

The Implications of Crude Oil Glut on the Performance of the Nigerian Capital Market.

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Abstract: *The study examined the implications of crude oil glut on the performance of the Nigerian Capital Market. The specific objectives of the study were to assess the extent to which crude oil domestic production affects the market capitalization of the Nigerian Capital Market; to determine how crude oil revenue impacts on the market capitalization of the Nigerian Capital Market and to ascertain the extent to which crude oil export affects the market capitalization of the Nigerian capital market. The study adopted an ex-post facto research design. Time series data for the period 1985-2013 were collected from the CBN statistical Bulletin using the desk survey method. The data were analysed using the ordinary least square multiple regression statistical technique. Results from the analyses revealed that crude oil domestic production had a positive and insignificant effect on the market capitalization. It was also discovered that crude oil revenue had a positive impact on the market capitalization of the Nigerian Capital Market. Again crude oil export had a small but inverse effect on the Nigerian Capital Market. Based on the findings, the study recommended that the Nigerian economy should be diversified to reduce the over dependence on oil revenue. Also, Nigerians should deeply be encouraged to go into agriculture to enhance food production and to promote exportation of non-oil products thereby reducing the extraneous burden on the country's foreign reserves. The paper equally recommended the right-sizing of foreign workers in the oil industry in order to reduce exploration cost.*

Keywords: *crude oil glut, domestic graduation, market capitalization, vulnerability of the economy, seasonality factors, corporate investment, oil price shock*

I. Introduction

The origin of crude oil extraction in Nigeria is traceable to 1956 following the discovery of the first oil well in commercial quantity at Oloibiri, Port Harcourt. In 1958 oil become an export and revenue generating commodity. Prior to this period, exports were mainly primary agricultural commodities that comprised groundnuts, cocoa beans, palm oil, cotton and rubber (Adedipe; 2004). Palm oil was the leading export product from 1946- 1958, followed by cocoa beans while groundnut/oil ranked third. From a production level of 1.9 million barrels per day in 1958, crude oil exports rose to 2.35 million barrels per day in the early 2000s. However, it fluctuated between 1.26 and 1.8 million barrels per day between 2007 and 2010 which was far below the OPEC recommended quota due to the socio-political instability in the oil-producing areas of the country (ibid). In terms of its contribution to total revenue, receipts from oil that constituted 26.3 per cent of the federally collected-revenue in 1970, rose to 82.1 per cent in 1974 and 83.0 per cent in 2008, largely on account of a rise in crude oil prices at the international market. Non-oil exports on the other hand, as a percentage of total exports, declined from 7.0 per cent between 1970-1985 to 4.0 per cent between 1970 and 1986 (CBN, 2000). The discovery of crude oil in Nigeria led to what is commonly referred to as the "Dutch disease". Thus, the performance of the manufacturing sector remained less impressive and that of agriculture declined. In the early 1960s, manufacturing activities consisted of partial processing of agricultural commodities, textiles, breweries, cement, rubber processing, plastic products, and brick making. The economy gradually became dependent on crude oil as productivity declined in other sectors (Oluwatomisin & Adeyemi, 2012).

The dominance of crude oil therefore implies that the Nigerian economy is susceptible to global oil quantity and price movements. During periods of favourable oil price shocks triggered by high surge in the demand for the commodity by consuming nations, the country experiences favourable terms-of-trade quantified in terms of a robust current account surplus and market rate appreciation and an upward shift in the expenditure curve of government (Akilo, 2012). This shift implies either an expansion or contraction to the level of aggregate demand, which effect is transferred into other sectors of the economy, including the level of investment. As argued by (Asaolu & Ilo, 2011), a large increase oil revenue will boost the purchasing power of the economy, promote industrial growth and investment. Consequently, it is expected that this will boost the earnings of corporate firms, dividend payment to investors, while simultaneously increasing stock prices. Conversely, when crude oil prices are low, occasioned by factors such as low demand, seasonality factors, excess supply and market rate appreciation, the Nigerian economy experiences significant drop in the level of foreign market inflows that often

result in low revenue, budget deficit, low investment and or slower growth.

Given the above background it is right to surmise that the performance of the oil sector will be one of the major systematic factors affecting the performance of quoted firms in Nigeria.

The vulnerability of the Nigerian economy in general and the Nigeria capital market in particular to oil glut has raised serious concern in recent times, as to what could be the future of Nigeria following the global dwindling oil prices. The global oil market has always determined government businesses, corporate investments and the Nigerian stock market. The recent oil glut and the attendant reduction in oil prices have posed serious challenges to the Nigerian economy.

With excess oil supply and falling price of oil, the Nigerian government has experienced huge shortfall in its revenue but heightened expenditure. This has led to low disposable income of workers, reduction in aggregate demand, low capital formation and high unemployment rate. Under these conditions, many quoted firm's stocks have fallen considerably leading to delisting from the Nigerian stock market. Given the above scenario, it becomes expedient to examine the extent to which oil glut has affected the performance of the Nigerian capital market. It should be noted that investment of any form is undertaken when there is excess or surplus funds. Where, however, there is shortage of funds, no meaningful investment can be undertaken by rational investors in an unstable economy.

Thus, the major objective of this study is to examine the implications of oil glut on the performance of the Nigerian capital market. The specific objectives are:

- (i) To determine the effect of crude oil domestic production on the market capitalization of the Nigerian capital market;
- (ii) To examine the extent to which crude oil revenue affects the market capitalization of the Nigerian capital market;
- (iii) To find out how crude oil export affects the market capitalization of the Nigerian capital market;
- (iv) To establish how the exchange rate could affect the market capitalization of the Nigerian capital market.

In order to achieve these objectives, the paper is divided into five sections, section one is the introductory section. Section two delves into the literature review. The third section is the research methodology, this is closely followed by data analysis and discussion of findings. The rest of the paper draws some managerial implications.

Research hypotheses

The following research hypotheses were formulated for this study

- H₀₁: Crude oil domestic production does not significantly affect the market capitalization of the Nigerian capital market;
- H₀₂: Crude oil revenue does not significantly affect the market capitalization of the Nigerian capital market;
- H₀₃: Crude oil export does not significantly affect the market capitalization of the Nigerian capital market
- H₀₄: Exchange rate does not significantly affect the market capitalization of the Nigerian capital market?

II. Literature Review

2.1 Theoretical framework

The framework upon which this study is anchored on is the Hubbert peak theory of oil production. The Hubbert peak theory was propounded by an oil geologist M. King Hubbert in the 1950s. The theory holds that for any given geographical area, from an individual oil-producing region to the planet as a whole, the rate of petroleum production tends to follow a bell-shaped curve. It is one of the primary theories on peak oil. Choosing a particular curve determines a point of maximum production based on discovery rates, production rates and cumulative production. Early in the curve (pre-peak), the production rate increases because of the discovery rate and the addition of infrastructure. Late in the curve (post-peak), production declines because of resource depletion.

The Hubbert peak theory is based on the observation that the amount of oil under the ground in any region is finite; therefore the rate of discoveries which initially increased quickly must reach a maximum and decline (Hubbert 1956).

2.2 Empirical literature

The interactions between oil glut and capital market envelopment has not received wide patronage by scholars. Most studies on oil glut centres on its implication on economic growth. Papapetrou (2001) investigated the relationship between oil price shocks, stock market, economic production activity and unemployment in Greece. The industrial production index and unemployment were used as measures of economic activity. He found that oil price shocks have negative impact on industrial production and unemployment. This result suggests that a positive oil price shock creates a depressed real stock return.

Somoye and Ilo (2008) examined the Nigerian stock market performance and the Nigerian economic activity from 1985 to 2005. Due to the short time span covered by the study their estimation stopped at the vecto-autoregressive (var) estimate level for lack of sufficient degree of freedom required for a cointegration analysis. The study however, concluded that among the variables examined in the VAR model the price of the Nigerian crude oil, market rate and the rate of inflation are the most significant macroeconomic variables influencing the aggregate stock market returns in Nigeria.

Fama (1981) observed that the world has shifted attention from oil dependent economy to electronic era and hence a possible reduced impact of oil shock in the economy, though still indirectly affects production, output and price. Since the price is still associated with macro factors that may cause increase in inflation. Gisser and Goodwill (1986) indicate that oil price shocks have an adverse effect on the macro economy and may even cause a recession.

Cheung and Ng (1998) found empirical evidence in support of a long run relationship between some stock market indices and some macroeconomic factors including oil prices. They found a negative correlation between oil prices and stock prices, they argued that increase in oil prices generally leads to increase in cost of production and then a fall in aggregate output.

Brasher(2004) in their analysis of how oil affects stock market documents that authors found in the case of the U.S.A that all sectors are not affected equally, or at the same time. They found that when oil prices rise: cyclical stocks are the most negatively influenced, cyclical consumer goods are the next most negatively influenced, and lastly financials are the next most negatively influenced. According to the documentation, cyclical stocks include, general retailers, support services, leisure and hotels, entertainment and media. Cyclical consumer goods comprise household goods and textiles, automobiles and parts, while the financials are the investment companies, banks, especially and other finance, life assurance and insurance and real estate. Beyond this analysis it is also obvious that stock prices are inversely related in the U.S.A.

Bashar and Sadorsky (2006) explained that the extension of the law of demand and supply is applicable to oil price movements. A demand surplus for oil leads to price increase. The oil price increase creates an indirect effect on the stock price through:

- (i) Oil price increase acts like an inflation tax.
- (ii) Makes consumers source for alternative energies
- (iii) Increases in the cost of non-oil producing companies' oil price volatility increases risk and uncertainty which negatively affects the stock price and reduces wealth and investment.

Other authors like Cunnado and Gracia (2005) and Lardic and Mignon (2006) based their argument on the classical supply side effect. An increase in oil price pushes up production cost leading to a decline in output growth and productivity. It impacts negatively on the trade of oil importer countries. It also leads to increases in money demand to meet extra cost which subsequently creates inflation, wage increases, with consequent decline in investment and ultimately in gross decline in domestic product.

Yurtserver and Zahor (2007) studied the impact of oil price shocks on the stock returns in Netherlands. They found that oil shocks have a negative impact on stock returns of some industries and individual companies, whereas they have positive impact on oil and gas companies.

2.3 History of Crude Oil in Nigeria

Oil was discovered in Nigeria in 1956 at Oloibiri in the Niger Delta after half a century of exploration. The discovery was made by Shell-BP, at the time the sole concessionaire. Nigeria joined the ranks of oil producers in 1958 when its first oil field came on stream producing 5,100 bpd. After 1960, exploration rights in onshore and offshore areas adjoining the Niger Delta were extended to other foreign companies. In 1965 the EA field was discovered by Shell in shallow water southeast of Warri. In 1970, the end of the Biafran war coincided with the rise in the world oil price, and Nigeria was able to reap instant riches from its oil production. Nigeria joined the Organization of Petroleum Exporting Countries (OPEC) in 1971 and established the Nigerian National Petroleum Company (NNPC) in 1977; a state owned and controlled company which is a major player in both the upstream and downstream sectors (Blair, 1976).

Following the discovery of crude oil by Shell D'Arcy Petroleum, pioneer production began in 1958 from the company's oil field in Oloibiri in the Eastern Niger Delta. By the late sixties and early seventies, Nigeria had attained a production level of over 2 million barrels of crude oil a day. Although production figures dropped in the eighties due to economic slump, 2004 saw a total rejuvenation of oil production to a record level of 2.5 million barrels per day. Current development strategies are aimed at increasing production to 4 million barrels per day by the year 2010, Petroleum production and export play a dominant role in Nigeria's economy and account for about 90 percent of her gross earnings. This dominant role has pushed agriculture, the traditional mainstay of the economy, from the early fifties and sixties, to the background (Ajakaiye, 2001).

While the discovery of oil in the eastern and mid-western regions of the Niger Delta pleased hopeful Nigerians, giving them an early indication soon after independent economic development was within reach, at the

same time it signalled a danger of grave consequence: oil revenues fuelled already existing ethnic and political tension and actually burned the country. This tension reached its peak with the civil war that lasted from 1967 to-1970. As the war commenced, the literature reflected the hostility, the impact, and fate of the oil industry.

Nigeria survived the war, and was able to recover huge revenues from oil in the 1970s. For some three years an oil boom followed, and the country was awash with money. Indeed, there was money for virtually all the items in its developmental plan. The literature of the post war years shifted to the analysis of the world oil boom and bust, collectively known as the oil shock. Starting in 1973 the world experienced an oil shock that rippled through Nigeria until the mid - 1980s. This oil shock was initially positive for the country, but with mismanagement and military rule, it became all economic disaster (Ajakaiye, 2001). The larger middle class produced by the oil boom of the 1970s gradually became disenchanted in the 1980s, and rebellious in the 1990s.

The enormous impact of the oil shock could not escape scholarly attention. For almost twenty years (1970s – 1990s), the virtual obsession was to analyse the consequences of oil on Nigeria, using different models and theories. A set of radical-oriented writers was concerned with the nationalization that took place during the oil shock as well as the linkages between oil and an activist foreign policy. Regarding the latter, the emphasis was on OPEC, Nigeria's strategic alliance formation within Africa, the vigorous efforts to establish the Economic Community of West African States (ECOWAS), and the country's attempts to use oil as a political weapon, especially in the liberation of South Africa from apartheid.

If many had hoped that oil would turn Nigeria into an industrial power and a prosperous country based on a large middle class, they were to be disappointed when a formally rich country became a debtor nation by the 1980s. The suddenness of the economic difficulties of the 1980s bust years had an adverse effect on class relations and the oil workers who understood the dynamics of the industry. As if to capture the labour crisis, writings on oil workers during this period covered many interrelated issues, notably working conditions, strikes, and state labour relations. To be sure, labour issues were not new in the 1980s, since the left-oriented scholars had made a point of exposing labour relations in the colonial era. What was new after 1980 was the focus on oil workers, unions, and class conflict (OPEC annual report 1983),

The Nigerian oil sector can be categorized into three main sub-sectors, namely, upstream, downstream and gas. The most problematic over the years has been the downstream sector, which is the distribution arm and connection with final consumers of refined petroleum products in the domestic economy. The incessant crisis in supply of products culminated in the decision by Government in 2003 to deregulate the downstream sub-sector. However, the manner of its implementation has been controversial because it ignores the economic realities in Nigeria. Oil production by the joint venture (JV) companies accounts for about 95 percent of Nigeria's crude oil production. Shell, which operates the largest joint venture in Nigeria, with 55 percent Government interest (through the Nigerian National Petroleum Corporation, NNPC), produces about 50 percent of Nigeria's crude oil. Exxon Mobil, Chevron Texaco, ENI/Agip and Total finaElf operate the other JV's, in which the NNPC has 60 percent stake.

The over-dependence on oil has created vulnerability to the vagaries of the international market, through some macro-economic variables. In particular, the place of oil in the mind of the average Nigerian has become more profound since the deregulation of the downstream segment of the Nigerian oil industry in 2003. The contradiction is more glaring now with the recent rise in crude oil prices at the global markets, which meant more external earnings for Nigeria, but also increased the expense burden on imported refined petroleum products! It is such contradictions that make the Nigerian economy appear strange at times, as policies seem to ignore what appears obvious to do. As such, policies designed to address the deficiencies and defects in the structure end up being poorly articulated and/or implemented because of regional, political or rent-seeking selfish interests (John, 1956).

Obviously, it is the same rent-seekers that continually sabotage the reinvigoration of the domestic refineries, making Nigeria to depend on importation of refined products to meet the domestic need. At present, Nigeria has four refineries, with a combined installed refining capacity of 445,000 barrels per day (bpd). These four refineries are: The first Port Harcourt Refinery was commissioned in 1965 with an installed capacity of 35,000 bpd and later expanded to 60,000 bpd; the Warri Refinery was commissioned in 1978 with an installed refining capacity 100,000 bpd, and upgraded to 125,000 bpd in 1986; the Kaduna Refinery was commissioned in 1980 with an installed refining capacity of 100,000 bpd, and upgraded to 110,000 bpd in 1986 and the second Port Harcourt Refinery was commissioned in 1989 with 150,000 bpd processing capacity, and designed to fulfil the dual role of supplying the domestic market and exporting its surplus.

The combined capacities of these refineries exceed the domestic consumption of refined products, chief of which is premium motor spirit (gasoline), whose demand is estimated at 33 million litres daily. The refineries are however, operating far below their installed capacities, as they were more or less abandoned during the military era, skipping the routine and mandatory turnaround maintenance that made products importation inevitable. Importation notwithstanding, there have been persistent product shortages that gave strength to the argument for deregulation of the downstream oil subsector in Nigeria.

The monetization of oil revenue has been a major factor in liquidity management in Nigeria. Measuring liquidity as the narrow and broad money definitions by the CBN, the early 1990s saw increases that were dampened by 1995 up until the civilian administration came on board in 1999. The new Government maintained disciplined fiscal operations for about one year and thereafter, the floodgates were opened. Since then, the CBN has been battling to keep liquidity in check, in order to ensure that it does not create adverse effects on the three key macroeconomic prices (i.e., interest rate, market rate and inflation rate). The greatest challenge is when Nigeria generates more revenue from crude oil sales than it budgeted, like now. Such excesses have always been monetized, creating market distortions and inflationary pressure (Adedipe, 2004).

The same argument goes for deficit fiscal operations in comparison to the GDP. The pattern of this ratio indicates the optimism that accompanies increase in oil revenue and makes Government to engage in frivolous spending or unnecessary projects. Deficit spending invariably makes Government resort to borrowing from the Central Bank through the instrument of Ways and Means Advances, which later convert into short term debt instruments that are quite expensive to service at market rates.

At this point, there is sufficient ground to examine how economic policy formulation has been impacted or induced by petroleum oil in Nigeria. As much as possible, major economic policies since Nigeria gained political independence would be examined vis-a-vis the state of the oil sector. This should provide adequate basis for making a few specific recommendations on how to reduce the dependency.

2.4 Contribution by the oil industry to the Nigerian economy

Over the past fifteen years the oil industry has made a variety of contributions to the, Nigerian economy. These have included the creation of employment opportunities; local expenditure on goods and services; contributions to government revenues, to gross domestic product, and to foreign market reserves; and the supply of energy to industry and commerce (Gbadebo, 2008).

One of the first contributions of the oil industry to the Nigerian economy was the creation of employment opportunities. From the start, Nigerians were employed in a variety of non-basic activities such as the building of roads and bridges, the clearing of drilling sites, transportation of materials and equipment, and the building of staff housing and recreational facilities. As time went on and as the industry's training programme progressed, they began to be employed in seismic and drilling operations, and in supervisory and managerial functions. However, direct oil industry employment in Nigeria is not likely to expand significantly in the future because the industry is very highly capital intensive, as is illustrated by the size of the capital-labour ratio in the industry, compared with other industries (Geneva & Toyin, 2003).

The very high capital-labour ratio in the oil industry means that growth in oil operations is generally reflected, not in the relative expansion of employment, but in the expansion of capital investment. This will be particularly the case when, with the passage of time and increased extraction, the need arises for increased investment in costly techniques of secondary recovery. At the moment total oil industry employment in Nigeria (including employment by ancillary firms) represents only 1.3 per cent of total modern sector employment in the country (Robinsoli, 1964).

In general, the contribution of an industry or branch of activity to the gross domestic product (at factor cost) during any accounting period is measured by its gross output less the cost of inputs-materials, equipment, services, etc. purchased from other industries or branches of activity. (Deduction of any taxes net of subsidies paid, gives the gross domestic product at market prices). The gross output of the petroleum sector consists of the proceeds from oil exports, local sales of crude oil for local refining, and local sales of natural gas. But because of the massive involvement of foreign operators in the Nigerian petroleum industry, not all of the industry's value added is retained in the country; at the moment a substantial proportion is sent out in the form of factor payments profits, dividends, interest, fees, and wages and salaries paid abroad. It is therefore more realistic to consider the industry's contribution to gross national product i.e., gross domestic product less factor payments made abroad. The industry's value added can also be obtained by adding together the various payments to the government in the form of rents, royalties, profit taxes, harbour dues, etc.; the wages and salaries of employees paid locally; and any net retained earnings.

The oil industry's periodic injection of purchasing power through its local expenditure on goods and services is another of its important contributions to the Nigerian economy. Apart from direct payments to the government, oil industry expenditure in Nigeria takes the form of payments of wages and salaries, payments to local contractors, local purchases of goods and services, harbour dues, vehicle licenses, telephone and postal charges, local rents, educational grants and scholarship awards, donations and subventions, and other minor social charges. Cumulative expenditure on these items totaled about N950 million by the end of 1974. Apart from the direct stimulation given to the producers of these goods and services such injections also exert secondary influences, through the multiplier process, on the level of output and employment in other related sectors of the economy, the magnitude of the overall effect depending on the size of the initial injection and the extent of leakages out of the local economic system that may exist (Rosser, 2006).

The payment of substantial revenues to the government is another important aspect of the contribution of the oil industry to the Nigerian economy. The significant increase in government receipts in recent years is a reflection of three factors: increased crude oil production in Nigeria; the huge increase in crude oil prices and the more favourable fiscal arrangements obtained by the government as a result of its improved bargaining position over the years (Anderson, 2006).

At the early stages of oil operations when the prospects of establishing a viable oil industry in Nigeria were rather uncertain, the government was in a weak bargaining position via the oil companies. Consequently, the terms negotiated at that time with the Shell-BP Petroleum Company of Nigeria were favourable to the Company, and included relatively low concession rents, a 12.5 per cent royalty rate, a 50/50 profit-sharing formula based on realized prices, and large capital allowances. The use of realized prices in the calculation of taxable profits meant that the country's oil revenues fell as oil prices fell throughout most of the 1960s. But as the country's oil prospects improved and the government's bargaining power consequently increased, these terms were progressively revised to take account of the changed conditions. These changes resulted in a significant increase in government oil revenues, particularly in 1973 and 1974. As noted above, a large part of the increase in oil revenues was accounted for by the huge increase in crude oil prices during 1973-74.

How far oil prices will continue to be high in the future will depend on the balance between the demand for and the supply of energy—in particular, on the level of economy in energy consumption, and the speed of development of substitute fuels in consuming.

This is an important aspect of the oil industry's contribution to the Nigerian economy, which could not have come at a more opportune moment because the country is embarking upon a massive programme of industrialization and economic development which postulates huge imports of capital goods and specialized services involving massive expenditure of foreign market. In many underdeveloped countries, especially those that depend heavily on a narrow range of primary commodities, acute shortages of foreign market, often exacerbated by massive declines in world commodity prices, constitute a major obstacle to effective economic development. The oil industry in Nigeria now has substantial foreign market reserves and is in the healthy position of being able to finance the foreign market cost of her development programmes. The industry's contribution to foreign market is not measured by the gross value of crude oil exports because the practice followed by the oil companies is to retain the entire proceeds from exports abroad, and to remit to the producing country only the amount needed to sustain their local operations.

Another contribution of the oil industry to the Nigerian economy is the provision of a cheap and/or readily available source of energy for industry and commerce, through the operations of the local refinery and the utilization of locally discovered natural gas. The Eleme refinery, near Port Harcourt, which came into operation in November 1965, had an initial capacity of 1.9 million tonnes per annum, and was designed to meet the country's main product requirements at that time, with the exception of bitumen, aviation gasoline, and lubricating oils. A liquefied petroleum gas plant, with a capacity of 15,000 tonnes per annum, was added in 1966. The refinery was damaged during the civil war but has since been rebuilt and expanded to a capacity of about 2.75 million tonnes. It is planned further to expand the capacity of the refinery to 3.75 million tonnes per annum and to build two new refineries one at Warri in Bendel State (now Delta State) and the other at Kaduna in Kaduna State—during the current National.

2.5 Challenges in the oil sector of Nigeria

The oil sector has been plagued by various problems which undermined its optimal development over the years. In general terms, the oil sector of the Nigerian economy in the 1990s faced (and still faces some of) the following problems:

- i) The Nigerian National Petroleum Corporation (NNPC) is controlled by the Ministry of petroleum Resources. It lacks autonomy, as a result of which decision taking is often bureaucratic and unnecessarily delayed. Therefore, the operation of the NNPC is characterized by inefficiency, especially in refinery operations, distribution and marketing.
- ii) Frequent delays in the payment of cash calls to the joint venture operators have tended to discourage increase in the level of investment by the oil companies. Insufficiency of funds has also constrained adequate equipment maintenance and efficient refinery operations by the NNPC. The Federal Government's delays in the payment of cash calls for its JV operations in the upstream sub-sector, focusing more on maintenance rather than growth.
- iii) There had been frequent communal disturbances which disrupts crude production as oil communities' clamour for higher stake in oil operations.
- iv) There are reported cases of massive smuggling of petroleum products across the borders in quest for foreign market and to take undue advantage of the lower domestic prices vis-a-vis neighbouring countries prices.
- v) Some marketers hoard products in periods of scarcity in order to sell in the black market at higher prices.
- vi) This is encouraged largely by price differential of some products and the proliferation of illegal sales outlets

where some adulterations occur. Others are relatively low level of investments in the sector, compared to its potentials.

- vii) High technical cost of production, due to low level of domestic technological development.
- viii) Restrictions imposed by crises and production disruptions caused by host communities.
- ix) Environmental degradation due to the flaring of associated gas.

2.6 Oil Price Shocks: Origin and Causes

Oil price shocks are not a new phenomenon; it has been a dominant feature in the oil market during the last two decades (Baumeister & Peerman, 2009). The market has been characterized with erratic movement of oil price since the 1970; moreover, there have been very large and sharp swings in the nominal price of oil since the collapse of oil price in 1986 (Sauter & Awerbuch, 2003). These shocks have been traced to many sources or origins. Understanding these origins will help in policy making against oil shocks.

Giraud (1995) highlights political and economic decisions in the oil industry as causes of oil price movements. While many writers focus on the economic factors, Mabro (1991a), as reported by Giraud (1995), states that the day-to-day prices of oil may be determined by free market forces, but sharp shifts in price level are essentially motivated by political factors, an example of which is the politically motivated civil strifes and unrests in the Middle East from where the bulk of crude oil supply emanate. Hamilton (2009) agrees with Mabro (1991) that supply disruptions are a significant factor of oil price volatility. He points out that politically-induced historical oil shock events such as the Yom Kippur War in 1973, Iranian Revolution in 1978, Iraq's invasion of Iran in 1980, and Iraq's invasion of Kuwait in 1990 have all spiked up oil prices despite increased production from non-OPEC countries to compensate for decline in OPEC's production. For example, the 1980 and 1990 events resulted in jump in oil price by 25 percent and 75 percent respectively (Hamilton, 2009). The hikes dissipate after the events, only to emerge with another event, thus creating shocks and disequilibria.

From an economic point of view, Baumeister & Peerman (2009) explain that oil price shocks results from low price elasticity of demand and supply. The result of this is that large price variation is required to clear the market, that is, to restore the market to equilibrium. Hamilton (2008) and Fattouh (2007) agree that crude oil price elasticity is very low especially in the short run. This is due to technology lock-up; that is, it takes some time before energy consuming appliances/capital stocks are replaced with more energy-efficient substitutes. However, substitution takes place in the long run and price elasticity is thus much larger. Notwithstanding, price elasticity is yet less than one (Hamilton, 2008). Baumeister & Peerman (2009) further explain that the demand function is recently getting less elastic (probably due to increasing growth in demand from emerging economies, relative to availability of substitutes such as bio-fuels and green energies), and this explains higher shocks in oil prices. Similarly, supply of crude oil is price inelastic. This results from time lag between exploration and production activities, making supply less responsive to price changes (Fattouh, 2007).

Besides the decreasing elasticity of crude oil demand function, Baumeister & Peerman (2009) further posit that shifts in demand for oil explain some of the price volatility. These shifts result from economic growth in oil-importing countries, but Kilian (2006) notes that the shifts in global oil demand, and consequent surges in oil price, in the past few decades have been mostly due to shocks/changes in inventory/precautionary demand planning (against probable future oil scarcity) by oil importers.

Hamilton (2009) however disagrees with Kilian (2006) that shifts in global oil demand and price is not due to precautionary demand for oil; rather, he argues that precautionary/inventory demand declines in periods of price increases, thus helping to moderate price surges rather than aggravating it. He concludes that positive inventory a precautionary demand identified by Kilian (2006) occurs after oil price rise has dissipated: firms replenish their stock that had been earlier depleted during period of price rise. Thus, it prevents excessive price plunge and invariably moderates volatility. Income elasticity also contributes to oil price volatility. Income elasticity higher than unity means that percentage rise in quantity demanded of oil is greater than percentage rise in income. Thus income variation causes demand for oil to shift in the same direction but at a higher magnitude, thus leading to oil price volatility. Reporting Darl (1991) Hamilton (2008) reports positive income elasticity for crude oil demand in developing countries from where most of the growth in world consumption of crude oil emanates. This agrees with Fattouh's (2007) report of Ibrahim and Hurst (1990) and Pesaran, Smith & Akiyaina's (1998) estimated crude oil income elasticity for developing and Asian countries. However, shifts in supply function are mild except for periods of political disturbance in oil-producing countries.

This points out that the current rising trend in oil price resulting from supply disruption may not be sustained. This thus bears a policy implication for governments in oil exporting countries with respect to tying budgetary plans too closely to crude oil revenues.

Baumeister and Peerman (2009) further identify shift in contractual arrangement from longer term to short term as another cause of volatility. They note that oil market transactions in 1960s were based on long-term contracts with predetermined price. Thus transition to the current market based system of spot market trading would results in quicker translation of oil demand and supply variations into price changes.

Sharp changes in oil price affect different countries differently, depending on whether the country in question is an exporter of crude oil or an importer. For an importer or a consumer nation, rise in price of oil, an input of production, raises the cost of production, and hence can lead to (cost-push) inflation, lower economic growth, and even recession (Sauter and Awerbuch, 2003; Barsky and Kilian, 2004; Mordi and Adcbiyi, 2010).

This was the case in the US between 1948 and 1981 (Hamilton, 1983). On the other hand, rise in oil price is beneficial to oil exporting countries as export receipt from a given quantity of oil increases (Deaton, 1999). On the other hand, decline in oil price may hurt them in terms of decline in foreign revenue, economic recession, and sometimes political instability (Zhang, Lai & Wang, 2007).

Are oil-exporting countries excluded from negative effects of oil price rise? It is evident that countries may benefit from additional income from commodity price booms; yet, the benefit may be limited due to the DDS plague. Besides, removal of subsidies on petroleum products by many governments in net oil-exporting countries in pursuit of market-based efficiency is tying domestic prices of petroleum products to international crude oil prices (Baig et al, 2007). This implies that oil price rise/shocks filters into their economies via domestic fuel prices. Thus, their economies may also be affected by oil price increase in a fashion similar to that of net oil importers.

Oil price rise is costly for the oil-importing economy, and neither does its decline benefit them (Atukeren, 2003). That is, price decline does not significantly improve the economy; whereas, oil price rise negatively impacts on the economy (Sauter & Awerbuch, 2003). This asymmetry is due to constraints placed on firms' adjustment to oil price shocks by resource reallocation effect.

When oil price rises, sectors that use oil-intensive production processes decline. On the other hand sectors that are less dependent on oil relatively expand. The engendered reallocation of resources, coupled with market imperfection constrains reverse adjustment when oil price falls. Factors of production do not readily move between sectors, despite falling oil price and declining costs of production; and consequent expansion in the energy-intensive sector. The sector could thus not fully expand in response to a unit fall in oil price - as much as they shrank when oil price had risen by a unit. This shows that oil price changes (rise and fall in price) lead to overall output loss for oil-importing countries (Jimenez-Rodriguez and Sanchez, 2003).

Oil price movements are not beneficial to exporting countries either, due to similar asymmetric effect. Effects similar to those faced by oil importing replicate themselves in oil-exporting countries given transmission of international price movement into domestic market. Price shocks are even worse when considered in the light of uncertainty effect on consumption and investment expenditures, and ultimately, the consequential output loss.

III. Research Methodology

The research design used for this study is the ex-post factor research design. This design has been adjudged appropriate as the event under study had already taken place. The study has no control over the variables under study simply because they have already been manipulated before they were applied in this study.

Data in this study consist mainly of secondary time series data for the period 1985 to 2013; sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin, Journals, the internet and other related publications.

Model specification

For the purpose of this study, the following econometric model is specified.

$$MCAP = f(CODP, COR, COEX, ER) \quad (1)$$

This leads to an ordinary least square formulated as;

$$MCAP = a_0 + b_1CODP + b_2COR + b_3COEX + b_4EXR + e_t \quad (2)$$

Where:

- MCAP = Market Capitalization.
- CODP = Crude Oil Domestic Production
- COEX = Crude Oil Export
- COP = Crude Oil Revenue
- EXR = Exchange Rate
- a_0 = Regression Constant.
- $b_1, b_2, b_3,$ = Regression Parameters
- e_t = Stochastic Error Term

IV. Data presentation, Analysis and discussion of findings

Data presentation

The data collected in relation to oil glut and its impact on the Nigeria Stock Market is presented below in Table 1

YEAR	MCAP	CODP	COR	COEX	EXR
1985	6.6	16.8	10.9	11.2	0.8938
1986	6.8	29	8.1	8.4	2.0206
1987	8.2	47.5	19	28.2	4.0179

1988	10	64.1	19.8	28.4	4.5367
1989	12.8	107.2	39.1	55	7.3916
1990	16.3	83.9	71.9	106.6	8.0378
1991	23.1	198.9	82.7	116.9	9.9095
1992	31.2	369.4	164.1	201.4	17.2984
1993	47.5	361.9	162.1	213.8	22.0511
1994	66.3	326.9	160.2	200.7	21.8861
1995	180.4	1150.7	324.5	927.6	21.8861
1996	285.8	1739.7	408.7	1286.2	21.8861
1997	281.9	1605.5	416.8	1212.5	21.8861
1998	262.6	1104.2	324.3	717.8	21.8861
1999	300	1536.5	724.4	1169.5	92.6934
2000	472.3	3282.9	1591.7	1920.9	102.1052
2001	662.5	2501.6	1707.6	1839.9	111.9433
2002	764.9	2695.9	1230.9	1649.4	120.9702
2003	1359.3	4113.9	2074.3	2993.1	129.3565
2004	2112.5	4274.4	3354.8	4489.5	133.5004
2005	2900.1	5664.9	4762.4	7140.6	132.147
2006	5120.9	6982.9	5287.6	7191.1	128.6516
2007	13181.7	7533	4462.9	8110.5	125.8331
2008	9563	9097.8	6530.6	9861.8	118.5669
2009	7030.8	7418.1	3191.9	8105.5	148.8802
2010	9918.2	14505.8	5396.1	11300.5	150.298
2011	10275.3	15285	8879	14323.2	153.8616
2012	14800.9	15004.6	8026	14260	157.4994
2013	19077.4	13750.7	6809.2	14131.8	157.3112

Source: CBN Statistical Bulletin, vol 24, 2013.

Dependent variable: FDI

Table 2: Result of Regress Analysis

Variables	Coefficient	Standard Error	t- Stats	Prob.
C	-3.023381	0.66441	-4.550469	0.0001
LCODP	0.676662	0.474426	1.426277	0.1667
LCOR	1.198212	0.449900	2.663285	0.0136
LCOEX	-0.072827	0.546932	-0.133155	0.8952
LEXR	0.818327	0.297926	-2.746746	0.0112

$$R^2 = 0.967070$$

$$R^2 \text{ adjusted} = 0.961581$$

$$f\text{-stat.} = 176.2021$$

$$D\text{-W Stat.} = 1.213224$$

Source: E-views Computation

Where

LCODP - Log of Crude Oil Domestic Production

LCOR - Log of Crude Oil Revenue

LCOEX - Log of Crude Oil Export

LEXR - Log of Market Rate

The analysis of the above results is based on three criteria;

- (i) Economic criteria;
- (ii) Statistical criteria;
- (iii) Econometric criteria.

Economic Criteria

The result in Table 2 above revealed that crude oil domestic production and crude oil revenue exert positive effect on market capitalization in Nigeria. This is in tandem with the a priori criteria. The parameters entered the model with positive signs implying that one percent increases in crude oil domestic production and crude oil revenue resulted in a 0.676662 and 1.198212 billion naira respectively increases in market capitalization in Nigeria. The empirical result also revealed that crude oil export and market rate impact inversely market capitalization in Nigeria. The more volatile the Market rate, the less capitalized the Nigerian Stock Market (Udoka & Anyinyang, 2013). Also, the higher the crude oil export, the less capitalized the Nigerian Stock Market. Stated in other words, one percent increases in market rate and crude oil exports reduced the Nigerian stock market

capitalization by 0.072827 billion naira and 0.818327 percent respectively.

Statistical Criteria

The goodness of fit of model as indicated by their R^2 value of 0.9671 or 96.71 percent indicated that the model fits the data well, the total variation in the observed behaviour of market capitalization is jointly predicted or explained by the variations in crude oil domestic production, crude oil revenue, crude oil export and market rate up to 96.71 percent the remaining 3.29 percent is accounted for by the disturbance term. The overall significance of the model was also tested using the ANOVA or f-statistics. Here the high significance of the f-statistics value of 176.2021 confirmed that the high predictability of the model did not occur by chance, it actually confirmed that the model fitted the data well.

The individual statistical significance of the parameters of the respective independent variables was also tested. All variables were significant at 10 percent level. However, only crude oil revenue and market rate were significant at 5 percent levels given their probability values of 0.036 and 0.0112 respectively.

Econometric Criteria

We also tested for the presence of autocorrelation in the residual of the model using the d-w statistics, the test revealed that the calculated d-w value of 1.213224 fell within the inconclusive region of the d-w table. Hence the decision as to the existence of serial correlation could not be precisely made.

Test of Hypotheses

Hypothesis one

H_0 : Crude oil domestic production does not significantly affect the market capitalization of the Nigerian stock market

H_1 : Crude oil domestic production does significantly affect the market capitalization of the Nigerian stock market

Decision Rule

Accept H_0 : if calculated t-statistics value < table t-statistics value.

Reject H_0 : if calculated t-statistics value > table t-statistics value.

From the regression result,

Calculated t-statistics value	=	1.4263
Table t-statistics value	=	2.064

Since the calculated t-statistics value of 1.4263 is less than the table t-statistics value of 2.064 at 5 percent level of significance, we reject the alternative hypothesis and accept the null hypothesis. It therefore implies that crude oil domestic production does not significantly affect the market capitalization of the Nigerian stock market.

Hypothesis two

H_0 : Crude oil revenue does not significantly affect the market capitalization of the Nigerian stock market.

H_1 : Crude oil revenue does significantly affect the market capitalization of the Nigerian stock market.

Decision Rule

Accept H_0 : if calculated t-statistics value < table t-statistics value.

Reject H_0 : if calculated t-statistics value > table t-statistics value.

From the regression result,

Calculated t-statistics value	=	2.6633
Table t-statistics value	=	2.064

Since the calculated t-statistics value of 2.6633 is greater than the table t-statistics value of 2.064 at 5 percent level of significance, we reject the null hypothesis and accept the alternative hypothesis. It therefore implies that Crude oil revenue does significantly affect the market capitalization of the Nigerian stock market.

Hypothesis three

H_0 : Crude oil export does not significantly affect the market capitalization of the Nigerian stock market

H_1 : Crude oil export does significantly affect the market capitalization of the Nigerian stock market

Decision Rule

Accept H_0 : if calculated t-statistics value < table t-statistics value.

Reject H_0 : if calculated t-statistics value > table t-statistics value.

From the regression result,
Calculated t-statistics value = 0.1332
table t-statistics value = 2.064

Since the calculated t-statistics value of 0.1332 is less than the table t-statistics value of 2.064 at 5 percent level of significance, we accept the null hypothesis and reject the alternative hypothesis. It therefore implies that crude oil export does not significantly affect the market capitalization of the Nigerian stock market.

Hypothesis four

H₀: Market rate does not significantly affect the market capitalization of the Nigerian stock market
H₁: Market rate does significantly affect the market capitalization of the Nigerian stock market

Decision Rule

Accept H₀: if calculated t-statistics value < table t-statistics value.
Reject H₀: if calculated t-statistics value > table t-statistics value.

From the regression result,
Calculated t-statistics value = 2.7467
Table t-statistics value = 2.064

Since the calculated t-statistics value of 2.7464 is greater than the table t-statistics value of 2.064 at 5 percent level of significance, we reject the null hypothesis and accept the alternative hypothesis, u therefore implies that Market rate does significantly affect the market capitalization of the Nigerian stock market.

Discussion of Findings:

The crude oil glut and its effect on the Nigerian Stock market have been examined. From the study, crude oil domestic production has a positive but insignificant relationship with the performance of the Nigerian capital market. This means that while oil production affects the Nigerian stock market positively, the effect remains marginal.

Finally, it was discovered that exchange rate affected significantly the market capitalization of the Nigerian Stock market. The more volatile the market rate regime, the lower the capitalization of the Nigerian Stock Market. This finding is in tandem with Franck and Young (1972), changes in the value of the market rate alter the value of the multinational's foreign firms, showing up as a profit or loss on its books which would then affect its share price. Also supporting this finding is Dornbusch and Fisher (1980) who asserts that market rate movements cause stock price movements.

V. Summary Of Findings, Conclusion And Recommendation

5.1 Summary of findings

This study was carried out to examine the effect of crude oil glut on the Nigeria Stock market. The study review relevant empirical and theoretical literatures on the subject matter. Using the ordinary Least Square multiple regression technique to investigate the extent to which crude oil domestic production, crude oil revenue, crude oil export and exchange rate affect the Nigerian Stock Market Capitalization. The following findings emerged from this study:

- i) Crude oil domestic production have a positive but insignificant effect on market capitalization;
- ii) Crude oil revenue have a large positive impact on the market capitalization of the Nigerian stock market;
- iii) Crude oil export has a small inverse effect on the Nigerian Stock Market
- iv) Finally, exchange rate significantly affects market capitalization in the Nigerian Stock Market inversely.

VI. Conclusion

This study examined the effect of crude oil glut on the Nigeria Stock market. With specific attention on the effect of crude oil domestic production, crude oil revenue, crude oil export and exchange rate on the Nigerian Stock crude oil revenue, crude oil export and market rate on the Nigerian Stock Market capitalization. We found that oil glut reduces the market price of oil which in turn reduces' oil revenue, this again affects government expenditure, thus affect the purchasing power of the people which again translate into the stock prices of quoted firms. Based on these findings, it is right to conclude that oil glut is not healthy for the Nigerian stock market.

Recommendations

Based on the analyses and the findings that emanated from this study the following recommendations are made.

- i) The Nigerian economy should be diversified to reduce the over reliance on oil revenue.
- ii) Nigeria should go back to agriculture and food production to promote exportation of non oil and reduce the high burden on the country's foreign reserve.
- iii) Government should, as a matter of urgency reduce the number of foreign workers in the oil industry as this will reduce the exploration cost.

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