

Exchange Rate Stability and Trade Performance in Nigeria

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ABSTRACT

The study evaluated exchange rate stability and trade performance in Nigeria. On the intellectual foundation of the monetary approach to exchange rate determination, a model, exchange rate (EXR_t) as a function of inflation (INF_t), external reserve (EXV_t), and trade balance (TDB_t), while interest rate (INT_t) is a control variable, was specified. Data on the variables were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin. Following the unit root test, the Toda-Yamamoto Granger Causality or Block Exogeneity Wald was carried out. The results showed that inflation, trade balance, and external reserves are not key determinants of exchange rate fluctuations in Nigeria. The findings have implications for the heavy dependence on oil exports, which makes the exchange rate more responsive to fluctuations in global crude oil prices than to domestic inflation or trade balances. The study recommended that policymakers consider alternative determinants of exchange rate stability beyond inflation, trade balance, and external reserves in exchange rate management in Nigeria.

INTRODUCTION

The relationship between exchange rate stability and trade performance is a key area of interest in economic research, particularly for developing economies like Nigeria, where external factors, such as global commodity prices and international trade dynamics, have significant impacts on economic stability. Exchange rate stability plays a crucial role in the functioning of an economy, influencing key variables such as inflation, investment flows, and trade performance. In Nigeria, where oil exports dominate trade flows, exchange rate volatility is often seen as a major factor affecting the efficiency and predictability of international transactions (Adeleye, 2019). The Nigerian naira has experienced significant fluctuations over the years, leading to concerns about the adverse effects of exchange rate instability on trade balance, particularly in terms of imports and exports. Nigeria's exchange rate policy has evolved from a fixed to a more flexible system, with interventions by the Central Bank of Nigeria (CBN) aimed at stabilizing the naira. However, despite these efforts, the country continues to face substantial exchange rate fluctuations, especially during periods of global economic downturns or when oil prices – which account for a large portion of Nigeria's foreign exchange earnings – experience instability. These fluctuations can significantly affect trade performance by altering the cost of imports and the competitiveness of Nigerian exports (Ibe & Egwaikhide, 2018).

Exchange rate instability, in particular, poses a challenge for trade and investment decisions. The unpredictability of currency values can lead to increased transaction costs for businesses engaged in cross-border trade. Importers may face higher costs, which can lead to inflationary pressures domestically, while exporters may find it difficult to export their goods competitively in international markets (Chuku & Emeka, 2020). Conversely, a stable exchange rate can enhance trade performance by promoting investor confidence, lowering transaction costs, and improving the predictability of foreign exchange costs for businesses (Onoja, 2019). Several studies have examined the relationship between exchange rate fluctuations and trade performance, but findings on whether exchange rate stability enhances or hinders trade performance remain mixed. Some scholars argue that exchange rate stability can have positive effects on trade by reducing uncertainty and enhancing the predictability of export returns (Adeniran & Olagunju, 2020), while others suggest that a flexible exchange rate, which allows for adjustments to external shocks, may be more beneficial in the long run for trade performance (Fosu, 2017). The key question, therefore, is whether exchange rate stability, in the context of Nigeria, actually fosters a more favorable trade environment or if such stability is merely a temporary solution that masks underlying structural issues in the economy.

Nigeria's trade performance has been historically volatile due to external shocks such as fluctuations in global oil prices, which have a direct impact on foreign exchange earnings and subsequently the exchange rate. The devaluation of the naira in recent years has raised concerns about the broader implications for Nigeria's trade balance, which is highly influenced by both oil exports and

the importation of essential goods. Understanding this link between exchange rate stability and trade performance is critical for formulating effective policy measures that can promote sustainable trade and economic growth in Nigeria (Okonkwo & Nwachukwu, 2018). This study aims to fill this gap by investigating how fluctuations in Nigeria's exchange rate affect the country's trade balance, with particular focus on imports and exports, and whether stability in the exchange rate encourages or hinders trade performance. The findings will provide insights into the role of exchange rate policies in Nigeria's broader economic strategy, particularly in enhancing trade performance and reducing dependency on oil exports.

Statement of the Problem

The relationship between exchange rate stability and trade performance has been a topic of significant interest in economic research, particularly in developing economies like Nigeria, where external factors such as global commodity prices and foreign exchange earnings from oil exports have a profound impact on economic performance. Despite efforts by the Central Bank of Nigeria (CBN) to stabilize the exchange rate, Nigeria has continued to experience significant fluctuations in the value of the naira. This volatility nature has raised concerns about its potential effects on the country's trade balance, specifically in terms of imports and exports. The depreciation of the naira, coupled with inflationary pressures, has led to higher import costs, which exhibit Nigeria's trade deficit and undermine domestic industries. On the other hand, the effects of exchange rate stability on the country's trade performance have remained unclear. Several studies have examined the influence of exchange rate volatility on trade performance in other economies, there is limited empirical research focusing specifically on Nigeria, where oil exports play a central role in the trade balance. Given that Nigeria's economic structure is highly dependent on oil revenue, fluctuations in oil prices have a direct impact on foreign exchange reserves and, by extension, the stability of the exchange rate. (Adeleye, 2019). Fluctuations in exchange rate create uncertainty in global trade, affecting the cost of imports, the competitiveness of exports, and overall trade performance, however, it remains unclear whether exchange rate stability encourages trade performance by reducing uncertainty, or if the effects of exchange rate stability are more complex, potentially leading to distortions in trade and investment decisions.

This study seeks to investigate how fluctuations in Nigeria's exchange rate affect the country's trade balance, particularly imports and exports, and whether exchange rate stability enhances or hinders trade performance. Therefore, this study aims to explore the link between exchange rate stability and trade performance in Nigeria, with a particular focus on understanding the consequences of exchange rate fluctuations on trade balance and evaluating the broader implications for trade policies. The results of this study will contribute to the ongoing debate on exchange rate policy and its role in shaping Nigeria's trade performance, providing relevant insights for policy makers and economic planners.

Objectives of the Study

The main objective of this study is to explore the relationship between exchange rate stability and trade performance in Nigeria. To achieve this, the study will focus on the following specific objectives to;

1. Assess the impact of exchange rate fluctuations on import in Nigeria
2. Investigate the effect exchange rate fluctuations on exports in Nigeria
3. Analyze the relationship between exchange rate fluctuations and trade balance in Nigeria.

LITERATURE REVIEW

In this section, the state of knowledge in the field is highlighted through conceptual clarification, theoretical review and empirical review.

Conceptual Clarification

To understand the relationship between exchange rate stability and trade performance in Nigeria, it is essential to define key concepts that form the foundation of this study: exchange rate stability, trade performance, and trade balance.

Exchange Rate Stability

Exchange rate stability refers to the degree of fluctuation in the value of a country's currency relative to other currencies over a given period. A stable exchange rate is one where the value of the currency does not experience significant volatility or abrupt changes. Stability in exchange rates reduces uncertainty in international trade transactions, as it enables businesses to predict future costs and returns (Adeleye, 2019). In Nigeria, the Central Bank of Nigeria (CBN) often implements policies to either fix or manage the exchange rate through interventions in the foreign exchange market to reduce volatility and stabilize the naira (Chuku & Emeka, 2020).

Trade Performance

Trade performance refers to the success or efficiency of a country in its international trade activities, typically measured by the volume and value of exports and imports, trade balance, and competitiveness in global markets. It reflects how well a country can capitalize on international trade opportunities, foster export growth, and maintain a sustainable import regime (Ibe & Egwaikhide, 2018). For Nigeria, trade performance is critical as the country relies heavily on oil exports, which are susceptible to fluctuations in global oil prices and, by extension, exchange rate volatility.

Trade Balance

The trade balance is the difference between the value of a country's exports and imports. A trade surplus occurs when exports exceed imports, while a trade deficit arises when imports surpass exports. Exchange rate fluctuations significantly influence the trade balance, as changes in the currency's value can alter the relative price of imports and exports (Fosu, 2017). In Nigeria, the naira's depreciation often increases the cost of imports, leading to higher import bills

and a trade deficit. Conversely, a stable exchange rate could help stabilize the costs of imports and exports, potentially improving the trade balance.

Exchange Rate and Export Competitiveness

The stability of the exchange rate can influence the competitiveness of a country's exports in the global market. A devaluation or depreciation of the local currency, for instance, can make exports cheaper and more competitive internationally, potentially increasing export volumes (Onoja, 2019). However, sustained volatility or overvaluation of the naira can make Nigerian exports more expensive and less attractive to international buyers, hindering trade performance.

Fluctuations and Trade Performance

Exchange rate fluctuations can lead to uncertainty in pricing for both exporters and importers. For Nigeria, the fluctuations in the exchange rate have often resulted in trade distortions, with importers facing higher costs and exporters struggling to maintain competitive pricing (Okonkwo & Nwachukwu, 2018). Volatile exchange rates increase transaction costs, affect pricing strategies, and may lead to supply chain disruptions, thus impacting overall trade performance.

Theoretical Review

Several theoretical perspectives can be applied to understand how fluctuations in exchange rates affect trade balance, particularly imports and exports, and how stability in the exchange rate may influence trade performance. Some of these theories are discussed below.

Monetary Approach

The Monetary Approach to exchange rate determination suggests that the exchange rate is driven by the supply and demand for money, with implications for trade performance. According to this theory, a country with higher inflation than its trading partners will experience a depreciation of its currency, which in turn makes imports more expensive and exports less competitive (Obstfeld & Rogoff, 1995). In the context of Nigeria, this approach suggests that exchange rate fluctuations are often linked to domestic inflation and changes in foreign exchange reserves, which are influenced by oil revenues and the management of monetary policy (Ibe & Egwaikhide, 2018). If the Central Bank of Nigeria (CBN) does not manage inflation and money supply effectively, exchange rate instability will persist, undermining trade performance.

The theory also posits that exchange rate stability can be achieved through sound monetary policies, which would improve trade performance by creating a more predictable trading environment. However, exchange rate stability can also result in misalignments if the currency is artificially pegged or overvalued, leading to trade imbalances. The Monetary Approach therefore suggests that while stability may enhance trade performance in the short term by reducing uncertainty, long-term trade sustainability depends on appropriate economic

fundamentals, including inflation control and efficient management of foreign exchange reserves (Onoja, 2019).

J-Curve Theory

The J-Curve Theory explains the dynamic relationship between exchange rate changes and trade balance over time. Initially, a depreciation of the currency may worsen the trade balance, as the effect of higher import costs and lower export revenues outweighs the benefits. However, over time, as exports become more competitive and import volumes decrease, the trade balance begins to improve, forming a "J" shape on a graph. This theory suggests that there is a time lag between the initial depreciation and the subsequent improvement in the trade balance (Smith, 2020). In Nigeria's case, exchange rate depreciation often leads to a worsening of the trade balance in the short run, especially due to the heavy reliance on imported goods. However, if the naira depreciation encourages increased export activity in the medium to long term, particularly in non-oil sectors, the trade balance may improve. This theory provides an explanation for the lagged effects of exchange rate movements on trade performance and suggests that a stable exchange rate could potentially reduce the risks of trade imbalances (Okonkwo & Nwachukwu, 2018).

Empirical Review

Nwankwo et al. (2024) examined the impact of globalization on Nigeria's exchange rate stability from 2005 to 2022 found a long-term influence of globalization. Migration rate and internet penetration positively affected stability, while FDI and trade openness showed a positive but statistically insignificant relationship. The study suggested that globalization could significantly enhance exchange rate stability, highlighting the need for policies aimed at improving migration and technological infrastructure. The authors also emphasized the importance of creating a favorable investment climate to attract foreign investors and support economic growth. They recommended that regulatory bodies simplify investment procedures to create a more attractive environment for foreign investments.

Fagbemi and Olatunde (2020) found a significant negative relationship between exchange rates and fiscal deficits in Nigeria from 1981 to 2017. They also found a positive relationship with public debt. The study suggested that appreciation of exchange rates could decrease fiscal deficits but not reduce public debt due to increased demand for loanable funds. The authors emphasized the need for strategic policies to mitigate exchange rate fluctuations and advocated for domestic production enhancements. The study underscored the importance of effective exchange rate management for Nigeria's fiscal performance and calls for policymakers to develop frameworks to stabilize exchange rates and minimize fiscal deficits.

Chukwu (2021) study on exchange rate instability in Nigeria revealed that it significantly impacts oil imports, exports, and non-oil trade components. The research used an ex post facto design and historical data from the Central Bank of Nigeria, using Ordinary Least Squares regression. The findings suggested that exchange rate instability positively affects oil imports and exports, while

negatively affecting the non-oil balance of trade. The study suggested that stable exchange rates are crucial for enhancing oil exports and addressing trade deficits. It recommends Nigerian policymakers implement regulations to control imports and promote exports, contributing to economic stability.

Obi-Nwosu (2024) examined the impact of exchange rate fluctuations on Nigeria's economic growth from 2001 to 2022. It found a significant positive relationship between exchange rate fluctuations and nominal GDP, suggesting that naira depreciation increases nominal GDP. However, the relationship between exchange rate fluctuations and inflation was insignificant, suggesting minimal impact on inflation dynamics. Furthermore, increased volatility negatively affected Nigeria's balance of payments. The study suggested that effective exchange rate management is crucial for Nigeria's economic growth, and policymakers should implement stabilizing exchange rate policies. Although fluctuations did not significantly affect inflation, they disrupted the balance of payments, requiring further policy interventions. The study concluded that exchange rate fluctuations significantly impact Nigeria's economic growth.

Zebulon (2024) analyzed the relationship between exchange rate fluctuations and Nigeria's economic growth from 1994 to 2023. The research used a multivariate regression model and economic theories like Purchasing Power Parity and Keynesian economics. The results showed a significant negative correlation between exchange rate fluctuations and Real GDP growth, with a coefficient of -30.680. Despite this, the study also found a positive trend in Real GDP, suggesting other factors contributed to economic stability. The study emphasized the need for policies to stabilize exchange rates and improve investment and economic planning. Policymakers were advised to focus on diversification and strengthen monetary policy frameworks to sustain growth. The study underscored the importance of monetary policy in fostering a stable economic environment for sustained growth.

Chioma (2023) explored the impact of exchange rate fluctuations on Nigeria's economic growth, a country heavily influenced by global oil prices. The research used econometric analysis and statistical methods to assess exchange rate movements and identify periods of volatility driven by global oil price fluctuations. The study found that exchange rate fluctuations influenced trade performance, with appreciation increasing import demand and depreciation enhancing export competitiveness while raising import costs. A stable exchange rate encouraged both foreign and domestic investments, fostering economic growth. The findings suggested that Nigerian policymakers need to manage exchange rate policy alongside fiscal and monetary strategies to ensure economic stability and growth. Emphasizing exchange rate stability could enhance investor confidence and mitigate the adverse effects of currency fluctuations on trade and economic dynamics. The study advocated for prudent macroeconomic policies, export diversification, and an enabling investment climate to foster sustainable economic development.

Nwolozi et al. (2024) found a significant correlation between Nigeria's foreign exchange reserves and the performance of the shipping industry from

2011 to 2022. The decline in FX reserves negatively impacted the Nigerian Naira and the shipping industry, leading to a decrease in export performance from 2012 to 2022. This decline exacerbated the exchange rate challenges faced by Nigeria. The study emphasized the need for policy interventions to stabilize FX reserves, as the shipping industry plays a crucial role in international trade and economic stability. The authors recommended strategic measures to boost FX reserves and improve maritime trade performance in Nigeria.

Amassoma (2017) examined the relationship between exchange rate variation and economic growth in Nigeria, focusing on how these fluctuations affect Nigerian purchasing power and international transactions. The study used quantitative methods and econometric techniques to analyze data from 1970 to 2013. The results showed a positive but statistically insignificant relationship between exchange rate fluctuations and economic growth in Nigeria. The resilience of the economy was attributed to effective government regulatory measures concerning inflation and oil prices. The study suggested that while exchange rate fluctuations can influence economic growth, the government can mitigate their effects through sound policy measures. Policymakers should enhance domestic production capabilities, stabilize the currency, and address volatile macroeconomic indicators to promote sustainable growth.

Kolawole et al. (2024) studied the impact of exchange rate fluctuations on Nigeria's manufacturing sector, using an Auto Regressive Distributed Lag (ARDL) model. The study found a negative relationship between exchange rate fluctuations and the manufacturing sector's GDP contribution, output, and capacity utilization. The volatility increased operational costs, hindering economic performance and contributing to Nigeria's growth. The authors concluded that macroeconomic policies aimed at stabilizing exchange rates are necessary to support the manufacturing sector and enhance productivity.

Anoke, Odo, and Ogbonna (2016) examined the impact of exchange rate depreciation on Nigeria's trade balance from 1986 to 2014. They found a long-term equilibrium relationship between the depreciation of the Naira and trade balance, but it did not significantly improve Nigeria's trade balance due to its heavy reliance on imports. The study also revealed that while exchange rate changes had a causal effect on the trade balance, depreciation negatively impacted the trade balance in the short run. The authors recommend that policymakers focus on diversifying foreign exchange sources and enhancing foreign direct investment (FDI) instead of promoting currency devaluation. The study concluded that depreciation was not a viable solution for addressing Nigeria's trade deficit.

Ogundipe, Ojeaga, and Ogundipe (2013) examined the long-term effects of exchange rate devaluation on Nigeria's trade balance. They used data from 1970 to 2010 to analyze the relationship between trade balance and determinants such as domestic income, money supply, interest rates, and nominal exchange rates. The results showed a significant long-term impact of exchange rate devaluation, but no short-term causality was found. The variability in money supply had a greater influence on trade balance than exchange rate volatility.

The study suggests caution in using exchange rate devaluation for improving trade balance, emphasizing the need for effective domestic monetary policy management and a comprehensive policy approach to stabilize money supply and enhance export capacity.

Eke et al (2015) examined the relationship between exchange rate behavior and trade balances in Nigeria from 1970 to 2012. Using real exchange rates and statistical techniques, the study found that exchange rates had a significant negative impact on Nigeria's trade balance. Currency devaluation did not improve the trade balance or overall balance of payments. The study suggested that policies focusing on currency devaluation may not be beneficial for improving Nigeria's trade balance. Instead, the authors recommend prioritizing measures to stabilize the exchange rate to prevent continuous devaluation, leading to improved economic stability and trade performance.

Ijirshar et al (2022) examined the impact of exchange rates on trade flow in Nigeria from 1986 to 2021. They used ARDL and NARDL models to analyze the relationship between exchange rates and trade flows. The results showed that real exchange rate depreciation negatively affected trade balance and exports in the short run, but in the long run, the effects turned positive. The study also supported the Marshall-Lerner condition, suggesting that the combined elasticities of exports and imports exceeded one, suggesting potential for long-term trade improvement in Nigeria. The authors emphasized the importance of understanding the asymmetric effects of exchange rate changes on trade flows for developing sound economic policies.

Umoru and Oseme (2013) examine Nigeria's trade balance and exchange rate shocks and found a cyclical feedback between trade balance and Naira depreciation, with initial improvements following depreciation. This contradicted the classical J-curve hypothesis and suggested that trade balance reactions were cyclical. The Marshall-Lerner condition held in the long run for Nigeria, suggesting that currency depreciation could eventually enhance trade balance. The study's findings challenged conventional views on the J-curve in developing economies and called for a reassessment of exchange rate policy. The study underscored the complexity of Nigeria's trade balance response to shocks.

Onakoya et al (2018) examined the relationship between trade balance and the real effective exchange rate (REER) in Nigeria. The research used the Johansen cointegration method and the Augmented Dickey-Fuller test to analyze data from 1981 to 2016. The results showed that the immediate devaluation of the Naira positively impacted trade balance in the short term, but no long-term relationship was found between trade balance and the explanatory variables (REER and GDP). The study suggested that Nigerian policymakers should shift towards allowing financial markets to dictate exchange rates, as a more flexible regime could enhance economic performance. Yusuf and Adaranijo (2022) examined the J-Curve phenomenon and Marshall-Lerner condition in Nigeria, focusing on exchange rate dynamics and trade balance. They found that the Marshall-Lerner condition was valid in the long run, suggesting a positive impact of Naira depreciation on trade balance.

However, they found no evidence of the J-Curve phenomenon in the short run. They emphasized the need for diversifying Nigeria's export base, enhancing non-oil exports, harmonizing fiscal, monetary, and exchange rate policies, and investing in research and development to improve Nigeria's competitiveness in international markets.

Cookey and Oladosu (2023) found that exchange rate volatility negatively impacted Nigeria's manufacturing sector GDP, while trade openness and external reserves positively influenced it. The study used analytical techniques like the Augmented Dickey-Fuller test, Error Correction Model, and Granger causality tests. The findings emphasized the importance of stable exchange rates for manufacturing sector growth and suggest that policymakers should prioritize exchange rate stabilization to enhance investment and performance. The positive effects of trade openness and external reserves suggest the benefits of export-oriented industrial strategies and maintaining sufficient foreign reserves.

Nyeche (2024) examined the impact of exchange rate dynamics on Nigeria's economic growth, focusing on the relationship between exchange rates, GDP, trade openness, and external reserves from 1985 to 2021. The research used secondary data from the World Development Indicators and the Central Bank of Nigeria, and econometric techniques like unit root tests, cointegration analysis, and the Autoregressive Distributed Lag model. The results showed that exchange rate fluctuations had a significant positive effect on real GDP, with a unit increase in exchange rate leading to a 0.3986 unit increase in GDP. Trade openness had a limited effect, while external reserves significantly contributed to GDP growth. The study suggested that effective exchange rate management is crucial for Nigeria's economic growth and recommends the government implement policies to stabilize exchange rates, enhance external reserves, and promote trade openness.

METHODOLOGY

Research Design

The research design for this study is a quantitative approach. This design was selected because it allows for the collection of measurable data and the use of statistical techniques to analyze the link between exchange rate fluctuations and trade performance. The study will employ causal-comparative research and time series analysis to explore how changes in exchange rates (both short-term fluctuations and long-term stability) influence trade balance, particularly imports and exports. This study will rely primarily on secondary data, which will be sourced from the Central Bank of Nigeria (CBN)

Theoretical Framework

The theoretical framework for the study titled is grounded in the Monetary Approach to exchange rate determination. This theory posits that the exchange rate is primarily influenced by the supply and demand for money, which has direct implications for a country's trade performance. Specifically, it suggests that a country experiencing higher inflation relative to its trading partners will see a depreciation of its currency, leading to more expensive imports and less

competitive exports. In the context of this study, the framework indicated that exchange rate fluctuations in Nigeria are closely tied to domestic inflation and foreign exchange reserves, which are significantly affected by oil revenues and the management of monetary policy by the Central Bank of Nigeria (CBN). Ineffective management of inflation and money supply by the CBN can lead to persistent exchange rate instability, adversely impacting trade performance.

Variables of the Study

Resulting from the theoretical framework, the variables of the analysis of the study are; the nominal exchange rate of the Nigerian naira against the US dollar, the difference between the value of exports and imports and the value of exports and imports.

Model Specification

$$EXR_t = (INF_t, ERV_t, TDB_t, INT_t)$$

Where

EXR_t is exchange rate

INF_t is inflation rate

ERV_t is foreign reserve

TDB_t is trade balance; the difference between export and import.

INT_t is interest rate

Explicitly the mathematical model becomes is;

$$EXR_t = \alpha_0 + \alpha_1 INF_t + \alpha_2 ERV_t + \alpha_3 TDB_t + \alpha_4 INT_t$$

Econometrics model is;

$$EXR_t = \alpha_0 + \alpha_1 INF_t + \alpha_2 ERV_t + \alpha_3 TDB_t + \alpha_4 INT_t + U_t$$

Exchange rate (EXR_t) is specified as been determined by inflation (INF_t), external reserve (EXV_t) and trade balance (TDB_t), while interest rate interest rate (INT_t) is a control variable and the error term U_t represents other factors that influence exchange rate of the Naira to the US dollar.

A priori expectation

Monetary Approach to exchange rate determination posits that the exchange rate of a country is primarily influenced by the supply and demand for money, which has direct implications for a country's trade performance. Specifically, it suggests that a country experiencing higher inflation relative to its trading partners will experience a depreciation of its currency, leading to more expensive imports and less competitive exports. The theory indicated that exchange rate fluctuations in Nigeria are closely tied to domestic inflation and foreign exchange reserves, which are significantly affected by oil revenues. Thus, ($\alpha_1 > 0$), ($\alpha_2 < 0$), ($\alpha_3 < 0$).

RESEARCH RESULT

Method of Data Analysis

Time series of Exchange rate (EXRt), external reserve (ERVt), inflation (INFt), trade balance (TDBt) and interest rate (INTt) from 1981 to 2022 are obtained from the Central Bank of Nigeria statistical bulletin of 2022. These variables are subjected to both unit root to test for the stationarity and the order of integration of the variables and the relationship between the dependent and independent variables of the model estimated.

Table 4.1 Phillip Perron (PP) Unit Root Test

Variable	Test Equation	Level		First Difference		Second Difference		Order
		Stat	PV	Stat	PV	Stat	PV	
EXRt	I	4.1365	1.0000	-0.9868	0.7491	-5.32746	0.0001	I(2)
	I & T	3.0308	1.0000	-2.3539	0.3970	-5.42377	0.0004	
	N	5.1870	1.0000	0.0486	0.6926	-5.10546	0.0000	
ERVt	I	-1.1498	0.6869	-4.5056	0.0008	-8.67370	0.0000	I(2)
	I & T	-2.0984	0.5317	-4.5413	0.0041	-15.8629	0.0000	
	N	-0.1702	0.6188	-3.9812	0.0002	-7.88425	0.0000	
INFt	I	10.5578	1.0000	1.4316	0.9988			I(1)
	I & T	4.0153	1.0000	-2.0898	0.5359			
	N	15.9417	1.0000	2.8333	0.9985			
TDBt	I	-1.9945	0.2881	-4.5153	0.0008			I(1)
	I & T	-2.0038	0.5824	-4.4013	0.0059			

	N	-2.8767	0.0051	-4.6084	0.0000			
INTt	I	-3.3492	0.0188	-8.9488	0.0000			I(1)
	I & T	-3.2915	0.0816	-8.7380	0.0000			
	N	-0.4164	0.5272	-9.0061	0.0000			

Source; Author's Computation

The unit root test result is assessed by comparing the probability value of the test statistic for each variable with the selected significance level of the study, which is 0.05. The decision criterion is to reject the null hypothesis if the probability value of the test statistic for the variable is less than the selected significance level (0.05), the selected level of significance for the study. The final column of the unit root results in Table 4.1 indicates that the order of integration comprises variables of order one I(1) and order two I(2). Exchange rate (EXRt), external reserve (ERVt) integrated at the second order, I(2). This indicated that Exchange rate (EXRt), external reserve (ERVt) are non-stationary at both the level and first difference, but become stationary at the second difference. The remaining three variables – inflation (INFt), trade balance (TDBt) and interest rate (INTt) – are integrated of order one, I(1). The probability values of the test statistics for the variables in the first difference column are below 0.05. The variables are non-stationary at the level but become stationary after the first difference. Therefore, the Toda Yamamoto approach is employed to estimate the parameters of the models, which exhibit mixed orders of integration I(1) and I(2).

Toda Yamamoto result

Table 4.2; VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1597.039	NA	4.22e+28	80.10197	80.31308	80.17830
1	-1401.720	332.0429	8.55e+24	71.58600	72.85266*	72.04398
2	-1367.094	50.20745	5.62e+24	71.10471	73.42692	71.94434
3	-1325.696	49.67817*	2.91e+24*	70.28478*	73.66254	71.50607*
0	-1597.039	NA	4.22e+28	80.10197	80.31308	80.17830

Source; Author's Computation

The optimal lag length (K) is 3, determined by the minimum values of the AIC, SC, and HQ criteria. The unit root test results in Table 4.1 indicates that the maximum order of integration is I(2), signifying that d_{max} equals 2. The $(k+d_{max})$ th order corresponds to the 5th order, necessitating a 5th VAR to implement the Toda-Yamamoto methodology and to provide the Granger Causality or Block Exogeneity Wald test results.

Table 4.3; Toda-Yamamoto Causality (Block Exogeneity Wald) test result

Null Hypothesis	Chi-sq	Prob. Value	Direction of Causality
EXRt does not cause INFt	17.36580	0.0002	Causality Exist
EXRt does not cause TDBt	28.39969	0.0000	Causality Exist
INFt does not cause TDBt	14.37782	0.0008	Causality Exist
INFt does not cause ERVt	6.674754	0.0355	Causality Exist

Source; Author’s Computation

The criterion for establishing causation is to reject the null hypothesis if the p-value of the test statistic is below 0.05 (5%). From Table 4.3 only uni-directional causality is found runs from exchange rate (EXRt) to inflation (INFt), exchange rate (EXRt) to trade balance (TDBt), inflation (INFt) to trade balance (TDBt) and from inflation (INFt) to external reserve (ERVt). It is shown that all the probability values of on the above are less than 0.05. The results also show that inflation, trade balance and external reserve are not key determinants of exchange rate in Nigeria.

Diagnostic Test

Table 1.4; VAR Residual Serial Correlation LM Tests

Null hypothesis: No serial correlation at lag h

Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	38.74800	25	0.0390	1.784593	(25, 42.4)	0.0473
2	40.62041	25	0.0252	1.907661	(25, 42.4)	0.0312
3	34.21199	25	0.1035	1.503605	(25, 42.4)	0.1186

Source; Author’s Computation

Null hypothesis: No serial correlation at lags 1 to h

Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	38.74800	25	0.0390	1.784593	(25, 42.4)	0.0473
2	90.55291	50	0.0004	2.600188	(50, 30.7)	0.0030
3	142.1097	75	0.0000	2.606907	(75, 9.0)	0.0604

Source; Author’s Computation

The null hypothesis for the serial VAR Residual Serial Correlation LM Tests posits the absence of serial correlation inside the model. The decision criterion

is to reject the null hypothesis if the p-value is less than 0.05 at the selected lag. The probability values of the test statistics at lag 3 exceed 0.05; hence, the null hypothesis asserting that the model is devoid of serial correlation cannot be rejected at lag three that was used in the model.

DISCUSSION

The findings showed that inflation, trade balance, and external reserves are not key determinants of exchange rate fluctuations in Nigeria and challenged conventional economic theories. Traditional economic models suggest that exchange rates are influenced by a country's inflation rate, trade balance, and foreign reserves through purchasing power parity (PPP), balance of payments (BOP), and supply-demand dynamics in the forex market (Dornbusch, 1976). However, empirical evidence from this study suggested otherwise, indicating that these factors may not significantly drive exchange rate volatility in Nigeria. One possible explanation could be the structural nature of Nigeria's economy, where exchange rate movements are primarily influenced by other macroeconomic variables such as capital flows, oil prices, and monetary policy interventions (Adeniran et al., 2014). The heavy dependence on oil exports makes the exchange rate more responsive to fluctuations in global crude oil prices than to domestic inflation or trade balances. Additionally, government intervention in the foreign exchange market through managed exchange rate regimes may weaken the direct relationship between external reserves and exchange rate fluctuations (Ezeabasili et al., 2012).

Furthermore, the study identified unidirectional causality paths provide insight into the transmission mechanism of macroeconomic variables in Nigeria. The causality from exchange rate to inflation suggests that currency depreciation leads to higher import prices, contributing to inflationary pressures, which aligns with the cost-push inflation theory (Mishkin, 2007). Similarly, the causality from exchange rate to trade balance implies that fluctuations in exchange rates impact export and import dynamics rather than vice versa. This could be attributed to the inelastic nature of Nigeria's imports, where devaluation does not significantly improve trade balance due to heavy reliance on foreign goods and weak domestic production capacity (Olufayo & Fagbohun, 2014). Additionally, the unidirectional causality from inflation to trade balance suggests that domestic price increases may influence trade performance by reducing export competitiveness. Likewise, inflation affecting external reserves indicates that rising domestic prices could lead to increased demand for foreign currency, depleting foreign reserves. These relationships highlight the complex interplay between macroeconomic variables, where inflation acts as a significant intermediary in the dynamics of exchange rate movements.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

This study challenged traditional economic theories that emphasize the roles of inflation, trade balance, and external reserves as determinants of

exchange rate in Nigeria. This study suggested that other determinants such as monetary policy rate, lending rates, oil prices, government expenditure, and financial development may have more significant impact on exchange rate movements in Nigeria. This underscores the unique structural characteristics of the Nigerian economy, particularly its heavy reliance on oil exports. Meanwhile, the effect of exchange rate on inflation indicated that currency depreciation can result in higher import prices, thereby increasing the overall price level. Similarly, variations in the exchange rate influencing the trade balance, suggested that currency depreciation or appreciation affects export and import dynamics. More so, changes in inflation impacting on trade balance, implied that higher domestic prices may reduce export competitiveness and worsen the trade balance. Furthermore, the effect of inflation on external reserves, indicated that rising domestic prices could lead to increased demand for foreign currency, thereby depleting foreign reserves.

Recommendations:

Following from the findings and conclusions, the study recommended that policymakers to consider alternative determinants of exchange rate stability beyond inflation, trade balance, and external reserves. A more comprehensive approach that incorporates factors such as capital flows, investor confidence, and global commodity prices would be crucial in designing effective exchange rate policies for Nigeria. That policy makers effectively manage foreign exchange reserves to buffer against external shocks and implement strategies to build and maintain adequate reserve to provide a cushion during periods of exchange rate volatility. Furthermore, the study recommended that the effect of factors such as the monetary policy rate, lending rates, oil prices, government expenditure, and financial development on exchange rate volatility be consider for further study.

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