

GLOBAL FINANCIAL CRISIS AND ITS EFFECT ON NIGERIA'S OIL REVENUE

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ABSTRACT

The research is on the effect of global financial crisis on Nigeria's oil revenue and its attendant effect on the sustainable economic growth and development. Secondary data from Central Bank of Nigeria (CBN) was mainly used for this study. The objective of the study was to determine the trend of oil revenue generated over the years; examine the effect of global financial crisis on oil revenue generation in Nigeria, and to make recommendation based on the research findings on possible policy framework that will enhance sustainability of economic growth and development. The study adopts descriptive statistics and regression analysis on the macro-economic variables (exchange rate and inflation). The results revealed that the global financial crises affected oil revenue generation in Nigeria with particular reference to the period under review. The results also show that 66 percent of total variation in crude oil revenue was explained by the explanatory variables. The results posit further that there is negative relationship between the variables (exchange rate and inflation) and the oil output, but exchange rate is significant at 10 percent implying that exchange rate determines oil output. However, inflation is not significant and also negatively related to oil output. The study therefore concluded that the global financial crises affected Nigeria crude oil revenue generation and that exchange rate was a significant factor that determines the crude oil output and revenue. Thus, for Nigeria to attain sustainable economic development, there is urgent need to consider appropriate policy measure to mitigate the effect of financial crises in Nigeria.

Keywords: Financial crisis, oil revenue, crude oil, exchange rate, Nigeria.

INTRODUCTION

Oil is a major source of energy in Nigeria and the world in general. Oil being the Mainstay of the Nigerian economy plays a vital role in shaping the economic and political destiny of the country (Odularu, 2008). Although, Nigeria's oil industry was founded at the beginning of the century, it was 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 (Odularu, 2008). Crude oil discovery had certain impacts on the Nigeria economy both positively and adversely. On the negative side, some of these communities still suffer environmental degradation, which led to deprivation of means of livelihood and other social factors. Hence, the need to evaluate implications of the global financial crisis on the oil revenue generated. Considering the fact that there are other sectors of the economy that benefit substantially from excess revenue made from the oil sector with the ultimate aim of

increasing the real gross domestic product of the economy and the eventual sustainable development of the country. Although, large proceeds are obtained from the domestic sales and export of petroleum products, its effect on the growth of the Nigerian economy needs to be empirically analysed.

Global financial crisis

It is a known fact that the current scenario does not directly involve the loss of human lives, the socio-economic confusion and anxiety that followed the September 11, 2001 terrorist attack on the USA based World Trade Centre are definitely not comparable with it. This could be likened to the Great Depression of the 1930s, the looming economic downturn was again triggered off by certain events in the United States which rapidly engulfed the entire globe (Bamidele, 2009).

The devastating consequences of the crisis on the world economy are unprecedented. Business titans are failing; forced nuptials are being consummated; major economies are getting bankrupt by the day; banks and other financial institutions were already falling short of their traditional services; big insurance firms now at the mercy of governments, in pursuit of emergency bail-outs; stock markets were crashing at an alarming rate while house owners were losing their houses on a high speed. Beyond reasonable doubts, we could rightly admit that the erstwhile sophisticated financial edifice and credits manoeuvrings that have come to characterize most Western economies are fast crumbling (Bamidele, 2009). The implication of these is the emergence of a very strong liquidity supply which lowered the level of risk awareness in an environment where intensive financial innovation should have been prosecuted with much caution.

In a nutshell, the current global economic meltdown is partly an offshoot of the crunch in the real estate market of the United States of America, whose Governments prudential regulation, resulted in the escalation of this reversal into global financial market. The global financial crisis which began in the United States of America and the United Kingdom when the global credit market came to a standstill in July 2007 (Avgouleas, 2008). The meltdown in the richest country of the world spread like wild fire through complex and poorly understood financial linkages and caused output decline in the rich countries. Commodity prices, including oil have fallen sharply. The price of oil in the world market has fallen from its peak of \$145per barrel in the second quarter of 2008 to less than \$50per barrel in the first quarter of 2009.

Nigeria economy over the years has been depending mainly on oil revenue as her source of income which shaped economic and political destiny of the nation. Nigeria being one of the oil producing countries produces for other countries to consume and the United State of America today remains the largest consumer of Nigeria's crude oil which account for about 40% of Nigeria's total oil exports, and US today have been affected by the adverse effect of global financial crisis.

Similarly, Nigeria's monthly allocations are derived basically from crude oil revenue and some percentage of it is allocated to each tier of the government (local, state and federal). Now that global financial crisis has hit the oil sector and spells doom for the economy, provides the basis for which this research was carried out. 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 impact of crude oil on the economy, and

implications of the global financial crisis on the oil revenue generated and its attendant effect of the sustainable development of Nigeria.

Problem Statement

It is a widely known fact that oil sector has over the years been a major main stay of the Nigerian economy. Yet many years with oil money have not brought the population an end to poverty nor, at least until recently, have they enabled the economy to break out of what seems like perennial stagnation in the non-oil economy. Crude oil discovery had certain impacts on the Nigerian economy both positively and negatively. Despite the crucial role the oil sector plays in the Nigerian economy over the years, the recent global financial crisis has also had a downturn effect on the excess revenue being made in the economy. Based on the fact that oil has always been our major source of revenue with (at least over 90%) of the GDP. The research questions are: What is the trend of oil revenue generation over the years in Nigeria? What are the effects of the global financial crises on the oil revenue generation? The general objectives of the study are therefore, to examine the impact of global financial crisis on Nigeria's crude oil revenue. Specifically, the study set to: determine the trend of oil revenue generated over the year, examine the effect of global financial crisis on oil revenue generation in Nigeria and the attendant effects on the sustainable growth of the country, and make recommendations based on the research findings on possible policy framework that will enhance sustainability of economic growth and development.

Significance of the Study

The importance of this study is to help in shedding more light on the financial crisis and how it affected Nigeria's oil revenue. The study will also help to determine the relationship between the oil revenue generation and the GDP. More importantly, the study will serve as a reference point to researchers and as policy direction for government in the area of downstream sector of the oil industry and sustainable economic growth of Nigeria in general. The hypothesis of the study is:

Hypothesis

H₀: Global financial crisis has no impact on Nigeria's crude oil revenue

H₁: Global financial crisis has an impact on Nigeria's crude oil revenue

LITERATURE REVIEW

Nigeria and Global Financial Crisis

The global financial meltdown and subsequent drop in crude oil price, economy analysts have posited that the crisis could affect the government spending and projects execution. The issue portends grave consequences since the country largely depends on oil for sustenance. Also, the federal government relies on oil benchmark to fix its budget. (Akinola, 2008).

Since the global financial crisis hit credit institutions in the United States and Europe, there have been speculations that the problem would affect the finances or better still, government across the world. This might not be unconnected to the fact that national economies depend on one another for survival, and as such, no economy can be insulated from what is going on from the rest of the world (NIIA, 2008).

Nigeria is the eighth largest producer of crude oil and a strong member of the organisation of petroleum producing countries (OPEC). Nigeria generates 85 percent of its revenue from crude oil. The Federal Government finances the annual budget largely through the sale of crude oil. Currently, the nation's foreign reserve is about \$56 billion, against \$64 billion recorded in the past two months. The price of crude oil per barrel hovers around \$56. Before now, the price of crude oil was between \$140 to \$145 per barrel. Oil revenue is affected; drop in oil revenues means less revenue for the government. That means less money to build new infrastructure, invest in new oil production and raise our reserves and fall in our external reserves which Nigeria has consistently built up in the last eight years (NIIA, 2008). The immediate impact has been in the steep fall in the value of the Naira against the US dollar as Forex inflows have dried up. The implication is that Nigeria's economy is based on mono-commodity (i.e crude oil) and negative developments in the global oil market would have similar impact on governments funding. Thus, persistent drop in crude oil price means that the government would have less to spend for capital projects in the years ahead (NIIA, 2008). Nigeria's biggest macroeconomic achievement has been the sharp reduction in its external debt, which declined from 36% of GDP in 2004 to less than 4% of GDP in 2007. In October 2005, the International Monetary Fund (IMF) approved its first ever policy support instrument for Nigeria. In December 2005, the United States and seven other Paris Club nations signed debt reduction agreements with Nigeria for \$18 billion in debt reduction, with the proviso that Nigeria pays back its remaining \$12 billion in debt by March 2006. The United States was one of the smaller creditors, and received about \$356 million from Nigeria in return for over \$600 million of debt reduction. Merrill Lynch won the right to take on \$509 million of Nigeria's promissory debt (accrued since 1984) to the "London Club" of private creditors. This arrangement saved Nigeria about \$34 million over a simple prepayment of the notes. Nigeria faces intense pressure to accept multibillion dollar loans for railroads, power plants, roads, and other infrastructures. Expanded government spending also has led to upward pressure on consumer prices. However, the recent drop in world oil prices and the global financial crisis have prompted the federal government to tap its foreign exchange reserves, which consequently have decreased from \$60 billion to \$48 billion, in order to meet pressing budget demands from cash-strapped state and local governmental bodies.

Oil and the macro-economic prices

The trends in interest, exchange and inflation rates in Nigeria reflect the monetization of oil revenue, which causes increase in money supply. This is exacerbated by the cash orientation of Nigerians and the penchant for carrying (and making payments with) lots of cash. As such, movements in these rates have been fluctuating inconsistently.

The first half of the 1990s was the military era when the management of oil revenue and the macro economy was haphazard, translating into macro-economic instability. The exchange value of the Nigerian currency (Naira) depreciated significantly from US\$0.1010/N in 1991 to \$0.0123/N in 1995, by which time the government had adopted what it termed "guided deregulation". This brought artificial stability that subsisted up until the democratic dispensation that commenced in May 1999. Since then, the domestic currency has depreciated by 29%, exchanging now between \$0.0066 and \$0.0076/N.

Hawtrey's monetary theory of trade cycle

This theory was developed by (Hawtrey). According to him, "the trade cycle is a purely monetary phenomenon." It is the changes in the flow of monetary demand on the part of businessmen that lead to prosperity and depression in the economy. He opines that non-monetary factors like strikes, floods, earthquakes, droughts, wars, etc. may at best cause a partial

depression, but not a general depression. He saw expansion and contraction of bank credits as being capable of causing cyclical fluctuation. According to Hawtrey, credit expansion by banks encourages borrowing on the part of merchants and producers which consequently increase money income of factors of production and a further increase in productive activities. As the cumulative process continues, producers are lured to quote higher and higher prices. Higher prices induce traders to borrow more to expand or hold still larger stocks of goods so as to earn more profits.

Hawtrey argued that prosperity cannot timelessly but would cease or come to an end when banks stop credit expansion. They would rather require their debtors to repay the loans granted to them, and this triggers the recessionary period. Hawtrey concluded by saying that “the process of recovery is very slow and halting”. He said traders resell their stocks at a give-away price so as to repay their loans as depression persists. As a result money flows into the reserves of banks and funds increase with banks.

This theory explains widely the causes of the recent global financial crisis that has brought about global economic downturn. The US expanded credit by allowing an intricate and highly leverage financial contracts; a monetary policy making the cost of credit negligible and therefore encouraging such high levels of leverage and generally a “hypertrophy” of the financial sector. This however resulted in the subprime mortgage meltdown in the United States.

Minsky’s theory of global financial crisis

Minsky has proposed a post Keynesian explanation that is most applicable to a closed economy. He theorised that financial fragility is a typical feature of any capitalist economy. High fragility leads to a higher risk of financial crisis. To facilitate his analysis, Minsky defined three approaches to which financing firms may choose, according to their tolerance of risk. They are hedge finance, speculative finance, and ponzi finance leads to the most fragility.

For hedge finance, income flows are expected to meet financial obligations in every period including both the principal and the interest on loans.

For speculative finance, a firm must roll over debt because income flows are expected to only cover interest costs. None of the principal is paid off.

For Ponzi finance, expected income flows will not even cover interests cost, so the firm must borrow more sell assets simply to service its debts. The hope is that either the market value of assets or income will rise up enough to pay off interest and principal.

Financial fragility levels move together with business cycle. After recession, firms have lost much financing and choose only hedge, the safest. As the economy grows and expected profits rise, firms tend to believe they can allow themselves to take on speculative financing. In this case, they know that profits will not cover all the interest all the time. Firms, however, believe that profits will rise and the loans will eventually be repaid without much trouble. More loans lead to more investment, and

the economy grows further. Then lenders also start believing that they will get back all the money they lend. Therefore, they are ready to lend to firms without full guarantees of success. Lenders know that such firms will have problems repaying. Still, they believe these firms will refinance from elsewhere as their expected profits rise- This is Ponzi financing. In this way, the economy has taken on much risky credit. Now, it is only a question of time before some big firms actually default. Lenders understand the actual risks in the economy and stop giving credit easily. Refinancing becomes impossible for many, and more firms default. If no new money comes into the economy to allow the refinancing process, a real economic crisis begins. During recession, firms start to hedge again, and the cycle is closed.

Empirical review

Since the discovery of oil in the late 1950s, Nigeria has effectively emerged as a mono-cultural economy depending on oil sales for its survival. Not until then crash of oil market in 1986, the government had never demonstrated any commitment strong enough towards reversing or diversification.

Asiade (1989) pointed out that the role of crude oil revenue to economic development in Nigeria can be seen through effects on industrial and other products resulting from the emergence of the crude oil industry

Tariq (1991) also realised that as a result of the variability of the oil market, the government could not plan its budget on the basis of reliable projections of income from oil. This distinction in oil revenue compelled the government to resort to large scale borrowing externally to finance projects since the financial inflows in unstable and fluctuation.

Oke (1998) remarked that although, oil sector accounted for only 20% of gross domestic product (GDP), its share in total expenditure rose rapidly to 60% in the early 1970s to over 90% since 1973. By contrast, the share of agriculture in the GDP fell by half to only 20% while the economy increasingly depends on food exports. He further observed that the role of public sector on the economic activities expanded rapidly as a result of large increase in revenue accruing to the government from crude oil, and the strategy to utilize the large public resources to expand infrastructural facilities for rapid industrial development.

Adedipe (2008) pointed out that Nigeria's economy is based on one commodity- crude oil-and negative developments in the global oil market would have similar impact on government's funding i.e. Persistent drop in crude oil price means that the government would have less to spend for capital projects in the years ahead.

Ajibade (2009) posited that the global financial meltdown and subsequent drop in crude oil price could shortly affect the government's spending and projects execution. The issue portends grave consequence since the country largely depends on oil for sustenance. Also, the federal government relies on oil benchmark to fix its budgets. This view is invariably telling us that the advent of the crude oil revenue boom expanded economic activities, but also contributed negatively to the economy by causing a decline in the agricultural sector, which used to be the country's major source of revenue before the advent of crude oil.

DATA AND METHODOLOGY

Area of study

Nigeria is located between 4°N and 14°N of the Equator and between 3°E and 15°E of the Greenwich meridian (Figure 1). Therefore, the latitudinal extent or stretch of Nigeria is about 10 (14°N – 4°N) while the longitudinal extent or stretch is 12 (15°E – 3°E). Nigeria is in West Africa. She is bounded in the west by Benin Republic, in the north by Niger Republic, in the east by Cameroon Republic, in the north-east by Chad Republic and in the south by Atlantic Ocean. Nigeria is the fourth largest country in West Africa in terms of land area after Niger, Mali, and Mauritania. The total land area of Nigeria is approximately 923,768 square kilometers. The greatest distance from east to west is approximately 1,300km while from north to south is about 1,100km. In terms of population, Nigeria is the most populous single country in Africa with 140 million (i.e. 140,003,542) 2006 population (census estimate). Nigeria is the eighth largest producer of crude oil and a strong member of the Organisation of Petroleum Producing Countries (OPEC). Hence she is often referred to as ‘the giant of Africa’.



Figure 1: Map of Nigeria

Source of data and measurement of variables

The data used for this research work is secondary data obtained from the Central Bank of Nigeria (CBN) statistical bulletin. The variables used in this research work are monthly average of crude oil revenue gotten by multiplying quantities of domestic crude production and crude oil prices for the period of January 2008 to December 2009 and the dummy variable which was used to represent the period before the global financial crisis and the period during the crisis. In this work, crude

oil revenue is the dependent variable and the dummy variable as independent variable. To simply justify the use of dummy variable for global financial crisis we will ascribe the analysis to the fact that the crisis is abstract and cannot be quantified. Therefore, the period between January to July 2008 is taken as the period before the crisis and is represented by zero (0) all through, while the period August 2008 to August 2009 is taken as the period during the global financial crisis and is represented by one (1). Though the crisis is ongoing, we will limit the data used to December 2009 where data is readily available.

ANALYTICAL TECHNIQUES

Descriptive statistics

This involves the use of graphical representation to show the trend of all the macro-economic variables (Exchange rate, Inflation rate, Oil Output, Oil Revenue) considered in this research over the years.

Regression analysis

This shows the relationship between the dependent variable and the explanatory variables and to test the hypothesis aforementioned.

Correlation analysis

It is used to show the relationship and impact of the explanatory variables on the gross domestic product of the country.

Model specification

This study uses ordinary least square (OLS) method of econometric analysis. The first and the most important step the econometrician takes in attempting the study of any relationship between variables is to express this relationship in mathematical form. Where Y is the dependent variable otherwise known as exogenous variable. X_1 is the independent variable also known as the explanatory variable. Converting this economic relationship (Koutsoyiannis,1977) into an econometric model. For the purpose of this study, the model employed is stated below:

MODEL

$Y = f(X_1, X_2, X_3)$Implicit function.

Converting this economic relationship into an econometric model gives;

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + U_1$Explicit function.

Where:

Y= Oil Revenue (\$)

X_1 = dummy variable (1= period of global financial crisis, 0= period before financial crises)

X_2 = Exchange rate (=N= / US\$)

X_3 = Inflation rate (%)

β_0 = Intercept of the function

U_1 = Random error

$\beta_1, \beta_2, \beta_3$ are parameter estimates.

Apriori expectation

Based on the theory and intuitive reason, it is necessary to predict the expected signs of the values of the variables used in the models. It is established in theoretical framework that there is linkage among variables. It is expected that in Model, $\beta_1 < 0$, β_3 can be either positive or negative ($\beta_3 < 0$ or $\beta_3 > 0$), $\beta_2 < 0$.

Estimation technique

The ordinary least square (OLS) method of econometrics analysis is used for the empirical investigation because OLS method is less sensitive to mis-specification errors than simultaneous estimation approach. And more so, the most frequently used method for estimation of regression is the Least Square.

To test for reliability of the results of the estimated parameters, many statistical techniques were used. The coefficient of determination (R^2) was employed to test for the explanatory power of the models. Besides, T-test was used to test for statistical significance of the parameters. F-ratio and Durbin-Watson were used as criteria for evaluating the results of the analysis.

RESULTS AND DISCUSSION

Descriptive statistics

This involves the use of graph to elucidate the trend of crude oil prices and crude oil output considered in the research over the years. It is used to describe the trend of crude oil prices and output with particular reference to the period under review (Jan2008 - Dec2009).

From the figures below (2a to 2 c and 3a to 3c), showed that from January 2008 to July 2008, crude oil revenue was increasing until the month of July before it started dropping up till December. This might be as a result of the violence in Nigeria's oil-rich Niger Delta region which has affected total output of OPEC thereby pushing crude oil price up. In the month of August 2008, crude revenue began to fall. Such fall could be attributed to the fall in prices at which crude oil was sold in the world market due to the effect of global financial crisis which emanated from United State of America around August 2008 coupled with the drop in oil demand in the global economy. However in January 2009, it started appreciating once again. This finding is in agreement with the result of the research conducted by Ayadi *et. al.* (2009) that oil price series is anti-persistent. This implies that a low price level has a tendency to be followed by a high price level and vice versa. This explains why crude oil revenue also fluctuates.

Crude Oil Prices and Output (2007-2009)

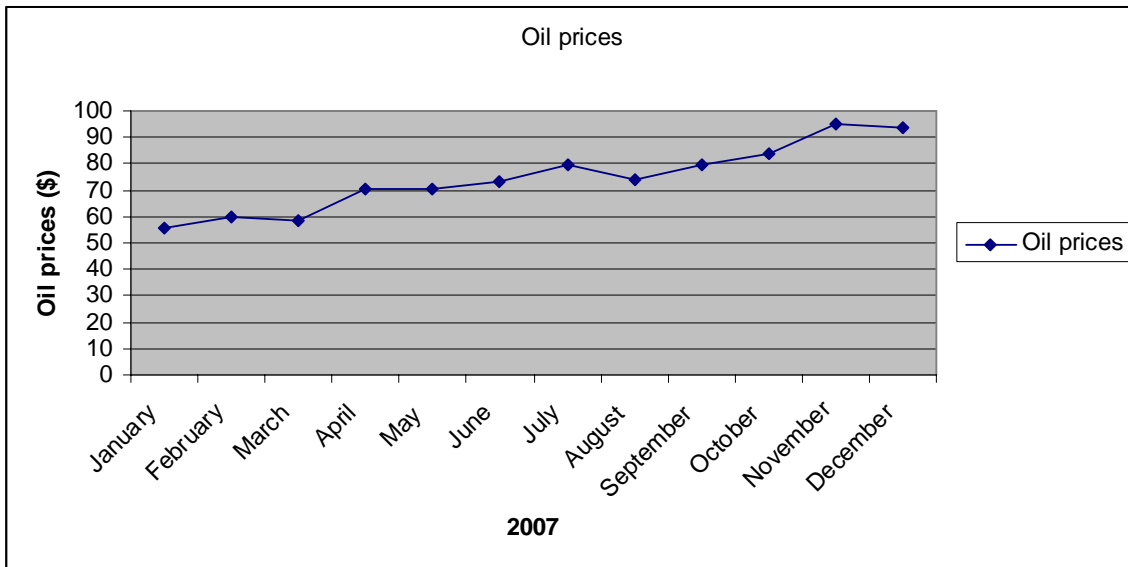


Figure 2a: The trend of oil prices

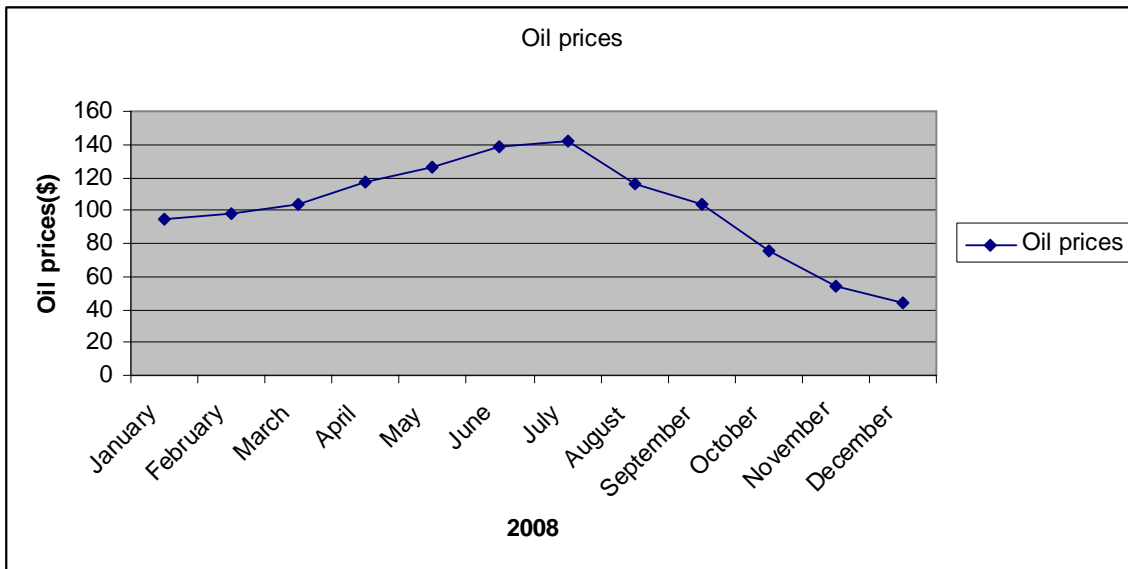


Figure 2b: The trend of oil prices

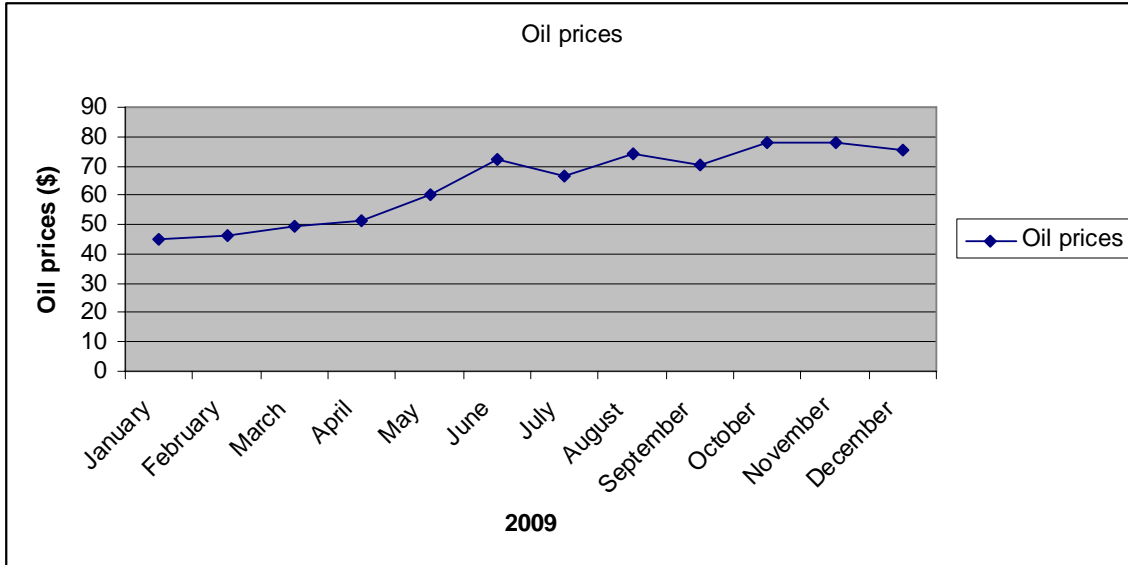


Figure 2c: The trend of oil prices

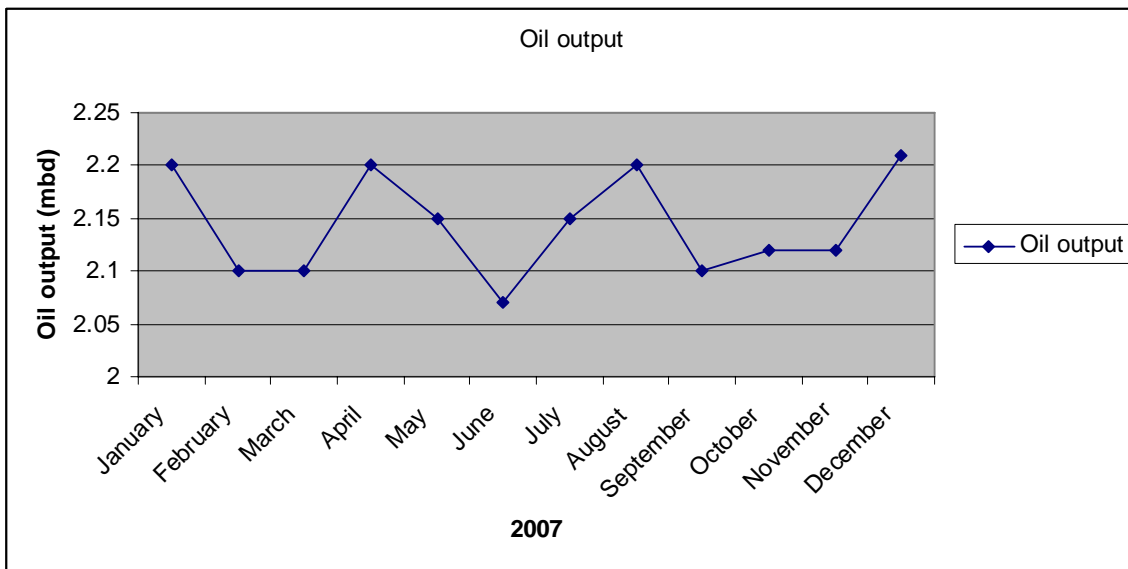


Figure 3a: The trend of oil output

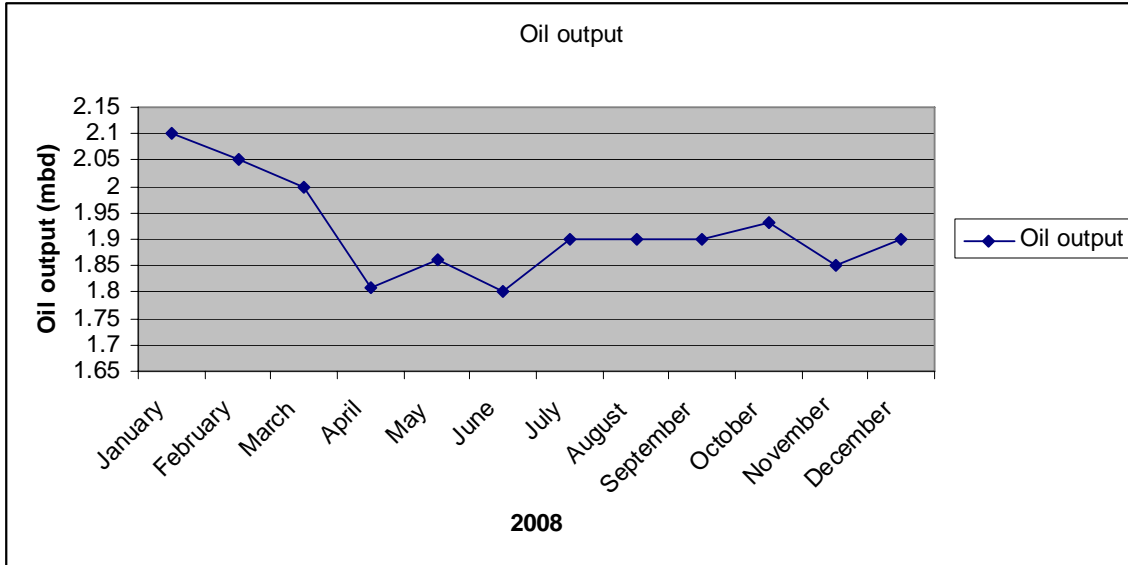


Figure 3b: The trend of oil output

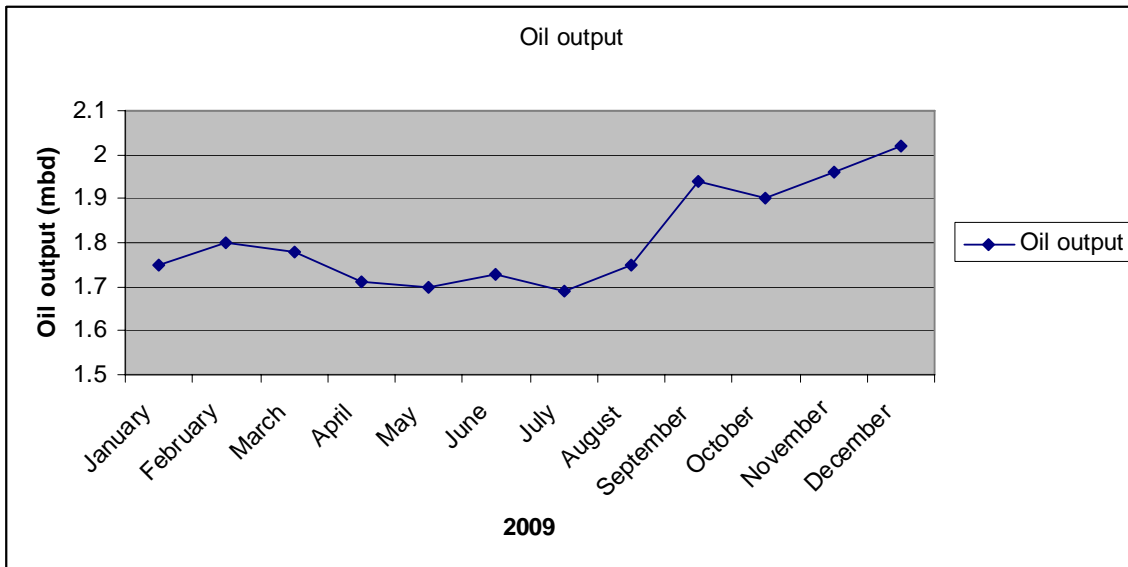


Figure 3c: The trend of oil output

Presentation of Regression Analysis

Regression results and interpretation for the model

$$Y = 431.6830 - 53.31317X_1 - 1.401325X_2 - 4.283452X_3 + U_t$$

$$R^2 = 0.664\%$$

1% Significance Level

$$\text{Adjusted } R^2 = 0.614\%$$

$$\text{F-Ratio} = 13.173$$

$$\text{Durbin-Watson} = 0.330852$$

The result from table 1 reveals an inverse relationship between global financial crisis(X) and crude oil revenue (Y). The negative coefficient of X shows that for every 100% increase in the dummy variable “global financial crisis” (X), will lead to a 53.3% decrease in crude oil earnings in the domestic economy ceteris paribus. The coefficient of determination (R^2) shows how good is the fit of the regression line to the sample observation of the dependent and independent variables. From the research result, $R^2 = 0.664$ or 66%. This implies that about 60% of the total variation in the dependent variable i.e. Nigerian crude oil revenue is being explained by the independent variables i.e. global financial crisis, exchange rate and inflation. While the remaining 34% is due to error term or factors not captured within the model. It further reveals that there is negative relationship between the variables (exchange rate, inflation) and the oil revenue. However, exchange rate is significant at 10 percent level of probability. More so, the result obtained for F-statistics of the model showed that the model is statistically significant. The Durbin-Watson result shows that there is no positive first order correlation.

Table 1: Regression Result of Revenue, Financial Crises, Exchange Rate and Inflation

Dependent Variable: OUTPUT				
Method: Least Squares				
Date 06/12/10 Time: 10:15				
Sample: 2008:01 2009:12				
Included Observations: 24				
Variable	Coefficient	Std. Error	t-statistic	Prob.
C	431.6830	109.8127	3.931084	0.0008
DUMMY	-53.31317	30.20473	-1.765060	0.0928
EXR	-1.401325	0.702972	-1.993430	0.0600
INFL	-4.283452	4.702732	-0.910843	0.3732
R- squared	0.663970	Mean dependent var		155.1648
Adjusted R-squared	0.613566	S.D. dependent var		58.96470
S.E. of regression	36.65472	Akaike info criterion		10.19197
Sum of squared resid	26871.36	Schwarz criterion		10.38832
Log likelihood	-118.3037	F- statistics		13.17285
Durbin-Watson stat	0.330852	Prob(F-statistics)		0.000057

Source: (Data analysis, 2010)

SUMMARY OF FINDINGS

The research is on the effect of global financial crisis on Nigerian oil revenue.

The study has been able to discover that there is a fluctuating trend in the macro economic variables considered i.e. inflation and exchange rate, and that Nigerian economy is so dependent on crude oil revenue.

The result of the regression analysis of the model shows that $R^2 = 0.664$ or 66%. This implies that about 66% of the total variation in the dependent variable i.e. Nigerian crude oil revenue is being explained by the independent variables i.e. global financial crisis, exchange rate and inflation. The regression line shows a negative relationship between global financial crisis, exchange rate, inflation and crude oil revenue. The F-ratio of the model showed that the model is statistically significant. Global financial crisis has significant impact on the Nigerian crude oil revenue. That is to say that the explanatory variable “X” (global financial crisis and macro-economic variables considered) is capable of explaining variation (change) in “Y” (crude oil revenue).

Exchange rate is significant at 10 percent level of probability. This implies that exchange rate is a factor/variable determining oil output. More so, the result obtained for F-statistics of the model showed that the model is statistically significant. However, Exchange rate is a significant factor that determines oil output.

CONCLUSION

The research work determined the effect of global financial crisis on oil revenue generation in Nigeria and also determined the trend of oil revenue generated over the years. This research work, have empirically verified the impact of financial crisis on Nigeria's oil revenue. Generally, it was observed from the empirical findings that the financial crisis had a negative effect on the crude oil revenue generated by Nigeria economy. Moreso, exchange rate has been deduced to be a significant factor contributing to the oil output. The study therefore concluded that the global financial crisis affected Nigeria's crude oil revenue generation and that exchange rate is a significant factor that determines crude oil output. The study thus recommends that attention should be given to efficiency in resource use, accountability, provision of infrastructure and reinvigoration of the peace process in the Niger Delta region of the country by implementing the post amnesty plans (PAP) as promised by the federal government of Nigeria.

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