



## Exchange Rates Fluctuations, Economic Factors and Financial Performance Evaluation of Multinational Companies in Nigeria

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**Abstract:** This study examined the effect of exchange rate fluctuation economic factors on financial performance of multinational companies in Nigeria, It specifically examined the effect of nominal exchange rate, real exchange rate, interest rate as well as exchange rate fluctuations on the financial performance of listed multinational oil and gas firms in Nigeria performance of deposit money banks in Nigeria. Secondary sources of data was employed to extract useful information from the Audited Annual Reports of the eight (8) oil and gas firms sampled were selected through purposive sampling technique for the investigation for the periods 2006-2020. The measures of exchange rate fluctuation economic factors comprise of foreign exchange rate fluctuation (FXRF), real exchange rate (REER), nominal exchange rate (NOER interest rate spread (INSR), firm's size (FSIZE), financial leverage (FLV) and business risk (BSR) with financial performance, being dependent variable measured by return on asset (ROA). Both descriptive and inferential statistics. Correlation and regression analysis were used to test the hypothesis. Findings revealed that nominal exchange rate and interest spread rate have positive and statistically significant relationships with return on asset ( $\beta=1.395$ , p-value 0,000 and 0.017; p-value 0.000) at the level of 5% level of significant while foreign exchange rate fluctuation, real exchange rate ,firm size and financial leverage has a negative and statistically significant association with return on asset ( $\beta=-0.0021$ , p-value=0.000,-8.01; p-value 0.049,-0.00031; p-value 0.038, and -0.00867; p-value=0.002) respectively at 5% level of significant. The study concluded that exchange rate fluctuation economic factors have strong statistical relationship with the financial performance of listed oil and gas companies in Nigeria. Based on the findings, the researchers recommends that micro-economic factors such as financial leverage, company size, and business risk should be taken into consideration by the management of Nigerian listed oil and gas businesses when mediating on fluctuations in the country's foreign currency rate. To lessen the severity of exchange rate fluctuations, the appropriate authorities should take proper steps to protect the value of the native currency. Furthermore, oil and gas companies should constantly assess the impact of fluctuations in the

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nominal exchange rate on their income from upstream and downstream oil exploration activities, and implement strategies to mitigate the negative impact of these fluctuations.

**Keywords:** Exchange Rate; Interest Rate; Return on Asset; Oil; Gas Multinational Companies

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## 1. Introduction

Petroleum and natural gas are essential to national economies. By acting as a go-between for investors and businesses, they facilitate the flow of capital. Financial results from oil and gas have significant consequences for economic development of nations beyond their mediating role. In return for their financial commitment, shareholders should benefit from the company's success. It's a virtuous cycle since it leads to more investment and a booming economy. Oil and gas must be profitable if they are to continue to play a vital role as economic intermediaries and offer enough returns to their owners. If they are able to make enough profit, they can. Poor oil and gas performance, on the other hand, may result in oil and gas failure and crisis, both of which are detrimental to economic development (Ongore & Kusa, 2013).

Oil and gas results may be influenced by a wide range of both micro- and macroeconomic variables (Ongore & Kusa, 2013). Internal variables are the specific aspects of a business that have an effect on its profitability, and they are mostly controlled by the choices made by the management and board of directors. This firm is not able to change the external elements, which are industry-wide or national in scope. The oil and gas industry is characterized by both internal and external factors, with the latter referring to the industry and macroeconomic variables within which the firm operates while the former may relate to the oil and gas overall managerial practices on various operational aspects of the oil and gas. Profitability in the oil and gas industry may be affected by the exchange rate, which is a macroeconomic variable that might have direct or indirect effects on individuals. It has a direct impact on oil and gas companies because of the way their balance sheets are set up in terms of foreign currency assets and liabilities, off-balance sheet exposure, and non-asset-based services (Martin & Mauer, 2003). Changes in the value of assets and liabilities denominated in domestic currency are reflected in the corresponding gains or losses recognized as a result of fluctuations in the value of the asset or liability denominated in a foreign currency. If the oil and gas firm has an equal number of assets and liabilities denominated in foreign currency, the company's balance sheet and income statement may not be significantly impacted by fluctuations in the exchange rate. An oil and gas firm is impacted immediately when its foreign currency assets exceed its foreign currency liabilities. (Olaniyan et al 2020). The exchange rate influences business success in a roundabout way by altering demand for the company's goods,

the level of competition, and other factors of financing circumstances (Chamberlain, 1997).

Prices of domestic goods, imported goods, exported goods, foreign direct investment, etc. might be impacted by fluctuations in the value of the currency. However, few of these analyses have considered how the currency rate (one of the macroeconomic determinants) affects businesses' bottom lines. Kiganda (2014), for instance, concluded that the exchange rate has a negative negligible influence on banks' profitability as reflected by ROA in his analysis of the effects of macroeconomic variables on bank profitability in Kenya.

The topic of exchange rates has risen to prominence among financial professionals, academics, and company management as a result of the substantial empirical efforts undertaken to understand and explain exchange rate fluctuations. Prior researches on the impact of exchange rate fluctuations on Nigerian businesses' bottom lines have drawn contradictory results (Diala et al, 2016).

Furthermore, most of these Nigerian studies have ignored the oil and gas industry, which is responsible for 7.42% of the country's GDP, since they have focused on other sectors (such as manufacturing, commerce, and financial services) (NBS). This exclusion suggests that more investigation into other sectors of the economy is required, since there is currently a dearth of clear empirical information on the issue.

As a result, the research problem of this study was to examine the relationship between exchange rate fluctuation, economic factors and financial performance of listed oil and gas firms in Nigeria.

## **2. Literature Review**

### **2.1. Conceptual Review**

#### **2.1.1. Exchange Rate**

A currency's "exchange rate" is the rate at which it can be purchased with another currency (foreign currency). When discussing the value of one country's currency in terms of another, we talk about the foreign exchange rate. Due to disparities in factor endowment, Osiegbo and Onuorah (2012) argue that no country can remain economically independent, making the exchange rate a vital part of international economic interactions. The interest rate, inflation rate, import and export levels, output levels, etc. all react to shifts in the currency rate. These specifics emphasize how crucial the exchange rate is to the economic development of any country that participates in international trade of goods and services. The significance of the exchange rate stems from the fact that it levels the playing field for businesses engaged in cross-border trade by eliminating the chasm between home pricing systems and overseas markets. It indicates that domestic prices are influenced by

international trends. Because it has such a profound effect on the volume of imports and exports, the exchange rate has a profound effect on the balance of payments.

Since the Structural Adjustment Programme (SAP) was implemented in 1986, the Naira currency rate has been reasonably steady; nonetheless, its continuous depreciation has been a drag on economic development. Oil-producing nations like Nigeria face a serious danger to their macroeconomic stability and economic progress from the combined whammy of increasing oil prices and unpredictable currency rates. Usman (2009) suggests that budget deficits correlate with falling oil revenues in Nigeria, whereas rising oil revenues are more typically linked to rising Government spending. Nigeria does import a lot of refined petroleum and other industrial commodities, but it does derive a significant amount of its revenue from oil sales.

Generally speaking, an exchange rate is the price of one currency in terms of another (Mordi, 2006). The exchange rate describes how much one country's currency is worth in terms of that of other nations. The degree to which domestic industries can compete with those in foreign nations may be gauged by watching the real exchange rate as it rises or falls (Razazadehkarsalari et al., 2011). When the value of an exchange rate considerably deviates from its equilibrium level, it is said to be volatile (Azeez et al., 2012). Unsynchronized currency rates are indicative of a situation where parallel marketplaces to the official market are flourishing.

### **2.1.2. Exchange Rate Fluctuations**

Currency exchange prices on the FOREX market go up and down in response to supply and demand fluctuations. When demand exceeds supply, the exchange rate of a currency increases in value. When goods and services are in surplus, however, the value of a currency falls. The long-term demand and supply of any currency is very sensitive to changes in the value of imports and exports and long-term capital movements like FDI (FDI). Factors that have contributed to this change throughout time include inflation, interest rates (Ani et al., 2013). It's possible that the inherent volatility of a freely floating exchange rate system may become too great under certain conditions.. This phenomenon arises due to the fact that international capital markets 'overshoot' in response to shocks, creating fluctuations in exchange rates, whereas goods and services markets react more slowly (Dornbush, 1976).

According to Sonik (2000), this is the pattern that emerges throughout most monetary crises. To start, the gap between the country's imports and exports is increasing. Therefore, when compared to other currencies using PPP, this one is seen as overpriced. If foreign investors are pouring money into a country's booming economy and providing cheap financing to local businesses, the country may seem to have a current account deficit even while it really has a capital account surplus. However, this kind of investment begins to dry up as the outlook for economic growth becomes less clear and volatility rises. As investors leave and the current

account deficit becomes more visible, governments are raising interest rates in an effort to encourage investment. High interest rates have a detrimental impact on the economy, increasing the need of capital restriction policies.

### **2.1.3 Nominal Exchange Rate and Real Exchange Rate**

According to Nwafor (2018), an exchange rate is the cost of one country's currency expressed in terms of another. An amount of money in one currency (say, Nigerian naira) may be stated as an equivalent amount in another currency. The two potential rates of exchange to apply are the real market rate and the theoretical market rate, or nominal market rate.

Economists employ a monetary concept called the nominal exchange rate to assess the parity of two currencies like the U.S. dollar and the Japanese yen. The Naira to the Dollar rate (N/\$) is common shorthand, but the real exchange rate is a more concrete concept that determines how much one currency is "worth" in terms of another currency. Exchange rates may be set at a fixed rate or allowed to fluctuate freely (Asher, 2012). With a fixed exchange rate system, the value of one country's currency is set in relation to another, meaning that it cannot rise or fall in value with respect to the other. However, this study focuses on the floating exchange rate, which is a system in which neither the government nor central banks interfere to maintain a steady exchange rate (Black 2003). Progress in the economy is made with floating rates because they make monetary policy more effective in shaping aggregate demand and lessen the disruptive impact of external shocks, especially international trade shocks (Pugel, 2007).

### **2.1.4. Interest Rate**

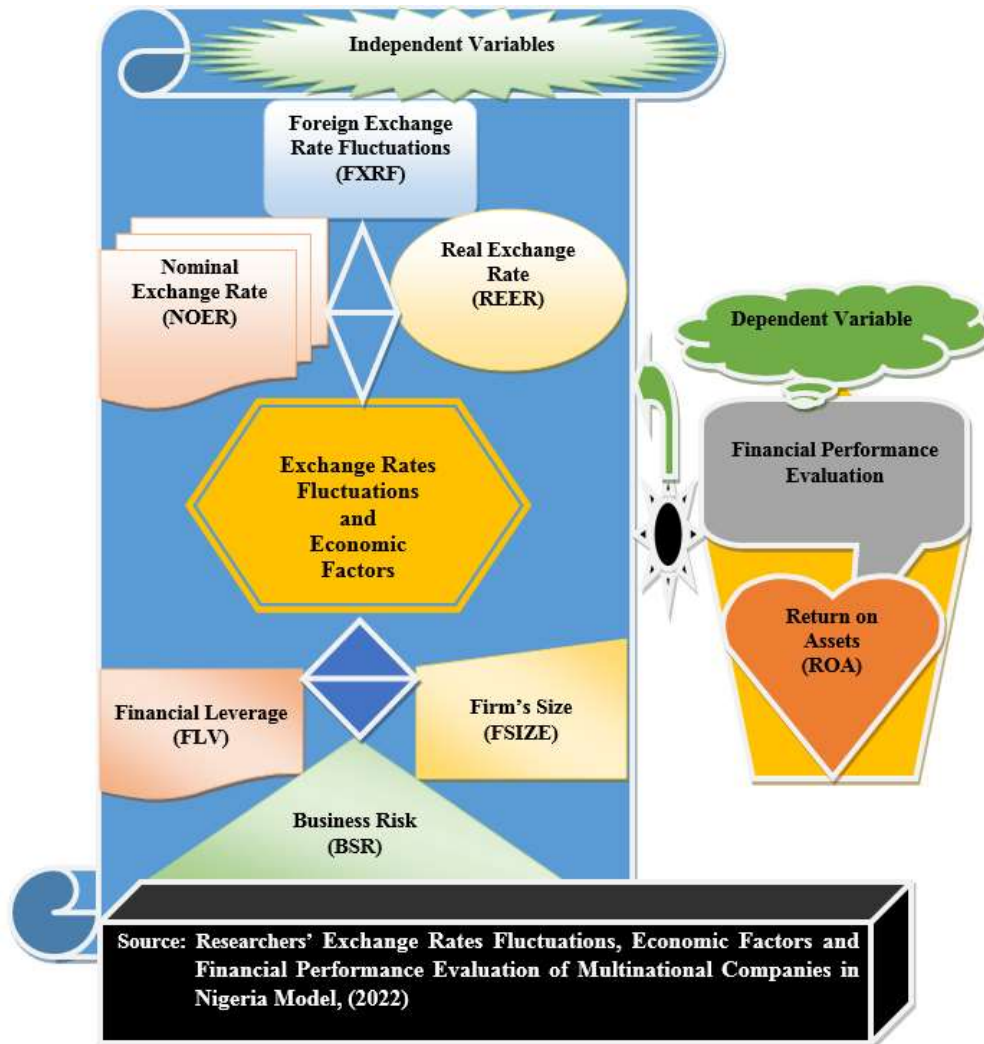
The interest rate is the expense incurred by the lender in connection with lending money to a debtor in return for the usage of those debtor's funds (creditor). According to Keynes's theory of interest, a high interest rate reduces private investment and hence retards economic growth. However, it may entice outside investors, which might increase the country's total debt. Nigeria's interest rate policy is an important instrument in the country's monetary policy armory, as it helps to encourage economic growth and development by mobilizing financial resources. The cost of borrowing money is expressed as an interest rate. Getting a loan means giving up the opportunity to put that money and time somewhere else. It's the sum that is sent to the lender as repayment. We must take this price into serious economic account. This is because interest rates have far-reaching repercussions for the economy, either through altering the cost of capital or the availability of credit, or both (Acha & Acha 2014). An amount of money that is due every month, expressed as a percentage of the total loan, deposit, or borrowing amount. It has been said that the interest rate is a measure of how much people value immediate cash flow above future earnings potential. The borrower has an immediate need or need for the loaned funds and is ready to pay a premium, represented by the interest rate, in exchange

for this service. After adjusting for inflation, the real interest rate is what investors, savers, and lenders earn on their money. The Fisher equation provides a formal description of this phenomenon, which indicates that the real interest rate is roughly equal to the nominal interest rate minus the inflation rate.

#### **2.1.5. Return on Asset**

Return on assets is one of the most popular accounting-based performance measures used in the literature on corporate governance. The ones who know are Rouf and Abdur. A company's profitability was formerly defined as the rate of return on its entire assets (Rouf & Abdul, 2015). It's proof that the company's board and management know how to make the most of what they have. A company may show its shareholders the return on investment (ROI) they've received from their capital expenditures by using this statistic. The most reliable measure of a business's asset usage efficiency is the rate of return on total assets. Investors may see how efficiently management is putting the company's money to work by looking at the return on assets. It's a ratio used to evaluate a company's profitability in comparison to its net income. A bank's profitability is sometimes measured in part by the rate of return (in percentage form) on its real invested capital (Alkassim, 2005).

**2.1.6. Conceptual Framework on Exchange Rates Fluctuations, Economic Factors and Financial Performance Evaluation of Multinational Companies in Nigeria**



### **3. Theoretical Review**

#### **3.1. Purchasing-Power Parity Theory**

As a concept, purchasing power parity was developed by Gustav Cassel in 1881. The purchasing power parity hypothesis was presented as an alternative to the fixed exchange rate system after its collapse. The hypothesis states that the only variables affecting the exchange rate between two currencies are changes in demand and supply. If two currencies are fixed at par, then any change in their exchange rates should reflect changes in their relative purchasing power in relation to the Base Exchange Rates, as determined by the international community. As with Ibenta, the market price of semolina in Nigeria and Ghana should be standardized. Shoppers in Ghana may choose to stock up on wheat rather than semolina if the latter is cheaper expensive in Nigeria (after taking into account transportation costs) (Ayodele, 2014). Because of this, demand would fall in Nigeria while rising in Ghana. A rising exchange rate (the value of the domestic currency in relation to the foreign currency) is seen to be positive for the economy because it increases demand for goods and services, which leads to more production and a higher gross domestic product. The Purchasing Power Parity Hypothesis has evolved and been broadly accepted by individuals who participate in international financial markets (Das & Das, 2012).

#### **3.2. Traditional Flow Theory**

Trade balances between nations are at the heart of the classic flow theory of currency rates. A unit of one country's currency is converted into another country's currency at a rate that is based on the total value of goods and services traded. The current account balance establishes the relationship between the actual exchange rate and trade flows. Nations that run trade surpluses tend to collect large amounts of foreign currency as a result of their trading relationships; whereas countries that run trade deficits tend to see their currencies weaken as a result of their trade surpluses. Acha and Acha (2014) posit the belief that changes in exchange rates or domestic prices may affect changes in relative prices and the balance of payments is a hallmark of the conventional flow theory of exchange rate determination (Ayodele, 2004). The relative income plays a major role in determining the exchange rate under the flow model. This is because the exchange rate adjusts to balance the demand by the domestic resident for foreign exchange, which is based on the hypothesis that foreign demand for domestic goods is primarily determined by domestic income (Davis et al., 2015).



### 3.3. Empirical Review

Okika et al (2018) studied how changes in the exchange rate affected the profits of certain publicly traded Nigerian companies. It looked at the impact that changes in currency exchange rates have on ROI. To accomplish these ends, two hypotheses were developed and evaluated using information culled from the companies' annual reports and the CBN's annual statistics bulletin. The results showed that none of the competing hypotheses had a chance. The research concluded that the ban on importing Nigerian-made items that are functionally equivalent should remain in place. In the event that this is strictly adhered to, greater opportunities for local manufacturing will arise. The cost of production in the industrial sector may be lowered significantly if the government pursues policies that seek to increase the value of the naira relative to the foreign currency market.

Takon et al (2016) examined the impact of FX transactions on Nigerian banks' bottom lines from 2010 to 2014. The research used information gathered from 10 Nigerian banks that are publicly traded. The Kao panel co-integration test result suggests a long term connection between the variables. A negative and negligible impact of foreign currency revenue on Nigerian banks' profitability was found using the DOLS. Banks in Nigeria's profitability throughout the research period was shown to be positively impacted by the control variable total assets, whereas total equity had a negative influence on bank profits.

Profitability of deposit money banks in Nigeria was studied by Agbeja et al (2016), who looked at the impact of counterparty risk and currency rate risk. Seven banks were randomly chosen over the course of five years, and pretax profit was analyzed in relation to the percentage of bad loans they held. The risk was evaluated with the use of secondary data and an auto-regression conditional model. Bank performance and profitability were shown to be significantly impacted by counterparty risk and exchange rate risk. Therefore, it was recommended that the government implement a strict but dynamic lending policy and regulate the exchange rate carefully in order to boost the economy.

The impact of fluctuations in the foreign currency rate on the earnings of commercial banks listed on the Nairobi Stock Exchange was studied by Carolyn and Daniel in 2016. Time series correlation analysis was applied to all commercial banks traded on the Nairobi Securities Exchange between 2006 and 2013. We relied heavily on the yearly reports that the Central Bank of Kenya published on its member banks. Multivariate Linear Regressions were used to establish relationships between changes in exchange rates, inflation, interest rates, and measures of banks' performance. Pearson's product-moment correlation was used to determine the degree of inter-variable association ( $r$ ). The relationship between the foreign exchange rate and financial performance indicators was found to be statistically significant.

Ismaila (2016) analyzes the influence of the SAP and post-SAP eras on economic growth and currency exchange rates in Nigeria. However, the analysis found that broad money supply, net export, and total government spending all had substantial roles in the country's long-term real production performance, but the exchange rate played no influence at all.

The impact of currency changes on Nigeria's economic progress was studied by Amassoma and Odeniyi (2016) using annual data spanning 43 years (1970 – 2013). We employed a standard deviation technique to measure the amount of uncertainty introduced into the model and its effect on the results of the research. This study uncovered evidence that naira devaluation has a favorable but nebulous effect on the long- and medium-term growth of the Nigerian economy. The government of Nigeria was able to handle numerous other key macroeconomic elements that may irritate exchange rate, which helped to cushion the blow of the currency's volatility during the study period. That raises the possibility that the government of Nigeria took steps to lessen the effect of fluctuations in the currency market on economic growth.

### **3.4. Research Gap**

Following an examination of related empirical studies, it is clear that most of the studies conducted in Nigeria only looked at few measures of exchange rate, rather than combining other attributes to investigate pattern of exchange rate fluctuation in Nigeria (such as growth rate, financial leverage, firm size, and so on). There is a dearth of study that combined other measures of exchange rate in examining the financial performance in Nigeria. It is on this premise that this study was carried out to examine the relationship that exists between exchange rate fluctuation economic factors and financial performance of listed oil and gas firms in Nigeria. However, the majority of these research were conducted in settings quite different from those seen in Nigeria. The studies' time horizons were too narrow, the studies' methods were inadequate, and the studies' conclusions were inconsistent because they did not employ the core variable that captures exchange rate. These gaps in the literature call for a more thorough investigation of how changes in the value of the naira affect the bottom lines of international oil and gas corporations operating in Nigeria.. The study chose to combine larger variables so as to increase the explanatory power of the model adopted in this study.

#### 4. Methodology

The study used an ex post facto quantitative research design, which was deemed appropriate for this study. The participants in this study were eleven oil and gas companies listed on the Nigerian Group Exchange (NGE) as at March 5, 2021. Only eight listed oil and gas companies that have regularly operated on the NSE for the past 15 years, from 2006 to 2020, were chosen using a purposeful sampling technique. The study employed only secondary data which was extracted from the annual reports of the selected firms. The data for this study include return on asset, foreign exchange fluctuation rate, real exchange rate, nominal exchange rate, firm size, growth rate. The measurements were constructed based on previous empirical literature on how exchange rate fluctuation affects the financial performance.

The independent variables exchange rates fluctuations and economic factors was proxies by foreign exchange rate fluctuation, real exchange rate, nominal exchange rate, interest rate spread, firm's size, financial leverage and businessrisk while the dependent variable financial performance was surrogated using return on assets.

**Table 1. Description of Proxies for Variables of the Study**

S/N	VARIABLES	SYMBOL	MEASUREMENT	PREVIOUS STUDIES
<b>Dependent Variable</b>				
1	Return on Assets	ROA	Net Profit After tax/ Total Asset	Rouf and Abdul,(2015), Alkassim, (2005)
<b>Independent Variables</b>				
1	Foreign exchange Rate fluctuation	FXRF	Standard Deviation against foreign currency	Ugwunta and Okanya, (2013)
2	Real Exchange Rate	REER	Nominal exchange rate multiplies by stock price	(Asher, 2012)
3	Nominal Exchange Rate	NOER	Consumer Price Index on fuel price	Osiegbu and Onuorah (2012)
4	Interest Rate Spread	INRS	Lending Rate-Interest rate on fuel price	Kalu, and Igwe-Kalu (2016)
5	Firm Size	FSIZE	Natural log of Total Assets	Diala et al., (2016).
6	Financial Leverage	FLV	Total debts/ Total Assets	Alaeto, (2020)
7	Business Risk	BSR	Current - Previous OP/ Previous OP	Agbeja et al., (2016)

*Source: Researchers' Compilation, (2022)*

### 3.1. Model Specification

The study adopted a similar regression model from the study of Agbeja et al.,(2016) which was modified to capture the relevant variables supported with empirical evidence. This model aided in the testing of the study's stated hypothesis as well as the achievement of the stated objective. The model's functional specification is written as follows:

$$ROA = f (FXRF+REER+NOER+INRS+FSIZE + FLV+BSR) \quad (3.1)$$

These are the econometric parameters:

$$(ROA)_{it} = b_0 + b_1(FXRF)_{it} + b_2(REER)_{it} + b_3(NOER)_{it} + b_4(INRS)_{it} + b_5(FSIZE)_{it} + b_6(FLV)_{it} + b_7(BSR)_{it} + \epsilon_{it} \quad (3.2)$$

Where:

ROA = Return on Assets

FXRF=Foreign exchange Rate Fluctuation,

REER = Real Exchange Rate

NOER= Nominal Exchange Rate

INRS= Interest Rate Spread

FSIZE= Firm's Size

FLV= Financial Leverage

BSR = Business Risk

$b_0$  = Intercept for X variable of company

$b_1 - b_9$  = Explanatory variable coefficients for firms, revealing their associations with the dependent variable (or parameters),

$e$  = Error term

$i$  = cross sectional of the variables

$t$  = Time series

Both descriptive and inferential statistics were used to analyze data from 2006 to 2020. This study made use of inferential statistics, namely correlation and regression analysis. Pearson correlation was used to determine the strength of the links between the factors of interest, and the panel data regression method was used to examine the hypothesized connection between explanatory variables and return on asset.

## 4. Results

### 4.1. Descriptive Statistics

The analysis covered listed firms in Nigeria selected based on the availability of data. Table 2 depicts the descriptive statistics of the variables used in this study.

**Table 2. Descriptive Statistics for the Selected Listed Oil and Gas Firms**

Variables	No of Observations	Mean	Standard Deviation	Minimum	Maximum
Return on Assets	110	0.4250	0.4660	0.0000	2.0200
Foreign Exchange Fluctuation Rate	110	42.7500	12.5557	12.0000	69.0000
Real Exchange rate	110	0.2138	0.5331	-0.6700	3.8100
Nominal exchange rate	110	0.7390	0.2710	0.1000	2.4800
Interest rate spread	110	1.09000	0.9251	0.1900	9.5700
Firm size	110	7.8517	11.1863	-14.2000	43.5800
Business Risk	110	0.0908	7.2521	-15.6600	74.4400
Financial leverage	110	0.4487	0.2442	0.0700	0.9000
Valid N (Listwise)	110				

*Source: Authors' Computation, (2022)*

Table 2 shows that the average return on asset of publicly traded oil and gas companies in Nigeria is 42.50%, with a minimum of 0.00 % and a maximum of 202.00 %, and a standard deviation of 46.60 %, indicating that the return on asset deviates significantly from the mean on both sides by 46.60 % among oil and gas companies listed on NSE.

Return on asset, foreign exchange fluctuation rate, Real Exchange rate, nominal exchange rate, liquidity ratio, firm size, business risk, and financial leverage have mean values ranging from 0,09 percent to 42.75 percent, with standard deviations 0.4660,12.5557,0.5331,0.2710,0.9251,11.1863,7.2521 and 0.2442 respectively. This indicates a wide variation in the measures of exchange rate fluctuation among the selected oil and gas companies.

### 4.2. Analysis of Correlation

Table 3 displays the correlation matrix for the variables used to investigate the association between seven (7) explanatory variables and the return on asset (dependent variable), as well as between explanatory variables.

**Table 3. Correlation Matrix of All Variables (2006 -2020)**

VARIABLES	ROA	FXRF	REER	NOER	INRS	FSIZE	FLV	BSR
ROA	1.000							
FXRF	0.0767	1.0000						
REER	0.0953	-0.0523	1.0000					
NOER	0.3868	0.2003	0.4718	1.0000				
INRS	0.0188	0.0313	-.1685	-.2902	1.0000			
FSIZE	0.0985	-.2750	0.0074	0.0001	-.1431	1.0000		
FLV	0.0750	0.0715	-.0968	-.0599	0.0637	-.4660	1.0000	
BSR	0.3002	0.0979	0.1587	0.4564	-.0485	0.0677	-.0333	1.0000

*Source: Authors' Computation, (2022)*

Indicating the strength of the linear relationship between the explanatory variables, the correlation coefficients fall between -27.50% and 45.64%. Gujarati (2004) claims that multicollinearity becomes an issue only when the pair-wise correlation coefficient between regressors is more than 0.80. From what can be seen in Table 3, most of the cross-correlation terms for the explanatory variables are rather small. This suggests that there is no cause for worry about multicollinearity among the explanatory variables.

### 4.3. Robustness Test

The results of the Variance Inflation Factor are shown in Table 5 (VIF). The threshold value for multicollinearity VIFs is between 5 and 10. That's why 1.22 is the average VIF across all variables and 1.32 is the maximum VIF number found by FXRF. Consequently, there is no multicollinearity issue across the variables in the research since all threshold VIF values produced are less than 5.

**Table 5. Variance Inflation Factor**

Variables	VIF	Tolerance
FXRF	1.32	0.802432
REER	1.16	0.861157
NOER	1.22	0.882099
INRS	1.16	0.862564
FSIZE	1.16	0.859906
FLV	1.22	0.887567
BSR	1.01	0.987725
<b>MEAN</b>	<b>1.22</b>	

*Source: Authors' Computation, (2022)*

Where: FXRF = Foreign exchange Rate Fluctuation, Real Exchange Rate = REER, Nominal Exchange Rate = NOER, Interest Rate Spread = INRS, Firm's Size = FSIZE, FLR = Financial Leverage, BR = Business Risk

#### 4.4. Panel Unit Root test of the Variables

Levin, Lin and Chu test result in Table 6 indicated all the variables exhibit stationarity at no differences level.

**Table 6. Panel Unit Root Test of the Variables**

Variable	Statistic	P-Value
ROA	-3.0738	0.0011
FXRF	-2.9385	0.0016
REER	-7.9547	0.0000
NOER	-9.3079	0.0000
INRS	-8.5729	0.0000
FSIZE	-9.1848	0.0000
FLV	-4.3126	0.0000
BSK	-7.1753	0.0000

*Source: Authors' Computation, (2022).*

Where: ROA = Return on Assets (proxy for profitability), FXRF = Foreign exchange Rate Fluctuation, Real Exchange Rate = REER, Nominal Exchange Rate = NOER, Interest Rate Spread = INRS, Firm's Size = FSIZE, FLV = Financial Leverage, BSR = Business Risk

#### 4.5. Effect of Exchange Rate Fluctuation Economic Factor and Financial Performance

**Foreign Exchange Rate Fluctuation (FXRF):** For the time period under consideration, a one-unit increase in the foreign exchange rate is associated with a decrease in return on asset (ROA) of -0.0021, as measured by the coefficient of FXRF, which is negative at -0.0021 with t-Statistics of 0.000, which is less than the 5 percent level of significance.

**Real Exchange Rate (EEER):** A unit rise in real exchange rate is associated with a -8.01-unit decline in return on asset (ROA) across the research period, as shown by the coefficient of real exchange rate (REE) being negative at -8.01 and t-Statistics of 0.049, which is less than the 5% threshold of significance

**Firm Size (FSIZE):** The t-statistic of 0.038 (smaller than the critical value of 0.05) and the coefficient of firm size (FSIZE) of -0.0031 show that company size has a

negative and statistically significant influence on return on asset throughout the study period.

**Business Risk (BSR):** As the t-statistic for the coefficient of business risk (BSR) is 0.024 (less than the 5% threshold of significance), it is evident that business risk has a negative and significant influence on return on asset throughout the study period

**Nominal Exchange Rate (NOER):** Since the nominal exchange rate (NOER) coefficient is 1.391 and the t-statistic is 0.000, we may conclude that the NOER has a positive and statistically significant influence on ROA (ROA). If the NOER increases by one unit, the ROA will rise by 1.391 units..

**Interest Spread Rate (INSR):** Interest spreading had a positive and negligible impact on ROA throughout the research period, as shown by a positive coefficient of real exchange rate (INSR) of 0.017 and a t-statistic of 0.000. If the interest rate (INSR) rises by one unit, the return on investment (ROI) will rise by 0.17 units.

Nonetheless, the outcomes of diagnostic tests including the Wald test, the Sargan test of instrument validity, and the Arellano-Bond test for higher order serial correlation AR (2) are shown in the last section of Table 7. There is an excellent match between the data and the model, as shown by the Wald chi2 statistic (6570.50,  $p = 0.000$ ). Sargan's test statistic is 58.75, corresponding to a probability of 0.273. In addition, the Z-statistic of the second order autocorrelation test AR (2) is 1.1602, with a probability value of 0.2460, as shown by the Arellano-Bond test for zero autocorrelation in first-differenced errors. Therefore, the absence of autocorrelation, the null hypothesis of the test, cannot be rejected. Therefore, the autocorrelation of the model is fine. As a consequence, the diagnostic statistics supported the findings' applicability to policy inference.

**Table 7. Effect of Exchange Rate Fluctuation Economic Factor on Financial Performance**

<b>Explanatory variables and other statistics</b>	<b>ROA Model (Two Step)</b>
ROA <sub>t-1</sub>	<b>0.1155**</b> (0.000)
FXRF	<b>-0.0021**</b> (0.000)
REER	<b>-8.01**</b> (0.049)
NOER	<b>1.395**</b> (0.000)
INSR	<b>0.017**</b> (0.000)
FSIZE	<b>-0.00031**</b> (0.038)
FLV	<b>-0.00867**</b>



	(0.002)
BSR	<b>-0.0555</b>
	(0.024)
Constant	<b>0.6314**</b>
	(0.000)
Wald chi2 Statistic	6570.50 (0.000)
Sargan Test	58.75 (0.273)
First order autocorrelation test	-1.8312 (0.0671)
Second order autocorrelation test	1.1602 (0.2460)
Firms	11
Observations	110

*Source: Authors' Computation, (2022)*

*Note: \*\*, means significant at 5%. Bracket ( ) are p-values*

Where: ROA = Return on Assets (proxy for profitability), FXRF = Foreign exchange Rate Fluctuation, Real Exchange Rate = REER, Nominal Exchange Rate = NOER, Interest Rate Spread = INRS, Firm's Size = FSIZE, FLV = Financial Leverage, BSR = Business Risk

#### 4.6. Discussion of Findings

Since investors and analysts expect firms to keep doing well, NOER has a positive and significant effect on ROA. This means that firms with a good proportion of nominal exchange rate using ROA to avoid decreases or losses. The results of this study agree with those of Olaniyan et al.,(2020) and Olufayo and Adegbite. (2014), but not with those of (Marfatia, 2014; Laurenceso., 2014). In the same vein, INSR had a positive and significant effect on ROA. This means that the interest spreading rate of oil and gas listed firms in Nigeria affected their ROA. The results corroborate with the research findings of (King George, 2013; Nwachukwu and Odigie, 2009; Jimoh, 2013) carried out in Indonesia and Nigeria respectively, but differ from (Hasan, 2016). Otherwise, FXRF had a significant and negative effect on ROA. This means that Nigerian Foreign exchange rate fluctuation is a big catastrophe to most of cross boarding business through firm listed because the unstable exchange rate takes huge part of their profit which is their ROA. The results back up the research of Ayodele, (2014) and Ani et al (2013), for listed oil and gas in three sub-Saharan African countries and Davis and Emerenini (2015), for companies in the UK, but they are different from outcome of Eregha (2015).

However, the negative and significant effect of FLV on BSR suggests that fluctuation in exchange create a great loss to most of the oil and gas firm ,the high income linkage weaken the strength of their financial leverage ,consistent change in the price of goods and service makes most companies suffers great loss and expose them to great risk ,the profit which they suppose to use to expand their firms size, increase their staff welfare protect the their companies from exposing to bankruptcy

through ROA. The result contrasts with the research findings of (Das and Das, 2012; Ani et al, 2013). Similarly, the negative and significant effect of FSIZE on ROA implies that firms under study did not engage in ROA through FSIZE. These results agree with the research findings of Akiri and Adofu, (2015), but differ from Adeniran (2014).

Several studies have been undertaken on factors affecting exchange rate fluctuation in Nigeria. Most of these studies were conducted examining fewer measures of foreign exchange without combining other measures (such as business risk, firm size and financial leverage etc.) as determinants of exchange rate fluctuation in Nigeria. This is exactly what this study attempted by investigating the relationship that exists between exchange rate fluctuation economic factors and financial performance of listed oil and gas firms in Nigeria. A number of logical inferences were drawn based on the empirical evidence and findings of this investigation.

The study therefore, concluded that exchange rate fluctuation economic factors have strong statistical relationship with the financial performance of listed oil and gas companies in Nigeria. This viewpoint was established using inference statistics, which confirmed the existence of a significant effect with a p-value less than 5% threshold of significance. The study recommends that financial leverage, firm size and business risk are important microeconomic variables to consider when the management of listed oil and gas companies in Nigeria mediates on foreign exchange fluctuation. Further recommendations are:

1. To lessen the extent of exchange rate fluctuations, the appropriate authorities should take necessary steps to protect the value of the native currency.
2. Firms in the oil and gas industry would be wise to conduct frequent analyses of the impact of fluctuations in the nominal exchange rate on their income from upstream and downstream oil exploration in order to mitigate the negative impact of such fluctuations on their financial performance.
3. The excessively high interest rate created by the oil and gas company has to be brought down to a more reasonable level. The goal is to encourage a healthy level of investment within the economy, which in turn will spur growth.
4. To mitigate the negative impact of a fluctuating real exchange rate on an oil and gas company's bottom line, regulators should pay attention to the aggregate effect of real exchange rate and make sure that policy is in place to require companies in the industry to assess the impact of real exchange rate on their revenue streams.

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