Journal of Accounting Information and Innovation
Vol.5, No.11, November-2019;
ISSN (4243 – 406X);
p –ISSN 3467 – 7038
Impact factor: 5.29

EFFECT OF OIL PRICE VOLATILITY ON THE VOLATILITY OF THE NIGERIAN ALL SHARE INDEX

Elias Igwebuike Agbo and Nwankwo, S. N.P.

Department of Accounting and Finance, Faculty of Management and Social Sciences, Godfrey Okoye University, Ugwuomu-Nike,Emene, Enugu State, Nigeria.

Abstract: *This paper examines the effect of oil price volatility on the volatility of Nigeria's all –share index, usingmonthly frequency data that cover the period from January1997 to December 2016. It employs the EGARCH [1,1] methodology for data analysis.Average monthly exhange rates and inflation rates are introduced as control variables.The results of the study suggest that oil price volatility has a negative and significant effect on the volatility of all-share index.. The study advises market participants to target oil price movements as an important instrument for predicting the volatility of Nigeria's stock market performance.*

Keywords: *Nigeria, crude oil price, volatility, all- share index.*

1.0 Introduction

Over several decades, plenty of literature has investigated the relationships between oil price and the stock market. Some of the early works on this subject – matter include Jones and Kaul(1996), Sadorsky(1999), Nandha and Faff(2008), Miller and Ratti(2009), and Chen(2011).These studies report a negative correlation between oil price and stock returns.In contrst,others studies such as Bashe and Sadorsky(2006), Mohanty,Nandha, Turskistani,and Alaitani(2011) as well as Wang, Wu and Yang(2013)affirm that the response of the stock market to oil price fluctuations depends largely upon the net position of the country studied in the global oil market and the forces that drive the oil price shocks.Such works generally find positive correlations between oil price changes and stock market returns in oil- exporting nations and negative connections between the two variables in oil-importing countries.Youssef and Mokni(2019) and Aydogan,Gokoe and Yulkenchi.(2017) equally contend that the relationship between the volatilities of the stock market and oil price returns vary, depending on the net position of the relevant country in the global oil market.

Recently,however, several studies have shifted their attention to the interaction between oil and stock returns. Youssef and Mokni(2019) present examples of the members of this group of studies as Miller and Ratti(2009), Reboredo(2010),Filis, Degiannakis and Floros(2011),Daskaliaki and Skiadopoulos(2011), Reboredo and Rivera-Castro(20), Zhang and Li(2014), Boldanove, Degiannakis and Filis(2016), Zhu, Su, You and Ren(2017) and Aydogan,Gokoe,and Yulkenchi(2017)..The two authors attribute this recent upsurge of interest in the oil/stock relationships to the assumption of the investing public that correlations have important implications for asset allocation andportfolio optimization.

2.0.Theory and Literature Review

2.1 Theory

Based on economic theory, any asset price is expected to be determined by its expected discounted cash flows (see Williams, 1938; Fisher, 1930 in Youssef& Mokni,2019). For this reason, researchers claim that any factor that can change these discounted cash flows should have a significant impact on an asset price (see Filis, Degiannakis & Floros,.2011). This line of reasonining prompted Hamilton (1996), Sadorsky (1999), Arouri and Nguyen (2010)to affirm that an increase in oil price would result in a reduction in production as such a rise in oil price will make inputs more expensive and contribute directly to the level of inflation. Inflation would, in turn, cause a reduction in investors' earnings expectations from the stock market. Hence, any increase in oil price is expected to be accompanied with a decline in stock prices. According toYoussef and Mokni(2019), many existing studies claim that oil price shocks influence stock markets indirectly through macroeconomic variables such as inflation and economic growth. For Jimenez-Rodriguez and Sanchez(2005), a rise in the oil price is expected to have a positive impact in an oil-exporting country, since the country's income will rise. With such increase in income, expenditures and investments will increase,a stuation which, in turn, enhances productivity and unemployment (Filis, Degiannakis & Floros, 2011). In this case, an oil price increase evokes a positive response from the stock markets(Youssef & Mokni,2019).

.Oil price is considered by some researchers as representing information flow.Even though diversification aims at minimizing a portfolio's unsystematic risk events,the economic consequences and risk spillovers that might emerge from declining oil price can make portfolio diversification more difficult.Tabelsi (2017) cited in Youssef and Mokni(2019) hold the viewthat risky assets would be strongly correlated in the stressed periods and that such situation is capable of increasing the risk of collapse.However,for an oil-importing country, the situation will be different as an increase in oil price is expected to have a positive impact (see Hooker 1996). An oil price increase will bring about an increase in production costs, as oil is regarded as the most important production input (see Arouri & Nguyen 2010; Kim & Loungani 1992).The studies ofBernanke (2006), Abel and Bernanke (2001), Hamilton (1996), Youssef and Mokni (2019) find both Hamilton (1988a, 1988b), and Barro (1984) as holding the view that the escalating cost of crude oil will affect consumer's behavior, which will, in turn, reduce their demand and spending as a result of higher consumer prices. Decreasing consumption of crude oil would cause a decrease in production and, in return, increase unemployment (see, Lardic & Mignon, 2006; Brown & Yücel, 2002; Davis & Haltiwanger, 2001 in Youssef & Mokni,2019). In addition, oil price shocks affect stock markets as a result of the uncertainty they create for the financial world, depending on the forces pushing up oil prices (demand-side or supply-side).

Filis et al..(2011) assert that stock markets will respond positively to oil price shocks originating from an increase in global demand and negatively if the shock originates from thesupply-side. ForHuang,Musulis and Stoll (1996) cited in Laura and Dieter(2015), if oil plays an important role in an economy. it is logical to expect its prices to be correlated with stock returns. The stock price portrays the state of the economy and is regarded as the stock market's best estimate of the future profitability of business enterprises (Jones, Leiby & Paik, 2004) . It is usually calculated as the present discounted value of their future profits. .Laura and Dieter(2015) trace the origin of most of the models designed to calculate the value of a stock to the theory of the valuation of firms for the reason that, in principle, the theory-based value of a stock can be derived from the firm's market value divided by the number of its shares. The value of the firm is equal to the present value of the expected future free-cash-flows, minus the value of all liabilities.

Cheikh, Naceur and Kanaan(2018) contend that when there is an oil price drop, oil revenue falls, resultingin weaker fiscal and external positions.They affirm thatequity returns fall to the extent that market participants expect an adverse effecton non-oil growth, of which the expected fiscal adjustment is a key determinant. The sensitivity of stock return to price decline is likely to improve while oil price declines, if market participants anticipate a higher probability of a negative impact on non-oil growth. Given the linkages between oil price and stock return, the sensitivity of stock return to oil price depends on economic conditions as well as policy-related considerations.

All-share index,which is a national index, represents the preformance of the stock market ; it reflects the investors' sentiment on the state of the national economy.In Nigeria,it is value-weighted and involves all the trading securities on the Nigerian stock market.The efficiency of capital markets are measured by the ability of the securities to reflect and carry along all relevant information in their prices(see Kanu, Nwaimo and Chimezirim, 2017). Consequently,the degree of responsiveness of the Nigerian stock market to information is expected to determine the extent at which volatility in the global pricing of crude oil will affect the pricing of her shares as well as her all-share index.

2.2Literature Review

A large body of literature has been employed to investigate the impact of oil price on sectoral and aggregate stock returns. These studies have remained controversial over a number of decades. .On the one hand, the results of some studies such as Kling (1985), Jones and Kaul (1996), Sadorsky (1999), Papapetrou

(2001), Shimon and Raphael (2006), Nandha and Faff (2008) Miller and Ratti (2009), Kilian (2009), Malik and Ewing (2009), Oberndorfer (2009),Cunado and Perez de Gracia (2014) as well as Sim and Zhou (2015) suggest that oil price returns exert a negative effect on stock returns. They rationalize this effect as arising from factors that relate with either the demand or supply side of oil. For instance,using vector autoregression and monthly data for the period 1947-1996, Sadorsky (1999) observes that both oil price returns and oil price volatility has a negative impact on the US stock returns. Shimon and Raphael (2006) also affirm that the oil price return and volatility can influence the macroeconomic growth and the financial assets return.In addition, Driesprong, Jacobson and Maat (2008) assert that oil returns are capable of significantly impacting the future stock returns negatively both in developed and emerging countries. Furthermore, Diesprong et al,(2008) claim that there is a month lag reaction of oil price changes in stock returns, as investors underestimate the importance of oil changes in the economy. In a related dimension,Park and Ratti (2008) did a comparison of the the effects of oil price volatility on stock returns between the US and 13 European economies, using monthly data for the period 1986-2005 and employing a multivariate VAR analysis. The results of the study suggest that an increase in the volatility of oil prices brings about some decrease in stock returns either immediately or with one month lag.In yet another study, Kilian (2009) finds that oil price shocks that are caused by precautionary or speculative demand for crude oil, may have a negative effect on the U.S. stock returns. Furthermore,the outcome of the study of Oberndorfer (2009) suggest that oil price volatility affects the Eurozone oil and gas stock corporations negatively.The implication of this result is that a short position in energy corporations in times of high oil volatility expectations is profitable. After carrying out a similar study, Cunado and Perez de Gracia (2014) discover that oil price changes have a negative impact on the majority of the European stock market returns . This confirms that oil- importing economies are affected by oil prices. After investigating the US market with monthly data spanning from 1973 to 2007 in order to determine the effect of oil returns on the US equities returns, Sim and Zhou (2015) also observe that negative oil price shocks affect US equities positively when the US market is performing creditably.

Contrary to the foregoing observations, some empirical studies find no evidence of a negative correlation between oil returns and stock returns. For instance, Wei (2003) observes that the oil price shock of 1973-74 had no influence on stock returns. Arouri and Nguyen (2010) who examined the impact of oil price changes and stock markets, by incorporating Dow Jones (DJ) Stoxx 600 and twelve European sector indexes, for the period 2008-2009 and employed a two-factor GARCH model, discover strong linkages between oil price fluctuations and stock markets.However, the magnitude and the direction of the particular effect was noticed to be dependent on the nature of the sectors.

Another group of studies focuses on the asymmetric effects of oil prices on stock market returns. Among those studies, Park and Ratti (2008) observe that oil price shocks do not have asymmetric effects on stock returns in the European oil importing countries.However, they notice some evidence of asymmetric effects on stock returns for oil importing and exporting countries such as the U.S. and Norway. After using a generalized least squares model for the period 1990-2006 to carry out similar study,Sadorsky (2008) confirm that oil prices have an asymmetric effect on stock prices.When Arouri (2011) investigated the relationship between oil prices and sector stock returns in Europe for the period 1998-2010.by adopting oil price increases and decreases as two different variables, the results also confirmed that changes in the price of oil have a strong asymmetry effect on sector stock returns.In addition, while focusing on the period 2005-2009 and taking into account Gulf Cooperation Council countries, Lee and Chiou (2011) carried out an empirical study that concentrated attention on the US stock market for the period 1992-2008.The results of their study show that there is a negative relationship between oil prices and stock returns. The results also suggest that changes both in oil price dynamics and oil price volatility shocks may have asymmetric effects on stock returns.Furthermore, at the end of their study based on 560 US firms listed in the NYSE and grouped into 14 sectors, Narayan and Sharma (2011) find that there is an asymmetric effect on stock returns for food, banking, financial, chemical, manufacturing, and real estate sector.For Sim and Zhou (2015),thier work based on firm-level data for the period 1990-2012 also find that positive and negative oil price shocks have asymmetric effects on US stock returns both during and after the financial crisis of 2008.

In another dimension, Degiannakis, Filis, and Kyzys (2014) investigated the effects of oil price shocks on stock market volatility in Europe by concentrating on three measures of volatility, i.e. the conditional, the realized and the implied volatility and considering the sources of oil price shocks. With the aid of Structural VAR model, they observe that supply-side shocks and oil specific demand shocks do not have impact on stock market volatility, whereas oil price changes due to aggregate demand shocks have a negative relationship and impact on stock market volatility. Precisely, their research findings demonstrate that the aggregate demand oil price shocks have a significant explanatory power on both current and forward looking volatilities and that a robustness excercise using short and long-run volatility models supports the results.

Ramos &Veiga (2013) investigated the effects of oil price increases on the stock market both oil consuming and producing economies. Theyexamined 18 countries during the period of 1988 to 2009 using a Generalized Autoregressive Conditional .Heteroskedasticity Model (GARCH). The oil-consuming countries studied included Austria, Belgium, Finland, France, Germany, Greece, Ireland, Japan, the Netherlands, Portugal, Spain, Sweden and Switzerland,while the oil-producing countries included Canada, Colombia, Mexico, Norway, and Russia. The authors find that an increase in the price of oil results in a negative impact on stock returns in oil-importing economies. In addition, the study discovered that, in consonance with Nusair (2016), an increase in the price of oil results in a positive impact on stock returns for oil-exporting economies.

In Nigeria,the studies on the relationship between oil price and stock returns have been scanty(see Akinlo.2014) even though Nigeria is a country where oil and its derivatives play a significant role in production and a nation that is highly dependent on oil revenue for the survival of its economy.According to Kanu,Nwaimo and Chimezirim(2017), the Nigerian economy relies heavily on crude oil export revenues and a change in oil price is expected to affect all her economic frontiers.

This peculiar nature of Nigerian economy notwithstanding, the studies that have examined the relationship between oil price shocks and stock returns have emerged with conflicting results. For instance , while Omisakin, Adeniji and Omojolabi (2009), Mordi, Michael and Adebiyi (2010), Abbas and Terfa (2010), Adebiyi, Adenuga, Abeng and Omanukwue(2010), Akomolafe and Danladi (2014), Akinlo (2014), Iheanacho (2016), Lawal, Somoye and Babajide (2016), Ojikutu,Onolemhemhen and Isehunwa (2017) and Obi, Oluseyi and Olaniyi (2018), find oil price shock as having a positive effect on stock price,Adaramola (2012) and Effiong (2014) report a negative rlationship between oil price shock and stock return. In addition, Effiong(2014) claims that the effect of oil price shock on stock price in Nigeria is insignificant.

This conflict of results has left much gap in literature and has created some vacuum which this study intends to fill.

This study considers Nigeria suitable to be used as proxy for developing economiesas she is a developing economy which is not only one of the largest member of OPEC and the largest net-exporter of oil in Africa but also a highly promising economy for internationalportfolio diversification..Furthermore, this study takes interest in focusing on Nigeria as Arouri and Fouquau(2009) report that previous empirical studies portray her as one of the oil-exporting countries sharing some specific economic features that differ on their reliance on oil price changes.

The aim of this study is to examine the effect of oil price volatility on the Nigerian stock market perfomance. Stock market performance is proxied here by the Nigerian All- share index. The importance of this study is underscored by the need for investors and policy- makers to understand the link between oil price changes and stock market performance. In addition,its significance lies on its envisaged ability to generate results that will improve stock returns forecasting accuracy, provide relevant information for investors and policy makers, make available reference materials for researchers and the academia as well as assist firms in constructing diversified portfolios and determining risk management strategies (see Youssef & Mokni,2019).

This study covers the period from January 1st, 1997 to December 31st, 2016. We choose January 1997 as the start date, as it is the first month of the fiscal year immediately succeeding the year that the Odife Panel presented their report after reviewing the Nigerian capital market. We select December , 2016 as the end month as the latest month for which all the relevant time series data were available when this project started. The reason for extending the study period to December 2016 is to incorporatesome of the months when Nigeria entered and had the full impact of a five- quarter economic recession that ended in the beginning of the first quarter of 2017.

Journal of Accounting Information and Innovation
Vol.5, No.11, November-2019;
ISSN (4243 – 406X);
p –ISSN 3467 – 7038
Impact factor: 5.29

The remainder of this paper is arranged as follows:- Section 2 provides a brief review of the theory and a summary ofthe related literature.Section 3 explains the data and methodology employed. Section 4 presents the major empirical results and policy impications, while section 5 summarizes and concludes the paper.

2. Methodology

2.1 Data description

This study investigates the asymmetrical effects of oil price fluctuations on the Nigerian all-share index. We choose monthly data spanning the period of January 1997–December 2016. Monthly frequency data are selected as several empirical studies have shown preference for high-frequency data when investigating oil and stock price correlation(see Cheikh et al.,2018). In order to check for robustness, other crude oil benchmarks such as West Texas Intermediate (WTI) and OPEC spot prices have been compared with the Brent crude. . We find that using those oil price types do not significantly alter the results of our benchmark specifications. Oil prices are denominated in US dollars and available from the US Energy Information Administration (EIA).Inthe crude oil market, there are various types and qualities of oil for different purposes. The price of oil highly depends seriously on in its grade, factors such as specific gravity, its content as well as location. 160 different blends of oil have been identified. However, the three primary benchmarks are WTI, Brent, and Dubai. Prices are quoted in different markets all over the univere. In alignment with Alikhanov and Nguyen (2011), we choose Europe Brent for the oil exporting country that we intend to investigate.

We compute oil volatility using the historical method. The end monthdata for all-share index (ASI) are obtained from the Central Bank of Nigeria Statistical Bulletins of the relevant period. The average monthly data on Nigeria's official exchange rate(OER) and inflation rate (INF) areretrieved from the CBN publications of the relevant years. The variables of the study include the historical prices of Brent spot crude oil (OP) used as independent variable and all=share indexasthe dependent variable. The Nigerian official exchange rateswhich are the Nigerian naira exchange rates against the US$ and inflation rates are employed as control variables.Literature recognizes inflation rates as part of those macroeconomic variables that affect stock market significantly(see Fama,1963). In addition, according to Ahkhanov and Nguyen (2011), exchange rate has a significant effect on stock return for exporting country just as industrial production has significant effect on a country engaged in production. Gther studies such as Chen, Roll and Ross (1986), Maysami and Koh (2000), Wongbangpo and Sharma (2002),and Mohammad et al, (2009) cited in Alikhanov and Nguyen(2011)emerged with results that suggest a negative relationship between exchange rate and stock market performance

The Brent crude oil price measures the spot price of various barrels of oil which are quoted in the global oil market..

2.1.1 Descriptive Statistics

Table 1 presents some summary statistics on all-share index, oil price, official exchange rate and inflation rate over 1997–2016. For example, monthly average returns on the Nigerian all-share index, oil price,official exhange and inflation rate are positive throughout our sample. All-share index has a positive skewness (0.6366) and normal kurtosis (3.10). Oil pricehas a positive skewness (0.4584) and Platykurtic (1.9113). Official exchange rate has a positive skewness (0.285226) and a positive kurtosis (5.911730). Inflation ratehas a positive skewness (0.248519) and a positive Kurtosis (3.143751)

Table 1: Descriptive Statistics

	OP	INF	OER	ASI
Mean	57.48429	11.47804	131.3484	23255.22
Median	50.31000	11.38500	130.3400	23285.85
Maximum	133.9000	24.10000	321.5451	65652.40
Minimum	9.800000	0.900000	21.88610	4890.800
Std. Dev.	34.55795	4.202081	52.08417	13450.52
Skewness	0.458444	0.248519	0.285226	0.635993
Kurtosis	1.911314	3.143751	5.911730	3.102396
Jarque-Bera	20.25920	2.677119	88.03586	16.28432
Probability	0.000040	0.262223	0.000000	0.000291
Sum	13796.23	2754.730	31523.63	5581252.
Sum Sq. Dev.	285426.2	4220.139	648349.7	4.32E+10
Observations	240	240	240	240

Source: Researcher's computation

The Jarque Bera statistics for ASI is 16.28432 and a p-value of 0.000291; This means that ASIis not normally distributed since the p-value is less than 0.05 .The Jarque Bera statistics for INF is 2.677119 and a P-value of 0.262223; This means that INFis not normally distributed since the p-value is less than 0.05. The Jarque Bera Statistics for OER is 88.03586 and a p-value of 0.00000; This means that OERis not normally distributed since the P-value is less than 0.05. The Jarque Bera Statistics for OP is 20.25920 and a p-value of 0.000040; This means that OPis not normally distributed since the p-value is less than 0.05

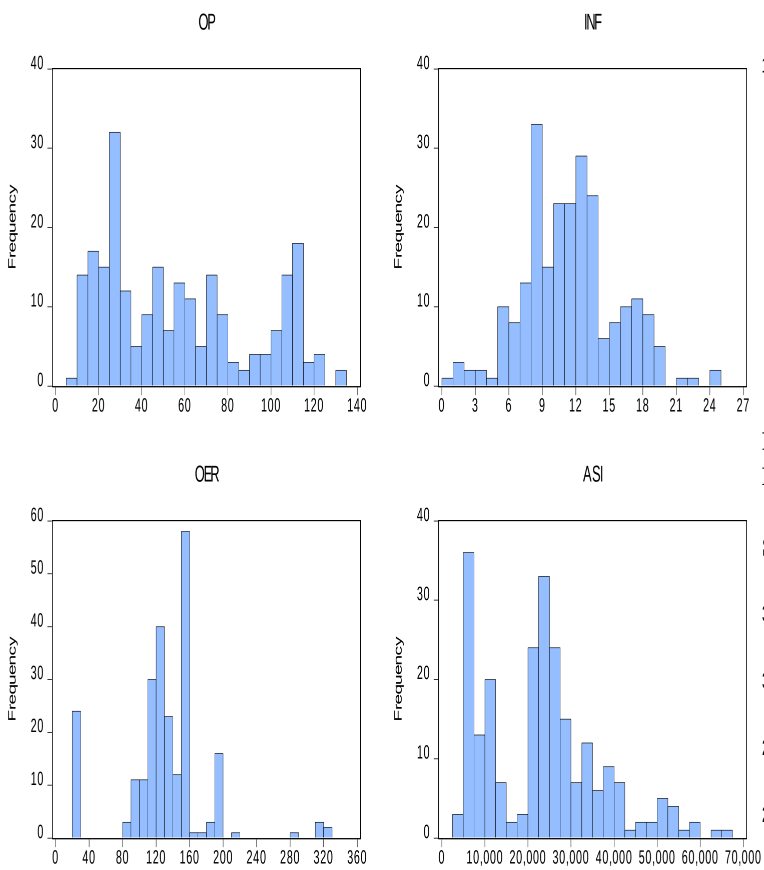

Fig. 1 : Histograms for DOP, ASI, OER and INF.

Source: Researcher's computation

We conduct normality tests for the data series. Our null hypothesis is that the residuals are normally distributed. In figure 3a we observe thatthe value for the Jarque-Bera statistic is 15801.22 and the p-value of 0.000. Consequently, we reject the null hypothesis, implying that that the residuals of the official exchange rates are not normally distributed .The value of the Jarque-Bera statistic in figure 3b is 120.6482 and and it has a p-value of 0.000. This means that the residuals of inflation rates are not normally distributed .In addition, for the residuals of oil price and Nigerian all-share index fail to be normally distributed as their Jaque Bera statistics andp-values are 249.1129, 0.000 and 178400.7, 0.000 respectively(see figures 3c & 3d)..

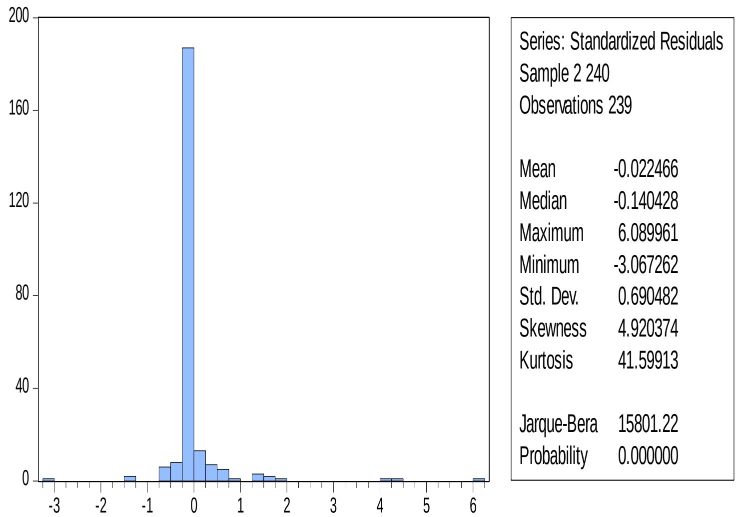

Fig.2a :Histogram (Normality Test For DOER)

Source: Researcher's computation

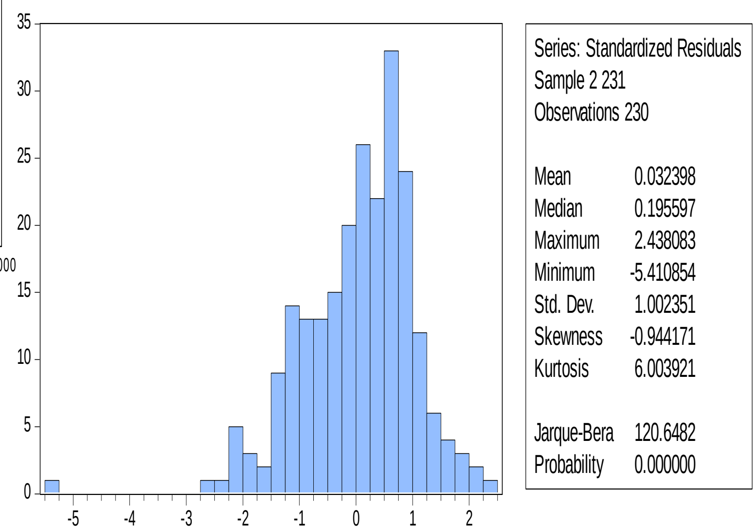

Fig. 2b :Histogram (Normality Test For DINF)

Source: Researcher's computation

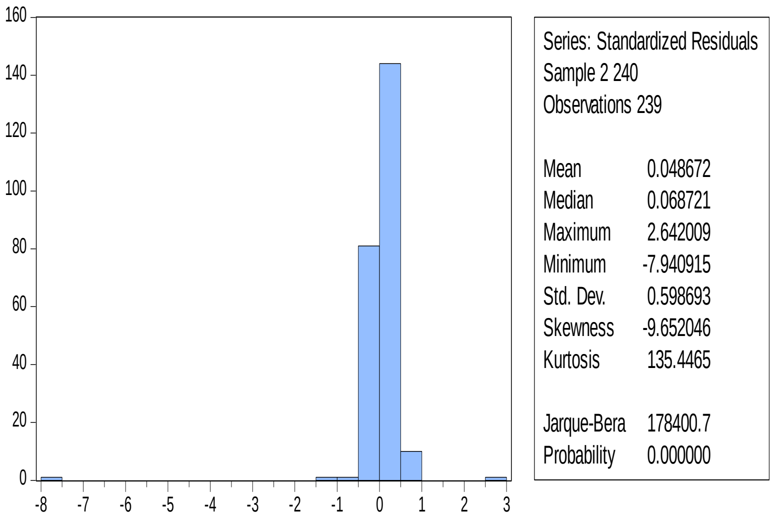

Fig. 2c :**Histogram (Normality Test For DOP)**

Source: Researcher's computation

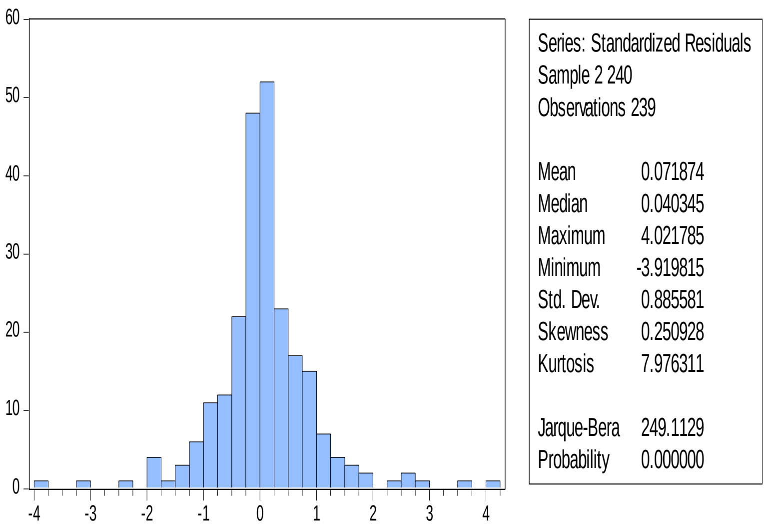

Fig. 2d :Histogram (Normality Test For DASI)

Source: Researcher's computation

2.1.3. Unit Root Tests

We investigate the properties of our key variables by checking stationarity. We test for the presence of unit roots in the levels and first differences of oil prices and all-share index. We perform the DF-GLS test, proposed by Elliott, Rottenberg and Stock.(1996), which is an augmented Dickey-Fuller test, where the time series is transformed via a generalized least squares (GLS) regression before the test is performed(see Cheikh et al.,2018). Since our study period covers episodes of high fluctuations in oil and stock markets,we expect that structural changes would occur in the oil price and all-share index series.

The summary results of these statistical tests for both oil price and all-share index series are reported in tables 2a and 2b. Our findings show that the null hypothesis of a unit root cannot be rejected for some of the variables across levels when using DF-GLS unit root tests.The non-stationarity of some of the seies at their levels, [I,0], implies that the application of Ordinary Least Squares (OLS) technique will invariably produce a spurious regression whose estimates will be both unreliable and misleading. According to Asaolu and Ilo (2012),modern econometric techniques have demonstrated that a linear combination of two variables that are each I(1), (containing stochastic trends) can be achieved through appropriate methods such that their residuals become I(0) or stationary. If y and x are I(1), then, the residuals from the regression of those series would be I(0). However, if they are not I(1),, they are cointegrated(see Adam,1992 in Asaolu & Ilo,2012). Consequently, we difference the series to achieve in order to find out if the series is stationary at first difference. We observe that for the variables in first log differences, all unit root tests suggest that we should reject the null hypothesis of nonstationarity.

Since the Augmented Dickey Fuller test in table 3a shows a significant result (p-value is 0.0000),wereject the null hypothesis. This means that DOP does not have a unit root [it is stationary].

Table 2a : Unit Root test for DOP

Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.620566	0.0000
Test critical values:	1% level	-3.457865	
	5% level	-2.873543	
	10% level	-2.573242	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(DOP)
Method: Least Squares
Date: 06/04/19 Time: 14:35

Sample (adjusted): 4 240
Included observations: 237 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DOP(-1)	-0.742573	0.086140	-8.620566	0.0000
D(DOP(-1))	-0.166106	0.064700	-2.567305	0.0109
C	0.118816	0.397821	0.298666	0.7655

R-squared	0.458697	Mean dependent var	0.039030
Adjusted R-squared	0.454070	S.D. dependent var	8.286513
S.E. of regression	6.122662	Akaike info criterion	6.474448
Sum squared resid	8771.955	Schwarz criterion	6.518348
Log likelihood	-764.2221	Hannan-Quinn criter.	6.492143
F-statistic	99.14494	Durbin-Watson stat	2.001256
Prob(F-statistic)	0.000000		

Source:Researcher'scomputation :

Since the Augmented Dickey Fuller test statistic in Table 3b shows a significant result, p = 0.000; we reject the null hypothesis. This means that DASI does not have a unit root (it is stati
onary)

Table 2x: Unit Root test for DASI
Null Hypothesis: DASI has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=14)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.543894	0.0000
Test critical values:	1% level	-3.457984	
	5% level	-2.873596	
	10% level	-2.573270	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(DASI)
Method: Least Squares
Date: 06/04/19 Time: 15:32
Sample (adjusted): 5 240
Included observations: 236 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DASI(-1)	-0.679898	0.103898	-6.543894	0.0000
D(DASI(-1))	-0.298542	0.088973	-3.355439	0.0009
D(DASI(-2))	-0.202343	0.064493	-3.137457	0.0019
C	48.16542	140.4453	0.342948	0.7319

R-squared	0.502526	Mean dependent var	1.230763
Adjusted R-squared	0.496093	S.D. dependent var	3033.737
S.E. of regression	2153.541	Akaike info criterion	18.20442
Sum squared resid	1.08E+09	Schwarz criterion	18.26313
Log likelihood	-2144.121	Hannan-Quinn criter.	18.22808
F-statistic	78.11864	Durbin-Watson stat	1.965029
Prob(F-statistic)	0.000000		

Source: Researcher's computation

2.1.4 Cointegration Tests

Tables 3a and 3b show the outcomess of co-integration tests.From the Trace and Maximum Eigen Value test outputs, the null hypothesis is that there is no cointegration among the variables; that is that.none of the variables are co- integrated. We accept the null hypothesis since P-value is 0.3068 (greater than 0.05).This means that in the long run, the variables will not be cointegrated or there is no long run association between the variables.

After differencing OP, ASI, OER and INF, they have become DOP, DASI, DOER and DINF respectively

Table 3a : Co-integration Test(Trace Test)

Date: 06/23/19 Time: 16:59
Sample (adjusted): 6 240
Included observations: 235 after adjustments
Trend assumption: Linear deterministic trend
Series: ASI OP OER INF
Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.103075	37.89081	47.85613	0.3068
At most 1	0.036720	12.32679	29.79707	0.9199
At most 2	0.014648	3.535222	15.49471	0.9374
At most 3	0.000288	0.067590	3.841466	0.7949

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 3b : Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.103075	25.56402	27.58434	0.0887
At most 1	0.036720	8.791567	21.13162	0.8489
At most 2	0.014648	3.467632	14.26460	0.9108
At most 3	0.000288	0.067590	3.841466	0.7949

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: Researcher's computation

2.1.5 Stability Test For The Model For Dmval As The Dependent Variable (Dmval, Dop,Doer and Dinf)

The classical Chow (1960) structural stability test was carried out to spot out evidence of potential structural break (see Zivot.& Andrews, 1992).. Though most of the residuals are within their confidence interval limits or bounds,the CUSUM squared result presented in Figure 6 rejected the hypothesis of coefficient stability at five per cent significance. This suggests the presence of structural change in the model. Structural breaks potentially occur in the model at 2008M12 and lasted through 2011M07 during which point the residuals drifted upward. This break point period coincided with the global financial crisis, which though noticed in 2007 only had impact on the Nigerian economy from the end of 2008.

2.2 Methods

2.2.1 Research Design

This work employed the ex post facto research design for determining the influence of oil prices shock on market capitalization..

2.2.2 Model Specification

A myriad of studies find the presence of nonlinear connections between oil and economic activity (see Mork, 1989, & Hamilton, 1996). Those studies suggest that oil price increases are much more influential than oil price decreases, implying an asymmetric relationship between oil price and output level. In the recent times, several papers have examined the potential asymmetric relationships between the crude oil market and other asset prices, such as stock prices or stock returns. For instance, Bittlingmayer (2005) observes that oil price fluctuations arising from war risks, and those related to other causes, display asymmetric effects on stock price dynamics. Cheikh et al,(2018) contend that ignoring nonlinearity can lead to problematic results, just as Balcilar et al. (2015) argue that using a linear framework would result in mixed results,

In this paper, we carry out the estimation with the Exponential GARCH (EGARCH)- a model which Soyemi et al, (2017) assert has been used in recent studies to measure volatility (See Lux, Segnon & Gupta, 2015, in Soyemi,Akingunola & Ogebe, 2017; Lawal et al., 2016; Eagle, 2017), among others.One considers this approach as a better means for accounting for the size effect of oil price movements on the dependent variable and allowing for movements in the conditional variance (see Manasseh & Omeje, 2016, Andreas & Constatinos ,2009 & Lawal et al., 2016).Proposed by Nelson (1991),the EGARCH model is important in capturing asymmetry, which is the different impacts on conditional volatility of positive and negative shocks of equal magnitude, and possibly also leverage, which is the negative correlation between returns shocks and subsequent shocks to volatility.One advantage of the EGARCH model over the basic GARCH (1,1) specification is that it is an asymmetric model that specifies the logarithm of conditional volatility and avoids the need for any parametric constraints Exponential GARCH has some form of leverage effects in its equation. Accoding to Sardrsky (1999),many authors have suggested that oil price volatility shocks may play an essential role in explaining economic activity. Some authors consider volatility of price changes as an

Journal of Accounting Information and Innovation
Vol.5, No.11, November-2019;
ISSN (4243 – 406X);
p –ISSN 3467 – 7038
Impact factor: 5.29

accurate measure of the rate of information flow in financial markets. Mokni and Mansouri(2017) report that such models are able to capture different volatility stylized facts that are often observed infinancial time series ,such as volatility clustering , heteroskedasticity and long memory, all at the sametime.

The EGARCH[p,q] model is specified as follows: -

$$\log(h_t) = \alpha_0 + \sum_{j=1}^{q}\beta_j \log(h_{t-j}) + \sum_{i=1}^{p}\alpha_i \left|\frac{u_{t=i}}{\sqrt{h_{t=i}}}\right| + \sum_{k=1}^{r}\gamma_k \frac{u_{t-k}}{\sqrt{h_{t-k}}}$$

(conditional variance equation)..(2.1)

For this study, the conditional mean and variance equations for testing the hypothesis is presented as follows:-

LOG(GARCH) = **C(1) + C(2)*DOP ....(2.2)**

LOG(GARCH) = C(3) + C(4)*ABS[RESID(-1)/@SQRT{GARCH(-1)}] + C(5)*RESID(-1)/@SQRT(GARCH(-1)) + C(6)*LOG{GARCH(-1)} + C(7)*DOP …………………………(2.3)

LOG (GARCH) is the conditional variance of the residual; it is the dependent variable. C (3) stands for the constant which indicates the last period (t-1) volatility. C(4) is the constant representing theimpact of a magnitude of a shock (size) /arch effect / spillover effect . It indicates the impact of long term volatility. At five percent level of significance, if C(4) has a p-value not higher than 0.05, the implication is that it is significant and there seems to be an impact of long term volatility..C (5) is the gamma (γ) or leverageterm. The gamma parameter measures the asymmetry or the leverage effect. If gamma = 0 , then the model is symmetric. When gamma < 0 , then positive shocks (good news) generate less volatility than negative shocks (bad news). When gamma > 0 , the implication is that positive innovations are more destabilizing than negative innovations.C (6) re[resents the GARCH effect. That is the alpha. Its parameter represents a magnitude effect or the symmetric effect of the model.Beta (the GARCH term) measures the persistence in conditional volatility irrespective of anything happening in the market. When beta is relatively large, then volatility takes a long time to die out following a crisis in the market (see Alexander,2009). C (7) is DOP (the explanatory variable),The statistics for the hypotheses are shown in tables 11 – 16. The decision is base on 5% level of significance. According to Brooks (2014), the model above, which is based on the assumption of normal gaussian distribution, captures the asymmetric volatility through the variable gamma(γ). The sign of the gamma determines the size of the asymmetric volatility and whether the asymmetric volatility is positive or negative.

The null hypothesis is that oil price shock had no positive and significant effects on the market capitalization. The model for testing this hypothesis is presented respectively :as follows:-

DASI = C(1) + C(2)*DOP ………..……………………………………………(2.4)

LOG(GARCH) = C(3) + C(4)*ABS[RESID(-1)/@SQRT{GARCH(-1)}] + C(5)*RESID(-1)/@SQRT{GARCH(-1)} + C(6)*LOG{GARCH(-1)} + C(7)*DOP……………………(2.5)

Where DASI stands for the Nigerian all share index and DOP represents oil price both in their first difference forms.

3,1 Empirical Results

In table 4, C5 is positive at 0.176041 and significant with a p-value of 0.0002 , implying that there is no leverage effect. In other words, bad news has less impact than good news of the same size. C(6), the GARCH (beta) term has a value of -0.594868 and a p-value of 0.0000. Hence, it is significant and there is volatility persistence .The oil price volatility[DOP] which is known as exogenous variable or variance regressor can also contribute in the volatility of all-share index[DASI] in equation 8.2. DOP has a p-value of 0.0000 which means that the impact of oil price volatility on all-share index is significant ; its volatility or shocks of oil price can affect the volatility of the all-share index. The shock in DOP does significantly affect DASI. However, since DOP has a negative coefficient of -0.035107 , the impact of oil price volatility on the Nigerian all-share index is negative.The result of the EGARCH estimation indicates that the coefficient of oil price shock is negative and the p-value is significant. It shows that a unit increase in oil price causes some decrease in all- share index. It was discovered that oil price fluctuation affected all- share index significantly in Nigeria within the period of study. The result is perfectly consistent with those of Adaramola (2012),Sadorsky (1999),Yurtsever and Zahor(2007) and Effiong (2014).However,it dffers slightly with those of Mordi et al. (2010), Hayky and Naim (2016), Echchabi and Azouzi (2017) and Ojikutu et al,(2017) that all find the impact of oil price shock on all- share index to be positive and significant.According to Hayky and Naim (2016), there is a positive and significant relationship between stock market index and oil price shocks in the period of high volatility regime and the absence of any connection between the variables during the period of low volatility regime. For Mordi et al. (2010), oil price has an asymmetric effect on all-share index.The negative connection between oil price and Nigerian all-share index is explained by the fact that, though Nigeria is an oil- exporting country, the import bill is significantly over and above what is exported at the moment (see Adaramola,2012)..

Table 4: **Estimation of The Egarch Model For All-share Index As The Dependent Variable With Normal Gaussian Distribution Type**

Dependent Variable: DASI
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 11/18/18 Time: 20:53
Sample (adjusted): 2 240
Included observations: 239 after adjustments
Convergence achieved after 12 iterations
Presample variance: backcast (parameter = 0.7)
LOG(GARCH) = C(3) + C(4)*ABS(RESID(-1)/@SQRT(GARCH(-1))) + C(5)
*RESID(-1)/@SQRT(GARCH(-1)) + C(6)*LOG(GARCH(-1)) + C(7)*DOP

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	152.1950	93.95737	1.619830	0.1053
DOP	138.2678	7.819097	17.68335	0.0000
	Variance Equation			
C(3)	23.26801	0.960265	24.23082	0.0000
C(4)	0.626982	0.083462	7.512181	0.0000
C(5)	0.176041	0.047146	3.733937	0.0002
C(6)	-0.594868	0.061970	-9.599329	0.0000
C(7)	-0.035107	0.005714	-6.143760	0.0000

R-squared	0.074186	Mean dependent var	80.95644
Adjusted R-squared	0.070280	S.D. dependent var	2186.523
S.E. of regression	2108.289	Akaike info criterion	17.77342
Sum squared resid	1.05E+09	Schwarz criterion	17.87524
Log likelihood	-2116.924	Hannan-Quinn criter.	17.81445
Durbin-Watson stat	2.101346		

Source : Researcher'#scomputation

3.2 Implication of Findings

The coefficient of oil price was found to be negative and the p-value significant. Contrary to economic *a –priori* expectation but consistent with the studies such as Sadorsky (1999),Yurtsever and Zahor(2007) Adaramola (2012) , Effiong (2014) and Ojikutu et al.,2017.that find all- share index was found to be a negative and significant function of oil price shock. .For instance, after employing the Ordinary Least Square estimation technique for analysis, Oiikutu et al., 2017 observe tha the impact of falling oil prices on stock market and exchange rates differs from country to country, either oil-exporting or oil-importing country. Based on the Trace statistics result,Ojikutu et al,2017 find that there exists one co-integrating relationship among all share index , crude oil prices and exchange rate . The R^2 value was 0.505; showing that 50.5% of the variation in stock market performance can be explained by crude oil prices and exchange rate. The F-statistic value of 2.17 ($P<0.05$) shows that all share index, crude oil prices and exchange rate are jointly significant and the Durbin Watson value of 2.22 implies that the model does not suffer from autocorrelation.. These findings are expected, given that economic activity and growth in the country are strongly influenced by their oil export earnings. From an investment strategy perspective, our results underscore the necessity for market participants to consider differences in the sensitivities of stock returns to oil prices when deciding on the compositions of international stock portfolios. As highlighted in other studies, there can be substantial potential benefits to including stocks from Nigeria in portfolios that also include stocks from net oil importing countries, given that the latter group generally exhibits negative sensitivities to oil price changes. From an economic policy perspective, the results point to the need for measures that reduce and smooth the impacts of oil price changes on all-share index over time. Such measures are especially beneficial from a macroeconomic stabilization viewpoint, given that a rise/fall in equity price increases/reduces the corporate sector's wealth, thereby reinforcing the adverse impact on aggregate demand. From the perspective of a policymaker, stabilizing the impact of oil price change on non-oil growth is advisable. The main channel for such stabilization is fiscal policy, particularly through public expenditure policy.. On-going and expected structural reforms are important because they serve to diversify the economic base and increase non-oil sources of financing. By adopting ths approach- the expected sensitivity of non-oil growth to oil-related influences is reduced with time.

4. Conclusions

This study examined the effect of oil price volatility on the volatility of all-share index in Nigeria using the EGARCH[1,1] model in the empirical analysis. It employed secondary data covering the period from January1997 to December 2016. Official exchange rate and inflation rate were used as control variables to strengthen the explanatory power of the model. The findings of this study show that oil price volatility has a negative and significant effect on the volatility of all-ahare index. Market participants are advised to target oil price movements as an important instrument for predicting the stock market volatility.
The results of this study have created awareness before the academia, research students, investors, policy- makers and the general public that, even though Nigeria is a major oil exporter, oil price changes do not have positive effect on her all-share index , contrary to economic theory. In summary, crude oil prices does impact all share index significantly. It is therefore recommended that the Nigerian government should take steps to ensure that oil companies in Nigeria are listed on the stock market to have more direct impact on the economy.
This study suggests that future research activityshould be extendedusing intra-day volatilty based on high frequency data.

References

Abbas, T. and Terfa, W.A. (2010)The Impact of Oil PriceVolatility on the Nigerian Stock Market: Evidence from Autoregressive Distributed Lag Model. Conference Paper.Nasarawa State University, Conference on ‘Managing the Challenges of the Global Financial Crisis in Developing Economies.

Abeng, M. O. (n.d.). Analysis of the effect of oil price shock on industry stock returns in Nigeria,Research Department,.Central Bank of Nigeria.

Adaramola, A. O.(2012).Oil price shocks and stock market behavior: The Nigerian experience, *Journal of Economics.* 3(1), 19-24.

Adebiyi, M.A.; A. O. Adenuga, M. O. Abeng, and P. N. Omanukwue (2009), Oil Price Shocks, Exchange Rate and Stock Market Behaviour: Empirical Evidence from Nigeria”. Joint Paper presented at the 14th Annual Conference of African Econometric Society at Abuja Sheraton Hotel and Towers, Abuja

Akinlo, O. O. (2014). Oil prices and stock market : Empirical evidence from Nigeria. *European Journal of Sustainable Development, 3*(2),33-40.

Akomolafe,K. J.& Danladi, J. D. (2014).Oil Price Dynamics and the Nigerian Stock Market:An Industry Level Analysis.*International Journal of Economics, Finance and Management, 3,* (6),1-9.

Alexander C,Lazar E.(2009) The equity index skew, market crashes and asymmetric

Alikhanov, A. & Nguyen, T. (2011). The impact of oil price on stock returns in oil- exporting economies: The case of Russia and Norway. *Master Thesis in Finance.* School of Economics and Management. Lund University.

Andreas, E. L. & Constantinos, K. (2009).The Effects of the increasing oil price returns and its volatility on four emerged stock markets. *European Research Studies,* Volume XII, Issue (1).

Arouri, M. H. and D. K. Nguyen (2010), Oil Prices, Stock Markets and Portfolio Investment: Evidence from Sector Analysis in Europe over the Last Decade,”Working Papers hal-00507823, HAL.

Asaolu, T. O. & Ilo, B. M. (2012). The Nigerian stock market and oil price : A co-integration analysis. *Kuwait chapter of Arabian journal of business and management review,* 1 (5), 39 – 54.

Balcilar, M., R. Gupta, and S. M. Miller(2015).Regime switching model of US crude oil and stock market prices: 1859 to 2013,*Energy Economics* Vol. 49, pp. 317–327.

Basher, S. A., Sadorsky, P., (2006), *Oil price risk and emerging stock markets.* Global Finance Journal

Bittlingmayer, G, (2005) Oil and stocks: Is it war risk?": University of Kansas manuscript, December 29, 2005.

Brooks, C. (2014). *Introductory economics for finance*. (3rd Ed). New York Cambridge University Press.

Caporale, G.M., Ali, F.M., Spagnolo, N. (2015), Oil price uncertainty and sectoral stock returns in China: A time-varying approach. China Economic Review, 34, 311-321.

Cheikh, N.B.;ockmarkets:Naceur, S. B.; Kanaan, C. & Rault, C.(2018). Oil prices and GCC stock markets:New evidence from smooth transition models. IMF Working paper WP /18/98.

Chen, N., Roll, R., Ross, S.A. (1986), Economic forces and the stock market. The Journal of Business, 59, 383-403.

Chen, S.S. (2011), Lack of consumer confidence and stock returns. Journal of Empirical Finance, 18, 225-236.

Chow, G. C. (1960) Test of Equality between sets of coefficients in Two Linear Regressions. Econometrica 28(3), 591-605

Cunado, J. & Perez de Gracia, F. (2003). Do oil price shocks matter? Evidence from some European countries, *Energy economics,* 25, 137 – 154.

Daskialaki, S. & Skiadopoulos, C.(2011). Should investors include commodities in their portfolios after all?: New evidence. Jounal of Banking and Finance, 35 : 2606 – 26..

Degiannakis, S., Filis, G. & Arora, V. (2017). Oil prices and stock markets. Working Paper Series. Independent Statistics and Analysis. U.S. Energy Information and Adminstration. June.

Degiannakis, S., Filis, G., & Kyzys, R. (2014). The effects of oil price shocks on stock market volatility.: Evidence from European data. *The Energy Journal,* 35(1), 35-56.

Degiannakis, S., Filis, G., Floros, C. (2013), Oil and stock returns: Evidence from European industrial sector indices in a time-varying environment. Journal of International Financial Markets, Institutions and Money, 26, 175-191.

Driesprong, G., Jacobsen, B., Maat, B. (2008), Striking oil: Another puzzle? Journal of Financial Economics, 89, 307-327.

Eagle, B. (2017). Oil price volatility and macroeconomy: Tales from top two oil producing economies in Africa. *Journal of Economics and Financial studies, 05*(05), 45-55.

Echchabi, A. & Azouzi, D. (2017). Oil price fluctuations and stock market movements: An application in Oman. *Journal of Asian Finance, Economics and Business,* 4 (2), 19-23.

Effiong, E. L. (2014). *Oil shocks and Nigeria stock market: what have we learned from crude oil market shocks?* OPEC, Oxford: John Wiley and Sons Ltd, 9600. Garsingloro , 36 – 38

Elliott, G., T. Rothenberg, and J. Stock, 1996, "Efficient Tests for an Autoregressive Unit Root," *Econometrica,* Vol. 64, No. 4, pp. 813–836.

Faff, R. and T. Brailsford (1999), "Oil Price Risk and the Australian Stock Market", Journal of Energy Finance and Development, 4(1), pp69 – 87.

Fama, E. (1963), Mandelbrot and the stable paretian distribution. Journal of Business, 36, 420-429.

Filis, G., Degiannakis, S., Floros, C. (2011), Dynamic correlation between stock market and oil prices: The case of oil-importing and oil-exporting countries. International Review of Financial Analysis, 20, 152-164.

Hamilton, J. D. (1983). Oil and the macro economy since World War II. *Journal of Political Economy.* 91 , 228 – 248.

Hamilton, J. D.,(1996) .This is what happened to the oil price–macroeconomy relationship,*Journal of Monetary Economics*, Vol. 38, No.2, pp. 215-220.

Hayky, A. & Naim, N. (2016). The Relationship between oil price and stock market index; An empirical study from Kuwait. Ahlia University, Kingdom of Brahain, 1 – 17

Huang, R.D., Masulis, R.W., Stoll, H.R. (1996), Energy shocks and financial markets. Journal of Futures Markets, 16, 1-27.

Iheanacho, E. (2016). Dynamic relationship between crude oil price, exchange rate and stock market performance in Nigeria. *International multi – disciplinary Journal,Ethiopia,* 10 (4). DOI: http://dx.doi.org/10.4314/afrrev.v10;4.16..

Jones, C.M., Kaul, G., (1996), *Oil and the stock markets. The Journal of Finance 51*(2), 463–491.

Jones, D., Leiby, P., Paik, I., (2004), *Oil price shocks and the macroeconomy: What has been learned? Energy Journal*, 25, 1–32.

Kanu, S. I.; Nwaimo, C. E. & Cimezirim, A. O.(2017). Oil price and all-share : Evidence from Nigera, *Research Journal of Finance and Accounting***, 8**(24).

Kilian, L & Park C. (2009). The Impact of oil price shocks on the US stock market. .*International Economic Review, 50*,(4), 1267-1287.

Laura, C. & Dieter, S. (2015). How do oil price changes affect Greman stock returns? *Journal of Energy Economics and Policy,5*(11), 3321-334.

Lawal, A. I., Somoye, R. O. C. & Babajide, A. A. (2016). Impact of oil price shocks and exchange rate volatility on stock maket behaviour in Nigeria. *Binus Business Review*, 7(2), 171 – 177. A01 10.21512/b.b.r.v 7i2 1453.

Lee, Y.H., Chiou, J.S. (2011), Oil sensitivity and its asymmetric impact on the stock market. Energy, 36, 168-174. .

Manasseh ,C.O. & Omeje, A. N. (2016). Application of generalized autoregressive conditional heteroskedasticity model on inflation and share price movement in Nigeria. *International Journal of Economics and Financial Issues, 6(4)*, 1491 -1501. ..

Mohanty, S.K., Nandha, M., Turkistani, A.Q., Alaitani, M.Y. (2011), Oil price movements and stock market returns: Evidence from Gulf Cooperation Council (GCC) countries. *Global Finance Journal, 22,* 42-55.

Mokni, K. & Mansouri, F. (2017). Conditional dependence between international stock markets: A long memory GARCH – copula model approach.Journal of motivational financial management, 42-43;116-31.

Mordi, C. N. O., Michael A. & Adebiyi, A. M. (2010). The asymmetric effects of oil price shocks on output and prices in Nigeria using a structural VAR model. *Economic and Financial Review, 481*, 1 – 32.

Mork, K., (1989) Oil and the Macroeconomy When Prices Go Up and Down: An Extension of Hamilton's Results,*Journal of Political Economy*, Vol. 97, No. 3, pp. 740-744.

Najaf R, Najaf, K. (2016). Impact of crude oil prices on the Bombay Stock Exchange. *Journal of Business Finance Aff 5: 216*. doi: 10.4172/2167-0234.1000216

Narayan, P.K., Sharma, S.S. (2011), New evidence on oil price and firm returns. Journal of Banking & Finance, 35, 3253-3262.

Nelson, B. D. (1991). Conditional heteroskedasticity in asset returns: a new approach. *Econometrica*, 59: 347–70. [Crossref], [Web of Science ®] [Google Scholar]

Oberndorfer, U. (2009), Energy prices, volatility, and the stock market: Evidence from the Eurozone. Energy Policy, 37, 5787-5795.

Obi, B.,Oluseyi,A. S. & Olaniyi, E.(2018). Impact of oil price shocks on stock market prices volatility in Nigeria: New evidence from a non-linear ARDL cointegration.*Journal of Global Economy.14*(3), 1-17.

Ojikutu, O. T., Onolemhemhen; R. U, & Isehunwa, S. O. (2017). Crude oil price volatility and its impact on Nigeria stock market performance (1985 – 2014). *International Journal of Energy Economics and Policy,* 7 (5). 302 – 311.

Omisakin, O., O. Adeniyi and A. Omojolaibi (2009) 'A Vector Error Correction Modelling of Energy Price Volatility of an Oil Dependent Economy: The Case of Nigeria', Pakistan Journal of Social Sciences 6(4): 207-213

Ono, S. (2011). Oil Price shocks and stock markets in BRICs. *The European Journal of Comparative Economics,* vol 8(1), 29 – 45.

Papapetrou, E. (2001), Oil price shocks, stock market. Economic activity and employment in Greece. Energy Economics, 23, 511-532.

Park, J., Ratti, R.A. (2008), Oil price shocks and stock markets in the US and 13 European countries. Energy Economics, 30, 2587-2608.

Reborado, J. C.(2010). Non-linear effects of oil shocks and stock returns : A Markov Regime –Switching Approach. *Applied Economics*,42: 3735 -45.

Reboredo J. C., and A., Ugolini, 2016, "Quantile dependence of oil price movements and stock returns," *Energy Economics* Vol. 54, No 1, pp. 33-49.

Sadorsky, P. (1999), Oil price shocks and stock market activity. Energy Economics, 21, 449-469.

Sadorsky, P. (2008), Assessing the impact of oil prices on firms of International Journal of Energy Economics and Policy | Vol 6 • Issue 2 • 2016 362

Sadorsky, P. (2014), Modeling volatility and conditional correlations between socially responsible investments, gold and oil. Economic Modelling, 38, 609-618.

Shimon, A., Raphael, S. (2006), Exploiting the Oil-GDP effect to support renewable development. Energy Policy, 34, 2805-2819.

Sim, N., Zhou, H. (2015), Oil prices, US stock return, and the dependence between their quantiles. Journal of Banking and Finance, 55, 1-8.

since 1996. The Energy Journal 25, 1–32.

Soyemi, K. A., Akingunola, R. O. & Ogebe, J. (2017). Effects of oil price shock on stock returns of energy firms in Nigeria. *Kasetsart Journal of Social Sciences*.XXX,1-8.Retriev*edfrohttp://dx.doi.org/10.1016/jikjss2017.09.004* .

Teräsvirta, T., 1998, "Modelling economic relationships with smooth transition regressions," in *Handbook of Applied Economic Statistics*, ed. by A. Ullah and D. E. A. Giles, (New York: Marcel Dekker).

Youssef, M. & Mokni, K. (2019). Do crude oil prices drive the relationship between stock markets of oil-importing and exporting countries? *Economies*, MDPI, Base, Switzerland, http:// crative commons.org/licences/by/4.0/1-22.

Wang, Y., Wu, C., Yang, L., (2013), *Oil price shocks and stock market activities: Evidence from*

Wei, C. (2003), Energy, the stock market, and the putty-clay investment model. American Economic Review, 93, 311-323.

Yurtsever, C. and T. Zahor (2007) "Oil Price Shocks and Stock Market in the Netherlands", University of Groningen, December

Zhang, B, & Lee, X. (2014). Recent hykes in oil-equity market : Transistory or permanent? Energy economics, 53; 305 -15.

Zhu,H.; Su,X.;You,W. & Ren, Y.(2017). Assymetric effects of oil price shocks on stock returns: Evidence from two-stage

Markov regime-swwitching approach. Applied economics, 49; 2491 -507.

Zivot. E., and K. Andrews, 1992, Further Evidence on the Great Crash, the Oil-Price Shock, and the Unit-Root Hypothesis,*Journal of Business and Economic Statistics*, Vol. 10, No 3, pp. 251-70.