Dynamic response of emerging market stock returns to exchange rate and oil price: a case of Nigeria

Joel Ede OWURU[1*] and Olabode Eric OLABISI[2]

To cite this article:

Owuru, J.E., Olabisi, E.O. (2023). Dynamic response of emerging market stock returns to exchange rate and oil price: a case of Nigeria. Romanian Journal of Economics, 57(2), pp. 114 - 130

Abstract. *Background: The share market is acknowledged as a pivotal subset of the larger financial market for trading financial assets, which is believed to be a catalyst for economic growth in the economy. However, various fundamental economic dynamics, especially the oil price and exchange rate, affect the overall behavior of returns to investors in the stock market. Nigeria has crude oil as its major export commodity in the international market, and in view of the recent global economic downturn that is linked to the COVID-19 pandemic, the petroleum cost has been plummeting along with the worsening exchange rate. Objective: This investigation explored the effects of fluctuations in oil prices and currency exchange rates on stock market yields in Nigeria. Method: Monthly information on crude oil cost, naira/dollar conversion rate, and the overall share index of Nigerian Stock Exchange (NSE) were acquired from the US Energy Information Administration encompassing the timeframe from January 2000 to September 2020 and estimated through the ARDL model. Results: We found that (i) The ARDL boundary examination indicated a sustained association among the variables examined in the investigation. (ii) A 1% escalation in oil prices would probably induce a 15.5% rise in stock returns in the short term and a 23.7% increase in the long term. (iii) A 1% devaluation of the naira/dollar exchange rate would reduce short-term stock market returns by 0.16%, whereas in the long term, an inconsequential adverse impact of the exchange rate on stock market returns was identified. Originality: Noteworthy for its unique contribution, this study stands out as one of the few empirical examinations exploring the tripartite relationship among stock market returns, prices of crude oil, and currency exchange rates in Nigeria. Using high-frequency data, the study effectively captures both the short-run and long-run effects of oil price changes and exchange rate fluctuations on stock market returns.*

Keywords*: stock market returns; oil price; exchange rate; ARDL model; Nigeria*
JEL classification: *C32; G12; G14; Q4*

1. Introduction

The stock market is a subset of the larger capital market, where different financial assets and securities are bought and sold. Various stakeholders have acknowledged that the market for shares is a financial hub for growing an economy as it guarantees access to funds by industrialists

[1] Augustine University, Ilara-Epe, Lagos State, Nigeria; *Corresponding author: joel.owuru@augustineuniversity.edu.ng ; joelowuru6@gmail.com

[2] Elizade University, Ilara-Mokin, Ondo State, Nigeria; olabode.olabisi@yahoo.com

and promotes the executions of development projects that require long-term capital in developing countries like Nigeria (see Ogbebor and Siyanbola, 2018). It has been recognized that among the stock markets in Africa, the Nigerian stock Exchange is the fastest-growing emerging one. Magnusson and Wydick (2002) remarked that as of 2002, only the stock exchange markets of three African countries, namely Nigeria, South Africa, and Zimbabwe that were listed as frontier markets in Sub-Saharan Africa by the IFC Global Composite Index. Among the institutional traders and investors in the capital market, the deposit money banks (DMBs) are not left out. In this case, the current increase in banks' capitalization would not be unconnected with the banking sector consolidation of 2005, which saw a phenomenal reduction of DMBs from 89 to 24 banks and an increase in the number of branches (Sanusi, 2011).

Nigeria is largely known as a mono-cultural economy, with crude oil as the major export commodity. However, the determination of the oil price is beyond its power. In other words, the oil price is determined on the international market, and the production quota is determined by the Organization of Petroleum Exporting Countries (OPEC). Consequently, shocks from incessant price change in oil translate into the economy of Nigeria, including the stock market. Similarly, returns from crude oil exportation are also affected by the rate at which the domestic currency is exchanged for the US dollar. Hence, the Nigerian stock market cannot be exempted from the dual shocks due to incessant variability in prices of oil and exchange rate risk exposures.

In fact, oil is very germane to Nigeria, like any other country in the world (except for the recent emergence of renewable energies). Recognizably, oil is a major input for production in the industrial sector; thus, an increase in oil prices induces higher production costs which can reduce subsequent returns on investments and dividends as future cash flow reduces. Again, a rise in oil prices can lead to an increase in inflation and the nominal interest rate, which are fundamental economic determinants of share prices. Similarly, an unstable exchange rate affects the expected returns on assets and equity for quoted firms.

In recent decades, a lot of shocks have had and are still having an impact on the capacity of the stock market to play its role in capital formation in an emerging economy like Nigeria. For instance, the global financial crisis of late 2007 to early 2009, the Nigerian economic recession of 2006, and the current global health pandemic of COVID-19, which has affected the oil price with a worsening exchange rate, all affect earnings from the stock market. As a macroeconomic variable, stock market returns or outcomes and variability in key external sector-based financial variables like exchange rate and oil price changes are linked, and their behaviors are hardly unpredictable (Omojolaibi, 2012).

From the literature, however, there is no agreement on the direction of the impacts of these variables. In terms of the category of empirical studies in this area, in Nigeria, many authors either focus on the connection between the advancement of the stock market and the expansion of the economy, and see Nigerian stock Exchange as the fastest-growing emerging one, (see Nyong, 1997; Osinubi and Amaghionyeodiwe, 2003; Magnusson and Nurudeen, 2009; Okpara, 2010, Olawoye, 2011; Ogboi and Oladi, 2012; Edame and Okoro, 2013; Babajide et al., 2015; 2016a & 2016b; and Ogbebor and Siyanbola, 2018 among others for Nigeria), stock market and oil price (see Salisu and Oloko, 2015; Babatunde et al., 2013; Fowowe, 2013 and 2017); stock market and exchange rate (see Bahmani-Oskooee and Sohrabian, 1992 for earlier paper), or stock market, oil price, and exchange rate nexus (Lawal et al., 2016).

The study addresses a gap in empirical research in relation to critical nexuses among stock market returns, prices of oil, and naira-dollar currency exchange rates. Given the global economic shocks resulting from fluctuations in prices of oil, and naira-dollar currency exchange rates, the need to understand their interconnectedness is emphasized. The research aims to contribute to this knowledge gap by investigating the short-term and long-term effects of changes in oil prices and exchange rates on stock market returns. The study utilizes recent high-frequency data, including market capitalization, Brent oil prices (used by OPEC), and the official exchange rate of the naira to the dollar, spanning from January 2000 to September 2020.

The underlying research questions that are addressed in this study are: (i) do prices of oil influence returns on investment in the stock market in Nigeria in the short and long run? (ii) does the exchange rate exhibit significant effects on stock returns in the capital market in Nigeria in the short and long run? By providing empirical answers to these questions, the results obtained are expected to be beneficial as they feed the investors with the right information on portfolio choices and the policy

makers with the mechanism of the transmission effects of external sectors to the capital market of the economy.

In addition to the above introduction, the remaining parts of this study are organized as: previous extant literature is briefly reviewed in section 2. Section 3 contained the theoretical framework and materials & methods, including data issues. While the results obtained are presented and discussed in section four, the conclusions drawn from the findings and relevant policy remarks are detailed in section five.

2. Literature Review

2.1 Brief Review of Empirical Literature

The literature on the relationship among oil prices, exchange rates, and stock market outcomes can be categorized into three perspectives. The first category focuses on studies examining the connection between oil prices and stock market behaviour. The second category involves studies investigating the relationship between oil prices and stock returns. The third category explores the interconnected relationship among oil prices, exchange rates, and stock returns. Overall, the existing empirical evidence on the nexus among these variables is predominantly mixed.

- *Oil Price-Stock Returns Nexus*

The connection between crude oil prices and stock returns is a subject of extensive research, yielding diverse findings without a definitive consensus. Some scholars suggest that an increased price of oil can predict positive returns in share markets. This perspective argues that rising oil prices stimulate income and revenue in oil-exporting economies, leading to increased expenditure, investments, and capital formation through the stock market. However, contrasting views exist. Some studies, such as Elyasiani et al. (2012), caution against holding assets in the stock market when oil prices fluctuate excessively, emphasizing the high risk associated with such market conditions. Thus, the literature on this relationship remains varied, with differing conclusions regarding the influence of petroleum prices on stock market outcomes.

Awartani and Maghyereh (2013) investigated the dynamics of oil and equity market returns and volatility spillover in the Gulf Cooperation Council Countries (GCCC) from 2004 to 2012. Using the Diebold and Yilmaz approach, they discovered bi-directional transmission of returns and volatility between equity and oil prices, indicating a significant role for oil in news transmission between the two. In the context of Greece, Papapetrou's (2001) work on the oil price-stock market relationship, as reviewed by Ashamu et al. (2017), showed that oil price variations significantly explain stock prices variability and depress real stock return. In the Indonesian stock market, Fariz et al. (2016) studied the effects of oil prices on sectoral stocks and found positive effects of oil price fluctuations on selected sectors' stocks, with agricultural and consumable sectors' stock returns responding asymmetrically.

The studies conducted by Ashamu et al. (2017) and Salisu and Isa (2017) investigated the impact of oil price volatility on bank stock prices in Nigeria. While Ashamu et al. found a short-run influence of past values of bank stock returns on current market returns as they observed that past oil shocks affected fluctuations in bank stock prices, Salisus and Isa extended the analysis to explore the relationship between oil prices and stock markets in both oil-exporting and oil-importing countries. Using monthly data from 2000 to 2015, they employed symmetric and asymmetric panel autoregressive distributed lags (ARDL) and discovered that stock prices in both groups responded asymmetrically to changes in oil prices, with stronger reactions observed among oil-exporting countries.

In a sequence of practical investigations, diverse scholars have explored the correlation between petroleum costs and stock market yields in diverse nations. Fowowe (2013) discovered a negligible adverse consequence of fluctuations in oil prices on stock returns in Nigeria. Broadstock and Filis (2014) communicated noteworthy unfavourable effects on actual stock yields in Nigeria, while Effiong (2014) detected an unfavourable and inconsequential influence of petroleum prices on stock market returns in the identical nation. Similar insignificant negative effects were observed in other countries: Kang et al. (2014) for China, Al-Qudah (2014) for Jordan, and Effiong (2014) for the USA and Pakistan. Rong-Gang et al. (2008) applied vector autoregressive methods to Chinese data and concluded that oil price volatility did not significantly impact stock returns. Chuanguo and Chena

(2011) contradicted this, establishing a positive link between world oil price volatility and Chinese stock market returns using GARCH models.

For the US, Salisu and Oloko (2015) employed VARMA-AGARCH models and found a significant positive return spillover from the US stock market to the oil market, with bi-directional shock spillovers between the two markets. Salisu et al. (2018) extended this analysis by incorporating macroeconomic fundamentals, revealing structural breaks in the relationship between global oil prices and US stock market series. They emphasized the importance of considering different forecast horizons before making investment decisions in US stocks.

The US stock reaction to variability in oil prices has been found to be a function of whether the shocks to oil prices are demand or supply shocks (Kilian and Park, 2009; Narayan and Narayan, 2010). Another methodology-Markov regime switching estimation was applied by Aloui and Jammazi (2009) to test the level of correlations and volatility spillovers between the stock market and the crude oil index for the economies of France, Japan, and the UK for the period of 1998-2009. They found, among other things, that oil price shocks significantly influence stock market volatility in selected economies.

The study of Narayan and Gupta (2015) investigated the relationship between oil price variability and stock returns over a century, using time-series data spanning 150 years. Their findings suggested that oil prices can predict U.S. stock returns, with negative changes in oil prices having a more pronounced impact on stock returns. In a related study, Sanusi and Ahmad (2016) conducted a multi-dimensional factor analysis to explore the connection between crude oil prices and the stocks of the oil and gas sector in the UK. They applied the asset pricing model (APM) and discovered a significant influence of oil price risk on the asset returns of oil and gas firms listed on the London Stock Exchange.

The impact of oil prices on stock market returns was studied by Fillis et al. (2011) using the Dynamic Conditional Correlation with the Generalized Autoregressive Conditional Heteroscedasticity (DCC-GARCH) method from 1997 to 2009. They discovered a negative relationship between oil prices and stock market returns. Additionally, Adekunle et al. (2020) focused on Nigeria, analysing the predictive role of crude oil prices on stock returns of oil and gas firms from 2014 to 2019 under the Capital Asset Pricing Model (CAPM). Their findings revealed that oil prices play a significant role in predicting the returns of listed oil and gas firms in Nigeria.

- ***Exchange Rate-Stock Returns Linkage***

Secondly, there are other studies that focus only on the connection between naira-dollar currency exchange rates and stock market returns. In such studies, the impacts of the exchange rate on stock market outcomes have been examined. The level of causality existing between these variables was also investigated. An earlier study on the association between exchange rate and stock return was done by Bahmani-Oskooe & Sohrabian (1992) using cointegration and the Granger causality test, and bi-directional causality existed between them. Ajayi & Mougoue (1998) and Ajayi, et al. (1996) applied the Error Correction Model (ECM) and causality test to investigate the interconnections between returns on shares and the exchange rate and found that an increase in exchange rate affects returns on shares.

For India, Sri Lanka, Bangladesh, and Pakistan, Smyth and Nandha (2003) found a bi-directional connection between the variables while Ibrahim and Aziz (2003) established an adverse correlation between currency exchange rates and the stock market for Malaysia between 1977 and 1998. Also, in India, Agrawal (2010) obtained a unidirectional relationship running from share return to exchange rate, while Hsing (2011) obtained a negative connection between the nominal exchange rate and the stock market index of South Africa. In some selected African countries, the connection between currency exchange rates and stock market performance was probed by Adjasi et al. (2008), and the result was that exchange rate changes decrease share prices in the short term in some countries while increasing share returns in the long term in some other countries.

For South Africa, Mlambo et al. (2013) examined the relationship between exchange rate variations and returns of assets in the Johannesburg Stock Exchange using monthly data for 2000-2010. A feeble nature of relationship was found between the variables under the framework of GARCH. For the economy of Pakistan, Khan (2014) studied the reaction of Karachi Stock Exchange (KSE) to changes in macroeconomic fundamentals, including exchange rate, under the framework of

ARDL from 1971 to 2012 and found that economic fundamentals positively determine KSE behavior in the long run and not in the short run.

As regards the time dimension of the impact of currency exchange rates on stock market performance in Nigeria, Adaramola (2012) applied cointegration and causality analysis with annual data for the period of 1985-2009 and established that exchange rate has a positive and significant short-run impact on stock market, while a negative and the significant effect was found for the long run. Similarly, an error-correction model (ECM) was used by Subair and Salihu (2013) in examining the linkage between exchange rate volatility and market for shares in Nigeria and found that the volatility of the exchange rate exhibits a strong decreasing effect on the Nigerian stock exchange market.

- ***Oil Price-Exchange Rate-Stock Returns Bond***

The third strand of the literature is in relation to the linkage of crude oil cost, currency exchange rate, and stock returns. Chinzara (2011) found that the naira-dollar exchange rate exhibits a significant influence on South African stock returns, while oil price has a lower level of impact on stock market returns. At a global level, Mollick and Sakaki (2018) compared the responses of 14 countries' currencies with oil and equity prices and found that the exchange rate of the selected countries positively predicted changes in stock market returns of their economies. Also, with the application of dynamic impulse response functions, the study of Bai and Koong (2018) queried the level of interconnectedness of actual petroleum prices, fluctuations in currency exchange rates, and stock market gains in China and the United States. They used monthly data from 1991-2015 and distinctively found the existence of significantly adverse effects of optimistic oil supply shocks on the Chinese stock market, while the US and China stock markets were positively influenced by exchange rate variations. Lawal et al. (2016) investigated the effects of exchange rate variability and petroleum price fluctuations on the stock market of Nigeria with the use of exponential GARCH for 1985-2014 and obtained that the volatility of share prices in Nigeria is positively influenced by currency exchange rates and petroleum price volatility.

The empirical literature seems to show that there is a scarcity of empirical studies that cover the dynamics of oil price, exchange rate, and stock market. The literature reveals that there is a lack of agreement in different studies on oil-stock return linkages. Such divergences can be attributed to different methodologies and data sets utilized by different authors. This could account for different conclusions reached in different studies (see Salisu et al., 2019a and 2019b; 2018; Ashamu et al., 2017; Salisus and Oloko, 2015; Okoro, 2014; and Wang et al., 2013). It is in view of this that this present study fills the empirical lacuna in the areas of the simultaneous impacts of oil and exchange rate variability on the behaviour of stock market returns in Nigeria.

2.2 Theoretical issues and Hypothesis Development

Prices of oil as well as exchange rates and stock market prices are financial variables that exhibit volatile time series behavior. In finance theory, the postulations of McKinnon (1973) and Shaw (1973) are relevant. To this author, finance leads growth in the economy, and since stock market outcome is an integral growth indicator, their financial repression assertions are integral (see Ogbebor and Siyanbola, 2018). Concerning stock performance and its influencers like the cost of oil and currency exchange rate, the Arbitrage Pricing Theory (APT) and Capital Asset Pricing Model (CAPM) play a crucial role in examining their correlation (refer to Ashamu et al., 2017; Salisu and Isah, 2017). The APT is a multi-faceted model for pricing assets that is most appropriate for forecasting the linear association between the anticipated return of the asset and several macroeconomic factors that encapsulate systemic risk (Hayes, 2019).

Alternatively, the CAPM highlights the connection between systematic risk and anticipated yield for assets, notably equities, illustrating how anticipated returns for investments in precarious assets can be deduced (Kenton, 2020). As a result, the null hypotheses examined in this investigation comprises: Ho1: Fluctuations in oil prices do not exert a noteworthy impact on stock market returns in Nigeria over the short and extended periods. Ho2: The exchange rate does not exert a substantial influence on stock market returns in Nigeria over the short and extended periods.

3. Materials and Methods

3.1 The Model Specification

This investigation delineated a three-variable Autoregressive Distributed Lag model (ARDL) to scrutinize the repercussions of fluctuations in oil prices and the exchange rate on returns in the Nigerian stock market. The selection of this is contingent on the capability of ARDL to distinctly segregate the immediate consequences of a specific independent variable from its enduring effects on a dependent variable. Furthermore, the ARDL framework, as elucidated by Pesaran et al. (2001), can accommodate enduring relationships among variables of interest regardless of distinct degrees of integration (stationarity). In the initial stages, the structural configuration of the model is implicitly stipulated in straightforward mathematics as:

$$SMR = f(OP, EXR) \quad (1)$$

Where
SMR = Stock Market Return
OP = Oil price
EXR = Exchange Rate

On a general note, equation (1) shows that stock market return is a linear function of Oil price and Exchange rate. However, a stochastic (econometric) model of equation (1) above can be denoted explicitly as:

$$SMR_t = X_0 + X_1 OP_t + X_2 EXR_t + \varepsilon_t \quad (2)$$

While other variables remain as defined in equation (1), $X_0, X_2,$ and X_3 symbolize the autonomous or intercept variable, coefficient of changes in price of oil and exchange rate respectively. Error term and the time series dimension of the data utilized are denoted as ε *and* t

In addition to the econometric model specification in equation (2), the estimated model in this study is ARDL and it captures both the short run and long run parameters of the model.

$$\Delta SMR_t = X_0 + \sum_{i=1}^{p} X_1 \Delta SMR_{t-1} + \sum_{i=1}^{p} X_2 \Delta OP_{t-1} + \sum_{i=1}^{p} X_3 \Delta EXR_{t-1}$$
$$+ \alpha_1 SMR_{t-1} + \alpha_2 OP_{t-1} + \alpha_3 EXR_{t-1} + \alpha_4 ECT_t \quad (3)$$

Where Δ is the level of change in the variable in the short run, $X_1 \rightarrow X_3,$ represent the coefficient of change in the lagged or past values of stock return, prices of oil, and exchange rate in previous time $(t-1)$ time. Also, $a_1 \rightarrow a_3$ indicate the long run coefficients for the impacts of lagged values of all the variables on the current value of stock market returns. Therefore, the variables with a change sign (Δ) stand for the short run dimensions of the model, while those without the change designate the long-run impact. The error correction term (ECT) measures the speed of convergence for the correction of short-run disequilibrium in the long run. It is the negative difference between the short run variables, and its coefficient a_4 is expected to sign negatively with a statistically significant value between 0 and 1.

3.2 Model Estimation Techniques

In addition to scrutinizing the variables descriptively and performing a unit root examination to evaluate the stationarity or degree of integration of the series, we utilize Pesaran et al.'s (2001) boundary test method to estimate the specified model in equation (3). This method is applied to ascertain the existence of a prolonged association among the variables. The coefficient obtained from the boundary test adheres to an F-distribution assessment. Should the F-test coefficient exceed the predefined lower and upper boundary limits, it validates the presence of cointegration, signifying a lasting connection among the variables.

To test the stated hypothesis of this study, the coefficient of the parameters in equation (3) is used. Ho_1: Changes in oil prices have no significant effect on stock market returns in Nigeria in the short and long run. For short run ($Ho_1 : X_0 = X_2 = 0$) and for the long run ($Ho_1 : X_0 = a_2 = 0$)
Ho_2: Exchange rate has no significant effect on stock market returns in Nigeria in the short run and long run. For short run, ($Ho_1 : X_0 = X_3 = 0$) and for the long run, ($Ho_2 : X_0 = a_3 = 0$)

The criteria for decision-making regarding the stated hypothesis is that if these coefficients as well as the overall measure of goodness fit (F-statistic) are significant at any of the three conventional levels of statistical significance (1%, 5%, and 10%), the null hypotheses will be rejected in favour of the implicit alternative hypotheses.

3.3 Variable Description and Data sources

The study applied monthly data for the period of 2000M01-2020M09. The main variables used are gains from shares, otherwise called stock returns, prices of oil and currency exchange rate. The stock market return is obtained from the all share index of the Nigerian stock exchange and is derived as: $SMR_{1t} = 100 * [\Delta Log(ASI_t)]$[1]

where all share indexes of stock prices is denoted as ASI and t is the time series dimension. The oil price used is Brent, and its variation or change is measured as ΔLog (OP_t), while the exchange rate (EXR) is measured as the percentage unit of naira that is exchanged for the US dollar. The Brent world oil price was sourced from the US Energy Information Administration (EIA), while EXR and ASI were obtained from the Global Economic Monitor of the World Bank.

4. Data Analysis and Interpretation

4.1 Descriptive Analysis

Stock market return (SMR): This is the dependent variable in this study. As noted earlier, this information was obtained from the ASI of the Nigerian Stock Exchange and used in the model estimation. However, the descriptive statistics described in Table 4.1 describe the actual behavior of ASI before its transformation. It can be seen from the results that the average value of ASI for the time covered in the study is 113.08, with a minimum and maximum of 37.73 and 379.73 and a standard deviation of 67.74. This implies that from January 2000 until September 2020, the deviation of the ASI varied widely at 67.74 billion dollars. Thus, there is a need to reduce the level of wide variations in ASI, as it measures the changing average value of share prices of all firms or corporations listed in the NSE, and also serves as a performance indicator of the stock market. *Oil price (OP):* This is one of the two independent variables in this study. It is expressed in US dollars per barrel of crude oil sold in the global petroleum market. Over the study period, the average price of oil was 63.7 dollars. While the minimum and maximum values were 18.8 dollars per barrel in November 2001 and 132.72 dollars per barrel in July, 2008 respectively, the standard deviation stood at 29.85 dollars per barrel (see Table 4.1). This falling oil price could be potentially destabilizing, and its effects can be felt on most economic fundamentals, including stock returns.

Exchange rate (EXR): From the result in Table 1, the mean value of the distribution of EXR for the study period was 185.70 Naira to $1. This means that the average value of the distribution hovered around December, 2014 and January, 2015. The minimum value of 99.65 Naira to $1 corresponds with the exchange rate in January, 2000 while the maximum value of 388.55 Naira to $1 was the rate as at September, 2020, the rate of deviation or the change in exchange rate over the time covered is 88.39 Naira to $1. The indication of these variations is that the exchange rate has been on the rise since the implementation of SAP in 1986 in Nigeria.

[1] See Salisus and Isa (2017) for such calculation.

Table 1. Summary Statistics of the variables

	ASI	***OP***	***EXR***
Observations	249	249	249
Mean	113.079	63.70	185.70
Median	100.583	59.71	151.04
Maximum	379.72	132.72	388.55
Minimum	37.73	18.38	99.65
Std. Dev.	67.74	29.85	88.39

Source: Computed from Eviews 9 based on the data (2020).

4.2 Correlation Matrix and Interpretation

The result for the correlation analysis carried out for the series variables employed in this study is presented in Table 2. This helps ascertain the extent of linear relationship among the variables so that the problem of multicollinearity in the estimated model can be avoided.

Table 2. Correlation Matrix and Interpretations

VARIABLES	**Dependent Variable**	**Independent Variables**	
	ASI	***OP***	***EXR***
	(1)	***(2)***	***(3)***
ASI	1		
OP	0.514	1	
EXR	-0.405	-0.0194	1

Source: Author's Computation (2020).

The result in columns (1) to (3) of Table 2 shows that the coefficient values of the associations or correlation among the variables that rely on each other (dependent) and those that stand alone (independent) are not high enough to the extent that a multicollinearity issue can be suspected. For instance, a positive relationship is found between ASI and the oil price at 0.514 (51.4%), while that of ASI and the exchange rate is -0.405 (-40.5%). The implication is that increases in oil prices would positively induce high returns for investors in stocks, while depreciation of the exchange rate would worsen stock returns. In connection with petroleum price and currency exchange rates, the correlation coefficient is -0.0194(-1.9%), denoting that there is a negative and low level of relationship between them.

4.3 Stationarity Test

To ascertain the validity of the estimated model for this study, a preliminary test of the unit root was done. The augmented Dickey–Fuller (ADF) is applied to ascertain the order of integration of the variables. From the results in Table 3, stock market returns (SMR) obtained from ASI is stationary at level, while oil prices (OP) and exchange rate (EXR) are stationary at first difference. Thus, the choice of using the Autoregressive Distributed Lag (ARDL) model is justified because the series are integrated at difference order (see the proposition of ARDL by Pesaran and Shin, 1999; Pesaran et al., 2001; and its application by Nusair, 2016).

Table 3. Unit Root Tests

	LEVEL					**FIRST DIFFERENCE**				
	Augmented Dickey-Fuller (ADF)					**Augmented Dickey-Fuller (ADF)**				
	Constant		**Constant & Trend**		**Remark**	**Constant**		**Constant & Trend**		**Remark**
Var.	**t-stat.**	**P-value**	**t-stat.**	**P-value**		**t-stat.**	**P-value**	**t-stat.**	**P-value**	
SMR	-9.698	0.000*	-9.856	0.000*	I (0)	-9.941	0.000*	-9.920	0.000*	I (0)
OP	-2.386	0.147	-2.263	0.452		-10.621	0.000*	-10.639	0.000*	I (1)
EXR	0.726	0.993	-1.031	0.937		-9.652	0.000*	-9.804	0.000*	I (1)

Note: * implies significance at 1%
Source: Author's Computation (2020).

4.4 Bound Test of Cointegration

Having established that the variables are stationary in different order, Table 4 subsequently revealed the cointegration test outcomes as to show the existence of a sustained relationship among the series. Using the F-test criteria for decision taking from the bound test, the study found that there is cointegration because the f-test calculated with a value of 45.07934 is greater than the values at the lower bound of I (0) and I (1) respectively.

Table 4. Bound Test Result

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k	Critical Value Bounds		
F-statistic	45.07934	2	Significance	I0 Bound	I1 Bound
Critical Value Bounds			10%	3.17	4.41
Significance	I0 Bound	3.79	5%	3.79	5.15
10%	3.17		2.5%	4.41	5.52
5%	3.79	5.15	1%	5.15	6.36

Source: Author's Computation (2020).

4.5 Inferential Statistics and Test of Hypotheses

This research explores how stock market returns are influenced by changes in oil prices and exchange rates. After confirming a long-term relationship among the variables, this section provides detailed results from the ARDL model, shedding light on both short-term and long-term impacts of fluctuations in oil prices and exchange rates on stock returns, in order to test the hypotheses.

4.6 ARDL Short Run and Long Run Results

4.6.1 Test of Hypothesis one

Research Question One: Do changes in oil price have significant effects on stock market return in the short run and long run in Nigeria?

Research Objective One: To investigate the short run and long run impact of changes in oil price on stock return in Nigeria.

Hypothesis One

Ho_1: Changes in oil prices have no significant effect on stock market returns in Nigeria in the short and long run.

To test this hypothesis, an excerpt of the ARDL result in Table 5 is used to fit the coefficients of the regression parameters as shown in equations (4) and (5) as:

For the short run model result

$$\Delta SMR_t = 0.411639 + 15.489904(\Delta OP_t) - 0.159757(\Delta EXR_t) - 0.654643\, ECT_t \quad (4)$$

For the Long run result

$$SMR_t = 0.411639 + 23.661592(\Delta OP_t) - 0.000711(EXR_t) - 0.654643\, ECT_{t-1} \quad (5)$$

Table 5. The short and long run ARDL results for hypothesis testing

ARDL Cointegrating And Long Run Form

Dependent Variable: SMR

Selected Model: ARDL(1, 0, 1)

Short Run Cointegrating Form

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
D(DLOGOP)	*15.489904*	*3.251507*	*4.763916*	*0.0000**
D(EXR)	*-0.159757*	*0.026564*	*-6.014076*	*0.0000**
ECT(-1)	*-0.654643*	*0.052476*	*-12.475198*	*0.0000**

*ECM = SMR - (23.6616*DLOGOP-0.0007*EXR + 0.4116)*				
Long Run Co integration Coefficients				
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
DLOGOP	*23.661592*	*5.124310*	*4.617517*	*0.0000**
EXR	*-0.000711*	*0.002655*	*-0.267796*	*0.7891*
Constant	*0.411639*	*0.540565*	*0.761498*	*0.4471*
R-squared	*0.376110*	*F-statistic*	*36.47221*	
Adjusted R-squared	*0.365798*	*Prob(F-statistic)*	*0.000000**	

Note: * implies significance at 1%; Source: Author's Computation (2020).

Interpretation

- ***The short-run impacts of the oil price on stock returns for hypothesis one***

The top section of the findings presented in Table 5 indicates the immediate effects of fluctuations in oil prices and exchange rates on stock returns. Notably, the results reveal that, with a 1% level of statistical significance, a positive differential change in oil prices corresponds to a 15.5% increase in stock returns in the short term. This suggests that the Nigerian stock exchange demonstrates a positive response to sudden shifts in oil prices, ultimately benefiting investors in terms of returns.

- ***The long-run impacts of the oil price on stock returns for hypothesis one***

Regarding the long-run perspective, the lower section of the findings in Table 5, as incorporated into equation (5), indicates the statistical significance of the coefficient representing changes in oil prices in influencing variations in stock returns. Notably, a 1% rise in oil prices is projected to stimulate stock market returns by 23.7%, assuming all other factors remain constant. This distinction arises from the observation that the influence of oil price changes on stock market returns in Nigeria is more pronounced in the long-run compared to the short-run. Therefore, in predicting stock returns in Nigeria, the variability of oil prices holds greater significance over the long term.

4.6.2 Test of Hypothesis Two

Research Question Two: How significant is the effect of exchange rate on stock market returns in the short run and long run in Nigeria?

Research Objective Two: To evaluate the impact of exchange rate on stock market return in Nigeria in the short run and long run.

Hypothesis Two

Ho_2: Changes in exchange rate have no significant effect on stock market returns in Nigeria in the short run and long run.

- ***The short-run impacts of exchange rate on stock returns for hypothesis two***

From the fitted results in equations (4) and (5) and Table 5 above, the impact of the exchange rate on the stock market in the short and long-run dimensions can be seen. The result indicates that a 1% increase in differential value of naira to dollar (depreciation) will worsen stock returns by 0.2%. This implies that the more the value of the naira depreciates relative to the dollar, the more unfavorable the trading outcome for investors in the NSE.

- ***The long-run impacts of the exchange rate on stock returns for hypothesis two***

As regards the long run impact of exchange rate variation on stock market returns, it is indicated in the results that the exchange rate has an insignificant negative effect on stock returns. This implies that an immediate upward change or rise in the exchange rate has a more negative effect on stock returns in the short run than in the long run. In terms of the error correction model whose result is shown in the last row of the upper part of the results in Table 5 for the short run, a coefficient of -0.654643 indicates that it will take 65.4% for short run disequilibrium in the system to be corrected in the long run. In other words, the speed of convergence is relatively high, and by implication, good policy directives and actions towards achieving an efficient market will be able to correct any temporary shocks to the oil price and exchange rate and have their impacts on the stock market moderated.

Decisions

In deciding whether to accept or reject the null hypothesis tested above, the decision is conditioned on the value of the statistical evidence, especially R-squared= 0.3761, the coefficients of the parameters, and the overall fit of the model through F-Stat. =36.47221(0.000). The value of the coefficient of the R-squared of the model (R-squared= 0.3761) implies that the included explanatory or independent variables (changes in oil price and exchange rate) account for about 38% of the overall variation in stock returns. That is, the remaining 62% of the change in stock market return could be elucidated by other exogenous factors that are not included in the model. Also, since the probability value of the F-test of 36.47221 is significant at 1%, the conclusion is that variations in oil price and exchange rate exert a substantial influence on stock market returns in Nigeria, though they are not the only determinants. The decision based on the individual parameter coefficients shown in equations (4) and (5) is that the coefficients are statistically different from zero. That is the alternative hypotheses of $Ho_1 : X_0 \neq X_2 \neq 0$ for the short run and $Ho_1 : X_0 \neq a_2 \neq 0$ d for the long run, and $Ho_2 : X_0 \neq X_3 \neq 0$ for the short run and $Ho_2 : X_0 \neq a_3 \neq 0$ for the long run as against their null earlier stated under theoretical issues and hypothesis development.

Overall, the rejection of null hypothesis one indicates that alterations in oil prices exert a noteworthy influence on stock market returns in Nigeria, both in the short term and the long term. Similarly, null hypothesis two is dismissed in favour of the alternative only in the short term, while in the long run; there is insufficient evidence to reject the null hypothesis regarding the impact of the exchange rate on stock market returns in Nigeria.

Diagnostic Test

The foregoing are the empirical results obtained for the study. However, it is important to verify the results obtained using basic diagnostic tests for model stability, serial correlation, and heteroscedasticity. These tests will help validate the results and ascertain their usefulness for policy suggestions.

Model misspecification test: this test relies on the Ramsey Reset test with a null hypothesis that the functional model specified is correctly specified. The decision is to accept the null when the probability values of the t-statistic and f-statistics are greater than 5% (P>0.05). The results in Table 6 show that the t-statistic is 0.1080 and the f-statistic is 0.011668(P = 0.9141 > 0.05). These implied that the estimated ARDL specified and used for the study was correctly specified.

Table 6. Ramsey Reset Diagnostic Test

Ramsey RESET Test
Equation: UNTITLED
Specification: SMR C SMR(-1) DLOGOP EXR EXR(-1)
Omitted Variables: Squares of fitted values

	Value	Df	Probability
t-statistic	0.108020	241	0.9141
F-statistic	0.011668	(1, 241)	0.9141

Source: Authors' computation

Model stability test: this test employs the cumulative square and sum of cumulative square plots to determine if the residual line falls within the bound. The plots in Figures 1A & 1B show that the CUSUM and CUSUM of squares are within the tolerable boundary of 5%; hence, the estimated model is largely stable and reliable at the 5% level of significance.

Figure 1. Cumulative sum of variance/residual Plot

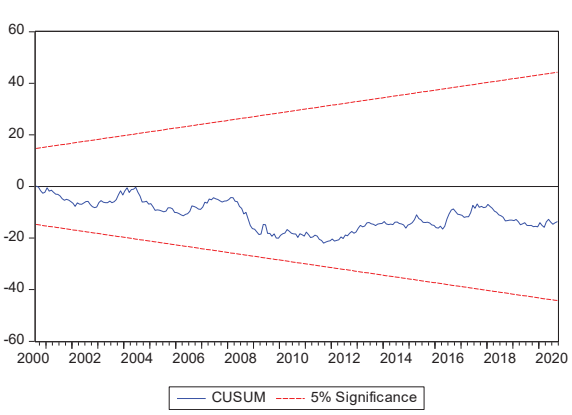

Figure 1A. Cumulative sum of variance/residual Plot

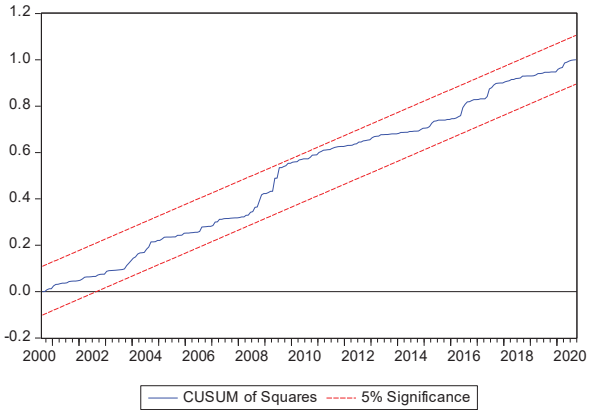

Figure 1B. Cumulative sum of square variance/residual Plot

Autocorrelation and Heteroscedasticity tests: these are some basic diagnostic tests in econometrics to ascertain that the model used and the time series properties of the variables do not correlate with the error term over successive periods. The Lagrangian Multiplier (LM) test and the Breusch-Pagan white noise test are used in this case with the null assumption or hypothesis that there is no serial autocorrelation and heteroscedasticity problem in the model. From the result in Table 7, the values of t-statistic and f-statistic are not significant with P = 0.6939 > 0.05. Thus, there is no serial autocorrelation and heteroscedasticity problem in the estimated results. This gives confidence that any emergent policy recommendation from the findings of this study is valid.

Table 7. Autocorrelation and Heteroscedasticity test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.365924	Prob. F(2,240)	0.6939
Obs*R-squared	0.750904	Prob. Chi-Square(2)	0.6870
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.823044	Prob. F(4,242)	0.5116
Obs*R-squared	3.315099	Prob. Chi-Square(4)	0.5065
Scaled explained SS	3.995124	Prob. Chi-Square(4)	0.4067

Source: Authors' computation

Discussion of Findings

The current analysis indicates that fluctuations in oil prices significantly influence stock market returns for investors in the stock market of Nigeria, both in the short and long terms. Given the country's heavy reliance on crude oil for major foreign earnings, variations in oil prices have a widespread impact across various sectors of the Nigerian economy. Essentially, global oil price fluctuations affect not only Nigeria but also the world at large. This phenomenon can be explained as follows: an upswing in oil prices leads to increased production costs, decreased returns on investment, and an uptick in the nominal interest rate, potentially dampening stock prices and returns. Conversely, a decline in global oil prices results in reduced production costs, contributing to an enhancement of returns in the stock market.

The extent of influence becomes apparent when considering the effects on stock market returns in response to shifts in crude oil prices. It is observed that in the short run, stock market returns exhibit a 15.5% response to oil price changes, while in the long run, this response increases to approximately 23.7%. This underscores the significance of oil as Nigeria's dominant export commodity, establishing its substantial influence on shaping the trajectory of stock market returns in the country. The current state of the Nigerian stock market reveals a degree of volatility, possibly attributed to the fluctuating nature of oil prices in the global market. For example, the stock market experienced fluctuations with returns of -22.78%, -6.07%, and 47.63% in 2019, 2020, and 2021, respectively (the global economy

business and economic data, 2023). This aligns with the findings of Lawal et al. (2016), supporting the notion that the Nigerian stock market responds positively to changes in oil prices. However, it contrasts with the conclusions drawn by Fowowe (2013) and Effiong (2014), who reported an insignificantly negative impact of oil prices on stock market returns in Nigeria. Additionally, it diverges from the findings of Broadstock and Filis (2014), who identified significant negative impacts on real stock returns in Nigeria.

In relation to the influence of exchange rate fluctuations on stock market returns, our empirical analysis revealed significant adverse effects of exchange rate variations on stock market returns in Nigeria over the short term. Conversely, in the long run, the impact on stock returns was found to be insignificantly negative. As anticipated, our findings suggest that abrupt changes in the exchange rate, such as depreciation, have a dampening effect on stock returns in the short term. This phenomenon may be attributed to the overall negative repercussions of a weakening exchange rate on the broader economic landscape.

Our discovery regarding the connection between exchange rates and stock returns aligns closely with the findings of Subair and Salihu (2013), who observed a negative effect of exchange rate volatility on the Nigerian stock markets. However, it diverges from the conclusions drawn by Adaramola (2012), who identified a positive and significant short-term impact of the exchange rate on the stock market, coupled with a significant negative effect in the long run. The results of our study regarding the impact of exchange rates on the stock market also mirror those of Hsing (2011), who documented a negative correlation between the nominal effective exchange rate and the South African stock market index.

5. Conclusions and policy recommendations

The Nigerian Stock Exchange (NSE) is an emerging stock market in Africa. As many firms are quoted and are participating in the global stock exchange markets as a result of the increasing rate of globalization process with improved technology of automated trading floors, the stock returns of investors and traders are subject to the forces of demand and supply shocks from many external macroeconomic factors including foreign exchange rates and petroleum cost. Currencies (Naira inclusive) and commodities (oil inclusive) are traded as well among the other portfolios of the investors. Investigating the basic determinants of returns from stocks (petroleum cost and naira-dollar exchange rate in our case) is relevant, especially as petroleum cost and naira-dollar exchange rate continue dipping due to the global pandemics and uncertainties in recent times.

From the empirical results findings, the oil price is a significant determinant of stock market returns in Nigeria, with a higher impact in the long run than the short run. Indeed, our findings evidenced that an oil-dependent economy like Nigeria would be adversely affected in the long consequent on persistent shocks in oil prices. On the part of currency exchange rate, we however obtained that when more Naira go for one dollar (Naira depreciation), it will cause stock returns to plunge by 0.16% in the short-run, whereas in the long run, its impact is insignificantly negative. This tends to support the fact that the varying effects of shocks in exchange rate would have been gradually decaying or waning as the economy moves on the long run equilibrium paths. From these findings, we stressed two major policy recommendations as (i) Although oil is vital and significant for high stock returns, it is non-renewable, hence, the economy should be diversified for more non-oil firms to be listed in the NSE in order to reduce unforeseeable demand and/or supply shocks from oil that can affect oil-based quoted firms more than their counterparts. (ii) Exchange rate stability should be pursued to reduce investment risks, and (iii) investors should take cognizance of the possible risks from variations in oil prices and exchange rates on stock returns in their portfolio choice management.

References

Nurudeen, A. (2009). Does stock market development raise economic growth? Evidence from Nigeria. *The review of Finance and Banking*, *1*(1), 16-26.

Adaramola, A. A. (2012) Oil Price Shocks and Stock Market Behaviour: The Nigerian Experience, Journal of Economics, 3:1, 19-24.

Adekunle, W., Bagudo, A. M., Odumosu, M., & Inuolaji, S. B. (2020). Predicting stock returns using crude oil prices: A firm level analysis of Nigeria's oil and gas sector. *Resources Policy*, *68*, 101708.

Adjasi, C., Harvey, S. K., and Agyapong, D. (2008). Effect of Exchange rate volatility on Ghana Stock Exchange. African Journal of Accounting, Economics, Finance and Banking Research, 3(3): 28-47.

Agrawal, G., Srivastav, A.K., &Srivastava, A. (2010).A study of exchange rates movement and Stock market volatility. *International Journal of Business andManagement, 5*(12), 62-73.

Ajayi, R.A., & Mougoue,M. (1996).On the Dynamic Relation between stock prices and exchange rates *Journal of Financial Research, 19*(2), 193–207.

Ajayi, R.A., Friedman, J., & Mehdian, S.M. (1998). On the relationship between stock returns and Exchange rates: Test of granger causality. *Global Finance Journal, 9*(2), 241-251.

Aloui,C.,and Jammazi, R.(2009).The effects of crude oil shocks on stock market shifts behaviour: are gimeswitching approach.*EnergyEconomics,31*(5),789-799.

Broadstock, D. C., & Filis, G. (2014). Oil price shocks and stock market returns: New evidence from the United States and China. *Journal of International Financial Markets, Institutions and Money*, *33*, 417-433.

Ashamu, S. O., Adeniyi, O. and Kumeka, T. (2017). The Effects of Oil Price Volatility on Selected Banking Stock Prices in Nigeria. The Nigerian Deposit Insurance Company (NDIC) Quarterly Journal, Vol. 32, No 3 and 4. Pg. 35-53.

Awartani, B. and Maghyereh, A. I. (2013). Dynamic spillover between oil and stock markets in The Gulf Cooperation Council Countries. *Energy Economics, 36*, 28 – 42.

Babajide, A. A., Lawal, A.I., & Somoye, R.O. (2015). Monetary Policy Dynamics and the Stock market Movements: Empirical Evidence from Nigeria. *Journal of Applied Economic Sciences, X* (8, (38)), 1179-1189.

Babajide A.A., Lawal, A.I., and Somoye, R.O. (2016a). Stock Market Response to Economic Growth and Interest Rate Volatility: Evidence from Nigeria. International *Journal of Economics and Financial Issues, 6*(1), 354-360.

Babajide, A.A., Lawal, A. I., and Somoye, R.O. (2016b). Stock Market Volatility: Does our Fundamentals Matter? *Economic Studies Journal,* (3), 33–42.

Babatunde, M.A., Adenikinju, O. and Adenikinju, A. F. (2013). Oil price shocks and stock market Behaviour in Nigeria. Journal of Economic Studies (2), pp.180-202.

Bahmani-Oskooee, M., & Sohrabian, A. (1992). Stock prices and the effective exchange rate of the dollar. *Applied Economics, 24*(4), 459–464.

Bai, S., and Koong, K. S. (2018). Oil prices, stock returns, and exchange rates: Empirical Evidence from China and the United States. The North American Journal of Economics and Finance, 44, 12–33. doi:10.1016/j.najef.2017.10.013.

Bjornland, H.C. (2009). Oil price shocks and stock market booms in an oil-exporting country. Scottish Journal of Political Economy, 56, pp.232–254.

Chinzara, Z. (2011). Macroeconomic Uncertainty and Conditional Stock Market Volatility in South Africa. South African Journal of Economics, 79 (1), 27-49.

Chuanguo,Z., and Chena, X.(2011).The impact of global oil prices hocks on China's stock returns: Evidence from the ARJI(-ht)-EGARCH model. *Energy Economics, 36*, 6627 – 6633.

Diebold, F.X. and Yilmaz, K., (2009). Measuring financial asset return and volatility spillovers, with application to global equity markets. Econ. J. 119, 158–171.

Diebold, F.X. and Yilmaz, K., (2012). Better to give than to receive: predictive direction Measurement of volatility spillovers. Int. J. Forecast. 28, 57–66.

Edame, Greg Ekpung and Okoro, Uchenna (2013). The Impact of Capital Market on Economic Growth in Nigeria. *Journal of Poverty, Investment and Development - An Open Access International Journal* 1, 1-12.

Effiong, E.L. (2014). Oil price shocks and Nigeria's stock market: what have we learned from crude oil market shocks? OPEC energy review. JohnWiley&Sons.

Elyasiani, E., Mansur, I., and Odusami, B. (2012). Oil price shocks and industry stock returns. Energy Economics 33, 966-974.

Fariz, R., Riga, M. H. and Indriana, V. (2016). The Effects of Crude Oil Price Changes on the Indonesian Stock Market: A Sector Investigation. Indonesian Capital Market Review 8, 12-22.

Fillis,G., Degiannakis, S. and 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*(23), 152-164.

Fowowe, B., (2013). Jump Dynamics in the Relationship between Oil Prices and the Stock Market: Evidence from Nigeria. Energy 56, pp.31-38.

Fowowe, B. (2017). Return and volatility spillovers between oil and stock markets in South Africa and Nigeria. African Journal of Economic and Management Studies. https://doi.org/10.1108/AJEMS-03-2017-0047.

Hayes, A. (2019). Arbitrage Pricing Theory. Trade Algorithm. https://www.investopedia.com/terms/a/apt.asp

Hsing, Y. (2011). The stock market and macroeconomic variables in a BRICS country and policy Implications. *International Journal of Economics and Financial Issues, 1*(1), 12-18.

Ibrahim, M., and Aziz, M. (2003). Macroeconomic variables and Malaysian equity market: view through rolling sub-samples. *Journal of Economic Studies, 30*(1), 6-27.

Jimenez-Rodriguez, R., and Sanchez, M. (2005). Oil price shocks and real GDP growth: empirical evidence for some OECD countries. Applied Economics. 37, 201–228.

Kang, W., Ratti, R.A. and Yoon, K.H., (2014). The impact of oil price shocks on US bond market Returns. Energy Economics 44, 248–258.

Kenton, W. (2020). Capital Asset Pricing Model (CAPM), Corporate Finance and Accounting. https://www.investopedia.com/terms/c/capm.asp.

Khan, A. (2014). How Does Stock Prices Respond to Various Macroeconomic Factors? A Case Study of Pakistan. Journal of Management Information. Vol. 1, No. 4 . https://doi.org/10.31580/jmi.v4i1.22

Kilian, L. and Park, C. (2009). The Impact of Oil Price Shocks on the US Stock Market. International Economic Review 50(4), 1267–1287.

Lawal, A.I., Somoye, R.O.C., and Babajide, A. A. (2016). Impact of Oil Price Shocks and Exchange Rate Volatility on Stock Market Behaviour in Nigeria. *Binus Business Review, 7*(2), 171-177. http://dx.doi.org/10.21512/bbr.v7i2.1453.

Lewellen, J. (2004). Predicting returns with financial ratios. Journal of Financial Economics 74, 209–235.

Magnusson, M.and Wydick, B. (2002). How Efficient are Africa's Emerging StockMarkets? Journal of Development Studies, 38, pp.141-156.

McKinnon, R. I. (1973). Money and Capital in Economic Development, Washington, D.C., the Brookings Institution, 1973.

Mlambo C., Maredza A., and Sibanda K. (2013). Effects of Exchange Rate Volatility on the Stock Market: A Case Study of South Africa. Mediterranean Journal of Social Sciences MCSER, 4(4): 561-570.

Mollick, A. V., and Sakaki, H. (2018). Exchange rates, oil prices and world stock returns. Resources Policy. doi:10.1016/j.resourpol.2018.07.007.

Narayan, P. K. and Gupta, R. (2015). Has oil price predicted stock returns for over a century? Energy Economics 48, 18–23.

Narayan, P., and Narayan, S. (2010). Modelling the Impact of Oil Prices on Vietnam's Stock Prices, Applied Energy Journal, 87, 356 - 361.

Nusair, S. A. (2016). The effects of oil price shocks on the economies of the Gulf Co-operation Council countries: Nonlinear analysis. *Energy Policy, 91*, 256–267.

Nyong M. O. (1997). Capital Market Development and Long Run Economic Growth: Theory, Evidence and Analysis, *First Bank Review*. pp. 13 – 38.

Ogbebor, P. I., and Siyanbola,T. T (2018).“Financial Development and Economic Nexus in Nigeria: The Role of the Stock Market.”*Inter.J.Res.Methodol.Soc. Sci.*, Vol., 4, No. 4:29-47.(Oct. – Dec.2018);ISSN:2415-0371. DOI:10.5281/zenodo.2545010.

Ogboi, C. and Oladi, S. O. (2012). Stock market and economic growth: The Nigerian Experience Research Journal of Finance and Accounting, 3:4.

Okoro,E.G. (2014).Oil Price Volatility and Economic Growth in Nigeria: a Vector Auto-Regression (VAR) Approach. *Acta Universitatis Danubius: Oeconomica*, *10*(1), 70-82.

Okpara G. C. (2010) Analysis of Capital Market Performance and the Growth of the Nigerian Economy: A Cointegration Approach*. Global Journal of Human Social Science, 10 (4) PP915*

Olawoye, O. (2011) ‘Impact of Capital Market on Economic Growth of Nigeria’. http://lekanolawoye.blogspot.com/2011/12/impact-of-capital-market-on

Omojolaibi, J., A. (2012). Does Volatility in Crude Oil Price Precipitate Macroeconomic Performance in Nigeria? Ed. Adenikinju, A., Iwayemi, A., and Iledare, W. Proceeding of the 2012 NAEE conference on Energy Technology and Infrastructure for Development.

Osinubi, T. S. and Amaghionyeodiwe, L. A. (2003). Stock market development and long-run growth in Nigeria. *Journal of African Business*, 4(3), pp. 103-129.

Papapetrou, E., (2001) Oil Price Shocks, Stock Market, Economic Activity and Employment in Greece. Energy Economics, 23, pp. 511-32.

Pesaran H. M. and Shin, Y. (1999). Generalized impulse response analysis in linear multivariate model. *Economics letters, vol. 58. (1) 17–29.*

Pesaran, M., Shin, Y., and Smith, R. (2001). Bound testing approaches to the analysis of level Relationship. *J. Appl. Econ*. 16, 289–326.

Qudah, A. M. A. A. (2014). *The determinants of capital structure of listed banks in Jordan: panel data Analysis. International Journal of Economics and Business Research, 8(1), 36.* doi:10.1504/ijebr.2014.063940.

Rong-Gang, C., Yi-Ming, W., and Jian-Lin J. (2008).Relationship between oil price shock sand Stock market: An empirical analysis from China. *Energy Policy, 36*(9), 3544-3553.

Salisu, A.A., Swaray, R., and Oloko, T. (2019a). Improving the predictability of the oil-US stock Nexus: the role of macroeconomic variables. Econ. Modell. 76, 153–171.

Salisu, A.A., Isah, K.O. and Raheem, I.D. (2019b). Testing the predictability of commodity Prices in stock returns of G7 countries: evidence from a new approach. Resource. Pol., 64, 1-20

Salisu, A.A., Swaray, R., and Oloko, T.F. (2018). Improving the predictability of the oil–US stock nexus: The role of macroeconomic variables, Economic Modeling. doi: 10.1016/j.econmod.2018.07.029.

Salisu, A. A. and Isah, K. O. (2017) Revisiting the oil price and stock market nexus: A Nonlinear Panel ARDL approach. Economic Modeling. 66, pp. 258–271.

Salisu, A.A. and Oloko, T.F., (2015). Modeling oil price–US stock nexus: A VARMA-BEKK-AGARCH approach. *Energy Economics*, 50(1), 1-12.

Sanusi, M.S. and Ahmad, F. (2016). Modeling oil and gas stock returns using multi factor Asset pricing model including oil price exposure. Finance Resource Letter. https://doi.org/ 10.1016/j.frl.2016.04.005.

Sanusi, L. S. (2011). Global financial meltdown and the reforms in the Nigerian Banking sector, CBN Journal of Applied Statistics 2, pp. 93-108.

Shaw, Edward S. (1973). Financial Deepening in Economic Development New York, Oxford University Press, 1973.

Shin, Y., Yu, B., and Greenwood-Nimmo, M.J., (2014). Modelling Asymmetric Cointegration and Dynamic Multipliers in a Nonlinear ARDL Framework. New York: Springer Science and Business Media, 281– 314.

Smyth, R. and Nandha, M. (2003). Bivariate causality between exchange rates and stock prices. In South Asia. *Applied Economics Letters, 10,699*–704.

Subair, K and Salihu, O. M. (2013). Exchange Rate Volatility and the Stock Market: The Nigerian Experience, Kwara State University, Malete, Nigeria. https://pdfs.semanticscholar.org/3036/cd5db 56fd11ce7173b7853259bf66237430e.pdf.

Wang, Y., Wua, C., and Y. Li (2013).Oil price shocks and stock market activities: Evidence from Oil-importing and oil-exporting countries. Journal of Comparative Economics, 41(4), pp.1220–1239.

Westerlund, J. and Narayan, P. K (2012). Does the choice of Estimator matter when forecasting Returns? Journal of Banking and Finance. Vol. 36, Pg. 2632-26402 .

Authors contribution: *Introduction, J.E.; Literature review, J.E & O.E; Methodology and data, J.E.; Research results and comments, J.E & O.E; Conclusion, J.E & O.E*

Acknowledgement: *The authors acknowledge insightful comments of the Journal editors and anonymous peer-reviewers. Authors of materials consulted are highly acknowledged. We received no financial support from any individual or institution.*