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Effect of Oil Price and Exchange Rate Volatility on Trade Performance in Nigeria

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Abstract
The study examines the effect of oil price and exchange rate volatility on trade performance in Nigeria. The specific objectives were to: ascertain the effect of oil price volatility on trade performance in Nigeria; determine the effect of exchange rate volatility on trade performance in Nigeria and evaluate direction of causality relationship among oil price volatility, exchange rate volatility and trade performance in Nigeria over a period of 1990 to 2024. These variables consist of exchange rate (EXCH); crude oil price (OILP) and government expenditure (GEXP), balance of trade (BOT) while inflation rate (INFL) and external government debt (EXTD) were sourced from Central Bank of Nigeria's (CBN) statistical bulletin 2024. The data collected were subjected to descriptive statistic, correlation matrix, Augmented Dickey-Fuller Unit Root test statistic and Johansen Co-integration test. The method of data analysis was Generalized Autoregressive Conditional Heteroskedasticity (GARCH). The empirical result shows that the coefficient of crude oil price volatility has positive and significant impact on trade performance (Z–statistics (3.02804), its probability value of 0.0025 > 0.05.); exchange rate volatility has positive and significant impact on trade performance (Z–statistics (5.136151), its probability value of 0.0000 > 0.05) and crude oil price and exchange rate have uni-directional relationship with trade performance in Nigeria. This study concluded that oil price and exchange rate volatility have positive and significant effect on trade performance in Nigeria. The study recommended that government should take measures for stability of the exchange rate to enhance trade performance such as control of import content of both public and private expenditures, stop importation of goods and services that can be produced locally as an avenue for reducing demand for foreign exchange.

Keywords: Oil Price, Exchange Rate Volatility, Trade Performance

1. Introduction

1.1. Background of the Study

Oil price and exchange rate are among the most important global economic factors that constitute major external shocks to business cycles and economic stability. Oil as an internationally traded commodity is an important driver of foreign exchange accumulation, foreign reserves and invariably, influence exchange rate movement (Attahir, 2019; Kanu & Nwadiubu, 2020) [6, 18]. Crude oil price plays a significant role in every economy of the world. This reality is particularly true for the Nigerian economy both at the supply and demand sides. Nigeria is a net-oil exporting country, but however is largely dependent on imported refined petroleum products to satisfy domestic demand. Unexpected fluctuations in the prices of crude oil therefore have diverse ramifications for the economy including the potential to disrupt economic activities in the country. Oil price fluctuations in recent years have been quite remarkable, and there appears to be a corresponding movement in stock market prices. Major global events such as the Arab Springs, the Syrian war, the Covid-19 pandemic, and the ongoing Russian war on Ukraine, have either been accompanied by a surge or a plunge in oil prices, thereby further complicating an already difficult situation for most economies across the globe (Okodua, Urhie, Akpesiri, Onyohu & Eyitemi, 2022) [20].

The Nigerian economy is largely oil-based, with crude oil being the mainstay of the economy. Although oil's contribution to GDP is relatively small; 8.09 per cent and 10.04 per cent in Q3 2016 and Q3 2017, respectively (NBS, 2017), it accounts for the largest share of government revenue. Chikamalu and Nwokoye, (2023) [11] noted that oil accounts for about 90 per cent of total foreign exchange revenue to the economy. In addition, though oil revenue as a share of total government revenue declined from about 75 per cent in 2012 to about 47 per cent in 2016 (CBN, 2017), it still plays a major role in shaping the growth of the Nigerian economy. The massive decline in crude oil price from an annual average of 111 dollars per barrel in 2012 to about 53 dollars per barrel in 2016 (Mmadu, Okeke & Ukpemeku, 2024) [19] can be alluded to as the major reason for a decline in share of oil revenue in total government revenue and not structural changes in the economy. Considering the over reliance of the economy on oil vis-a-vis volatility of the oil price; the Nigerian economy is exposed to external shocks from the oil market (Rofiat, 2019) [21]. This is apparent in the sharp decline in oil prices that led to the economy sliding into recession from Q1 2016 through to Q2 2017.

Exchange rate volatility poses significant challenges to economic stability and investment attractiveness in emerging markets, with Nigeria serving as a prominent example. Fluctuations in the value of a currency relative to others can create an unpredictable investment environment, leading to increased risk and uncertainty for investors. The persistent depreciation of the Naira has emerged as a critical issue, deeply influencing Nigeria's macroeconomic landscape and the behavior of foreign portfolio investors (Funso & Adekunle, 2020) [13]. In recent decades, Nigeria has witnessed notable depreciation of the Naira, with a particularly sharp decline occurring between 2015 and 2023. This sustained decline against major currencies has intensified inflationary pressures, eroding the purchasing power of both domestic and foreign investors. The resultant surge in inflation has impacted consumer prices and investment returns, further destabilizing the economy and increasing risks for foreign investments (Aderemi, Ogunleye, Abalaba & Owolabi, 2020) [3].

Nigeria's situation is somewhat paradoxical; it is a major exporter of crude oil and at the same time, a major importer of refined petroleum products. This makes the Nigerian case a unique one because the pressure on exchange rate following oil price change comes from both the nation's status of being an exporter of crude oil and importer of petroleum related products. Crude oil volatility and continued devaluation of the Nigerian naira by the Central Bank of Nigeria is damaging to businesses and the economy as a whole. This is reflected in Nigeria's balance of payments deficit over the years. It is against this background that this study is being carried out.

1.2. Statement of the Problem

Every economy wants to achieve vibrant and competitive international trade that could accelerate economic growth and development. However, the realisation of this objective is determined by the capacity to expand and sustain the export of goods and services. As a result of the wave of globalisation, nations rarely operate in an autarky situation, as they trade among themselves aided by the foreign exchange (forex) market (Yildirim & Arifli, 2021) [23].

Oil price volatility can be beneficial for oil exporting countries, as it increases perceived price uncertainty, hindering national planning, investments, and resource reallocation. This is particularly problematic for developing countries relying on oil exports as a primary source of public revenue (Chikamalu & Nwokoye, 2023) [11]. Governments often allocate large budgets to subsidizing fuel to protect firms and households from price volatility. However, mineral exporting countries have poor economic records, with many ranking in the bottom one-third of the United Nations Human Development Index. These countries are also characterized by high levels of corruption and low democratization, increasing the risk of civil war. The contrast between oil-rich African nations and the extreme poverty experienced by the African people is perplexing, with many oil-exporting countries experiencing low GDP growth, low per-capita incomes, poor performance in non-oil sectors, and civil violence and war (Mmadu, Okeke & Ukpemeku, 2024) [19].

The country's long-standing, pervasive, and extreme poverty as well as its crumbling infrastructure have been made worse by drops in oil prices, which have also caused the value of the Nigerian Naira to plunge. The vulnerable poor, who make up the majority of the population, now have to contend with higher living expenses and a worse standard of living. Nigeria is rich in resources, especially its copious natural resources, fertile land, and enterprising populace. Nonetheless, 82 percent of Nigerians live in poverty and earn less than $2 per day, compared to 26 percent in South Africa (Ashiru, Clement & Kabiru, 2020). Following these backdrops, the study aimed to examine the effect of oil price and exchange rate volatility on trade performance in Nigeria.

1.3. Objectives of the Study

The main objective of the study is to examine the effect of oil price and exchange rate volatility on trade performance in Nigeria. The specific objectives are to:

- analyze the effect of oil price volatility on trade performance in Nigeria.
- examine the effect of exchange rate volatility on trade performance in Nigeria.
- evaluate the direction of causality relationship among oil price volatility, exchange rate volatility and trade performance in Nigeria.

1.4. Research Questions

This study seeks to provide answers to the following research questions.

1. How does oil price volatility affect trade performance in Nigeria?
2. What is the effect of exchange rate volatility on trade performance in Nigeria?
3. What is the direction of causality relationship among oil price volatility, exchange rate volatility and trade performance in Nigeria?

1.5. Significance of the Study

This study would be beneficial and relevant to investors, government, policy makers and researchers.

- **Investors:** Understanding exchange rate volatility is crucial for investors as it directly impacts their portfolio returns, risk assessment, and investment decisions, particularly for those with international holdings. High volatility can increase perceived risk, potentially

discouraging investment, while also presenting opportunities for savvy investors who can leverage price swings.

- **Government:** The outcome of this study will benefit the government, financial institutions and policy makers. By providing the understanding needed to diversify and promote other sectors in the economy by managing exchange rate volatility to spur economic growth and standard of living improvement in Nigeria.
- **Policymakers:** The study will also be helpful for policymakers since it will provide them with knowledge on how to pick growth plans carefully. The data would particularly affect the creation and execution of programs and policies connected to control of exchange rate and crude oil volatility and their direct and indirect support of economic growth.

2. Conceptual Literature

2.1. Crude Oil Price Volatility

Crude oil price refers to the cost of a barrel of raw, unrefined petroleum. It's primarily influenced by global supply and demand, but also by factors like economic growth, geopolitical events, and technological advancements. Essentially, the price is determined by how much of the resource is available versus how much is needed by the world. Crude oil is a crucial commodity, and its price impacts various aspects of the global economy, including gasoline prices, shipping costs, and input costs for producers. Fluctuations in oil prices can have ripple effects on stock markets, as they can influence economic growth and inflation expectations (Abdulkarim, Akinlaso, Hamid, Ali, 2020) [1].

Adekunle, Bagudo, Odumosu, Inuolaji, (2020) [13] conceptualizes crude oil price to be the value in dollars of a barrel of crude oil in the global market. Oil price fluctuation refers to the swings of instabilities in oil price over a duration or deviance from a benchmark. Therefore, crude oil price fluctuation is an extent of the fluctuations (i.e. incline and decline) of the worth of oil across a duration. Numerous factors have been identified as causes of oil price fluctuation. These factors include demand and supply of crude oil, OPEC decisions, and civil unrest. It is due to these fluctuations in the value of crude oil as well as Nigeria over-reliance on petroleum revenue that many economists raise concern about the future of the economy (Agbo & Nwankwo, 2019) [4].

2.2. Exchange Rate Volatility

Exchange rate is the price of one currency in terms of another. Balance of payments records a country's international financial transaction and trade position with respect to other nations of the world (Yildirim & Arifli, 2021) [23]. The effect of proper exchange rate management in enhancing economy development cannot be jeopardized. This is because exchange rate movement has a significant effect on other macroeconomic variables such as inflation, interest rate, money supply, balance of trade and balance of payments position. The issue of exchange rate management is of great importance to policy makers due to the fact that no country exists in isolation and every nation desires equilibrium in balance of payments.

Exchange rate volatility refers to the fluctuations in the exchange rate, leading to a persistent depreciation of the domestic currency (Igbinovia & Ogiemudia, 2021) [14]. This volatility exposes economic agents to greater exchange rate risk, which can be anticipated or unanticipated. Unanticipated fluctuations have a more significant impact, influencing aggregate demand and supply through exports, imports, and the cost of intermediate goods (Igbinovia & Ogiemudia, 2021) [14].

2.3. Trade Performance

International trade refers to the exchange of goods, services, and capital between different countries (Igbinovia & Omorose 2021) [15]. It is a vital component of international economics and plays a crucial role in shaping the global economy. Benefits of International trade include: increased economic growth and development, improved efficiency and productivity, enhanced competition and innovation, access to new markets and customers, and increased availability of goods and services.

According to Irmiya, Irmiya and Odumu, (2023) [17] "the BOP is a technique of itemizing payments and receipts in a country's transaction with other countries". Cohen sees the balance of payments as an instrument which shows a county's trading positions, variations in its net position as a foreign borrower or lender as well as changes in its official reserve holdings with other countries of the world.

The balance of payments can be defined as a methodical record of fiscal and financial relations for duration of time-say a year-between a country and other nations. These transactions involve provision of receipts and payments to the rest of the world (Charfeddine, Klein & Walther, 2020) [10]. Generally, transactions are classified into credit and debit entries; payments by a non-resident to a country are categorized as credit items while expenses by the country to other countries are classified as debit items. Fundamentally, the foreign sector of an economy is separated into capital and current accounts. The capital account comprises of direct investments and portfolio investment, being its short or long term, and capital transfers, whereas the current account includes all entries of current transactions, which are transactions that involve either of import or export of visible as well as invisible products, they also consist of services and merchandise (Chikamalu & Nwokoye, 2023) [11].

2.4. Theoretical Literature

2.4.1. Purchasing Power Parity Theory

The interestingly simple theory of purchasing power parity (PPP) states that for a unit of currency from one country to have the same purchasing power in another country, the nominal exchange rate between the two currencies must be equal to the ratio of the aggregate price levels between the two countries (Abdulkarim, Akinlaso, Hamid & Ali, 2020) [1].

The Purchasing Power Parity (PPP) theory is primarily associated with the Swedish economist Gustav Cassel. While some historians trace the idea back to earlier writers, Cassel is credited with developing and popularizing the theory in the early 20th century, particularly after World War I. Cassel formulated the PPP theory to explain the long-run equilibrium exchange rate between currencies. He argued that the exchange rate should adjust to reflect the relative purchasing power of different currencies.

There are two types of purchasing power parity: absolute and relative. This is one of the two main assumptions of economic theory. A basket of goods should have the same worth once two currencies have been exchanged, according to the basic Purchasing Power Parity principle. Absolute purchasing power parity is what this is (APPP). Usually, the theory

depends on converting foreign currencies into US dollars. For instance, the idea states that if a can of Coca-Cola costs $1.50 in Zambia, a can of Coca-Cola in Malawi should equally cost $1.50 after being converted from USD to the local currency (Bagirov & Mateus, 2019) [7].

The classic purchasing power parity (PPP) hypothesis has been extended to include relative purchasing power parity in order to account for variations in inflation over time (RPPP). The quantity of goods or services that one unit can buy is referred to as its purchasing power, and inflation can reduce this amount. Theoretically, currencies in countries with higher inflation rates will decline. Additionally, changes in the exchange rate between the two countries would be impacted by differences in the rates of inflation and the cost of commodities between the two nations, according to relative purchasing power parity (RPPP) (Bergmann, 2019) [8].

This theory clarifies how a country's currency may be overvalued or undervalued as a result of the significant variances in purchasing power. This is important because currencies that are overvalued or undervalued in PPP terms will probably correct over time, which could have long-term consequences on the economy and exchange rate fluctuations. The theory also helps to make these economic consequences somewhat foreseeable. For instance, it is reasonable to expect that a local currency that PPP determines to be significantly overvalued will depreciate over time in relation to other widely traded currencies like the US dollar (Chikamalu & Nwokoye, 2023) [11].

2.4.2. Monetary Approach to Rate of Exchange

The aggregate demand and supply of each nation's national currency are balanced to determine exchange rates, according to the monetary method. According to this approach, the demand for money is influenced by real income, general price levels, and interest rates. Real income, price level, and the demand for money are all directly correlated. The relationship between it and the interest rate, however, is the opposite. The quantity of money in circulation is separately determined by the monetary authorities of individual countries (Funso & Adekunle, 2020) [13].

The initial state of the foreign currency market is thought to be equilibrium or interest parity. Additionally, it is presumable that the country of origin's monetary authority increases the money supply. Long-term effects include a corresponding increase in price in the country of origin. Additionally, the value of the domestic currency will decline (Funso & Adekunle, 2020) [13]. The fact that the idea is based on the Purchasing Power Parity Theory is one of its benefits. Second, the theory assumes that the initial interest rates in two different countries are equal. A currency's value is impacted by changes in the money supply, interest rates, and real income. The inherent premise of monetary models is that global demand for reserves does not exist. The theory's constrained viewpoint, which misses a number of arguments for demand for foreign currencies, is among its most important weaknesses. Currency substitution, which occurs when a reserve currency is demanded in addition to or instead of the local currency, is a noteworthy situation that defies the tenets of monetary theory. Suppose that domestic currency is not a reserve currency while foreign currency is. According to monetary theories, the nominal exchange rate should increase as real income in the country of origin increases (Bagirov & Mateus, 2019) [7].

2.5. Empirical Literature

Several studies abound on the relationship between migration, remittance and economic growth.

Surajdeen, Olanipekun, Abdulkadri, Adegboyega and Olajide, (2024) [22] investigated the impact of exchange rate and oil price on economic growth in Nigeria. The study sought to identify the effect of crude oil price, exchange rate, and interest rate on real gross domestic product using annual time-series data for the period of 1990 to 2023. The secondary data were sourced from World Development Indicators, Central Bank of Nigeria Statistics, and OPEC database. The method of data analysis was ARDL model. The results reveal a weakly negative association (-0.0906) between growth rate (GR) and Nigeria's exchange rate (EXR), indicating that the growth rate tends to decline significantly as the exchange rate increases. Conversely, the strong positive connection suggests that growth rate (GR) in Nigeria is significantly impacted by changes in the currency rate. Additionally, the study finds a weakly positive correlation (0.2221) between the price of crude oil (COPr) and growth rate (GR). The study recommended that Nigerian government should possess political goodwill to embark on aggressive export promotion policies that will ensure the competitiveness of domestically produced items through value added approach.

Ikpe, Ubom and Johnson, (2024) [16] examined the effect of exchange rate volatility on international trade in Nigeria. The specific objectives were to investigate the impact of exchange rate on import and export in Nigeria. The study employed an ex post facto research design and used monthly data from January 2013 to December 2023. Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model was employed in the estimation of measure exchange rate volatility. Vector Autoregression (VAR) model was used to analyze the relationships between exchange rate volatility and trade variables. While the Impulse Response Function (IRF) was used to examine the impulse responses of trade variables to exchange rate volatility shocks, the Granger Causality test was used to determine the causality between exchange rate volatility and trade variables. Findings showed that exchange rate volatility has a significant negative effect on imports and a positive effect on exports on the Nigeria economy. Based on the findings, it was recommended that exchange rate management is crucial for trade policy decisions in Nigeria.

Mmadu, Okeke and Ukpemeku, (2024) [19] examined the impact of the volatility of oil price on economic growth in Sub-Saharan African countries for the period 2006-2021. Broadly, this study aims to investigate the impact of oil price volatility on economic growth in Sub-Saharan African Countries, using the data on Gross Domestic Product and exchange rate, Gross Capital Formation, and FDI as key variables that provide an indication of economic well-being. The countries selected were Nigeria, Angola, Egypt and Algeria, as they form major oil-exporting countries in Sub-Saharan Africa with stable historical data. Panel data were used for the analysis. Panel Pooled OLS, Panel Fixed Effect Model and Generalized Method of Moment model were employed in the estimation for oil price volatility in sub-Saharan African countries. The estimation of the panel model for the oil exporting countries shows that the volatility of oil price has a positive and significant effect on the economic growth of oil exporting countries. The study recommends, among others, that Foreign Direct Investment (FDI) will

increase capital inflows to these oil-exporting countries, promote growth and employment.

Irmiya, Irmiya and Odumu, (2023) [17] analyzed the effects of exchange rate fluctuations on the balance of payments in Nigeria. The study sought to verify the effect of exchange rate fluctuation on BOP current account, BOP capital Account and BOP financial Account in Nigeria. The ex post facto research design has been adopted in this study. Secondary data were obtained from the CBN website and the National Bureau of Statistics for 2010-2019. Descriptive statistics and Pearson's correlation using the Statistical Package for Social Sciences 23 were used to analyze the data. It was found that the recent relatively unstable exchange rate had resulted in a disrupted balance of payments in Nigeria. The implication of this finding was that an unstable exchange rate has weakened the value of the Nigerian naira, discouraging exports of local goods, making imports of foreign goods more expensive and hindering domestic and foreign investment, which ultimately has a negative impact on the balance of payments. It was concluded that exchange rate volatility can cause balance of payments deficit. It was therefore recommended that the Central Bank of Nigeria should adopt measures to promote exchange rate stability, as the overall performance of the economy revolves around exchange rate stability.

Chikamalu and Nwokoye (2023) [11] analyzed whether international oil price volatility was a major source of balance of payments (BoP). Specifically, the study sought to evaluate the impact of oil price volatility on balance of payments over the period of 1981 to 2020. The method of data analysis were generalized autoregressive conditional heteroscedasticity (GARCH) to derive values for international oil price volatility. The result shows persistent volatility clustering in oil prices. In addition to estimating the effects of international oil price volatility on Nigeria's BoP, we disaggregated the BoP into its current and capital accounts in order to ascertain whether oil price volatility affected the two components differently. Vector autoregressive (VAR) technique was used to estimate the balance of payment equation model. Our results indicate that increasing volatility of oil price negatively and significantly impacted on balance of payment and its current account while it positively and significantly impacted on the capital account balance thus driving Nigeria's balance of payments disequilibrium. The study therefore recommends economic diversification as well as encouragement of alternative sources of energy to reduce domestic dependence on oil.

Ijirshar, Okpe and Andohol, (2022) examined the impact of exchange rate on trade flow in Nigeria. The specific objectives of the study were to identify the impact of exchange rate, gross fixed capital formation (GFCF), foreign direct investment (FDI), export value, impact value on trade balance from 1986 to 2021. The study utilised linear and nonlinear autoregressive distributed lag (ARDL and NARDL) models to test the J-Curve hypothesis and the Marshall-Lerner condition in Nigeria. The study found symmetric effects of exchange rate on trade balance, exports, and imports. The findings also show that real exchange rate depreciation has a strong negative influence on trade balance and exports in the short run but positive in the long run, exhibiting the shape typology of the J-curve. Furthermore, the study reveals evidence of the Marshall-Lerner condition since the sum of the elasticities of export and import is greater than unity. Thus, there is room for long run net trade improvement. The study suggests the need for the Nigerian government to grant investment incentives to domestic firms to expand production and improve on the quality of output to reduce import.

2.6. Gap in Literature

There exists research gap between this study and past researches. The research gap covers subject gap, gap on geographical location of the study, gap on the variables and contents of the study, gap on literature and gap on methodology.

- **Subject gap:** The subject matter of this work and some reviewed empirical studies has some differences. There are limited studies on impact of oil price and exchange rate volatility on trade performance in Nigeria over the period of 1990 - 2024. The study is geared to bridge the time gap in literature.
- **Gap on geographical location of the study:** This work covers oil price and exchange rate volatility in Nigeria. None of the past studies used combination of oil price and exchange rate volatility as mentioned and most of the past studies were done outside Nigeria.
- **Gap on the variables and contents of the study:** The variables used in this study includes proxies for oil price and exchange rate volatility namely: crude oil price, exchange rate fluctuation (for independent variable) while the following are proxy for trade performance namely: Balance of trade (BOT) (for dependent variable).

3. Methodology

This study adopted Ex Post-Facto research design. The data analytical technique was taken in three phases namely pre-estimation, estimation and post-estimation. The pre-estimation tests are descriptive statistics that identify the nature and characteristics of the variables, Augmented Dickey-Fuller Unit Root test statistics that identify the stationarity position of the variables, Engle-Granger Co-integration test that identify whether model variables have long-run and short-run relationship. The study estimation technique is Generalized Autoregressive Conditional Heteroskedasticity (GARCH) and Granger causality test, then the post-estimation techniques were heteroskedasticity ARCH and histogram normality test. These variables consist of exchange rate (EXCH); crude oil price (OILP) and government expenditure (GEXP), balance of trade (BOT) while inflation rate (INFL) and external government debt (EXTD) were sourced from Central Bank of Nigeria's (CBN) statistical bulletin 2024. The study covered a period of 1991 to 2024 as defined in our model specification.

3.1. Model Specification for the Study

$$BOT = f(OILP, EXCH, INFL, GEXP, EXTD) \quad (3.3)$$

Where BOT is balance of trade as a proxy for trade performance, EXCH is exchange rate; INFLA is inflation,

OILP is crude oil price and control variables GEXP is government expenditure and EXTD is external government debt. In a linear function, it is represented as follows:

$$BOT = \beta_0 + \beta_1 OILP_t + \beta_2 EXCH_t - \beta_3 INFL_t + \beta_4 GEXP_t - \beta_5 EXTD\,t + \mu t \quad (3.4)$$

Where: β0 = Constant term, β_1 to β_6 = Regression coefficients, μt = Error Term and t is the period. To reduce the outliers among the variables, all variables will be expressed in logarithmic form.

$$LogBOT = \beta_0 + \beta_1 OILP_t + \beta_2 LogEXCH_t - \beta_3 LogINFL_t + \beta_4 GEXP_t - \beta_5 EXTD_t + \mu t \quad (3.5)$$

Where: β0 = Constant term, β_1 to β_6 = Regression coefficient, Ut = Error Term and t is the period. The model is transformed into Generalized Autoregressive Conditional

Heteroskedasticity (GRACH) Model

The conditional variance is influence past p period of residual error term and past q period of conditional variance. GARCH (p, q)

$$LogBOT = \boldsymbol{\alpha_0} + \sum_{i=1}^{q} \alpha_i \varepsilon_{1-q}^2 + \sum_{j=1}^{p} OILP_j h_{t-1} + \sum_{i=1}^{q} \alpha_i \varepsilon_{1-q}^2 + \sum_{j=1}^{p} GEXP_j h_{t-1} + \sum_{i=1}^{q} \alpha_i \varepsilon_{1-q}^2 + \sum_{j=1}^{p} EXTD h_{t-1} + \sum_{i=1}^{q} \alpha_i \varepsilon_{1-q}^2 + \sum_{j=1}^{p} EXCH_j h_{t-1} + \sum_{i=1}^{q} \alpha_i \varepsilon_{1-q}^2 + \sum_{j=1}^{p} INFL_j h_{t-1} + e_t \quad (3.7)$$

4. Descriptive Statistics of the Variables

Table 1: Result of Descriptive Statistics

	BOT	OILP	EXCH	GEXP	EXTD	INFL
Mean	1252290.	7403010.	102.7239	1117431.	1136910.	21.34571
Median	395946.1	4807587.	102.1052	1188715.	796164.8	13.00000
Maximum	5822589.	22825185	342.5430	2707952.	2998939.	72.80000
Minimum	-7905599.	31378.70	0.724100	14162.70	40844.30	6.600000
Std. Dev.	2777738.	7297396.	100.5923	916760.8	1100640.	16.97902
Skewness	-0.703662	0.586017	0.761474	0.068960	0.385140	1.424181
Kurtosis	4.676017	1.986317	2.664445	1.392304	1.526839	4.157464
Jarque-Bera	6.984824	3.501775	3.546616	3.797074	4.030152	13.78546
Probability	0.030427	0.173620	0.169770	0.149788	0.133310	0.001015
Sum	43830160	2.59E+08	3595.338	39110102	39791856	747.1000
Sum Sq. Dev.	2.62E+14	1.81E+15	344039.6	2.86E+13	4.12E+13	9801.767
Observations	35	35	35	35	35	35

Source: Author's Computation from E-view 10

The table shows descriptive statistics of the variables. In the model established in the study, there is one dependent variable and five independent variables. These variables consist of exchange rate (EXCH); crude oil price (OILP) and government expenditure (GEXP), balance of trade (BOT) while inflation rate (INFL) and external government debt (EXTD) respectively. The mean of balance of trade (BOT) is 1252290.0 the median is 395946.1, maximum is 5822589.2, minimum was -7905599.0, and sum of the variable is 43830160.4 respectively. The mean of crude oil price (OILP) is 743010.2, the median is 4807587.0, maximum is 2282185, minimum is 31378.70, and sum of the variable is 2590000000 respectively. The mean of government expenditure (GEXP) is 1117431.0, the median is 1188715.3, maximum is 2707952.9, minimum is 14162.70, and sum of the variable is 39110102.4 respectively. The mean of external government debt (EXTD) is 1136910.0, the median is 796164.8, maximum is 2998939.0, minimum is 40844.30 and sum of the variable is 39791856.9 respectively. The mean of exchange rate (EXCHR) is 102.723, the median is 102.1052, maximum was 342.5430, minimum is 0.724100 and sum of the variable Is 3595.338 respectively. The mean of inflation rate (INFLA) is 21.34571, the median is 13.000000, maximum is 72.800000, minimum is 6.6000000, and sum of the variable is 747.100 respectively.

4.1. Correlation Matrix of the Variables

Table 2: Result of Correlation Matrix

	BOT	OILP	EXCH	GEXP	EXTD	INFL
BOT	1	0.251536	-0.0703631	0.267516	0.1004248	-0.1297644
OILP	0.25153	1	0.9133956	0.939311	0.9494417	-0.3002426
EXCH	-0.07036	0.913395	1	0.914429	0.9598278	-0.33671368
GEXP	0.267516	0.939311	0.914429	1	0.9660610	-0.35966737
EXTD	0.100424	0.9494417	0.959827	0.966061	1	-0.28481102
INFL	-0.129764	-0.3002426	-0.336713	-0.359667	-0.28481102	1

Source: Author's Computation from E-view 10

This correlation matrix presents a table showing correlation coefficients between sets of variables. Each s (X_i) in the table is correlated with each of the other values in the table (X_j). There is no linear relationship between balance of trade (BOT) and crude oil price (OILP) (0.25153). There is no perfect linear relationship between balance of trade (BOT) and government expenditure (GEXP) (0.26751). There is no perfect linear relationship between balance of trade (BOT) and external government debt (EXTD) (0.100424). There is no perfect linear relationship between balance of trade (BOT) and Exchange rate (EXCHR) (-0.07036). There is no perfect linear relationship between balance of trade (BOT) and Inflation rate (INFLA) (-0.129764). This test presented clear understanding on the assumption of ordinary least square that there is no perfect or exact linear relationship among explanatory variables. The result of correlation matrix showed that every explanatory variable in the study is linearly independent of each other.

4.2. Unit Root Test using Augmented Dickey-Fuller Test

Table 3: Results of Stationarity (unit root) test.

Variables	Variables' Name	ADF- Statistic	5% Critical Value	Remark
BOT	Balance of trade	-4.617025	-2.945842	1 (1)
OILP	Crude oil price	-8.259902	-2.945842	1 (1)
GEXP	Government Expenditure	-7.109700	-2.945842	1 (1)
EXTD	External government debt	-6.704722	-2.945842	1 (1)
EXCHR	Exchange Rate	-5.090027	-2.945842	1 (1)
INFLA	Inflation Rate	-3.053066	-2.945842	1 (1)

Source: Author's compilation from E-view 10

In the table 4.1, the variables that were tested with unit root are shown, the values for Augmented Dickey-Fuller (ADF) statistic is presented, the lag length of each variable is identified. The Mackinnon critical values at 5% level of significant were pointed out. The order of integration of each variable was enumerated, and finally the stationarity position of each variable was also stated. When Augmented Dickey-Fuller statistic is greater than Mackinnon 5 percent critical value in absolute term, it is concluded that the variable is stationary. These variables consist of exchange rate (EXCH); crude oil price (OILP) and government expenditure (GEXP), balance of trade (BOT) while inflation rate (INFL) and external government debt (EXTD) were stationary at first difference, that is they are I(1) process. Therefore, they contain unit root. The existence of unit root in most variables paves way for further investigation on the nature of the long run relationship among the variables.

4.3. Co-integration Test Results

Ho = There is no co-integration (no long run relationship among Variable)

Table 4: Co-integration Test Results

Date: 07/15/25 **Time:** 17:36				
Sample (adjusted): 1992 2024				
Included observations: 33 after adjustments				
Trend assumption: Linear deterministic trend				
Series: BOT OILP EXCH GEXP EXTD INFL				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	**Eigenvalue**	**Statistic**	**Critical Value**	**Prob.****
None *	0.720102	116.5593	95.75366	0.0009
At most 1 *	0.667526	74.53941	69.81889	0.0200
At most 2	0.503792	38.19999	47.85613	0.2934
At most 3	0.241519	15.07489	29.79707	0.7752
At most 4	0.153470	5.952469	15.49471	0.7011
At most 5	0.013673	0.454337	3.841466	0.5003
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level				
* Denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Author's Computation from E-view 10

The co-integration results in table 4.4 for the model (EXCH; OILP; GEXP, BOT, INFL and EXTD) reveals that both trace test indicates 2 co-integrating equation(s) at the 5 percent level of significance. Thus, there is a long-run relationship among the variables (EXCH; OILP; GEXP, BOT, INFL and EXTD). We therefore reject the null hypothesis of no co-integration amongst the variables and accept the alternative hypothesis.

4.4. Estimation of Regression Model

Empirical Results of the Autoregressive Conditional Heteroskedasticity Model (ARCH)

Table 5:

Dependent Variable: BOT				
Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)				
Date: 07/15/25 Time: 17:59				
Sample: 1990 2024				
Included observations: 35				
Convergence not achieved after 500 iterations				
Coefficient covariance computed using outer product of gradients				
Presample variance: backcast (parameter = 0.7)				
GARCH = C(7) + C(8)*RESID(-1)^2 + C(9)*GARCH(-1)				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
OILP	0.463242	0.152976	3.028204	0.0025
EXCH	53134.28	10345.15	5.136151	0.0000
GEXP	5.182670	1.691793	3.063419	0.0022
EXTD	-2.332110	1.362138	-1.712095	0.0869
INFL	-1283.392	7667.843	-0.167373	0.8671
C	85860.62	437819.8	0.196109	0.8445
Variance Equation				
C	1.01E+10	1.84E+10	0.550107	0.5822
RESID (-1)^2	0.571665	0.458959	1.245570	0.2129
GARCH (-1)	0.578244	0.427483	1.352671	0.1762
R-squared	0.811920	Mean dependent var		1252290.
Adjusted R-squared	0.779493	S.D. dependent var		2777738.
S.E. of regression	1304375.	Akaike info criterion		30.53270
Sum squared resid	4.93E+13	Schwarz criterion		30.93265
Log likelihood	-525.3222	Hannan-Quinn criter.		30.67076
Durbin-Watson stat	0.681756			

Source: Author's Computation from E-view 10

The Autoregressive Conditional Heteroskedasticity model was carried out to examine parameters estimates. The empirical result shows that the coefficient of crude oil price (OILP) has positive and significant impact on balance of trade (BOT) because Z–statistics (3.02804) with its probability value of 0.0025 was greater than 0.05. The empirical result shows that the coefficient of government expenditure (GEXP) has positive and significant impact on balance of trade (BOT) because Z–statistics (3.063419) with its probability value of 0.0022 was less than 0.05. The empirical result shows that the coefficient of exchange rate (EXCH) has positive and significant impact on balance of trade (BOT) because Z–statistics (5.136151) with its probability value of 0.0000 was less than 0.05. The empirical result shows that the coefficient of Inflation rate (INFLA) has negative and insignificant impact on balance of trade (BOT) because Z–statistics (-0.167373) with its probability value of 0.8671 was greater than 0.05. The empirical result shows that the coefficient of external government debt (EXTD) has negative and insignificant impact on balance of trade (BOT) because Z–statistics (-1.198196), its probability value of 0.8671 was greater than 0.05. Again, our empirical result shows that the R-squared (R^2) is 0.811921. The variables of the study have strong correlation/relationship with each other.

4.5. Granger Causality Test Result

Table 6: Result of Causality Test

Pairwise Granger Causality Tests			
Date: 07/16/25 Time: 09:50			
Sample: 1990 2024			
Lags: 2			
Null Hypothesis:	**Obs.**	**F-Statistic**	**Prob.**
OILP does not Granger Cause BOT	33	2.62994	0.0898
BOT does not Granger Cause OILP		8.60665	0.0012
EXCH does not Granger Cause BOT	33	4.34889	0.0227
BOT does not Granger Cause EXCH		1.07930	0.3536
EXTD does not Granger Cause BOT	33	0.72450	0.4934
BOT does not Granger Cause EXTD		0.91699	0.4114
GEXP does not Granger Cause BOT	33	3.62928	0.0397
BOT does not Granger Cause GEXP		8.06944	0.0017
INFL does not Granger Cause BOT	33	0.31117	0.7351
BOT does not Granger Cause INFL		0.09004	0.9142
EXCH does not Granger Cause OILP	33	19.5040	5.E-06
OILP does not Granger Cause EXCH		2.80934	0.0773

Source: Author's Computation from E-view 10

Evaluating the results in table 4, based on the decision rule, the result of pairwise granger causality test shows that crude oil price (OILP) does not granger cause balance of trade (BOT) because its Prob. value (0.0898) was greater than it Prob. Value (0.05) while balance of trade (BOT) granger cause crude oil price (OILP) because its Prob. value (0.0012) was less than it Prob. Value (0.05). The variable government expenditure (GEXP) does granger cause balance of trade (BOT) because its Prob. value (0.3734) was greater than it Prob. Value (0.05) while balance of trade (BOT) does granger cause government expenditure (GEXP) because its Prob. value (0.0017) was greater than it Prob. Value (0.05). The variable external government debt (EXTD) does granger cause balance of trade (BOT) because its Prob. value (0.72450) was greater than it Prob. Value (0.05) while balance of trade (BOT) does granger cause external government debt (EXTD) because its Prob. value (0.4114) was less than it Prob. Value (0.05). The variable exchange rate (EXCHR) does granger cause balance of trade (BOT) because its Prob. value (0.0227) was greater than it Prob. Value (0.05) while balance of trade (BOT) does not granger cause exchange rate (EXCHR) because its Prob. value (0.3536) was greater than it Prob. Value (0.05). The variable inflation (INFLA) does not granger cause balance of trade (BOT) because its Prob. value (0.7351) was greater than it Prob. Value (0.05) while balance of trade (BOT) does not granger cause inflation (INFLA) because its Prob. value (0.9142) was greater than it Prob. Value (0.05).

4.6. Econometric /Second Order Test

The null hypothesis; there is no Heteroskedasticity

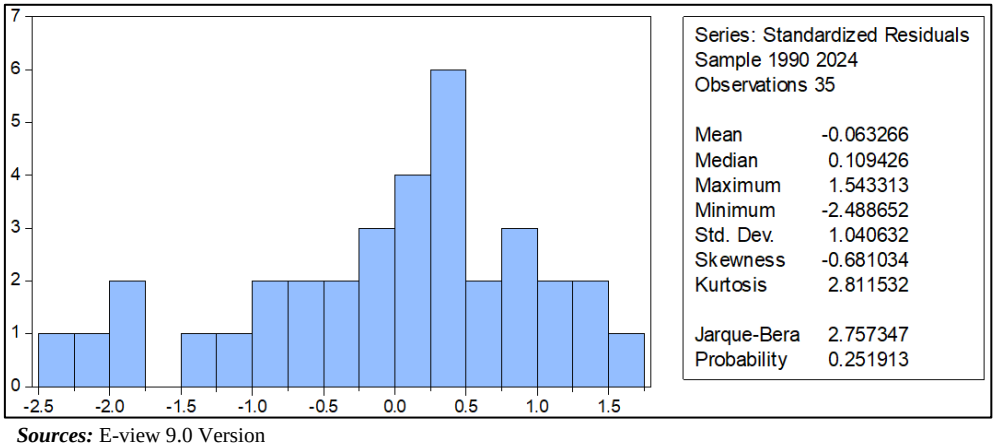
Table 7: Result of Heteroskedasticity Test ARCH

Heteroskedasticity Test: ARCH			
F-statistic	0.199365	Prob. F(1,32)	0.6582
Obs*R-squared	0.210514	Prob. Chi-Square (1)	0.6464
Test Equation:			
Dependent Variable: WGT_RESID^2			
Method: Least Squares			
Date: 07/16/25 **Time:** 10:06			
Sample (adjusted): 1991 2024			
Included observations: 34 after adjustments			

Source: Author's Computation from E-view 10

The heteroskedasticity ARCH test was used to identify whether the model suffers from heteroskedasticity problem. The heteroskedasticity problem violates the ordinary least squares assumption that state that error term has constant variance. heteroskedasticity ARCH Test is a statistic that ensures that the assumption of ordinary least square was not violated. The null hypothesis; there is no heteroskedasticity problem because its Prob. Value of heteroskedasticity ARCH Test (0.1993) was greater than it Prob. Value (0.05), we reject alternative hypothesis and accept the null hypothesis. It is concluded that the model is free from heteroskedasticity problem. This denotes that prediction base of the Ordinary Least Square estimates were efficient and unbias.

4.7. Histogram Normality Test



Sources: E-view 9.0 Version

Fig 1: presents Normality test for each of the Distribution.

Jarque-Bera (JB) test is statistics that compute both skewness and Kurtosis. Skewness shows the degree symmetry (normal distribution). The normal measurement is zero/0. Kurtosis is a statistic that compute degree of peakedness. The normal measurement is three/3. A distribution is skewed if one of its tails is longer than the other. A skewed distribution can be positive or negative. Positive skewed distribution means that it has a long tail in the positive direction. Negative skewed distribution means that it has a long tail in the negative direction. The null hypothesis is that there is skewness and Kurtosis in the model. We reject null hypothesis and accept the alternative that there is no skewness and Kurtosis in the

model because its P-value of Jarque-Bera (JB) test (0.2519) is greater than its 5% significant level (0.05). This implies that the standardized residuals from the estimated model in the regression framework is normally distributed, which is consistent with the OLS assumption.

4.8. Test of Hypotheses

The results for the various hypotheses testing are presented in the section.

4.8.1. Test of Hypothesis one

H_{O1} Oil price volatility has no significant effect on trade performance in Nigeria.

In testing this hypothesis, oil price volatility was regressed against trade performance in Nigeria. The empirical result shows that the coefficient of crude oil price (OILP) has positive and significant impact on balance of trade (BOT) because Z–statistics (3.02804) with its probability value of 0.0025 was greater than 0.05. The empirical finding reveals that crude oil price has positive and significant impact on trade performance in Nigeria.

4.8.2. Test of Hypothesis Two

H_{O2} Exchange rate volatility has no significant effect on trade performance in Nigeria.

In testing this hypothesis, exchange rate volatility was regressed against trade performance in Nigeria. The empirical result shows that the coefficient of exchange rate (EXCH) has positive and significant impact on balance of trade (BOT) because Z–statistics (5.136151) with its probability value of 0.0000 was less than 0.05.

4.8.3. Test of Hypothesis Three

H_{O3} There is no causality relationship among oil price volatility, exchange rate volatility and trade performance in Nigeria.

The result of pairwise granger causality test shows that crude oil price (OILP) does not granger cause balance of trade (BOT) because its Prob. value (0.0898) was greater than it Prob. Value (0.05) while balance of trade (BOT) granger causes crude oil price (OILP) because its Prob. value (0.0012) was less than it Prob. Value (0.05). The variable exchange rate (EXCHR) does granger causes balance of trade (BOT) because its Prob. value (0.0227) was greater than it Prob. Value (0.05) while balance of trade (BOT) does not granger cause exchange rate (EXCHR) because its Prob. value (0.3536) was greater than it Prob. Value (0.05). In summary, both crude oil price and exchange rate have uni-directional relationship with trade performance in Nigeria.

4.9. Discussion of the Results

4.9.1. What is the effect of oil price volatility on trade performance in Nigeria?

It was observed from the hypothesis tested that crude oil price (OILP) has positive and significant impact on balance of trade (Z–statistics (3.02804), its probability value of 0.0025 > 0.05.). The finding of this study was in line with study of Surajdeen; Olanipekun, Abdulkadri, Adegboyega and Olajide, (2024) [22] that investigated the impact of exchange rate and oil price on economic growth in Nigeria. The study sought to identify the effect of crude oil price, exchange rate, and interest rate on real gross domestic product over a period of annual time-series data from 1990 to 2023. The secondary was sourced from World Development Indicators, Central Bank of Nigeria Statistics, and OPEC database. The method of data analysis was ARDL model. The results reveal a weakly negative association (-0.0906) between growth rate (GR) and Nigeria's exchange rate (EXR), indicating that the growth rate tends to decline significantly as the exchange rate increases. Conversely, the strong positive connection suggests that GR in Nigeria is significantly impacted by changes in the currency rate. Additionally, the study finds a weakly positive correlation (0.2221) between the price of crude oil (COPr) and GR.

4.9.2. What is the effect of exchange rate volatility on trade performance in Nigeria?

It was observed from the hypothesis tested that exchange rate (EXCH) has positive and significant impact on balance of trade (BOT) (Z–statistics (5.136151), its probability value of 0.0000 > 0.05). The finding of this study was in line with study of Irmiya, Irmiya and Odumu, (2023) [17] that examined the effects of exchange rate fluctuations on the balance of payments in Nigeria. The study sought to verify effect of exchange rate fluctuation on BOP current account, BOP capital Account and BOP financial Account in Nigeria. The ex post facto research design has been adopted in this study. Secondary data was obtained from the CBN website and the National Bureau of Statistics for 2010-2019. Descriptive statistics and Pearson's correlation using the Statistical Package for Social Sciences 23 were used to analyze the data. It was found that the recent relatively unstable exchange rate had resulted in a disrupted balance of payments in Nigeria. The implication of this finding was that an unstable exchange rate has weakened the value of the Nigerian naira, discouraging exports of local goods, making imports of foreign goods more expensive and hindering domestic and foreign investment, which ultimately has a negative impact on the balance of payments. It was concluded that exchange rate volatility can cause balance of payments deficit.

4.9.3. What is the causality among oil price volatility, exchange rate volatility and trade performance in Nigeria?

It was observed from the hypothesis tested that both crude oil price and exchange rate have uni-directional relationship with trade performance in Nigeria. The finding of this study was not in line with study of Okodua, Urhie, Akpesiri, Onyohu and Eyitemi, (2022) [20] that investigated the nexus between oil price volatility and market valuation of listed energy companies in Nigeria, within a dynamic heterogeneous panel model framework. The paper utilizes the pooled mean group estimator in analysing the hypothesized relationship among equity valuation of listed energy companies in Nigeria, oil price volatility, and two control variables – firm profitability and inflation rate. The method of data analysis was Vector error correction model. The short-run results show a mix of negative and positive, but statistically significant impacts of oil price volatility on equity valuation across listed oil firms, the long-run results indicate a statistically significant positive impact of oil price volatility on the stock valuation of energy firms in Nigeria. The short-run results are highly suggestive of the important role of the level of risk investors are willing to accommodate in their decisions to invest in stocks under different economic scenarios, in explaining stock returns for each of the oil-producing firms in Nigeria.

5. Summary of Findings

The following are the major findings of the study**:**

1. The empirical result shows that the coefficient of crude oil price volatility has positive and significant impact on trade performance (Z–statistics (3.02804), its probability value of 0.0025 > 0.05.). The crude oil price volatility has 42 percent positive and significant impact on trade performance in Nigeria. A percent change in crude oil price volatility results to 42 percent increase in trade performance in Nigeria.
2. The empirical result shows that the coefficient of exchange rate volatility has positive and significant impact on trade performance (Z–statistics (5.136151), its probability value of 0.0000 > 0.05). The exchange rate volatility has 53 percent positive and significant impact on trade performance in Nigeria. A percent change in exchange rate volatility results to 53 percent increase in trade performance in Nigeria.
3. In summary, both crude oil price and exchange rate have uni-directional relationship with trade performance in Nigeria. The result of pairwise granger causality test shows that crude oil price (OILP) does not granger cause balance of trade (BOT) because its Prob. value (0.0898) was greater than it Prob. Value (0.05) while balance of trade (BOT) granger cause crude oil price (OILP) because its Prob. value (0.0012) was less than it Prob. Value (0.05). The variable exchange rate (EXCHR) does granger cause balance of trade (BOT) because its Prob. value (0.0227) was greater than it Prob. Value (0.05) while balance of trade (BOT) does not granger cause exchange rate (EXCHR) because its Prob. value (0.3536) was greater than it Prob. Value (0.05).

6. Conclusion

This study concludes that oil price and exchange rate volatility have positive and significant effect on trade performance in Nigeria. Descriptive statistics, correlation matrix and unit root tests were pre-estimation tests that were carried out in the study. The descriptive statistics provide nature and characteristic of the variable, the correlation matrix ensures that variables of the study do not have perfect linear correlation among explanatory variables and unit root test check the stationarity of the variables. Johansen cointegration test was used to identify whether there is long run relationship between the variables. However, having established this, the study went ahead to conduct estimation test Autoregressive Conditional Heteroskedasticity model to identify parameter estimate and histogram normality test, heteroscedasticity and cross-sectional dependence test a respectively to ensure absent of possible multi-collinearity problem among the model residuals.

7. Recommendations of the Study

Based on the findings of this study, the following recommendations were made.

- Government should take measures for stability of the exchange rate to enhance trade performance such as control of import content of both public and private expenditures, stop importation of goods and services that can be produced locally as an avenue for reducing demand for foreign exchange.
- Nigerian government should strengthen local firms by granting them investment incentives to boost and enhance the quality of output. This will not only ease substitution but also encourage exports and consequently reduce imports.
- Corruption must be checked or controlled as it erodes investors' confidence to invest in countries with high corruption index like Nigeria. Countries in oil exporting countries should invest in human capital, build infrastructure, and create independent institutions dealing with corrupt public officials who steal oil revenues.

8. References

1. Abdulkarim FM, Akinlaso MI, Hamid BA, Ali HS. The nexus between oil price and islamic stock markets in Africa: A wavelet and multivariate-GARCH approach. Borsa Istanbul Rev. 2020;20(2):108-20.
2. Adekunle W, Bagudo AM, Odumosu M, Inuolaji SB. Predicting stock returns using crude oil prices: A firm level analysis of Nigeria's oil and gas sector. Resour Policy. 2020;68:101708.
3. Aderemi TA, Ogunleye AG, Abalaba BP, Owolabi OO. Exchange rate volatility and trade balance in Nigeria: An autoregressive distributed lag model approach. Euro Economica. 2020;39(1):23-32.
4. Agbo EI, Nwankwo SNP. Effect of oil price volatility on the volatility of the Nigerian all share index. J Account Inf Innov. 2019;5(11):1-10.
5. Ashiru I, Clement IM, Kabiru L. Balance of payments response to crude oil price asymmetry in Nigeria: An NARDL approach. Lapai J Econ. 2020;4(2):20-31.
6. Attahir BA. Oil price and exchange rate nexus in Nigeria: Are there asymmetries? CBN J Appl Stat. 2019;10(1):1-28.
7. Bagirov M, Mateus C. Oil prices, stock markets and firm performance: Evidence from Europe. Int Rev Econ Finance. 2019;61:270-88.
8. Bergmann P. Oil price shocks and GDP growth: Do energy shares amplify causal effects? Energy Econ. 2019;80:1010-40.
9. Bugshan A, Bakry W, Li Y. Oil price volatility and firm profitability: an empirical analysis of Shariah-compliant and non-Shariah-compliant firms. Int J Emerg Mark. 2021;7(3):34-45.
10. Charfeddine L, Klein T, Walther T. Reviewing the oil price–GDP growth relationship: A replication study. Energy Econ. 2020;88:104786.
11. Chikamalu UM, Nwokoye ES. International oil price volatility and Nigeria's balance of payments. J Int Econ Relat Dev Econ. 2023;3(3):789-92.
12. Daggash J, Abraham TW. Effect of exchange rate returns on equity prices: Evidence from South Africa and Nigeria. Int J Econ Finance. 2017;9(11):35-47.
13. Funso DD, Adekunle OE. Exchange rate and balance of payments in Nigeria. J Econ Dev Stud. 2020;8(1):111-21.
14. Igbinovia LE, Ogiemudia AO. Oil price and exchange rate volatility in Nigeria. Oradea J Bus Econ. 2021;6(1):74-86.
15. Igbinovia LE, Omorose AO. Oil price and exchange rate volatility in Nigeria. Oradea J Bus Econ. 2021;6(1):74-92.
16. Ikpe ME, Ubom AU, Johnson G. Effect of exchange rate volatility on international trade in Nigeria. Int J Res Finance Manag. 2024;7(2):441-51.
17. Irmiya SR, Irmiya AP, Odumu VA. Effect of exchange

rate fluctuations on balance of payments in Nigeria. Afr J Manag Bus Res. 2023;10(1):34-41.
18. Kanu SI, Nwadiubu A. Exchange rate volatility and international trade in Nigeria. Int J Manag Sci Bus Adm. 2020;6(5):56-72.
19. Mmadu BA, Okeke IC, Ukpemeku AP. Impact of the volatility of oil price on economic growth in Sub-Saharan African countries. Eur J Econ Financ Res. 2024;8(6):96-102.
20. Okodua H, Urhie S, Akpesiri ME, Onyohu CH, Eyitemi AF. Oil price volatility and equity valuation of listed energy companies in Nigeria: A panel ARDL model. Int J Energy Econ Policy. 2022;12(5):482-90.
21. Rofiat BA. Crude oil price fluctuations and Nigerian balance of payments 1987-2017. Lapai J Econ. 2019;3(1):12-23.
22. Surajdeen TA, Olanipekun WD, Abdulkadri M, Adegboyega AH, Olajide OA. Impact of exchange rate and crude oil price on the Nigeria economic growth. Acta Univ Danubius. 2024;20(4):252-61.
23. Yildirim Z, Arifli A. Oil price shocks, exchange rate, and macroeconomic fluctuations in a small oil-exporting economy. Energy. 2021;219:119527.