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Exchange Rate Volatility and Oil Price Shocks in Nigeria

BAYEM, Sylvanus A[1]. (MSc Candidacy)
Department of Banking and Finance,
Faculty of Management Sciences,
Delta State University, Abraka

EHIEDU, Victor C[2]. (PhD)
Department Banking and Finance
Faculty of Management Sciences
Delta State University, Abraka Campus,
Delta State, Abraka.

AGBOGUN, Ernest O[3]. (MSc Candidacy)
Department of Banking and Finance,
Faculty of Management Sciences,
Delta State University, Abraka

ONUORAH, Anastasia C[4]. (PhD)
Department of Banking and Finance,
Faculty of Management Sciences,
Delta State University, Abraka

Abstract
Given the idea of Nigeria's economy with unrefined petroleum as its essential product ware, vacillations in oil costs affect the Nigerian economy and, specifically, swapping scale developments. The last option is especially fundamental as a result of the country's double problem of being an oil exporter and an oil merchant, which has arisen in the earlier ten years. Utilizing yearly information from 1982 to 2020, the paper checked out the impacts of oil cost, foreign reserves, and rate of interest on money rate instability in Nigeria. This study's theoretical foundation is based on Tim Bolerslev's (1986) Generalized Autoregressive Conditional Heteroskedasity model and Daniel Nelson's Exponential General Autoregressive Conditional Heteroskedastic model (1991). The models are used to calculate the link between changes in oil prices and the exchange rate. We used descriptive and econometric studies that were relevant. When unit root tests were performed, the econometric tests employed were unit root tests, Johansen co-integration approach, and the Vector Error Correction Model (VECM); all variables were stationary at first difference. The vector correction mechanism was used to analyze the speed with which the variables adjusted from short run dynamics to long run dynamics, while the Johansen Co-integration technique was employed to determine the long run relationship between the variables. It has been seen that a 2.8% ascent in currency rate instability in Nigeria is brought about by a comparing shift in oil cost. Thus, this study suggests that the Nigerian government broaden its economy away from oil and into different areas with the end goal that raw petroleum is presently not the backbone of the economy and that incessant vacillation in raw petroleum costs affects the volatility of Nigeria's rate of currency exchange.

Key Words: *Oil Price, Exchange Rate, Exchange Rate Volatility, Interest Rate, External Reserve*

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I. Introduction

Various evidences, particularly from the post-Breton Woods era, attest to the importance of oil price variations in determining the exchange rate's direction (AdeniyiOmisakan, Yaqub and Oyinlola 2016). As indicated by Krugman (2015), in oil selling nations, currency rates improves in light of rising oil costs and cheapen because of dropping oil costs, while the opposite is normal in oil bringing in nations. A variable currency rate, according to Englama, Duke, Ogunleye, and Isma (2016), makes worldwide exchange and

ventures more troublesome by expanding conversion scale hazard. Swapping scale instability builds the danger and capriciousness of outer exchanges, inclining a country toward conversion standard dangers (Jin, 2018).

As per Adedipe (2016), when Nigeria got political autonomy in October 1960, agro-based creation was the pillar of the economy, representing more than 70% of GDP, utilizing generally 70% of the functioning populace, and representing roughly 90% of unfamiliar government income. The manufacturing area's commitment to GDP expanded from 4.8 percent to 8.2 percent during the early post-freedom time frame until the mid-1970s; in any case, as raw petroleum turned out to be more crucial for the worldwide economy, this example modified. As unrefined petroleum turned into a product item in Nigeria in 1958, following the revelation of the principal producible well in 1956, the commitment of oil to central government income expanded from 26.3 percent in 1970 to 82.1 percent in 1974, and represented 83% of national government income in 2008, according to Englama et al., (2016). The 1973 Middle East war triggered a massive increase in oil revenue. It resulted in unprecedented, unexpected, and unanticipated prosperity for Nigeria, and the naira strengthened as inflows of foreign exchange countered outflows, and Nigeria's foreign reserves assets grew (Adedipe, 2016).The economy of Nigeria progressively became reliant upon raw petroleum as usefulness declined in different areas (Englama et al., 2016).

Nigeria has been essentially a mono-product economy since the commercial discovery of oil. Nigeria's overall export revenue in 2019 was US$140,579 million, with income from petroleum exports accounting for US$161,804 million, or around 87.6% of total export revenue. The Nigerian economy's full reliance on oil export revenue has increased the country's vulnerability to oil price fluctuations.

Factors, for example, ideal oil cost shocks set off by struggle in oil-creating nations all over the planet, expansions in product interest by consuming countries because of irregularity factors, exchanging positions, etc. all add to Nigeria's good terms of exchange, as proven by her enormous flow account excess and swapping scale appreciation. At the point when raw petroleum costs are low because of elements like helpless interest, irregularity, and surplus creation, Nigeria experiences negative terms of exchange, as demonstrated by a spending plan shortage and slow financial development (Englama et al., 2016).During the worldwide monetary crisis in 2009, one model was a decrease in income from international oil sale out. Oil send out income tumbled from US$174,033 million of every 2008 to US$43,623 million out of 2019, as per the OPEC measurable release (2019/2020), while the naira devalued to N368.902 in 2019 from N311.546 in 2018.

The motivation behind this study is to perceive how much the cost of oil impacts conversion scale instability in Nigeria. Since raw petroleum is a crucial wellspring of energy in Nigeria and all over the planet, changes in its cost straightforwardly affect the entry of unfamiliar money into the country. Therefore, there is a need to explore its effect on the naira conversion scale instability. Oil, as a vital piece of Nigeria's economy, affects the nation's financial and political destiny. Raw petroleum has brought Nigeria incredible cash, yet its effect on the country's monetary development as far as returns and usefulness is as yet disputable (Onuorah &Appah, 2012; AL-Ezzee, 2017).

Nigeria has disregarded its strong agriculture and light industry roots in favor of an unhealthy dependence on crude oil from the 1970s to the present. New oil income has sparked a downturn in other sectors of the economy, driven significant migration to cities, and resulted in an increase in poverty, particularly in rural areas. As a result, Nigeria's job sector has seen a high rate of unemployment, low pay, and deplorable working conditions (Adedipe, 2016; AL-Ezzee, 2017).Nigeria's poverty rate climbed from 36% to just under 70% between 1970 and 2000, and it is thought that oil wealth did not help to raise the standard of living at the time, but rather lowered it (Xavier & Subramanian, 2018).

Oil price changes have gotten a lot of attention because of their alleged impact on macroeconomic indicators. Higher oil expenses might slow monetary development, cause securities exchange frenzy, and cause expansion, all of which can prompt money related and monetary insecurity. It will likewise bring about exorbitant loan fees and perhaps a downturn (Mckillop, 2019). Sharp expansions in worldwide oil costs, just as unpredictable cash rates, are generally perceived as variables that smother monetary advancement (Jin, 2018).During the worldwide monetary crisis, the cost of oil fell by more than 66% from its pinnacle of $147.0 per barrel in July 2008 to $41.4 per barrel toward the finish of December 2008. Before the emergencies, oil costs were high and the conversion standard was steady, yet as the worldwide monetary crisis (GFC) unfurled, oil costs plunged and the swapping scale fell, downgrading by over 20%. Since oil value unpredictability straightforwardly affects unfamiliar trade inflows into the nation, it's vital to check whether it likewise straightforwardly affects Naira swapping scale instability (Englama et al., 2016), (Ehiedu, and Olanye, 2014).

The oil market has forever been, and will keep on being, a unique one. This is because of the way that oil is so vital to the worldwide economy, that it overruns everybody's daily existences, and that its market is really around the world (Mordi, 2016). Hence, the reason for this study is to explore the effect of oil value instability on conversion scale unpredictability and its repercussions on the Nigerian economy, just as to propose procedures for diminishing the adverse consequences it can have on the economy in general.

To decide the effect of oil costs on the Nigerian conversion scale, the review utilizes an econometric methodology. To decide the drawn out connection between oil cost and swapping scale instability, the Johansen greatest probability test is performed. The cost of unrefined petroleum and trade rates are significant exploration themes since both affect macroeconomic conditions like financial turn of events, global business, expansion, and energy the board. The relationships between the two have been investigated, mostly for interaction and causality recommendations. Changes in the price of crude oil have been proved to be a crucial factor in explaining foreign exchange rate swings in previous decades (Adeoye&Atanda, 2015).

While many research have looked into some part of the relationship between international oil prices and currency rates, a few questions remain, such as whether there is a major link between oil prices and exchange rate determination in Nigeria. Is there a symmetric influence on exchange rate volatility when positive and negative shocks to oil prices occur?

II. Literature Review

2.1 Conceptual Review

2.1.1 Oil Price in Nigeria: A Historical Perspective

The global oil cost was entirely steady from the finish of the 1940s until the start of the 1970s, with just minor vacillations. Then, at that point, from the mid 1970s through the mid 1980s, the cost of oil climbed much past assumptions because of OPEC's rising and disturbances in unrefined petroleum supply. OPEC's command over oil was first seen during the Yom Kippor War, which started in 1973. Because of the United States and Europe's sponsorship for Israel, OPEC forced an oil ban on western nations. Oil creation has been cut by 5,000,000 barrels for each day.The slice back added up to around seven percent of the world creation and the cost of oil expanded 400% in a half year.

Unrefined petroleum costs were sensibly consistent from 1974 to 1978, going somewhere in the range of $12 and $14 per barrel. Then, at that point, somewhere in the range of 1979 and 1980, because of the Iranian insurgency and the Iraq war, worldwide oil creation declined by 10%, making unrefined petroleum take off from $14 to $35 per barrel. Purchasers and organizations were being incited to save energy because of rising oil costs. Individuals purchased vehicles that could deal with their fuel, while organizations purchased machines that were more eco-friendly (Sharma 1998).

Oil prices rose, allowing non-OPEC countries to expand their search and production. From 1982 to 1985, OPEC attempted to stabilize the price of oil by producing quotas, but safeguarding measures, the global economic disaster, and erroneous quotas generated by OPEC member countries all contributed to oil prices falling below $10 per barrel.

Since the mid-1980s, oil price changes have been more frequent than in the past. OPEC has attempted to affect oil price stability by allocating production quotas to its member countries, but has proven unsuccessful. OPEC's share of global oil output has decreased from 55% in 1976 to 42% currently.

Oil costs have an assortment of impacts on the economy. Transportation costs, warming uses, and the costs of merchandise made with oil based goods are on the whole straightforwardly impacted by changes in oil costs. Oil value floods make more vulnerability about the future, influencing spending and venture choices by shoppers and organizations. Changes in oil costs likewise cause redistributions of work and capital between energy-concentrated and non-energy-escalated areas of the economy (Spatafora&Stavrev, 2019).

2.1.2 Exchange Rate Volatility

It is broadly reported in the writing that keeping up with relative steadiness or getting the conversion standard right is basic for both inside and outside balance, just as monetary development. The rate of currency exchange is the main value variable in an economy since it fills in as an ostensible anchor at neighborhood costs while likewise guaranteeing worldwide intensity (Mordi 2016).

Currency exchange instability alludes to swings or varieties in return rates over the long haul or deviations from a harmony conversion standard. There might be varieties from the balance conversion standard where there are many business sectors running simultaneously with the authority market. At the point when supply, request, or both are probably going to react to huge irregular shocks, unpredictability throughout any time span stretch will in general ascent, and when the versatility of both market interest is low, value instability will in general be low (Obadan 2016).

When the exchange rate is not fixed, it is vulnerable to fluctuations, making the floating exchange rate more volatile. The level of volatility and the degree to which currency rate stability is maintained are influenced by economic fundamentals. Strong fundamentals lead to favorable economic conditions and outcomes, which in turn lead to the currency appreciating and maintaining stability (Mordi 2016).

2.1.3 Measuring Exchange Rate Volatility

There has been no agreement among economists on the proper approach for gauging volatility in the enormous literatures on exchange rate volatility. The lack of consensus on this subject reflects a number of variables, as diverse theories are unable to provide definitive direction on which metric is the most appropriate. Furthermore, the type of measure to be used will be determined by the study's scope. It is necessary to evaluate the time period over which fluctuations are to be recorded, as well as whether it is unlimited volatility or a sudden movement in the exchange rate parallel to its expected value.Finally, in shaping the applicable measure of exchange rate to be used, the level of collective trade flows should be taken into consideration.

How much money rates are a wellspring of hazard and vulnerability because of their high not set in stone by how much conversion scale changes are unsurprising. The anticipated component of the arrangement can be supported away utilizing supporting, bringing down the expense of exchange. Despite the fact that involving the forward rate as a marker as an issue with anticipating future trade rates, and showing the conversion scale hazard with errors between the current spot rate and the previous period forward rate, a sensible measure is utilize the forward rate as a sign of things to come spot rate, and demonstrating the conversion scale hazard with the inconsistencies between the current spot rate and the prior period forward rate, despite the fact that involving the forward rate as a pointer as an issue with foreseeing future trade rates, adding to the reality.

According to Olayungbo (2019), a number of factors should be considered, ranging from structural models to time series equations using ARCH/GARCH techniques. The standard deviation of the initial variation of logarithms of the exchange rate is the most often used metric for calculating volatility. The result will not be a source of uncertainty if the exchange rate is on a steady trajectory that can be easily foreseen. The standard deviation is measured over a one-year period to identify short-term volatility, while a five-year timeframe is utilized to determine long-term variability.

2.1.4 Oil Price and Exchange Rate

According to Adedipe (2016) the different exchange rate regimes in Nigeria can be classified into different periods relating to vagaries in the international oil market.

The Post-Independence Era (1960-1971):

To maintain parity, the Nigerian currency was tied to the British pound sterling (GBP) through administrative methods. Nigeria adopted the US dollar after the devaluation of the British pound in 1967, which was thought to be better for supporting import substitution industries that rely largely on net imported inputs. During this time, the Nigerian pound sterling was overvalued, preventing ideal agricultural and export-oriented growth.

The Oil Boom Era (1972-1986):

The currency rate followed the same path as oil prices throughout this time, and the naira remained overvalued as a result of the massive increase in foreign exchange revenues. Until 1972, when the GBP was floated and then pegged to the US dollar, this currency was anchored to the GBP. In 1978, however, the naira was tied to a basket of Nigeria's 12 key trading partners' currencies. In 1985, this was changed, and the Naira was re-quoted against the US dollar.

The Post–Sap Era (From 1986):

In an ongoing effort to reorganize the economy away from oil dependency, the Naira was subjected to a managed float regime. The goal of the 1986 deregulation of the foreign exchange market was to reveal the true value of the naira in order to stimulate oil-non-oil exports. As a result, the exchange rate fell from N0.89388/US$ at the end of 1985 to N2.0206/$ at the end of 1986. This was done in the hopes of boosting non-oil exports, and the naira was further depreciated by 44 percent in March 1992, to N17.2984/$.

2.2 Theoretical Framework

Writing has recognized an assortment of hypothetical connections between oil cost and trade rates (Osuji, 2015). Oil value changes have stood out enough to be noticed in light of their supposed effect on macroeconomic markers. Since two critical oil value shocks hit the worldwide economy during the 1970s, financial analysts, policymakers, and the overall population have been worried about the impacts of huge ascents in oil costs on macroeconomic pointers (Oriakhi and Osaze, 2019). It is doubtful whether the swapping scale is the most provoking macroeconomic variable to experimentally show. The cost of oil has been contended in various articles to significantly affect the conversion standard. The possibility that the cost of oil could be adequate to clarify all drawn out changes in the genuine swapping scale has all the earmarks of being novel (Al-Ezzee, 2017).

Nigeria, as other low-pay nations, has set up two essential swapping scale systems to accomplish inner and outer equilibrium. The objective of this uncommon methodology is to keep the conversion scale consistent (Yip, Tan, Habibullah and Khadijah, 2019). The non-oil economy, capital arrangement, and per capita pay are

completely hurt by a fluctuating genuine swapping scale because of ominous vacillations brought about by unpredictable oil costs (Umar and Abdulhakeem, 2018).Significant misalignments in the conversion standard may bring about a shortage of result and extreme monetary torment.

2.3 Empirical Review

For oil trading nations, observational exploration on the job of oil cost as a driver of genuine swapping scale has delivered a few bewildering results. (2019, Rickne) According to observational investigations, there has all the earmarks of being a fairly significant relationship between genuine oil costs and genuine trade rates in various countries (Plante 2018).

According to Korhonen and Juurikkala (2017), expanded unrefined petroleum costs cause a genuine swapping scale appreciation in oil trading nations, which isn't shocking given how much cash they make from oil sends out. There is a critical relationship between genuine oil costs and genuine trade rates for oil-bringing in nations; proof has been displayed for Spain (Lizardo&Mollick, 2018).

Spatafora and Stavrev's (2020) research of the Russian economy confirms the sensitivity of Russia's equilibrium real exchange rate to long-run oil prices. Also, Jebbin and Osu (2017) observed a drawn out sure relationship in Russia between the genuine oil cost and the genuine reciprocal swapping scale versus the Euro. Between the 1970s and 2008, varieties in the worth of the US dollar against significant monetary forms were chiefly clarified by oil costs, as per Lizardo and Mollick (2018). They found that as oil costs rise, the monetary forms of oil merchants like China depreciate. Increases in oil costs, then again, make the US dollar devalue perceptibly in net oil exporters like Canada, Mexico, and Russia. In any case, Akram (2019) notices critical verification that oil expenses and Norwegian exchange rates don't have a straight relationship.

The work of Ehiedu,V.C, OditaA.O, & Kifordu, A.A (2020),also reconciled the disequilibrium which exists in the short and long run relationships of the variables in the models. The result showed a non-significant degree of openness but positively associated with gross domestic product. Foreign private investment was strongly and statistically significant to gross domestic product. It was therefore recommended that for Nigeria financial sector services to take substantial benefits of broad participation in globalization, the provision of sound macroeconomic policy framework with high degree of certainty of the future of investment is needed.

Guo and Kliesen (2018) assess the portion of conversion scale varieties brought about by different oil shocks utilizing the Blanchard-Quah distinguishing proof methodology. They found that genuine oil shocks delivered the greater part of the change in genuine conversion standard developments over all skylines, utilizing quarterly information from 1974 to 1992 and contrasting the United States of America with four particular countries (Germany, United Kingdom, Japan, and Canada). Using data on certifiable effective exchange rates for Germany, Japan, and the United States of America, Amano and Norden (2016) observed that over time, authentic oil cost is the primary variable in influencing veritable exchange rates.

Assuming the usefulness of tradable merchandise is higher than that of non-tradable products in different countries, the genuine swapping scale might rise. This is the Balassa-Samuelson speculation, which was proposed by Balassa and Samuelson in 1964. (1964). The Balassa-Samuelson impact, as per Bagella, Becchetti, and Hasan (2018), is the component by which the genuine swapping scale appreciates because of changes in relative productivity. Given that oil is the chief commodity great driving the terms of exchange oil sending out countries, we use the genuine oil cost as an intermediary of the terms of exchange and explore the effect of oil value instability and usefulness differentials on the genuine conversion standard. The cost of the major sent out great is every now and again utilized as a proportion of the terms of exchange practice(Korhonen. &Juurikkala, 2017).

Abdulkareem and Abdulhakeem (2016) used a panel of 16 underdeveloped countries to give significant proof of the Balassa Samuelson effects. According to the Onuorah, Ehiedu, & Okoh, (2022) and Ayadi (2015) survey, the trend appreciation in the real exchange rate seen in Central and Eastern European countries in the early 2000s was caused by the Balassa effect. Even though other factors were also at play, the projected Balassa effect goes some distance toward understanding the true appreciation, according to the writer.

Using an extended version of the Balassa-Samuelson model, Azeez, Kolapo, and Ajayi (2017) find evidence that changes in oil prices had a significant effect on the real exchange rate from 1996 to 2003, and that the Balassa-Samuelson working through productivity changes may exist, though its economic significance may be small.

In a study of over 50 commodity exporting poor nations, Cashin, Céspedes, and Sahay (2016) discovered a long-run association between exchange rate and the price of the exported commodity in one-third of their sample. Bhattacharya and Bhattacharya (2019) proved the positive benefits of world oil prices for Nigeria's exchange rate.

The study of Ehiedu, Onuorah and Okoh (2021) on Automated Teller Machine (ATM) Penetration and Financial Inclusiveness in Nigeria: proved that Financial inclusion is the ability to encourage economic growth through investments in oil, none oil, education and also an access to entrepreneurial capital Developments.

Individuals are also given the ability to invest in their well-being, as well as efficiently handle volatility shocks. The study population is confined to ATM penetration concerning financial inclusiveness in Nigeria. Data were sourced from CBN and World Bank Data Bank (2019). Consequently, the aggregate ATM penetration, (bank branches, ATM and loans penetrations) and financial inclusiveness (Number of internet users) measures were obtained for this study. On basis of the above, a multivariate regression model was employed. The R-Squared is 0.67 indicating that the independent variables jointly explained about 67% of the systematic variations in the financial inclusiveness index respectively. The result further revealed that the wider the geographical coverage of ATM, the higher the level of financial inclusiveness in Nigeria. Put differently, wider coverage of ATM results to reduce the level of financial exclusion in Nigeria. However, it failed the test of statistical significance. This further revealed that the current rate of geographical ATM penetration is not significant enough at the moment to reduce the level of financial exclusion inherent in the country.

III. Research Methodology

The ex-post facto research configuration was utilized in this review. Since time-series information were gotten and will be utilized to evaluate the impact of oil value shocks on swapping scale instability in Nigeria, this plan was picked. Changes in oil cost per, not entirely set in stone by the elements of interest and supply, are utilized to measure an oil value shock, while conversion standard instability is assessed by changes in return rates as distributed by the Central Bank of Nigeria (CBN). The loan cost will likewise be utilized as a control variable in this examination. For the reasons for this review, the financial period covered is 39 years, from 1982 to 2020.The econometric strategy utilized is a mix of the Johansen most extreme probability assessment technique and the vector mistake rectification model (VECM); the previous permits us to decide our model's cointegration rank, while the last option supports deciding the chance of blunder revision as the model methodologies its for quite some time run harmony way. The following factors influence the decision to choose a cointegration technique over traditional least square techniques:

i. Because most time series data are not stationary, the assumptions of a constant mean, constant variance, and constant auto variance for each subsequent lag are frequently violated, the OLS method of estimation can only produce a misleading result. The cointegration approach is a practical method for estimating long-run parameters.
ii. The cointegration approach provides a direct test of the economic theory and allows the estimation of short run disequilibrium relationships using the predicted long run parameters.
iii. The traditional approach has been chastised for disregarding the issues that arise when unit roots variables are present in the data generation process. However, both unit root and cointegration have significant implications for dynamic model definition and estimate.

Model Specification:

$$Y = \alpha_0 + \beta_x + \varepsilon_t \quad \textbf{(i)}$$

With equation 1 defined in terms of the objectives of this study as;

$$\textbf{OPS} = f\ \textbf{(EXCHANGE RATE VOLATILITY)} + \varepsilon_t \textbf{(ii)}$$

Given that OPS oil price shock, while exchange rate volatility is the changes in the rate at which on the exchange rate fluctuates over time. When all variables are finally entered, the equation becomes;

$$\textbf{Oil Price Shock} = f\ (\textit{Exchange Rate Volatility}) + \varepsilon_t \quad \textbf{(iii)}$$

Then the variables are coded into the main regression models as shown below;

$$OPSy = \alpha_0 + \beta_1 + \beta_2 EXRV + \beta_3 ERSV + \beta_4 INTR + \varepsilon_t \quad \textbf{(iv)}$$

Where:

OPSy:	Oil Price shock as measured by the variations in oil price per barrel
EXRV:	Exchange rate volatility as measured by the rate of changes in the exchange rate
ERSV:	The value of external reserve
INTR:	The official interest rate for borrowing
α_0:	a constant, equals the value of Y when the value of X = 0
β:	coefficient of the independent variables
ε:	the error term

IV. Data Presentation And Discussion Of Results

4.1 Tests for Unit Root

The unit root test is utilized to build up on the off chance that the factors are fixed or not, and assuming they are, the request for mix (for example number of times they are to be differenced to accomplish stationarity). Since most time series information are non-fixed, it is helpful to do a fixed test in ordinary econometric investigation using time series information. The Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests were utilized to perform unit root tests on the time series utilized in the review. The consequences of the

Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests show that the factors as a whole (OPS, EXRV, ERSV and INTR) are completely coordinated series of request I (1).

Table 2: Augmented Dickey Fuller (ADF) and Phillips Perron (PP) test for unit root

Variable	Augumted Dickey fuller test(ADF)			Phillips Perron (PP)		
	Level	First difference	OI	Level	First Difference	OI
EXRV	-1.062207	-18.62853*	I(1)	-0.529109	-16.39442*	I(1)
OPS	-2.137543	-6.058508*	I(1)	-2.137724	-6.058478*	I(1)
ERSV	-2.207279	-6.719037*	I(1)	-2.166444	-7.124260*	I(1)
INTR	-2.048322	-9.138885*	I(1)	-1.878074	-9.863937*	I(1)

*,**,*** indicate statistical significance at 1%, 5%, and 10% respectively. OI signifies order of integration
Source: Computed by using E-views 7.

Table 2 shows explain the factors are generally not level fixed. This should be visible to looking at the noticed upsides of the Augmented Dickey more full (ADF) test and Phillips Perron test measurements (in outright terms) with the basic worth (additionally in outright terms) at the 1%, 5%, and 10% degree of importance. Accordingly, the factors were just differenced once, and every one of them became fixed at the underlying distinction, i.e., they were completely coordinated in a similar request (1).

4.2 Johansen Maximum Likelihood Test of Co-integration

The primary objective of this test is to check whether a straight mix of the incorporated factors stays stable over the long haul. On the off chance that this remains constant, proposes that cointegration exists between the factors, and that there is a drawn out connection between them. The Johansen cointegration test started with a follow test and a test for the quantity of cointegrating relations or rank utilizing Johansen's most extreme Eigen esteem. The following are the outcomes:

Table 3: Johansen Cointegration

No. of co-integrating equation	Trace Statistic		Maximum Eigen value	
	Statistic	5percent CV	Statistic	5percent CV
None	79.88171	63.87610	40.88306	32.11832
At most 1*	38.99865*	42.91525*	18.28741*	25.82321*
At most 2	20.71124	25.87211	14.19844	19.38704
At most 3	6.512805	12.51798	6.512805	12.51798

Source: Computed by using Eviews 9.0

The two trials yielded a similar outcome. The invalid speculation (H0) that there is no co-incorporating association between the factors was dismissed by the follow test, just like the test in view of the best Eigen esteem. At the 5% degree of importance, the two of them show proof for one co-incorporating condition. The co-reconciliation test uncovered that EXRV, OPS, ERSV, and INTR have a balance condition that holds them with respect to one another after some time. The co-coordinating coefficients acclimated to EXRV are displayed beneath in the precisely recognizing evaluations of the Johansen Maximum probability assessments. They are truly gainful in understanding the since quite a while ago run connections among co-incorporating factors.

Table 4: Normalized Co-integrating coefficients

Variables	EXRV	OPS	ERSV	INTR
Coefficients	1.000000	2.860249	-0.531970	-0.532029
Standard Error		(0.3.1751)	(0.29149)	(0.91854)
		9.0083	-1.70905	0.0012114

Source: Computed by using Eviews 9.0

The co-efficient estimates can be understood in terms of long run elasticity because our model was represented in logarithm form, and the t-statistics is utilized to establish the statistical significance of each variable. A variable is statistically significant if the absolute value of its t-statistic is about 2 or higher, according to the rule of thumb..

4.3 The Vector Error Correction Model (VECM)

The speed of adjustment factor, also known as the ECM coefficient, indicates how quickly the system adjusts to reestablish equilibrium. It depicts the variables' reconciliation over time, from the state of

disequilibrium to the period of equilibrium. Table 5 shows the result of the vector correction model (VECM); the main criteria for analyzing VECM are as follows: 1. The VECM must be between 0 and 1; 2. It must be negative to be relevant. There is no error correction if it is positive, therefore the t-statistic diverges; and 3. The t-statistic must be significant.

Table 5: Vector Error Correction Model

Variables	ECM(-1)	T-statistic
D(EXRV)	-0.633566	-10.2559
D(OPS)	-0.037631	-1.11319
D(ERSV)	-0.011029	-0.13882
D(INTR)	-0.012318	-0.60156

Source: Computed by using Eviews 9.0

EXRV has a speed of adjustment co-efficient of -0.633566. The VECM is correctly signed and lies between 0 and 1 in terms of magnitude. When these requirements are met, the model has the ability to fix errors that occur in the short term as it approaches its long-term equilibrium path. In this equation, the error correction model specifies that approximately 63.35 percent of mistakes generated between periods are associated in succeeding periods. Because our model's flaws are short-lived, the long-term connection obtained is stable, and our finding is reliable.

V. Conclusion And Recommendations

5.1 Conclusion

Utilizing the Johansen and vector mistake amendment draws near, this examination project expects to decide if oil cost significantly affects swapping scale instability in Nigeria from 2006 to 2020. Different elements that can impact the conversion scale in Nigeria, for example, outer holds and loan cost, are likewise analyzed. The reliant variable of the model was swapping scale unpredictability, while the autonomous factors were oil cost, unfamiliar holds, and loan fee. Subsequent to investigating the significant writing and doing the proper experimental examination, it was found that a proportionate change in oil value causes a more than proportionate change in conversion scale instability.

Swapping scale instability, as indicated by Jin (2018), builds the danger and vulnerability of unfamiliar exchanges while likewise inclining a country toward conversion standard related perils. For the motivations behind this review, the accompanying answers for lessening conversion standard instability in Nigeria are proposed. Our discoveries were in accordance with those of Adeoye and Atanda (2015), who observed that unpredictability shocks in the ostensible and genuine trade paces of the naira against the US dollar in Nigeria somewhere in the range of 1986 and 2008. This implies that the moderate money related administration systems executed throughout the years to keep up with the conversion scale of a unit US dollar to naira have been inadequate.

5.2 Recommendations

Following the findings obtained from this study, the following recommendations are necessary;

1. FOREX management measures are required, particularly to fulfill the high demand for foreign currency that has defined Nigeria's performance, trade balance, and overall economic performance.
2. In order to achieve exchange rate stability, solid monetary policy is also required. Similarly, if government spending is strongly linked to revenue from natural resources, the revenue will become increasingly unpredictable, causing expenditure instability and, in turn, real exchange rate instability.

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APPENDIX

Year	**EXR**	**OILP ($)**	**ER (US Millions)**	**INT (%)**
1982	0.7143	1.67	116.4	8.00
1983	0.6955	2.03	200.8	10.00
1984	0.6579	2.29	217	10.00
1985	0.6579	3.05	295.7	10.00
1986	0.6299	10.73	1789	10.00
1987	0.6159	10.73	3736	9.00
1988	0.6265	12.87	3624	10.00
1989	0.6466	14.21	3079	6.00
1990	0.606	13.65	1795	11.00
1991	0.5957	29.25	2007	11.00
1992	0.5464	36.98	4567	9.50
1993	0.61	36.18	4683	10.00
1982	0.6729	33.29	1027	11.75
1994	0.7241	29.54	597.6	11.50
1995	0.7649	28.14	456.6	13.00
1996	0.8938	27.75	981.8	11.75
1997	2.0206	14.46	1577	12.00
1998	4.0179	18.39	5213	19.20
1999	4.5367	15.00	6022	17.60
2000	7.3916	18.30	3663	24.60
2001	8.0378	23.85	3358	27.70
2002	9.9095	20.11	4052	20.80

2003	17.2984	19.61	2783	31.20
2004	22.0511	17.41	4902	36.09
2005	21.8861	16.25	7944	21.00
2006	21.8861	17.26	2695	20.79
2007	21.8861	21.16	2158	20.86
2009	21.8861	19.33	6124	23.32
2010	21.8861	12.62	7815	21.34
2011	92.6934	18.00	5309	27.19
2012	102.1052	28.42	7591	21.55
2013	111.9433	24.23	1027	21.34
2014	120.9702	25.04	8592	30.19
2015	129.3565	28.66	7642	22.88
2016	133.5004	38.13	12063	20.82
2017	132.147	55.69	24321	19.49
2019	128.6516	67.07	37456	18.70
2020	125.8331	74.48	45394	18.36

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