or there is unit root
NGSEINDX (Share prices)	0.1033	-2.559178	Non Stationary or there is unit root
OILQ	0.0004	-4.387285	Stationary or there is no unit root
EXC (Exchange Rate)	0.6918	-1.158784	Non Stationary or there is unit root
OILA	0.9261	-0.223796	Non Stationary or there is unit root
GDP	0.9999	2.189720	Non Stationary or there is unit root
DOILM	0.0586	-2.991263	Stationary or there is no unit root
DSTOCK	0.0242	-3.481948	Stationary or there is no unit root
DOILQ	0.0000	-14.52621	Stationary or there is no unit root
DEXC	0.0000	-20.18926	Stationary or there is no unit root
DOILA	0.0000	-6.241569	Stationary or there is no unit root
DGDP	0.0000	-7.596573	Stationary or there is no unit root

Once the ADF test was ran for the second time, all the data found to be stationary, in other words unit root does not exist. According to the table, P-

value of DOILM, DSTOCK, DOILQ, DEXC, DOILA and DGDP are less than 0.05, thus the Null Hypothesis are rejected. Therefore, all of them are stationary. Note that, DOILQ resulted Stationary when the stationarity test was conducted, there is no need to retest it. In difference all the tables were found to be stationary and ready for Granger Causality Test. To conduct the test, the corresponding variables are considered:

a) DGDP –OILA
b) DSTOCK-OILM
c) DEXC-OILQ

Granger Causality Test

The Granger Causality test is a statistical hypothesis test of causality, named after Granger, 1969 that checks for causality based on prediction. It determines whether one time series is useful in forecasting another. In theory, the variable X Granger causes variable Y if predications of the value of Y based on its own past values and on the past values of X are better than predictions of Y based on its own past values. Granger defines the causality relationship based on two principles:

- The cause happens before the effect.
- The cause has unique information about the future values of its effect.

$$P[Y(t+1) \in A|I(t)] \neq P[Y(t+1) \in A|I_{-X}(t)]$$

Where,
P=Probability
A= an arbitrary non-empty set
I(t) and $I_X(t)$= times
X= excluded

If this hypothesis is accepted, then X Granger –causes Y, the Null Hypothesis: OILM has a unit root
If t-Calculated value falls above the t-table value, the null hypothesis is rejected

The Impact Of Iran Nuclear Agreement On Nigeria's Economy

The Iran Nuclear deal came at a time that Nigeria's economy was already in bad shape and when the Nigerian oil sector suffered a huge plunge in its earnings. Earnings fell by 26%: from N 486.4 billion in January to N359.7 billion in February and even further by July. Nigeria largely depends on energy for a substantial percentage of their Foreign Exchange earnings, which is currently about 90 percent. The oil sector has suffered all forms of oil theft, vandalism, and mismanagement. The main issue is that the federal annual budget is defined by the projections made on oil prices and quantity of oil sold. In year 2015, the country has "struggled with the negative effect of the recent oil drop that saw the country changing its benchmark price twice in the 2015 budget to remedy the effects on the budget and the economy" by cutting jobs and capital spending companies have been left with no other alternative than to withdraw from their oilrigs and quickly put an end to investments in

exploration and production. The unemployment rate has risen as over 100,000 oil workers have lost their jobs and manufacturing of drilling and production equipment has fallen suddenly [3].

The Nigerian crude oil prices hit its lowest in ten years with Bonny Light valued at only 23 cents more per barrel than the Dated Brent and Qua Iboe at 35 cents more than the Dated Brent. Crude oil prices fell 9% from the $59.81 per barrel on July 1 to $54.55 on July 14, 2015, which further plunged to $50.00 per barrel. The slide was attributed to the oversupply of physical oil and the decline in demand for Nigerian crude as a result of:

- Iran's return to the crude oil market, explained in the preceding paragraphs played a crucial role in the decrease in the demand for crude from Asia.
- The U.S who used to be the largest importer of the country's oil has slashed its imports from Nigeria due to their 'Shale' Oil boom, which has also played a huge role in the country's oil surplus. In addition to that, new technologies like horizontal drilling and hydraulic fracturing have made heavy oil importers like the U.S to be less dependent on imported oil [4].
- The instability of the Chinese Stock Market as well as the European weak economy and energy efficient vehicles that demand less fuel.

Analysts have estimated that Nigeria could lose about $1.69 billion or N333 billion in crude oil revenues by year-end, following the nuclear deal reached with Iran by the P5+1 on Tuesday July 14, 2015. At the current production level of 1.093 million barrels per day, Nigeria would have earned about $19.23 billion for the remaining 169 days in 2015 had the prices stayed stable around July 1st prices, as against $17.54 billion, based on July 14th prices. Nigeria will need to join in the fight for market share within the global crude oil market. There is a need for the country to join countries like Saudi Arabia and Iraq to pump crude without constraints. From a macro-economic perspective, possible outcomes include the following [4, 5]:

- The government will be forced to find other areas to make up for the apparent short fall in available resources of the country and overlapping agencies and workforces.
- Secondly, all subsidies might not be available anymore because the government will be short of cash and discharge any government prop ups, just to sustain its operation.
- Fuel prices might rise by almost 200 percent especially if Nigeria loses more major customers.
- Dr. Ngozi Okonjo-Iweala, the Minister of Finance says that the fall in oil prices has led to new austerity measures to be implemented.
- Former Governor of Lagos State Governor, Bola Ahmed Tinubu, in an essay on "Slump in Oil Prices: A Progressive Way Out'', argued that the austerity measures proposed by the government would further enrich the affluent but put average Nigerians into more hardship and economic depression. Furthermore austerity measures embarked by some countries in the Euro zone had not solved their economic problems in the past five years since the global financial crises.

From a microeconomic perspective, possible outcomes include the following [4]:

- Nigeria is an import dependent economy; the country must rely on importation for a majority of its economic goods, even food. It spends approximately1.3 trillion. Naira on food importation annually. Not to mention the dollar exchange rate that is currently N240 to $1, this will mean more expensive imports for the merchant.
- The merchant must pass on the added expense to the consumer in order to break even.
- In the long run inflation will set in; however it can't be controlled by monetary policy and manipulation by interest rates.
- The average Nigerian citizen might continue to notice a dramatic increase in food and transportation costs, among other things.

On the optimistic note, hope is not fully at loss. Recently, Nigeria has replaced Saudi Arabia as the top crude oil supplier to one of the world's biggest consumers of crude, India. India is taking a lot more as NNPC lowered its July official selling prices for the Bonny Light to a 23-cent premium over the Dated Brent [6]. Traders said, there was a significant interest for the West African crude by Indian refiners from July and August loadings and they expect it to persist for the coming weeks [6]. There is also a growing tendency for Nigerian crude to end up in Europe. Netherlands, France, Brazil have joined India in becoming major importers of the Nigerian crude. Moreover, in the event that the Iran Nuclear Deal becomes violated and sanctions "snap-back" into their places, given Iran's history of deception, Nigeria might still have the opportunity to get back into its former position some analysts argue.

RESULT AND DISCUSSION

Table 2 indicates the test result of Pairwise Granger Causality Tests for DGDP –OILA and the oil prices have significant effect on GDP. The null hypothesis which states: "Oil prices do not affect GDP" was rejected, whilst, the alternative hypothesis was accepted. Therefore: "Oil prices do affect GDP".

Table 3 indicates the test result of Pairwise Granger Causality Tests for DGDP –OILA and the oil prices have significant effect on stock market. The null hypothesis which states: "Oil prices do not affect the stock market" was rejected, whilst, the alternative hypothesis was accepted. Therefore: "Oil prices do affect the stock market".

Table 4 indicates the test result of Pairwise Granger Causality Tests for DEXC-OILQ and the oil prices have significant effect on exchange rate. The null hypothesis which states: "Oil prices do not affect exchange rate" was rejected, whilst, the alternative hypothesis was accepted. Therefore: "Oil prices do affect the exchange rate".

Table 2: Pairwise Granger Causality Tests for DGDP –OILA

Sample: 1979 2014			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
DOILA does not	33	24.3527	7.0E-07

Granger Cause DGDP			
DGDP does not Granger Cause DOILA		2.67781	0.0863

Table 3: Pairwise Granger Causality Tests for DSTOCK-OILM

Sample: 1999M01 2015M10			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
DSTOCK does not Granger Cause DOILM	199	2.20885	0.1126
DOILM does not Granger Cause DSTOCK		3.42656	0.0345

Table 4: Pairwise Granger Causality Tests for DEXC-OILQ

Sample: 1971M03 2015M06			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
OILQ does not Granger Cause DEXC	177	4.00723	0.0199
DEXC does not Granger Cause OILQ		0.98217	0.3766

Stock Prices and Oil Shocks

An increase in oil prices has an unfavorable effect on stock market prices. Channeling idle funds from surplus to deficit units in the economy based on stock market is vital in financial intermediation in both developed and developing countries [7]. The savings are mobilized and can efficiently allocation for economic growth [8]. When Oil prices decreases globally, there is a setback in trade balance, which leads to a lower current account surplus as well as foreign asset positions in oil exporting countries like Nigeria. The decrease in oil prices leads to decrease in private disposable income in oil-exporting countries (Nigeria) also decrease corporate profitability, lower domestic demand and stock prices thereby causing exchange rate to depreciate [9]. Furthermore, changes in economic activities such as corporate earnings, inflation, and monetary policies will negatively affect equity and bond valuations in the stock market. And a reverse action will occur when there is an increase in oil prices. Thus oil price fluctuations are an important factor for investors to consider when making necessary investment decisions and for policy makers to adopt appropriate policies in managing stock markets [10].

GDP and Oil Prices

The GDP is affected when present of oil shocks within the economy. The relationship between oil price volatility and GDP is only important when "oil intensity" of economy is increasing or already big enough to threaten the stability of economic growth [11]. Whereby, the oil intensity is defined as the number of barrels of oil required to generate $1000 of GDP [11]. Nigeria is currently facing problems exporting crude oil due to glut in the global crude oil market which led to the decreasing demand of world petroleum products and unstable oil prices. Owing to this, a negative relationship between oil prices and macroeconomic activity exists. A sharp increase in oil prices reduces the country's growth output, possibly leading to an economic depression. The increase in oil prices lowers GDP growth by raising production costs within the country. The fluctuations in oil prices directly affect aggregate output adversely and delay of business investments causing uncertainty cost increases due to sectorial resource reallocation [11]. Furthermore, an increase in crude oil prices negatively affects output and employment because of the resulted increase on tax consumption. Thus, an increase in inflation will take place due to businesses that face higher costs from their suppliers, thereby increasing prices for their own products. In contrast to this effect, if the growth of output slows down due to uncertainty delaying investment in capital goods, there will be a different effect in GDP because:

- Employment growth tends to be highly dependent on output growth [11].
- Price volatility decreases employment growth and increases unemployment rate. Price volatility influences financial markets both directly and indirectly [11].

Exchange Rate and Oil Prices

The exchange rate reflects the value of one currency in terms of the other compared currency. As hypothesized, oil prices fluctuations affect exchange rates. In the presence of oil shocks in oil exporting countries, exchange rate of the domestic currency, Naira (NGN) is expected to depreciate when oil prices decreases. When oil prices increase, the domestic currency (NGN) is appreciates. This is because revenue increases from exporting activities within the country. Moreover, depreciation and appreciation of exchange rates affects economic growth in terms of trade and shifts income to/from exporting countries from/to importing countries [12]. The domestic exchange rate as expected will become affected as a result of changes in government expenditure, balance of trade, inflation, interest rates as well as FDI. In the first period, the positive exchange rate to oil price shock but became negative in the second period contribute for the oil price shock which has important effect on the persistent fluctuations of domestic currency and a strong policy is required form the Nigerian government [13].

Overall, these results conclude that Nigeria's economy suffers from what is called the "Dutch Disease" which is a negative impact on an economy that increase the sharp inflow of foreign currency in oil revenue. The currency inflows lead to currency appreciation and impart towards other products

become fewer prices competitive on the export market and was suffered by Nigeria's economy since the 1970s [14]. During that time of 1970 oil boom a similar event occurred as oil prices decreased swiftly, the economy became incapable of absorbing inflows without causing inflation. Economists argue the reason for this is because the economy is not diversified enough. Large inflow from oil export hits a less diversified economy result in resource pull and spending effect [15]. In an article, Alley et al [16] explains that the oil sector experiences a rise in marginal productivity and thus pay factors employed relatively more than other sectors do. The direct de-industrialization of the economy occur when the resources are pulled to the oil and gas sector at the expense of other tradable and non-tradable sector such as manufacturing and agriculture [17]. This then causes the output of the industrial sector to decline while prices of the domestic sector rise as the nominal exchange rate (E) and foreign price level (P*) remaining constant while, the domestic price level (P) and real exchange rate ε (EP/P*) rises [16]. It's become expensive and less competitive in the international market since increase in the real exchange rate penalizes exports of other tradable sectors [15].

CONCLUSION

This study concludes that high oil prices are never sustainable and Nigeria's economy is very vulnerable to oil shocks and the recent decline in oil prices paints an unstable future for its economy. The obtained Granger-Causality test results indicated that oil prices directly affect the GDP, Exchange Rate and Stock Prices. A significant fall in exchange rates and the domestic currency depreciated for the entire period has forcing the policymakers to implement stern policies in the financial institutions.

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