Oil Price Movement and Stock Markets Performance in Nigeria

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Abstracts

This study examined the effect of oil price movement on stock market performance in Nigeria. In the analysis, stock market performance proxy by stock yield was the dependent variable while oil price and inflation were the explanatory variables. Time series data over the period of 1993 to 2020 were collected from the World Bank (WB) Commodity Price Data and World Bank Development Index (WDI). The study employed the Fully Modified Ordinary Least Squares technique. In the linear model, the result shows that oil price and inflation do not have a significant effect on stock yield. When the non-linear form was estimated, inflation shows a significant negative effect on stock yield while oil price shows a significant positive effect on stock yield. The study submitted that the movement in oil price provides a positive signal for stock traded in the market. Thus,

investors should consider investing only in stocks that benefit from higher oil prices, such as oil and gas, refiners, and pipeline companies.

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1. Introduction

One major input that drives production in the real sector is energy specifically oil. The use of oil is not avoidable in the operational activities of every industry (Filippidis, Filis and Kizys, 2020; Montoro, 2012). In routine daily production of goods and services, substantial quantity of oil is deployed (Liu, Lin, Xia, Fan and Wu, 2015). Consequently, economic activity is heavily dependent on the use of oil and this makes changes in the oil market have effect on macroeconomic aggregates globally and countrywide (Filippidis, Filis and Kizys, 2020).Accordingly, based on the status of an economy as oil-importer or oil exporter, a rise in oil prices in the absence of close substitute for oil results in higher production costs or higher income which then raise inflation. At the firm level, volatility in oil price have bearing on financial performance, subsequently dividend declared, retained earnings and equity prices (Elyasiani, Mansur and Odusami, 2011).

In the financial market, oil price movement affects investors demand resulting from unforeseen changes in discretionary income and in precautionary savings (Kang, Ratti and Yoon, 2014). The supply side related factors can lead to changes in inflationary expectations, which are, in turn reflected in financial asset yields.

Oil price movements due to supply-side factors that bring about changes in world oil production, aggregate demand variable resulting from changes in global demand for industrial commodities and a precautionary demand shock based on the future expectation of availability oil arising from geopolitical crisis (Kilian, 2009) can affect the world market as they can trigger inflation and retard growth (Elyasiani, Mansur and Odusami, 2011). In the bond market, the demand side effect of oil price shocks in terms of consumer and business spending on other goods and services (Hamilton, 2008) comes from its effect on the investors demand

resulting from unforeseen changes in discretionary income and in precautionary savings due to the shocks (Kang, Ratti and Yoon, 2014).

Equally, movements in oil prices brought about by supply side related factors can lead to changes in inflationary expectations, which are, in turn reflected in bond yields. In the same vein, government finances can also be affected by shocks in oil prices especially in emerging and oil importing countries that with large budget deficits by straining their sovereign bond markets thereby making their bond markets particularly susceptible to oil price shocks. Also the possible effect of oil price movements on the bond market serve as a channel through which future Gross Domestic Product (GDP) growth can be predicted since the term spread associated with long term bond yields provide the necessary information for such prediction (Demirer, Ferrer and Shahzad, 2020). Thus, the opposite channel is also apparent in the relationship between bond and oil price.

The falling oil price is largely deemed to result from the effect of the increased supply of oil, but the slightly worsened global growth prospects is also deemed to have played a part. A fall in oil prices have a greater effect if it is permanent, as companies and consumers change their behaviour more than they would if the fall in the price was temporary. In Nigeria, lower price of crude oil occasioned by factors such as low demand, seasonality factors, and excess supply led to unfavorable terms of trade evidenced by budget deficit and slow economic growth (Englama, 2010). High price of oil retard economic growth, generate stock exchange panics and brings about inflation which eventually leads to monetary and financial instability. It also leads to high interest rates and even a plunge into recession (Mckillop, 2004). The recent movement in the oil market call for companies to reduce their profitability outlook and short term returns by minimising their exposure to the risky asset stimulate a renewed interest in understanding how financial market participants, policy makers and investors are affected by these shocks.

Extensive studies has been conducted to examine the relationship between oil price and macroeconomic variables including exchange rate, inflation, interest rate and commodity price level (see Oluwatomisin, Paul and Adeyemi, 2014;Razmi, Mohamed, Chin and Habibullah, 2015; Montoro, 2010; Krichene, 2000,

Hidhayathulla and Mahammad ; 2015;Farhad and Yoshino; 2015). However, there is sparse literature on the relationship between oil price and stock market performance in the Nigerian context. This study addresses this gap in the literature by investigating this link between oil price and stock price movements in Nigeria.

This study investigates the relationship between oil price and stock market performance with specific focus on Nigeria corporate sector stock market. The specific goal of this research is to:

i. Investigate the relationship between oil price movements and stock market yield in Nigeria.
ii. Examine the effect of inflation on stock market yield in Nigeria.

The findings of the study would shed light on the appropriate measures of managing stock prices movement. Furthermore, as a guide for proactive and appropriate policy formulation, it is germane for policymakers devising policies for attracting foreign reserve to know the direction of influence between oil price and stock price. Therefore, this study will be of immense importance to the government and policy-makers alike especially in their efforts to fashion out sound and effective exchange rate administration. Sound policies in exchange rate administration, will no doubt, foster improve international trade through exportation of goods and services etc. The net effect of which will be a favourable balance of payment. With a favourable balance of payment, there will be a resultant improvement in the standard of living for the citizens. Hence, member of the society will benefit from the outcome of the study through the improvement in their standard of living.

2. Literature Review

Oil is an international commodity that attracts foreign exchange and is a quick source of capital accumulation. It is also defined as a liquid that is found in rock under the ground". Huge revenues are realized from the wide differential between unit production costs and economic rents, royalties, petroleum taxes, oil exports etc. (Clements and Fry, 2007; Obadan, 2006). The stock market is an economic institution which promotes efficiency in capital formation and allocation. It enables governments and industry to raise long-term capital for financing new projects, and expanding and modernizing industrial and commercial concerns

(Daferighe and Charlie, 2012). The stock market is an entity organized for trading financial assets or liabilities. Such financial assets will include all forms of securities ranging from common stocks to derivatives. The primary function of the stock market is to enable funds to be effectively allocated from the surplus units in the economy to the deficit units for productive investments. Indeed, with such mechanism, corporate financial managers have access to a wide range of sources of finance and instruments.

Among the theories predicting the implication of uncertainty (i.e theories of investment under uncertainty) such as uncertainty arising from oil price shocks on the asset or financial market are the assets pricing theory and real option theory.

The asset price theory suggested that because of the crucial effect of oil on consumption or the investment opportunity set, when the oil price increase, production activity and corporate earnings decline and therefore the asset prices in the financial market is adversely affected. Consequently, the higher energy cost arising from the increase in oil price decrease the use of oil, which in turn lowers the productivity of capital and labour, and therefore decreases its output (Tsai, 2015). On the other way round, the increase in the cost of energy can also transmit to a reduction in households demand for output of the firm due to increase in precautionary savings and the operating income of household, and in particular, restricts the household purchase of durable goods. Consequently, the reduced consumption negatively impact on corporate profits for energy-using durable goods industry (Tsai, 2015). The theory of real options was based on the position that when there is uncertainty about the prices of a commodity, the firm forced to postpone or abandon production and new investment. Accordingly, since oil price tend to move in the same way with energy price, it is expected that higher oil price uncertainty will depress output growth and investment (Kocaaslan, 2019). Accordingly, increase in uncertainty about the return of a given assets tends to increase the time value of a call option on that asset, delaying exercise. The uncertainty may diminish the willingness of individual firms to commit resources to irreversible investments and similarly, the willingness of consumers to commit resources on relatively illiquid durables (Elder, 2018) The bane of the real option theory is that values increase with higher volatility of the price of the underlying asset (Lund and Nymoen, 2014).

Several studies abound in the literature on the effect of oil price on financial market variables. However, most studies on the effect of oil price on financial market variables have focused attention on the effects of oil price shocks on the bond market with sparse evidence on the stock market. For instance the study conducted by Kang, Ratti and Vespignani (2016) to unravel the implication of US and non US oil supply shocks on stock returns established the importance of disaggregating world oil supply and the recent extraordinary surge in the US oil production for analysing impact on US stock prices and submitted that a positive US oil supply shock has a positive impact on US real stock returns while also acknowledging the importance of demand shocks in explaining US real stock returns when supply shocks from US and non US oil production are identified. In the same vein Lambertides, Savva and Tsouknidis (2017) in the study conducted on the effects of oil demand shocks and supply shocks on stock order flow imbalances using structural VAR model finds that positive oil demand shocks, explained almost 36% of the observed variation in the daily average stock order flow imbalances measured by the buy/sell trade ration leading to a negative stock returns reaction rather than positive while oil supply shocks was found to exhibit a negative and marginally significant effect on stock order flow imbalance.

Among the few evidence on the effects of oil price shocks on the bond market, the study of Kang, Ratti and Yoon (2014) on the effect of demand and supply shocks of the global crude oil market on aggregate US bond index real returns using SVAR reported that a positive oil market-specific demand shock is associated with significant decreases in aggregate bond index real returns for 8 months following the shock and also that a positive innovation in aggregate demand impact negatively on real bond returns which become more adverse over twenty four months. In the same vein, Demirer, Ferrer and Shahzad (2020) studied the effect of oil shocks on the severing bond markets of large number of advanced and emerging economies. The study finds that oil price shocks does not only affect stock markets returns but also bond markets even after controlling for discount rate shocks as well as aggregate capital markets effects. However, in contrast to the case of stock market, the effect of sovereign bonds was found to be heterogeneous and primarily driven by demand related shocks. The study also finds that oil price shocks serve as a driver of connectedness

patterns across global financial markets but the effect on connectedness depends on the nature of the oil market schock and the economic characteristics of the countries. Also very recently, Balcilar, Gupta, Wang and Wohard (2020) studied the predictability of the movements of bond premia of US Treasury due to oil price uncertainty over the monthly period from 1953:06 to 2016:12 and finds that oil uncertainty does not only predict increases US bond returns, but also its volatility with the effect of the latter being stronger. Also it was found that oil uncertainty tends to have a stronger impact on the shortest and longest maturities and relatively weaker impact on bonds with medium term maturities.

Filis and Chatziantoniou (2014) using Structural VAR framework to investigate the financial and monetary policy response to oil price shocks finds the level of inflation in net oil-exporting and net oil-importing countries is significantly affected by oil price innovations and also that the response of interest rates to an oil price shock depends heavily on the monetary policy regime of each country while it was also found that stock market operating in net oil importing countries exhibit negative response to increased oil prices. Meanwhile, the reverse was found to be the case for the stock market of the bet oil exporting countries.

In a similar vein, Hammoudeh, Nguyen and Sousa (2015) studied the effect of monetary policy of the US on sectoral commodity prices and macroeconomic activity using structural VAR model and finds that US monetary contraction leads to an immediate rise in the broad commodity price index reflecting aggregation bias, higher expected inflation and speculation, high production costs or some overshooting due to overreaction. The study finds the existence of significant heterogeneity in the price responses of the different types of commodity sectors.

Similarly, Adjemian and Pariès (2008) in the study conducted on optimal resolution of the policy trade-offs from oil price disturbances finds that the inflationary forces related to the use of oil as an intermediate good seem to require specific policy actions in the optimal allocation. Also, Plantep (2014) studied optimal policy in a New Keynesian model where supply and demand shocks affect the price of oil using impulse response functions from a VAR estimated with post-1986 US data. The study finds minimal movement in core inflation in response to

both shocks and also that the federal funds rate rises (fall) in response to the demand (supply) shock. In the study conducted by Natal (2012) on how monetary authorities should react to an oil price shock established that in a non-competitive economy, policies that perfectly stabilise prices entail large welfare costs which account for the reluctances of policymakers to enforce them. The study submitted that the optimal rule is hard on core inflation but accommodates oil price changes.

Azeez and Obalade (2019) examine macroeconomic determinant of stock market development in Nigeria for the period of 1981 to 2017. The study employed the ARDL bound testing technique to investigate the long run and short run relationship between the dependent variable (stock market development) and independent variables (GDP, banking sector development, stock market liquidity, foreign direct investment, inflation rate and savings rate). The result of the study showed that in both the short run and long run, key macroeconomic determinants of stock market development in the context of the Nigerian Stock Exchange Market are banking sector development, stock market liquidity, foreign direct investment and to an extent the income level (GDP) while inflation rate which measures macroeconomic stability, and savings rate do not significantly explain stock market development.

Udi and Ohwofasa (2018) exploring some of the determinants of stock market in Nigeria for the period 1986-2016. The variables employed included market capitalization, per capital income, interest rate, exchange rate, inflation and the economy level of openness. The econometric methodology is error correction model and the paper finds that interest rate, inflation rate and past level of market capitalization were the major determining factors for trading activities at the Nigerian Stock Exchange. The paper also finds a negative relationship between stock market performance and inflation, interest rate as well as per capita income.

3. Methodology

This report investigates the effects of oil price movement on stock market performance in Nigeria. To achieve this goal, annual time series data over the period of 1993 to 2020 (28 years) was collected from the World Bank (WB) Commodity Price Data and World Bank Development Index (WDI). This study follows ex post facto research design. The choice of this research design is because

of its usefulness in examining how an independent variable, present prior to the study in the participants, affects a dependent variable. This study examined how oil prices affect corporate sector stock index. Traditional Keynesian economists believe that transmission mechanisms are collateral, i.e. money supply changes influence aggregate demand through exchange rates or interest rates. Based on Taylor rule and in line with Investment-Savings Liquidity-Money supply(IS-LM) model, the transmission channel of monetary policy due to a decreased inflation rate can be written schematically as follows;

$\uparrow M \rightarrow \downarrow I_r \rightarrow \uparrow I \rightarrow \uparrow X$

M denotes money supply which increases due to the low inflation rate, this drives down interest rate (I_r)whilst having a positive impact on both Investment (I) and output (X). In case the monetary authority decided to increase interest rates:

$\downarrow M \rightarrow \uparrow I_r \rightarrow \downarrow I \rightarrow \downarrow X$

On the overall this decision will have a negative impact on both oil prices and on the bond market indices, i.e. due to the interest rates rise, market value of stocks falls and oil output decreases. In addition, it has been analysed by Granville and Mallick, (2006), that such policies are implemented by mature economies who attempt to regulate inflation using interest rates.

In this report, the model is adapted from the study conducted by Tsai (2015) on the responses of stocks returns to oil price shocks, by running stock yield (STY) against oil price (OIP), and consumer price index as proxy for inflation (INF). The regression model is formulated as follows:

$$STY_t = \beta_1 + \beta_2 OIP_t + \beta_3 INF_t + \varepsilon_t$$

Where STY is stock yield, OIP is oil price, INF inflation, t is the time coverage which is 1980 to 2022, β_1 is the intercept while β_2 and β_3 and the slope coefficientsand ε_t is the error term.

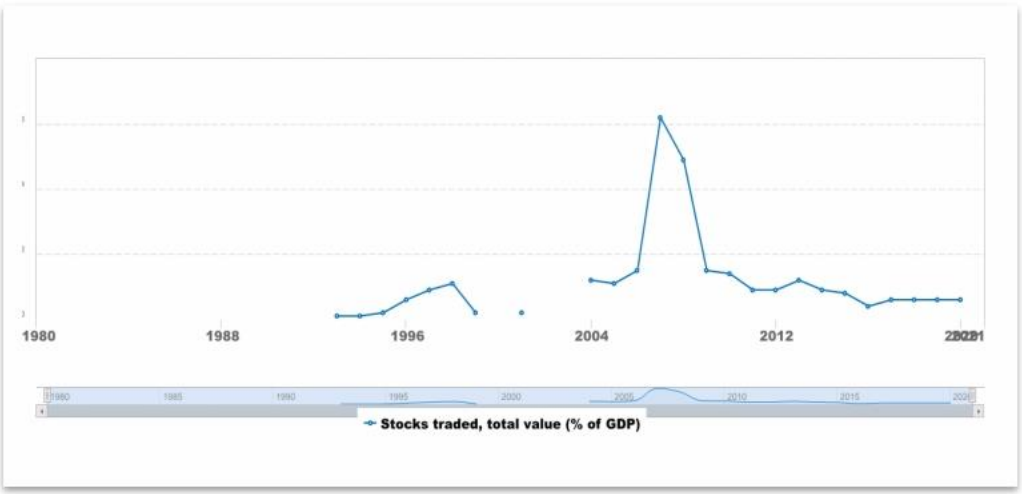
As extracted from World Bank Development Index (WDI), stock market yield was measure by total value of stocks traded as a percentage of GDP, inflation is proxy by annual consumer prices in percentage and oil price is proxy by average crude oil price in US Dollar per barrel (bbl) from World Bank (WB). In the analysis the annual time series dataset covers 1993 to 2020as used in the

estimation. The model was analysed in both linear form. This study adopts the fully modified ordinary least square method in its estimation (FMOLS). Fully modified least squares (FM-OLS) regression was originally designed in work by Phillips and Hansen (1990) to provide optimal estimates of cointegrating regressions. The method modifies least squares to account for serial correlation effects and for the endogeneity in the repressors that result from the existence of a cointegrating relationship. The resulting FMOLS regressions are shown to have some interesting properties. For example, when there is some cointegration in the system, FMOLS estimation has a limit theory that is normal for all of the stationary coefficients and mixed normal for all of the nonstationary coefficients. Thus, there are no unit root limit distributions even in the case of the unit root coefficient sub-matrix. Moreover, optimal estimation of the cointegration space is attained in FMOLS regression without prior knowledge of the number of unit roots in the system, without pretesting to determine the dimension of the cointegration space and without the use of restricted regression techniques like reduced rank regression.

4. Results and Discussion

This first pre-analysis is the graphical relationship among the variables, followed by the descriptive statistics, correlation matrix

Figure 4.1: Trend of Stock Market Performance, 1980-2022



Source: Author's Computation, 2023

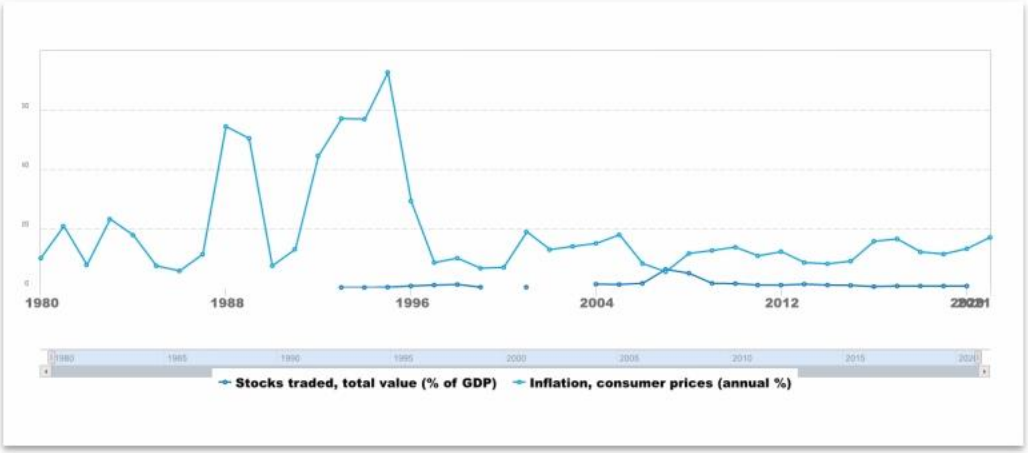
The graph in Figure 4.1 represents the trend of the total value of stocks traded in the Nigeria stock market from 1980 to 2021. The x-axis of the graph represents the years, while the y-axis represents the total value of stocks traded. The graph shows the fluctuations in the value of stocks traded over the period under consideration.

The graph indicates that there were no recorded stock trades in the Nigeria stock market before 1993. This suggests that the stock market might have been relatively inactive or underdeveloped during that period. From 1993 to 1999, the value of stocks traded experienced a significant increase. This rise suggests growing investor confidence and interest in the market, potentially fuelled by economic growth and market reforms during that period.

There was a sharp decline in the value of stocks traded between 1999 and 2000. This could indicate a market correction or a response to specific economic or political events during that time. The absence of recorded stock trades between 2000 and 2003 suggests another period of relative inactivity or limited trading in the market. The value of stocks traded experienced a steep increase between 2004 and 2007. This surge might be attributed to favorable market conditions, increased investor participation, or economic growth during that period. The graph indicates a significant decline in the value of stocks traded between 2007 and 2009. This period coincides with the global financial crisis, which had a profound impact on financial markets worldwide, including Nigeria. From 2010 to 2021, the value of stocks traded gradually decreased. However, the description highlights that the decline was slow but somewhat unstable, suggesting fluctuations and volatility in the market during this period.

Overall, the graph provides an overview of the historical trends in the Nigeria stock market. It showcases periods of growth, decline, and market instability, indicating the varying dynamics and challenges experienced by the stock market over time.

Figure 4.2: Trend of Stock Market Performance and Inflation



Source: Author's Computation, 2023

Figure 4.2 illustrates the relationship between the total value of stock traded and inflation over a period 1980 to 2021. The x-axis of the graph represents the years, while the y-axis represents the total value of stock traded and inflation. The graph indicates that the total value of stock traded was volatile throughout the entire period under consideration. This suggests fluctuations and instability in the stock market. The description highlights that the total value of stock traded was relatively low between 1996 and 2021 compared to the preceding period. This indicates a decline or a stagnation in the stock market activity during this period. In contrast to the later period, between 1980 and 1996, the total value of stock traded experienced occasional upsurges in some years. This suggests that there were intermittent periods of increased market activity and potentially higher investor confidence during this earlier period. The graph depicts that inflation was relatively low and close to the origin (i.e., low inflation) until 2006. This indicates a period of stable or moderate inflation rates. From 2006 onwards, inflation rose above the total value of stock traded and continued until 2021. This suggests that inflation rates exceeded the level of stock market activity during this period.

Overall, the graph provides insights into the relationship between the total value of stock traded and inflation over time. It indicates that the stock market experienced volatility and a decline in trading activity from 1996 to 2021 compared

to the earlier period. Additionally, the rise of inflation above the total value of stock traded after 2006 suggests potential challenges and the impact of inflation on the stock market.

Table 4.1: Descriptive Statistics

	STY	OIP	INF
Mean	1.157121	44.89975	19.18975
Median	0.882124	29.28000	12.87658
Maximum	6.238708	105.0100	72.83550
Minimum	0.108820	13.06000	5.388008
Std. Dev.	1.410527	30.17054	16.98996
Skewness	2.705313	0.777861	1.805853
Kurtosis	9.583475	2.249441	5.060106
Jarque-Bera	75.64273	4.972682	28.09375
Probability	0.000000	0.083214	0.000001
Observations	25	40	39

Source: Author's Computation, 2023

In Table 1, the mean value of all the variables; stock yield, oil price and inflation is closer to the minimum rather than the maximum value which suggest that over the period, the values of these variables were generally low. The standard deviation of stock yield, oil price and inflation were lower than their means suggesting that the three variables were volatile. Also, going by the skewness coefficient, inflation, oil price and stock yield are highly skewed since their skewness coefficient are between -1 and more than one

Furthermore, the Jarque-Bera statistics suggest that stock yield and inflation are not normally distributed since the probability values of Jarque-Bera statistics are statistically significant while oil price is normally distributed

Table 2: Correlation Matrix

	STY	**OIP**	**INF**
STY	1.000000	0.411217	-0.341916
OIP	0.411217	1.000000	-0.500461
INF	-0.341916	-0.500461	1.000000

Source: Author's Computation, 2023

In Table 2, the association between stock yield and oil price is positive while the association between stock yield and inflation as well as inflation and oil price are negative. This implies that when oil price increase, stock yield falls and vice versa but when inflation increase, oil price and stock yield will fall and vice versa**.** The result also suggest that there is absence of multicollinearity problem in the estimated model since the correlation coefficient of any of the pairs of the variable is less than 0.85.

In the empirical analysis, both the linear and non-linear form of the model was estimated and the result is presented in Table 4.3 as follows:

Table 3: Regression Estimates

Variable	**Linear**	**Non-Linear**
OIP	0.014432 (0.1615) [1.448744]	0.570799 (0.0240) [2.423744]
INF	-0.014702 (0.4203) [-0.821323]	-0.669171 (0.0127) [-2.714182]
C	0.657635 (0.4196) [0.822505]	-0.696355 (0.6139) [-0.511834]
R-squared	0.193819	0.559388
Adjusted R-squared	0.120529	0.519333

F-statistic	2.644572	13.96530
Prob(F-statistic)	0.093489	0.000122
Durbin-Watson stat	0.986103	0.982924

Note: The parenthesis ( ), and [ ] present the probability value and t-statistics respectively while the coefficients are outside
Source: Author's Computation, 2023

The multiple regression result presented in Table 4.3 shows that when the model is estimated in the linear form, the coefficient of oil price show a positive sign while the coefficient of inflation shows a negative sign implying that oil price has a positive effect on stock yield while the effect of inflation is negative but both effect are not significant. When the non-linear form was estimated, the direction of the effect of the two variables on stock yield does not change but their effects on stock yields becomes statistically significant implying that inflation has a significant negative effect on stock yield while oil price has a significant positive effect on stock yield.

The post-test used in this report comprises of Jarque-Bera normality test, Breusch–Godfrey serial correlation, heteroscedasticity test Breusch-Pagan-Godfrey and Ramsey RESET test to determine the reliability and dependability of the estimated model.

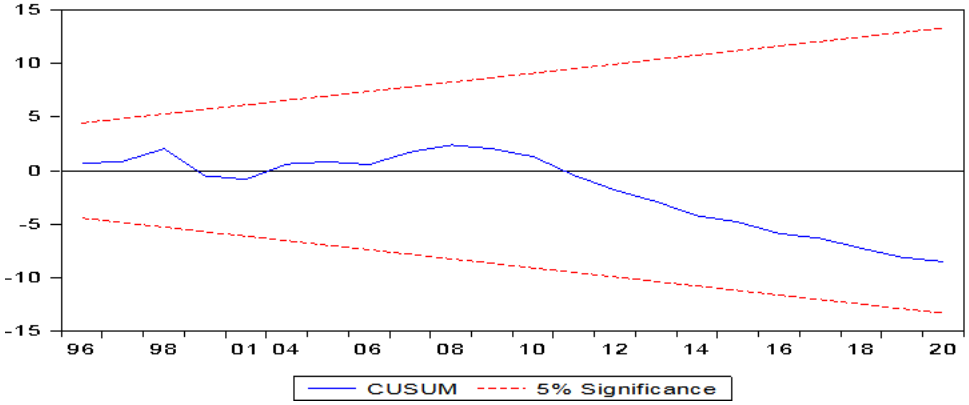
Table 4: Post Tests

Jarque-Bera Normality Test	Obs* R-squared	0.588088	Normally Distributed
	Prob value	0.745244	
Breusch–Godfrey Serial Correlation	Obs* R-squared	6.321321	No Serial Correlation
	Prob value	0.0542	
Heteroscedasticity Test Breusch-Pagan-Godfrey	Obs* R-squared	5.439981	No Heteroscedasticity
	Prob value	0.0673	
Ramsey RESET Test	F-statistics	0.074797	Correctly Specified
	Prob value	0.088885	

Source: Author's Computation, 2023

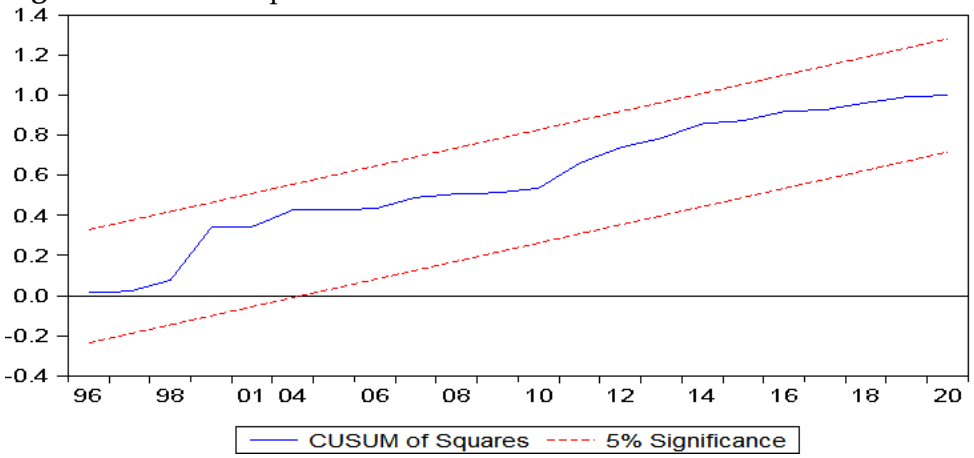
All the post-tests conducted Jarque-Bera normality test, Breusch–Godfrey serial correlation, heteroscedasticity test Breusch-Pagan-Godfrey and Ramsey RESET test established the reliability and dependability of the estimated model.

Figure 3: CUSUM Test



Source: Author's Computation, 2023

Figure 4: CUSUM Square Test



Source: Author's Computation, 2023

The Figure 3 and 4above, suggest that the estimated model is stable since the CUSUM and CUSUM Square lie within the critical lines.

5. Conclusion and Recommendations

The result obtained from the analysis shows that the coefficient of oil price has a positive sign while the coefficient of inflation shows a negative sign implying that oil price has a positive effect on stock yield while the effect of inflation is negative but both effect are not significant. When the non-linear form was estimated, the direction of the effect of the two variables on stock yield does not change but their effects on stock yields becomes statistically significant implying that inflation has a significant negative effect on stock yield while oil price has a significant positive effect on stock yield

By and large our result established that oil price has a positive insignificant effect on stock yield while the effect of inflation has an insignificant negative effect on stock yield based on the linear model. When the non-linear form was estimated, inflation shows a significant negative effect on stock yield while oil price has a significant positive effect on stock yield. This result of the positive significant effect of oil price on stock yield corroborated the findings in the study conducted by Kang, Ratti and Vespignani (2016) on the implication of US and non US oil supply shocks on stock returns. The study submitted that a positive US oil supply shock has a positive impact on US real stock returns while also acknowledging the importance of demand shocks in explaining US real stock returns when supply shocks from US and non US oil production are identified.

The result was also in line with Tsai (2015) on the responses of stocks returns to oil price shocks before, during and after a financial crisis using daily data on 682 firms from January 1990 to December 2012 based on panel regression. The study finds that US stocks returns respond positively to changes in oil prices during and after financial, positive and negative oil price shocks have asymmetric effects on stock returns during and after crisis, stock returns in response to oil price shocks across industries are heterogeneous within the crisis and post-crisis and that the stock returns of some energy-intensive manufacturing industries respond more positively to oil price shocks compared with less energy-intensive manufacturing industries and that big firms are the most strongly and negatively influenced by an oil price shock prior to the crisis. On the other hand, it was established that an oil price shock in the post-financial crisis period is positively amplified in the case of medium-sized firms.

The result was also supported by Babatunde and Adenikinju, (2013) on the interactive relationships between oil price shocks and the Nigeria stock market. The study applied the multivariate vector auto-regression that employed the generalized impulse response function and the forecast variance decomposition error. Empirical evidence reveals that stock market returns exhibit insignificant positive response to oil price shocks but reverts to negative effects after a period of time depending on the nature of the oil price shocks. The results are similar even with the inclusion of other variables. Also, the asymmetric effect of oil price shocks on the Nigerian stock returns indices is not supported by statistical evidences.

The findings show that inflation has a significant negative effect on stock yield while oil price has a significant positive effect on stock yield. This result proved that the movement in oil price in Nigeria provides a positive signals for stock traded in the Nigerian stock exchange market. Following the empirical findings, the following recommendations are made for effective policy formulations.

1) Investors should consider investing only in stocks that benefit from higher oil prices, such as oil and gas producers, refiners, and pipeline companies.
2) Investors needs to look-out for sectors that have a positive correlation with the price of oil, such as the transportation sector to take advantage of the period of high price of oil, to realise higher revenues.
3) Government should monitor geopolitical events that could affect the global oil supply, as they can have a significant impact on oil prices. For example, tensions in the Middle East or production cuts by OPEC can lead to higher oil prices.

References

Adjemian, S. and Pariès, M.D (2008). Optimal monetary policy and the transmission of oil-supply shocks to the euro area under rational expectations, ECB Working Paper, No. 962, European Central Bank (ECB), Frankfurt a. M.

Defina, R.H. & Taylor, H.E. (1993). Monetary policy and oil price shocks: Empirical implications of alternative responses, Applied Economics, 25:6, 777-785, doi: 10.1080/00036849300000132

Demirer, D., Ferrer, R, and Shahzad, S.J.H (2020) Oil price shocks, global financial markets and their connectedness, Energy Economics 88 (2020) 104771

Demirer, R, Ferrer, R. and Shahzad, S.J.H (2019) Oil Price Shocks and Financial Markets: A Comparative Analysis of Stock and Sovereign Bond Markets Department of Economics & Finance of SIUE (Southern Illinois University Edwardsville).

Elder, J. (2018) Oil price volatility and real options: 35 years of evidence, J Futures Markets, 2019;1-16. DOI: 10.1002/fut.22057

Elyasiani, E., Mansur, I. and Odusami, B. (2011) Oil price shocks and industry stock returns Energy Economics 33 (2011) 966-974

Filippidis, M., Filis, G. and Kizys, R. (2020) Oil price shocks and EMU sovereign yield spreads, Energy Economics, 86(2020) 104656

Filis, G. and Chatziantoniou, I. (2014) Financial and monetary policy responses to oil price shocks: evidence from oil-importing and oil-exporting countries, Rev Quant Finance Acc 42:709-729 DOI 10.1007/s11156-013-0359-7

Hammoudeh, S., Nguyen, D.K. and Sousa, R.M (2015) US monetary policy and sectoral commodity prices, *Journal of International Money and Finance*, http:/dx.doi.org/doi:10.1016/jimonfin.2015.06.003.

Jiménez-Rodríguez, R. (2014). Oil price shocks and stock markets: testing for non-linearity, Empir Econ doi 10.1007/s00181-014-0832-8

Jimnez-Rodrguez, R. & Snchez, M. (2005) Oil price shocks and real GDP growth: empirical evidence for some OECD countries, Applied Economics, 37:2, 201-228, doi: 10.1080/0003684042000281561

Kang, W., Ratti, R.A. and Vespignani, J. (2016) The impact of oil price shocks on the U.S. stock market: A note on the roles of U.S. and non-U.S. oil production, Economics Letters 145 (2016), 76-181

Kang, W., Ratti, RA.and Yoon, K.H. (2014) The impact of oil price shocks on U.S. bond market returns, Energy Economics 44 (2014) 248-258

Kocaaslan, O.K (2019) Oil price uncertainty and unemployment, Energy Economics 81 (2019) 577-583

Lambertides, N., Savva, C.S., &Tsouknidis, D.A (2017) The effects of oil price shocks on U.S. stock order flow imbalances and stock returns, *Journal of International Money and Finance,* doi: http://dx.doi.org/10.1016/j.jimonfin.2017.03.008

Lee, K. and Ni, S. (2002) On the dynamic effects of oil price shocks: a study using industry level data, *Journal of Monetary Economics* 49 (2002) 823-852.

Liu, J, Lin, S., Xia, Y., Fan, Y. and Wu, J. (2015). A financial CGE model analysis: Oil price shocks and monetary policy responses in China, Economic Modelling 51 (2015) 534-543

Lund, D. and Nymoen, R. (2014) Comparative statics for real options on oil: What stylized facts to use?, Department of Economics, University of Oslo P.O.Box 1095, Blindern, NO-0317 Oslo, Norway

Montoro, C. (2012) Oil shocks and optimal monetary policy, Macroeconomic Dynamics, 16 2012, 240-277. Printed in the United States of America.doi:10.1017/S1365100510000106

Natal, J (2012) Monetary Policy Response to Oil Price Shocks, *Journal of Money, Credit and Banking,* Vol. 44, No. 1 (February 2012), 54-101

Plantep, M. (2014) How Should Monetary Policy Respond to Changes in the Relative Price of oil? Considering Supply and Demand Shocks, *Journal of Economic Dynamics & Control*, http://dx.doi.org/10.1016/j.jedc.2014.04.002

Sadorsky, P. (2008) Assessing the impact of oil prices on firms of different sizes: Its tough being in the middle, Energy Policy 36 (2008) 3854-3861

Tsai, C., (2015) How do U.S. Stock Returns Respond Differently to Oil Price Shocks Pre-Crisis, Within the Financial Crisis, and Post-Crisis?, Energy Economics (2015), doi: 10.1016/j.eneco.2015.04.012