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RESEARCH ARTICLE

The Effect of the Change in Oil Prices on Stock Market Capitalization in Nigeria

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ABSTRACT

This study evaluates Oil Price Changes on Stock Market Capitalization in Nigeria. The specific objectives of the study are to i. examine the effect of the stock price on stock market capitalization in Nigeria. ii evaluate the effect of inventors' behaviors on stock market capitalization in Nigeria. Ex post facto research designs were adopted in obtaining, analyzing, and interpreting the data. The study using the Ordinary Least Squares technique analyzed the data. The study review that stock price changes have a significant effect on the value of stock market capitalization in Nigeria. The result also reviews that inventors' behaviors have a significant effect on stock market capitalization in Nigeria. it affects the domestic market; the price of other stocks is changing day by day. We conclude that changes in oil prices have a significant impact on the stock market. We recommended that government should carefully consider oil-saving measures. Policies to improve energy efficiency, promote energy conservation, and use alternative fuels are among these measures (i.e. coal, natural gas, and renewable energy). And Oil industry investors must diversify their holdings to account for the negative effects of oil price changes on the stock market.

Keywords: *Price Changes, Oil Price, Stock Market, Capitalization, Nigerian*

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1. Introduction

Oil and its products are considered to be the most important source of energy all over the world and due to its importance, change in the price of oil impact the financial environment of developed and developing countries. The effects of price change in crude oil in the world oil market have both a direct and indirect impact on an economy, given that oil is the largest internationally traded good both in volume and value terms. Changes in crude oil prices besides affecting production and consumption like other commodities can also cause a change in behaviour of investors and stock prices (Fatima and Bashir, 2014). Oil prices have been showing spectacular movements which have been at the forefront of the increase in uncertainty of the energy sector with a recent experience on a historical decline (Abderrazak and Naceur 2014). Between 1984 and 2014, five other episodes of oil price declines of 30 percent or more occurred: an increase in the supply of oil and change in OPEC policy (1985-86); U.S. recessions (1990–91 and 2001); the Asian crisis (1997–98); and the global financial crisis (2007–09), (Baffes et al, 2014) and the current scenario of falling oil price that started in 2014 was triggered by; Slow world global economic growth compounded by the sustained debt crisis in Eurozone countries, declining output and productivity in China, recession and declining output in Russia, escalating global tension in Ukraine and the Middle East, a technological breakthrough in oil drilling and improvement in hydraulic fracturing in the United States of America. These changes in the form of demand-side shocks and supply-side shocks are responsible for the current sustained fall in oil price.

Recent crude oil price changes show that during the period spanning 2007 to 2008 the oil price increased from 60 dollars to cross the threshold of 100 dollars reaching a record of 147 dollars per barrel in July 2008. Since then, prices have been showing a decrease and by August 2008 declined to a level of 115 dollars, and four months later the price dropped back to be traded at 45 dollars at the end of December 2008. The cycle was being launched again around March and April 2009 when oil was traded at about 40 dollars per barrel to reach by August 2009 the level of more than 70 dollars per barrel (Canuto, 2014). However, during the period from January 2011 to June 2014, monthly average oil prices fluctuated between $93 and $118 per barrel before going down to $61 per barrel in December 2014.

Statement of Problem

The sudden decline in oil prices has been followed by profound volatility in foreign exchange and equity markets of a number of emerging economies since October 2014. Low oil prices have already led investors to reassess the growth prospects of oil-exporting countries. This has contributed to capital outflows; reserve losses, sharp depreciation, or rising sovereign credit default swap (CDS) spreads in many oil-exporting countries. In Nigeria, the recent oil price decline caused the Central Bank of Nigeria to devalue the naira towards the end of 2014. CBN moved the mid-point of the official exchange rate to N168/US$ from N155/US$ and increased the band around the foreign exchange rate to +/-5% from 3% signaling a devaluation of the naira by 8 percent. Moreover, the closure of the Retail and Wholesale Dutch Auction System of the foreign exchange market signaled a further devaluation of the exchange rate from N155/US$ N168/US$ to N199.7/US$. usually a capital flight from the capital markets to the money markets to capitalize on the new and higher rate in the money markets. Certainly, this often causes stock price crashes and enhances the investors' negative sentiments in the capital markets. Therefore, this study seeks to, evaluate Oil Price Changes on Stock Market Capitalization in Nigeria.

Objectives of the Study

The broad objective of the study is to evaluate Oil Price Changes on Stock Market Capitalization in Nigeria. the specific objectives are;

I. To examine the effect of the stock price on stock market capitalization in Nigeria

II. To evaluate the effect of inventors' behaviors on stock market capitalization in Nigeria.

The hypothesis of the Study

I. Stock price has no significant positive effect on stock market capitalization in Nigeria.

II. Inventor's behaviors have no significant positive effect on stock market capitalization in Nigeria.

2. Review of Related Literature

Conceptual Review

Crude Oil Price

Crude oil price fluctuations are usually defined in terms of cyclical movements that emanate from changes in either the supply or the demand for crude oil in the international market. Oil prices are determined from external factors (international market) and are measured in dollars per barrel. Investors in the stock market in Nigeria, especially oil industry investors react to fluctuations in crude oil prices. The relationship between oil prices and economic activity can be explained using the standard supply-side effect, which states that higher oil prices raise production costs and reduce the availability of the primary productive input, slowing the pace of activity development (Blanchard and Gali, 2008).

Oil prices may also have an impact on the economy via demand-side channels, such as lowering household purchasing power and slowing consumption expenditures. The stock market, on the other hand, is regarded as a global indicator of a country's economic performance (Amin, 2015). For example, a drop in stock prices may cause widespread economic disruption by reducing household income and making investors more cautious about spending money, resulting in a drop in consumer expenditures. Furthermore, investors are finding it difficult to raise capital by issuing more stocks in the face of lower stock prices (Alamgir and Amin, 2021).

Stock Market Capitalization

The stock market is part of the capital market which is the market where medium to long terms finance can be raised. The capital market is the market for dealing (that is lending and borrowing) in long-term loanable funds, Masih, Peters & Mello (2010).

Thus, the stock market is seen as a leading operator in the capital market. Akingunola, Adekunle, and Ojodu, (2012) define the market as a public market (a loose network of economic transactions, not a physical facility or discrete entity) for the trading of company stock and derivatives at an agreed price; these are securities listed on a stock exchange as well as those only traded privately. The stocks are listed and traded on stock exchanges which are entities of a corporation or mutual organization specialized in the business of bringing buyers and sellers of the organizations to a listing of stocks and securities together.

History has shown that the price of shares and other assets is an important part of the dynamics of economic activities in an economy, (Ologunde, Elumilade, Asaolu, 2006). The stock market is often considered the primary indicator of a country's economic strength and development. Rising share prices, for instance, tend to be associated with increased business investment and vice versa, (Akingunola, Adekunle, and Ojodu, 2012). Participants in the stock market range from small individual stock investors to large hedge fund traders, who can be based anywhere. Below is a list of indicators that measure the operations of the capital market as opined by (Akingunola, Adekunle, and Ojodu, 2012).

Theoretical Literature

Efficient Market Hypothesis (EMH)

The theoretical background linking capital market and economic growth is based on the Efficient Market Hypothesis (EMH) developed by Fama in 1970. According to the Efficient Market Hypothesis (EMH), financial markets are efficient or prices on traded assets that have already reflected all known information and therefore are unbiased because they represent the collective beliefs of all investors about prospects.

According to Baars and Rukavishnikova (2014), there are three forms of efficient markets; weak form, semi-strong form, and strong form. These forms indicate at which level the efficient market hypothesis holds. In the weak form, stock prices are only based on the historical prices, while at the semi-strong form stock prices are also adjusted for obvious public information like corporate announcements. At last, the strong form assumes that all publicly available information is incorporated in the stock prices. According to Fama (1970), stocks are priced based on the rational behaviour of investors and cannot be predicted using either technical analysis, which extrapolates trends of past prices on the future stock prices, or fundamental analysis, which helps to identify mispriced stocks.

The previous test of the Efficient Market Hypothesis (EMH) has relied on long-range dependence of equity returns. It shows that past information has been found to be useful in improving predictive accuracy. This assertion tends to invalidate the Efficient Market Hypothesis (EMH) in most developing countries. Equity prices would tend to exhibit long memory or long-range dependence, because of the narrowness of their market arising from the immature regulatory and institutional arrangement. They noted that, where the market is highly and unreasonably speculative, investors will be discouraged from parting with their funds for fear of incurring financial losses. Situations like the one mentioned above, have a detrimental effect on the economic growth of any country, meaning investors will refuse to invest in financial assets. The implication is that companies cannot raise additional capital for expansion. Thus, it suffices to say that the efficiency of the capital market is a necessary condition for growth in Nigeria, (Nyong, 2003).

This theory has been criticized by many researchers who believe that stock prices can be at least partially predicted. In support of this, Baars and Rukavishnikova (2014) opined that in line with studies conducted within the behavioural finance field, investors do not behave rationally and are subject to many behavioural biases which can affect their decisions next to the information that is publicly available. However, the most controversial critique was made by Grossman and Stiglitz (1995) who argue that it is impossible for markets to be perfectly efficient since otherwise the profit to collect information would be absent and there would be no reason to trade leading to marking to collapse.

Empirical Review

Reboredo and Rivera-Castro (2013) examine the connection between oil price and stock market returns using daily data that consists of the aggregate S&P 500 and Dow Jones Stoxx Europe 600 indexes and US and European industrial sectors (automobile and parts, banks, chemical, oil, and gas, industrial goods, utilities, telecommunications, and technologies) over the period from 01 June 2000 to 29 July 2011. Based on wavelet multi-resolution analysis they found that oil price changes have not much effect on stock market returns in the pre-crisis period at either the aggregate as well as the sectoral level. With the onset of the financial crisis, their findings support the positive interdependence between oil price shocks and the stock returns at both the aggregate and the sectoral levels.

Eryiğit (2009) analyzed the impacts of oil price changes on the sectoral indices of the Turkish stock exchange using daily data. Adopting the ordinary least square technique, he estimated an extended market model which included market return, oil prices (in Turkish Lira), the oil price in dollars, and exchange rate (USD/TL) to determine the effects of the oil price (USD) changes on market indexes in Istanbul Stock Exchange (ISE) between 2000 and 2008. He found that changes in the oil price (TL) had statistically significant effects on electricity, wholesale and retail trade, insurance, holding, investment, wood, paper, printing, basic metal, metal and non-metal products, machinery, and mineral products indices at the 5 percent significance level. In addition, changes in the oil price (USD) had a significant positive effect on the wood, paper printing, insurance, and electricity sub-sector indices.

Farzanegan and Markwardt (2009) stated that due to the high dependence on oil revenues, oil price fluctuations had a special impact on the Iranian economy. By applying a VAR approach, they analyzed the dynamic relationship between asymmetric oil price shocks and major macroeconomic variables in Iran. Contrary to previous empirical findings for oil net importing developed countries, oil price increases (decreases) have a significantly positive (negative) impact on industrial output. Unexpectedly, the authors noted that they cannot identify a significant impact of oil price fluctuation on real government expenditures. The response of real imports and the real effective exchange rate to asymmetric oil price shocks are significant. Furthermore, the response of inflation to any kind of oil price shock is significant and positive.

Aliyu (2009) assessed the impact of oil price shock and real exchange rate volatility on real economic growth in Nigeria based on quarterly data from 1986Q1 to 2007Q4. The empirical analysis started by analyzing the time-series properties of the data which is followed by examining the nature of causality among the variables. Furthermore, the Johansen VAR-based cointegration technique was applied to examine the sensitivity of real economic growth to changes in oil prices and real exchange rate volatility in the long run while the short-run dynamics were checked using a vector error correction model. Results from ADF and PP tests show evidence of unit root in the data and Granger pairwise causality test revealed unidirectional causality from oil prices to real GDP and bidirectional causality from real exchange rate to real GDP and vice versa. His findings showed that oil price shock and appreciation in the level of exchange rate made a positive impact on real economic growth in Nigeria. He

recommended greater diversification of the economy through investment in key productive sectors of the economy to guard against the vicissitude of oil price shock and exchange rate volatility.

3. Methodology

To obtain, analyze, and interpret data related to the study's objectives, an ex post facto design was used. This design was chosen to give the researcher the opportunity to observe variables over a long time. As a result, from 1980 to 2014, both the dependent and independent variables will be tracked. The hypotheses were tested using the Ordinary Least Squares technique to determine the impact of the independent variable – Oil Price – on the dependent variable – Stock Market performance indicator proxied by an increase in stock traded value. Time series data is used in this study. It is an annual secondary data set derived from the Central Bank of Nigeria's statistical bulletins for the years 1980 to 2014. The unit root was established using the Phillips-Perron test.

Model One for Hypothesis one

I. Stock price has no significant positive effect on stock market capitalization in Nigeria.
The functional form specification in investigating hypotheses one and two is as follows;

SM = f (Dummy, SP) …….. 1

This equation implies that stock market performance indicators (represented by the value of stock trading in the stock market) depend on oil price and dummy variable, exchange rate, interest rate, and oil export are control variables used in the study).

Dummy. D = 1-periods of oil price stability-(1980-1984, 1987-1989, 1992-1996, 1999-2000, 2002-2006, 2010-2013).

D = 0 - periods of oil price fluctuation - caused by an increase in the supply of oil and change in OPEC policy (1985-1986), U.S. recessions (1990–91 and 2001), the Asian crisis (1997–98), global financial crisis (2007–09) and the period of change in technology (2014-2015).

We expect that periods of oil price stability will affect stock exchange performance indicators positively while periods of oil price fluctuations will affect stock exchange performance negatively. Transforming equation 1 into a linear function;

$$SM = \alpha_0 + \alpha_1 D_i + \alpha_2 OP + \alpha_3 (D_i * OP) + u_t \quad \text{..... (2)}$$

Were α_0 = the constant or the intercept and α_1= the differential intercept α_7 = differential slope coefficient for the multiplicative case between the dummy and dummy multiplied by the oil price - indicating by how much the slope coefficient of the major periods' oil price change differ from the slope coefficient of the periods before without price change.

Equation 2 is the model for our objective one. The null hypothesis in equation (2) is $\alpha_1 = 0$ and $\alpha_3 = 0$ indicating that there are no structural changes between the two periods.

Based on equation 2 above, the equation for model 2 is built as stated below.

Model Two for Hypothesis Two

II. Inventor's behaviors have no significant positive effect on stock market capitalization in Nigeria.

The functional form specification in investigating hypothesis two is as follows;

SM = f (OP, EXCHR, INTR, OILEXP))…….. 3

The mathematical specification in equation 3 is transformed to an econometric model below;

$$SM = \alpha_0 + \alpha_1 OPR_t + \alpha_2 EXCHR_t + \alpha_3 INTR_t + \alpha_4 OILEXP_t + \varepsilon_t \text{.....} 4$$

where, α_0 intercepts and α_1, α_2,...etc are the slope of the coefficients of the independent variables to be determined where ε_t is the error term at time t.

The Error Correction Model (ECM)

Once the existence of a long-run co-integration relationship has been established, the short-run or the error correction model can be specified as:

$$(\Delta SM)_t = \alpha_0 + \alpha_1 \sum_{i=1}^{p} \Delta OPR_t + \alpha_2 \sum_{i=1}^{p} \Delta EXCHR_t + \alpha_3 \sum_{i=1}^{p} \Delta INTR_t + \alpha_4 \sum_{i=1}^{p} \Delta OILEXP)_t + \alpha_5 ECM_{t-1} \quad \text{..... 5}$$

The ECM is for objective two.

4. Data Presentation and Analysis

Table 4.1: Phillip-Perron Unit Root Test Results of the Series in Levels

Macro-Economic Variable	Test Stat.	5% Critical-value	Result	Lags
OP	-1.3495	-2.9511	Not stationary	0
SM	-1.7741	-2.9511	Not stationary	0
OILEXPORT	0.3384	-2.9511	Not stationary	0
EXCHR	-0.0227	-2.9511	Not Stationary	0
INTR	-0.4449	-2.9571	Not Stationary	0

Source: Computed by the Author; (*) means significant at 5%.

Correction of Non-Stationarity

Non-stationary variables in levels meant that we difference the data. The Phillips-Perron unit root test was replicated on all variables not stationary at their levels. Table 4.2 presents the results.

Table 4.2: Unit Root Test for the Series in Differences

Macro-economic variable	Test Stat.	5% Critical-value	Result	Lags
OP	-4.6428	-2.9540	stationary	0
SM	-7.4077	-2.9540	stationary	0
OIL EXPORT	-4.5530	-2.9540	stationary	0
EXCHR	-5.4002	-2.9540	Stationary	0
INTR	-9.0668	-2.9540	Stationary	0

Source: Computed by the Author

Note: (*) means significant at 5%.

Table 4.2 shows the correction of the unit problem observed in table 4.1.

Testing for Co-integration Using the Engel-Granger Residual Approach

after determining the order of integration of the variables, the Engel-granger residual-based cointegration test was used for the three models, and the test results are presented in Tables 4.3. Even though individual time series may be non-stationary, a linear combination of them can be stationary because equilibrium forces tend to keep such series together in the long run, as Engel and Granger (1987) pointed out. The variables are said to be cointegrated when this happens, and error correction terms are used to account for short-term deviations from the long-term equilibrium relationship implied by cointegration.

Table 4.3 : Cointegration test

Variable	PP test statistics	5% critical value	Result
Residual1	-6.9291**	-2.9604	Co-integrated

Source: Computed by the Author. The three residual (s) indicate cointegration at 5% significance level Key *(**) denotes rejection of the hypothesis at 5% significance level

The results of the cointegration test are shown in Table 4.3. Because all of the variables in Model 1 are integrated to order (1), we proceed to the cointegration equation, where the residual of the cointegration is stationary at 1 (0), implying that all of the variables in Model 1 must be regressed on their respective levels of integration. Because the residual obtained from the linear combination of the variables in question was stationary at a 1% critical value, the cointegration result shows that there is cointegration. We then moved on to the ECM equation. Tables 4.3 show the results of the residual-based cointegration tests.

Cointegration is accepted, so the residuals generated from the long-run growth functions in the three models lagged once (say ECMt-1) were used as error correction terms in their respective dynamic models, as shown in Tables 4.3. For the effect of oil price on stock value traded, the Error Correction Model (ECM) was used. Table 4.4 shows the results of modeling the error correction dynamic relationship for the effect of oil price on stock market performance indicators. The speed of adjustment from the short run to the long-run equilibrium is measured by the coefficient of the error correction term in this case.

5. Conclusion

The Engel-Granger cointegration technique and error correction mechanism are used in this study to see if changes in oil prices affect the value of Stock Market Capitalization in Nigeria. The study's main findings show that changes in crude oil prices have a significant impact on the value of the stocks market in Nigeria. As an oil-producing country, this is in line with theory. The findings, however, show that the relationship is significantly positive in the short term. This is also in line with theory, especially given the fact that Nigeria is currently viewed as an oil-importing country. Despite the fact that Nigeria is an oil exporter, the cost of imported refined oil products is significantly higher than what is exported in recent years.

We conclude that changes in oil prices have a significant impact on the stock market. According to our findings, stock market capitalization values are the primary channel for short-run adjustment to long-run equilibrium. Because oil is a global commodity influenced by supply, demand, and speculative factors, the challenge should be to keep oil prices stable in the domestic market while protecting the stock market from the volatility associated with oil prices.

6. Recommendation

Because high oil prices can have significant negative economic consequences, there is a case to be made for government intervention to reduce volatility. There appear to be three areas that should be considered.

To begin with, the Nigerian government could benefit from increasing strategic oil reserves in order to protect the economy from supply disruptions.

1. The government should carefully consider oil-saving measures. Policies to improve energy efficiency, promote energy conservation, and use alternative fuels are among these measures (i.e. coal, natural gas, and renewable energy).

2. Oil industry investors must diversify their holdings to account for the negative effects of oil price changes on the stock market. To avoid severe losses during periods of oil price shocks, they should read the country's economic conditions as well as those of the international oil market.

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