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Dollarization, interest and exchange rates dynamics in Nigeria

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Abstract
The study provided analysis of the economic implications of dollarization in Nigeria; a focus on interest rate and exchange rate dynamics. The used secondary data covering the period from 1986 to 2024 and were sourced from National Bureau of Statistic and Central Bank of Nigeria Statistical Bulletins. The study estimated and analyzed data using statistical techniques and econometrics. The Augmented Dickey Fuller (ADF) test was used to initially assess the data set for stationarity attributes in order to avoid inaccurate regression estimations. The data's structural breaks were taken into consideration using the Zivot-Andrews (ZA) structural breakpoint model, which incorporates the unit root test. The study also employed the Johansen cointegration test to ascertain the variables' long-term correlations. The impact of dollarization on Nigeria's interest rate and exchange rate throughout the research period was investigated using the Structural Vector Autoregressive (SVAR) approach. The result obtained from Johansen cointegration test suggested that, long-run link exist among the variables of the study. Dollarization has a negative impact on interest rates and exchange rates, according to the calculated Structural Vector Autoregressive (SVAR) model. Based on these results, the study suggested, among other things, the Nigerian apex bank should implement currency-differentiated reserve requirements by raising the reserve requirements for dollar-denominated deposits above those for local currency deposits and adjust prudential regulations for foreign currency credit, such as higher provisions for foreign currency loans, impose higher reserve requirements on foreign currency denominated assets held by banks compared to those held in local currency and control the flow of dollars within the financial system so that only agents involved in legitimate international transactions can access them.

Keywords: Dollarization, Exchange Rate, Interest Rate & SVAR.

1. Introduction

The Naira's legal function as a medium of exchange in Nigerian markets and for foreign exchange has gradually been supplanted over time by the US dollar. The US dollar and other western financial convertible currencies can effectively infiltrate Nigeria's domestic market through emulation, according to an economic principle. It is known as the dollarization theorem. Dollarization is the practice of Nigerians using US dollars in addition to their local currency (David & Kehinde, 2015). Recognizing the magnitude, timing, direction, and duration

of dollarization's monetary policy shocks on economic activity gives the monetary authority the crucial data they need to adjust their policy initiatives. The possible effects of dollarization on the stability of the financial system have made monetary policymakers concerned. According to Adamu (2017), a significant portion of the financial system that is dollarized, whether formally or informally, may provide stability risks in the form of solvency risk, liquidity risk, or both.

Finding feasible currency exchange arrangements has been a persistent problem for nations since the fixed exchange rate regime of Bretton Woods ended centuries ago, and the options available to them have expanded. As the incorporation of global trade and marketplaces for capital, choosing an exchange rate system has become more challenging. New issues have surfaced, along with fresh responses to the query of what exchange regime will best advance the development goals of each nation. Full dollarization is the most recent of these alternatives, in which a nation formally forgoes its own currency in favor of another, more stable one, usually the U.S. dollar, as legal tender (IMF, 2020). Going from informal, restricted dollarization to complete, official usage of the foreign currency in all transactions is known as full dollarization. The primary appeal of full dollarization is the removal of the possibility of an abrupt, significant decline in the worth of the currency of the country. By doing this, the nation could be able to lower the risk premium associated with its foreign borrowing (IMF, 2020).

Dollarized economies could benefit from lower interest rate margins on foreign borrowing, more investment and growth, cheaper fiscal expenses, and increased trust among foreign investors. The interest premium linked to devaluation risk would be eliminated by dollarization, but the premium linked to sovereign risk would remainIn an economy that is heavily dollarized, the government and private sector can choose to borrow in either domestic or foreign currency, which eliminates the expense of devaluation risk. (IMF, 2020).

When employed as a vehicle currency, the US dollar is favored as a store of value and as a unit of account. Exchange rate management is made possible by the need to lessen the impact of dollarization on general macroeconomic aggregates. Accordingly, Opuala-Charles and Orji (2022) define foreign exchange rate management as the policy measures taken by the government through its monetary institutions with the intention of regulating the flow of foreign currency. The rate at which currencies are exchanged is a significant factor in determining a nation's relative economic health, along with interest rates and inflation (Opuala-Charles & Orji, 2023). Accordingly, academics propose that the amount of foreign currency held in relation to the total amount of Naira in circulation influences Nigeria's exchange rate fluctuations (Bawa, Omotosho & Doguwa, 2015). The extent of dollarization has also been influenced by other factors, including differences in interest rates and the anticipated rate of currency devaluation, particularly in the black market; ongoing domestic inflation; heightened political unpredictability; lower expected returns on domestic financial instruments; the risk of currency units (home) being convertible to another (foreign); the absence of capital flow restrictions; and a sharp rise in trade openness (Opuala-Charles & Orji, 2023).

Many Nigerian businesses are having a hard time sleeping as a result of the naira's unchecked decrease in value in comparison to the US dollar and other currencies. The majority of foreign companies buy their goods in foreign

currencies so they may sell them profitably in Nigeria. These companies set the selling price of their goods in either US dollars or the currency of the country where they purchased them. However, many firms are now operating at a loss rather than a profit due to the naira's volatile exchange rate against the dollar and other foreign currencies. As a result, companies who are unable to withstand the current situation have shut down (Ekpenyong, 2022).

Despite a number of measures taken by the Central Bank of Nigeria (CBN) to counteract the trend, it is no longer news that Nigeria's currency, the Naira, has continued to weaken against the dollar as a result of rising demand for the dollar. In addition to the growing demand from end users for dollars to cover genuine needs, dollars are now being used in some regions of the nation for a variety of purposes, such as paying for visas, bribing delegates at party primaries, and paying rent. Dollarization has undoubtedly become more prevalent in Nigeria as a result of the depreciation of the Naira.

A nation's currency frequently serves as a representation of its economic self-determination, independence, and culture. As a result, Nigeria's sovereignty and sense of national identity may be undermined if the US dollar is accepted as legal cash there. Nigeria's monetary policy autonomy and exchange rate tools, even during financial emergencies, have been lost due to the dollarization of the national economy. Nigeria has been compelled to give up authority over its monetary policy as a result. In order to successfully control inflation, unemployment, and economic growth, the Nigerian Central Bank (CBN) cannot change the money supply or establish interest rates (Adamu, 2017). These assertions are supported by the recent sharp rise in Nigeria's unemployment rate, inflation rate, and economic growth.

The U.S. economy, world demand for the dollar, and geopolitical developments are some variables that impact the exchange rate of the dollar. Given the advanced nature of the US economy, there is little question that using the US dollar as legal money in Nigeria exposes the country's economy to serious exchange and interest rate risks, which can affect trade balances and general economic stability.

Measuring the extent of dollarization is one of the most challenging issues for earlier study has been how it affects local interest and exchange rate volatility, and how this has led to the usage of foreign currencies in home economic activities. The study tracks the degree to which the US dollar is utilized in place of the Nigerian naira in order to calculate the dollarization index in Nigeria. This entails figuring out indicators like the proportion of commercial banks' loans denominated in dollars and the foreign exchange rate deposits to total deposits. It employs econometric models like Structural Vector Autoregression (SVAR) to analyze its impact on variables like exchange rate and interest rates. The Central Bank of Nigeria (CBN) also uses a proxy for dollarization based on the IMF's conventional approach and often employs econometric models like Vector Autoregression (VAR) to analyze its impact on variables like inflation and interest rates. Hence the need to examine empirically and provide analysis of the economic implications of dollarization in Nigeria; focusing on interest rate and exchange rate dynamics.

2. Literature Review

Conceptual Review

Different international organizations and academics have rather different definitions of interest rates, exchange rates, and dollarization. Dollarization is a process of monetary integration that began with the slow, scaled loss of a currency's functions over time, exhibiting

characteristics of the spontaneous evolution characteristic of Adam Smith's "invisible hand" (Carlos, 2016). The currencies that are most frequently used for international transactions are the most likely to take the place of these lost functions in this process; the country with the weaker currency has the strongest claim because it has a hegemonic influence in the economic zone. In a similar vein, Thomas (2021) described dollarization as the practice of citizens of one nation using assets (or liabilities) valued in the currency of another. Depending on whether a domestic currency circulates concurrently with a foreign currency, dollarization can be either partial or complete. These categories are also referred to as de facto and de jure dollarization. This is due in part to the fact that many economies are only partially dollarized, and in part—and probably more significantly—to the fact that certain nations have considered or made the decision to fully dollarize their economy. Dollarization refers to the practice of using the U.S. dollar either in place of or in addition to the native currency of another nation, according to Eric (2022). One instance of currency substitution is this. Dollarization typically occurs when hyperinflation or volatility renders a nation's own currency unusable as a medium of exchange. According to Danielle (2022), dollarization is the process by which all transactions in another nation are conducted in U.S. dollars. The dollar becomes the go-to currency in this scenario for setting prices for goods, storing savings, and making payments. Because neither nation must exchange money in order to purchase products, dollarization lowers transaction costs during trade and promotes greater economic integration. Adopting the US dollar or another commonly used currency facilitates faster and more affordable trade between the two nations as well as occasionally with other nations. According to this study, dollarization is the process by which Nigerians stop using Naira as legal tender and instead use a foreign currency, especially the US dollar, though not typically as a store of wealth, monetary unit, or medium of exchange.

However, according to Bosco and Emerence (2016), interest rates are a macroeconomic notion that refers to the cost imposed by a bank on the quantity of money it lends. It is the pace at which people can access funds from commercial banks. Interest rates are a significant economic cost that can be viewed as either an opportunity cost of funds or a cost of capital. Additionally, interest rates can be considered as the expense associated with using money. This is an example of the opportunity cost of borrowing money from a lender. It might also be seen as the money paid to the original source. It comes at a high financial expense. Interest rates are the fees charged by a lender to a borrower for using borrowed funds, expressed as a percentage of the principal (CBN, 2016). It is generally expressed as a percentage of the principal amount borrowed for a year or any other time period, such as a month, week, day, etc., as agreed upon by the borrower and lender at the time of the loan contract (CBN, 2016). According to Caroline (2023), interest rates are the percentage of the principle that a lender charges a borrower. Usually expressed on an annual basis, a loan's interest rate is expressed as an annual percentage rate, or APR. Interest rates are influenced by a variety of factors, including credit supply and demand, inflation expectations, and central bank monetary policy actions.. Interest rates were defined in the study as either the return on investment or the cost of borrowing money. An essential component of the economy, interest rates greatly influence a number of financial

decisions, including borrowing, investing, and saving.

However, in an effort to define the term, Peterson (2017) defines the exchange rate as a figure that is used to determine the difference in value between money from one country and money from another, or the ratio at which the primary unit of two currencies may be swapped. To put it another way, James (2022) defines the exchange rate as the rate at which one currency will be exchanged for another, and it has an impact on international trade and money transfersBoth the value of the home currency and the value of the foreign currency affect exchange rates. The GDP, unemployment rate, market interest rates, and economic activity of each nation all have a significant impact on the exchange rate between two currencies. The global financial marketplace, where banks and other financial organizations frequently trade currencies based on the aforementioned criteria, sets what are commonly referred to as market exchange rates (James, 2022). The price at which one currency can be traded for another between countries or economic zones is known as the exchange rate, according to the Corporate Finance Institute (2023). It is crucial for comprehending the dynamics of business and money movement and is used to calculate the relative values of various currencies. The cost of a unit of foreign currency is expressed in terms of the amount of domestic currency that is traded when exchange rates are directly quoted. Indirect quoting of exchange rates is the process of expressing the value of a domestic currency in terms of the amount of foreign currency that is exchanged. "Cross rates" refer to the practice of recommending a domestic exchange rate utilizing several international currency exchange rates (Corporate Finance Institute, 2023). The price at which one currency, in this example the Naira, will be worth another, in this case the US dollar, is known as the exchange rate, according to this study. This depends on which way the currency rate moves. A unit of domestic currency will purchase fewer units of foreign currency if the domestic currency is appreciating, or gaining value, in relation to the foreign currency. On the other hand, a unit of the home currency will purchase more units of the foreign currency if the home currency is depreciating, or losing value, in relation to the foreign currency.

Graphical Trends Analysis

The trends analysis for the selected macroeconomic variables such as dollarization, interest rate and exchange rate in Nigeria between the period of 1986 and 2024 is provided to assess at a glance movement of these macroeconomic variables selected for study as presented in figure 1 to 3.

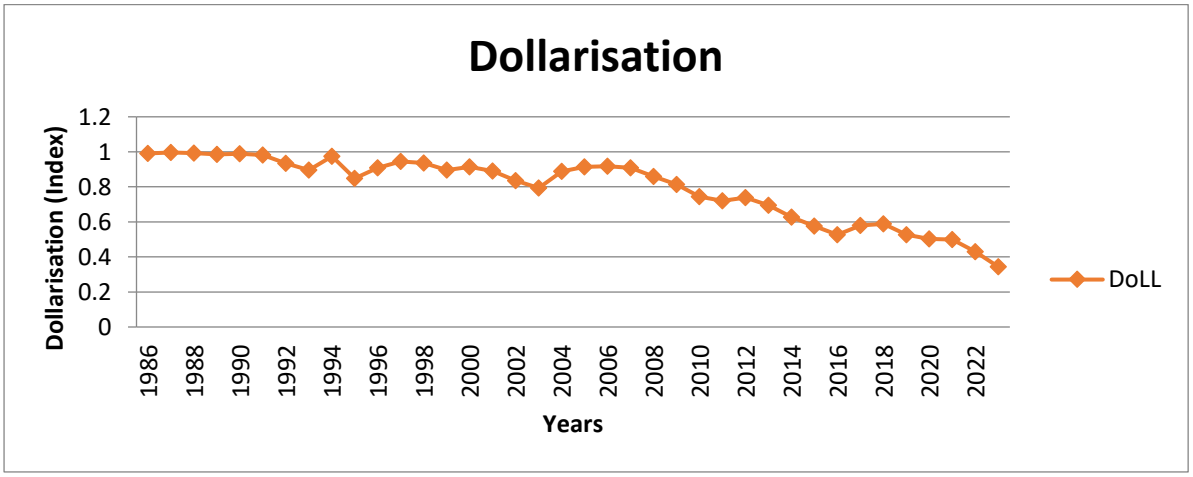

Figure 1: Trend of Dollarisation in Nigeria
Source: Extracts from E-Views Version 10 (2025)

The dollarization index, as depicted in Figure 1 above, quantified the extent to which Nigeria replaced its own national currency with the US dollar (USD) as its official or de facto currency over the 37 years chosen for the study. The graph showed that Nigeria's dollarization (DOLL) trended high and steadily from 1986 and the mid-1990s, reaching its highest point ever in 1987. This may be explained by the technical devaluation of Nigeria's native currency, which was implemented in 1986 as part of the Structural Adjustment Programme (SAP) to change domestic prices in favor of exports. The government at the time not only permitted citizens to open dollar-denominated bank accounts, known as "domicile accounts," but it also permitted dollarization to occur in such a way that contracts, domestic and foreign debts, and the salaries of certain government officials were all valued and quoted in dollars. Between 2010 and 2023, the degree of dollarization saw a significant decline. Because of the strict regulations put in place to discourage dollarization in Nigeria, such as the CBN Act of 2007, which makes the Naira the only legal tender in Nigeria and makes it illegal to refuse it as payment, as well as the requirement that prices for goods and services in Nigeria be in Naira, the degree of dollarization in Nigeria has decreased over the period. The use of foreign currency (FX) in transactions between Nigerians or Nigerian organizations is prohibited under the CBN's 2015 Dollarization Circular. One of the other factors that contributes to the long-term decline in dollarization tendencies in Nigeria is the CBN's limitation on deposit money banks' ability to collect foreign currency for domestic transactions.

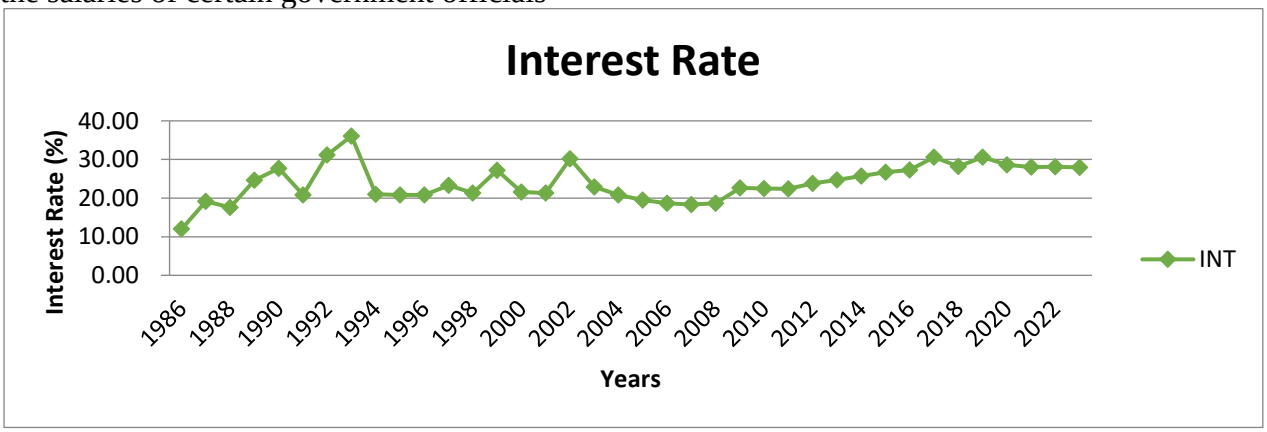

Figure 2: Trend of Interest Rate in Nigeria
Source: Extracts from E-Views Version 10 (2025)

The trend for interest rates, which gauge the prime rate at which commercial banks make money available to individuals, was shown in Figure 2. The graph showed that interest rates in Nigeria fluctuated during the study period. Interest rates continued to decline from 1994 to 1998, as well as from 2005 and 2008, but they were high in 2013 and 2023, and they reached their highest point ever in 1992. Since then, interest rates have fluctuated, which is a fundamental aspect of Nigeria's efforts to stabilize its money supply and prices. Between 2005 and 2008, interest rates showed a consistent decreasing trend, demonstrating the steadiness of the money supply and price stability policies during that time.

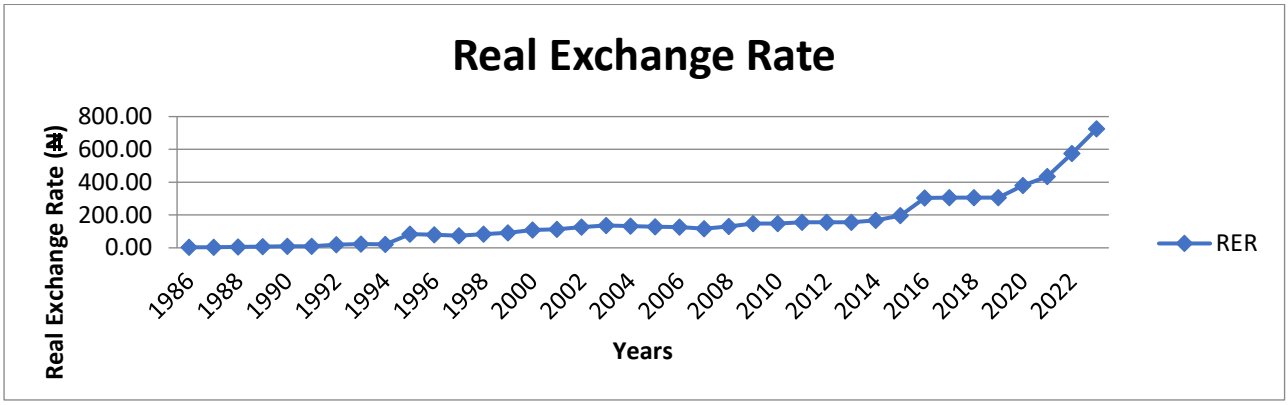

Figure 3: Trend of Exchange Rate in Nigeria
Source: Extracts from E-Views Version 10 (2025)

The time plot of the Nigerian Naira to US dollar exchange rate over a 37-year period is shown in Figure 3. The graphic demonstrates how consistent the Naira's value relative to the US dollar was from 1986 to 1995. The Naira was worth more at this time than it was when the Nigerian Naira to US dollar exchange rate was at its lowest point ever, reaching an all-time low in 1986. The Structural Adjustment Programme (SAP) started to have an impact on the Nigerian economy in 1992, when the exchange rate started to rise. In 2023, it reached its highest point ever. The graph also demonstrates that the series saw both upward and negative movement between 2007 and 2016.

Theoretical Framework

The theories of purchasing power parity (PPP) and the international fish effect (IFE) serve as the foundation for this investigation. A unit of currency from one country should have the same purchasing power in another if the nominal exchange rate between two currencies is equal to the ratio of the two countries' aggregate price levels, according to the disarmingly straightforward purchasing power parity (PPP) theory, which was developed by Swedish economist Gustav Cassel in 1918. Even though purchasing power parity (PPP) has been a component of economics for centuries, the term was first used in the years following World War I as part of a global policy debate about the appropriate level for nominal exchange rates among the major industrialized nations following the massive inflations that occurred during and after the war (Cassel, 1918). Based on the concept of one price, the purchasing power parity (PPP) idea is a sophisticated economic proposition. According to the legislation, prices of items of comparable quality should be the same in two nations when stated in the same currency, provided that there are no trade obstacles and that transportation costs are either nonexistent or very low. According to the PPP hypothesis, exchange rates between any two nations will fluctuate over time to reflect shifts in each nation's price level.

However, according to the Fisher effect theory, the projected changes in inflation rates are equivalent to the variations in nominal interest rates between two economies. Interest rates are correlated with inflation and currency rates through the Fisher effect. According to the international Fisher effect, often known as Fisher's open hypothesis, shifts in the nominal interest rates of two economies are associated with anticipated shifts in the spot exchange rates of those nations (Fisher, 1930). According to the theory, the real interest rate plus the anticipated rate of inflation equals the nominal interest rate for any given time period. We call this the Fisher Effect. According to Fisher's (1930) theory, the nominal

interest rate is made up of two parts: the actual rate and the expected inflation rate. He claimed that in a world of perfect foresight, interest rates and inflation would have a one-tone relationship, with real interest rates being entirely based on the actual economic factors—like investor time preference and capital productivity—and unaffected by the anticipated rate of inflation.

The study's theoretical foundation is provided by the Purchasing Power Parity (PPP) and International Fisher Effect (IFE) theories, which analyze long-term price levels and relate inflation and exchange rates to interest rate convergence under dollarization and other alternative exchange rate regimes. Nigeria, which has been dollarized since 1986 during the SAP era, is the subject of the analysis. According to the PPP and IFE theories, Nigeria and the United States should have high price integration after all this time. This would be especially true given that the research generally agrees that the Fisher Effect and Purchasing Power Parity hold true over the long term. Furthermore, Nigeria's attainment of trade and financial integration with the United States and global markets may have played a role in the integration of both the price and income levels. In order to confirm the study's relevance to the Nigerian economy, it would be based on the theoretical foundations of the International Fisher and Purchasing Power Parity theories.

Empirical Review

Ahmed (2023) investigates how Nigerian general business indicators are affected by currency substitution. Using quarterly data from 1994Q1 to 2009Q4, the study used econometric techniques, such as the cointegration and error correction model (ECM) approach, to analyze the long- and short-term attendant links. Even if the effects of inflation, interest rate differentials, and exchange rate depreciation in Nigeria are not particularly significant, the study's empirical findings show that there is a long-term correlation between currency substitution and these broad business indices.

Likewise, Ustaoğlu (2021) employs quarterly data from 1986:01 and 2020:12 to investigate the reciprocal impact of deposit dollarization on the USD exchange rate in Turkey. Deposit dollarization has been used to describe the dollarization phenomenon, which has recently returned to our nation's agenda. Consequently, the USD exchange rate was significantly impacted by dollarization. However, it was discovered that dollarization was unaffected by the USD exchange rate. Consequently, it was concluded that causality was unidirectional. Their adjustments had an impact on USD exchange rates and deposit dollarization.

Furthermore, by examining the case of Ghana using the Autoregressive Distributed lag Modeling framework, George, John, and Michael (2019) expand the boundaries of study on the factors that contribute to dollarization in emerging countries. The study's data set covered the period from January 2002 to March 2016. The data points to a stochastic trend that dollarization shares with real production, inflation, interest rate differentials, exchange rates, and financial development. The analysis highlights the significant contributions that financial development and exchange rate depreciation have made to the dollarization process. Financial progress reduces the trend of using foreign currency, whereas depreciation encourages it.

Additionally, Uduakobong and Babatunde (2019) looked at how dollarization affected a few macroeconomic factors in Nigeria between 1972 and 2017. The study examined how Nigeria's prime

lending rates, inflation, unemployment, per capita income (PCI), foreign direct investment (FDI), real GDP growth, and total trade were affected by the real dollarization index using basic regression models. Dollarization did not significantly improve the chosen macroeconomic factors, according to empirical findings.

Furthermore, Alagidede and George (2018) investigated Ghana's money demand stability and currency replacement. The study models a long-run money demand function within the framework of portfolio balance. For yearly data from 1960 to 2013, the estimation method uses the Autoregressive Distributed Lag model in accordance with the cointegration and error correction framework. The findings show that whereas narrow money's income elasticity is about one, broad money's is less than unity. The interest rate variable's coefficient is negative for narrow money and positive for broad money, indicating that the two types of money are defined differently. Additionally, while the exchange rate variable stays positive throughout, the coefficient for returns on foreign bonds is negative for both narrow and wide monetary aggregates. The results show that exchange rates and foreign interest rates are important drivers in the dynamics of local money demand, even if there is no empirical evidence to support currency substitution.

3. Methodology

In order to establish a cause-and-effect relationship between dollarization, exchange rates, and interest rates in Nigeria, the study used an ex-post facto research design, which examines how independent variables with certain characteristics that existed before the study affect a dependent variable. Statistics bulletins produced by the Central Bank of Nigeria (CBN) and the National Bureau of Statistics (NBS) for the years 1986–2024 were among the primary secondary sources of data used in this study. This study employed statistical and economic methods for data presentation and analysis. Examples of these methods include tables and the Augmented Dickey Fuller Test (ADF), which is used for unit root testing to determine the sequence of integration of the variables without interruption. To account for structural discontinuities in the data, the unit root test was incorporated into the Zivot-Andrews (ZA) (Zivot & Andrews, 1992) structural breakpoint model. The primary objective of this test is to confirm whether the data are indeed nonstationary in the presence of structural discontinuities. Perron (1989) discovered that structural breakdowns in stationary data can cause unit root. The Johansen cointegration test was employed to ascertain the long-term correlations among the variables in the study. The Structural Vector Autoregressive (SVAR) framework was used to analyze how dollarization affected Nigeria's interest rates and exchange rates during the study period. The estimated model was validated using diagnostic tests as the Ramsey RESET Test, Breusch-Pagan-Godfrey Heteroscedasticity Test, and Breusch-Godfrey Serial Correlation LM Test.

The study adopted the Structural Vector Autoregressive (SVAR) AB-model by David and Kehinde (2015) which combines the restrictions for A and B was adopted. In order to avoid characterizing this variable as exogenous, The policy instrument is mostly determined endogenously, as the SVAR technique recognizes. After modeling its reduced version with the help of a VAR system, the SVAR analysis proceeds to identify the model. This is achieved by the modeling of a "reaction function in surprises," which represents unanticipated

shifts in the non-policy variable and monetary policy shocks as well as unannounced changes in the policy instrument. The restrictions on matrices A and B can be represented in matrix form for three variable scenarios as follows:

$$A = \begin{bmatrix} 1 & 0 & 0 \\ a21 & 1 & 0 \\ a31 & a32 & 1 \end{bmatrix} \qquad \mu_t = \begin{bmatrix} b11 & 0 & 0 \\ 0 & b22 & 0 \\ 0 & 0 & b33 \end{bmatrix} \qquad \in_t$$

……..,,(3.1)

Where;

A is a triangular 3 × 3 matrix and B is also a diagonal 3 × 3 matrix. Equation (3.1) then becomes;

$$A = \begin{bmatrix} 1 & 0 & 0 \\ a21 & 1 & 0 \\ a31 & a32 & 1 \end{bmatrix} \qquad \begin{matrix} \mu 1 \\ \mu t2 \\ \mu 3 \end{matrix} = \begin{bmatrix} b11 & 0 & 0 \\ 0 & b22 & 0 \\ 0 & 0 & b33 \end{bmatrix} \qquad \begin{matrix} \in 1 \\ \in 2. \\ \in 3 \end{matrix}$$

……..…….(3.2)

The variables' vector ordering can be written as follows:

$y_t = [DOL,$ EXR, $INT]$

…….…….…….(3.3)

Theory and intuition serve as the guiding principles for the variable ordering. We anticipate that the exchange rate will cause dollarization, which would subsequently impact interest rates. The matrices in equation (3.3) allow us to express our variables' ordering as follows:

$$A = \begin{bmatrix} 1 & 0 & 0 \\ a21 & 1 & 0 \\ a31 & a32 & 1 \end{bmatrix} \qquad \begin{matrix} \mu 1 DOL \\ \mu t2 EXR = \\ \mu 3 INT \end{matrix} \begin{bmatrix} b11 & 0 & 0 \\ 0 & b22 & 0 \\ 0 & 0 & b33 \end{bmatrix} \qquad \begin{matrix} \in 1 DOL \\ \in 2 EXR \\ \in 3 INT \end{matrix}$$

…….....(3.4)

Equation 3.4 can be explicitly expressed as;

$\mu_1 DOLL = b_{11} e_1 DOLL$…….……..……(3.5)

$\mu_2 EXR = a_{21}\mu_1 DOLL + b_{22} e_2 EXR$…….……..……...(3.6)

$\mu_3 INT = a_{31}\mu_1 DOLL + a_{322}\mu_2 EXR + b_{33} e_3 INT$…….……..…..…..(3.7)

Where;

DOLL is Dollarization

EXR is Exchange Rate

INT is Interest Rate

The response of dollarization to its own shock as well as exchange rate and interest rate will depend on signs and magnitudes of the dollarization coefficients in equations 3.5, 3.6 and 3.7 represented as $b_{11,}$ a_{21} and a_{31} respectively. Equation 3.6 was be used to assess the impact of dollarization on exchange rate in Nigeria. Similarly, equation 3.7 was used to examine the extent to which dollarization impact on interest rate in Nigeria.

4. Empirical Results

Unit Root Test

The data were put through a unit root test to check for stationarity in the data series in order to prevent illogical regression estimates that could produce erroneous results. Table 1 displays the results of the Augmented Dickey-Fuller (ADF) test.

Table 1: ADF Unit Root Test (Without Break)

Variables	ADF Test Statistic	5% Critical Value	10% Critical Value	Prob.	Order of Integration
DOLL	-4.630987	-2.948404	-2.612874	0.0007	I(1)
INT	-4.044510	-2.943427	-2.610263	0.0033	I(1)
RER	-8.419332	-2.948404	-2.612874	0.0000	I(1)

Source: Extracts from E-Views 10, 2025

DOLL, INT, and RER have respective ADF statistic values of -4.630987, -4.044510, and -8.419332. For the 37 observations, the corresponding one-sided p-values are less than 0.05. The outcome also demonstrates that, for all variables, the statistic ta values are below the critical thresholds at 5% and 10%. Therefore, with a standard test size, the null hypotheses are rejected. As a result, at first difference I(1) series, the variables are stationary.

To account for structural discontinuities in the data, the unit root test is a component of the Zivot-Andrews (ZA) (Zivot & Andrews, 1992) structural breakpoint model. Verifying whether our data are actually nonstationary in the presence of structural fractures is the main goal of this test. Perron (1989) found that unit root can be induced by structural breakdowns in stationary data. Consequently, table 2 displays the results of the unit root test with breaks.

Table 2: Zivot and Andrews Unit Root Test (With Break)

Variables	Break Year	Zivot-Andrews test statistic	5% Critical Value	10% Critical Value	Prob.	Order of Integration
DOLL	2004	-4.893525	-5.08	-4.82	0.003504	I(1)
INT	1994	-6.166148	-5.08	-4.82	0.000247	I(1)
RER	2016	-0.321970	-4.80	-4.42	0.030873	I(1)

Source: Extracts from E-Views 10, 2025

The results of the Zivot and Andrew unit root tests, which are displayed in table 2, reveal that we may reject the null of the unit root for all variables at the five percent significance level because the P-Values for each variable are less than 0.05. The results of the unit root test for these series, which omitted structural breakdowns, are clearly in line with this result.

Johansen Co-integration

Table 3 displays the findings of the Johansen cointegration test, which was used to ascertain the long-term relationship between the study's variables.

Table 3: Johansen Cointegration Test Result

Deterministic Trend (Series) = (DOLL, INT, RER)					
Null Hypothesis	**Alternative Hypothesis**	**Eigen Value**	**Trace Statistic**	**0.05 Critical Value**	**Probability**
r = 0*	r = 1	0.362929	29.49260	29.79707	0.0227
r ≤1*	r = 2	0.158227	1 7.261146	15.49471	0.0475
r ≤2*	r = 3	0.029024	10.060337	3.841466	0.30031
Null Hypothesis	**Alternative Hypothesis**	**Eigen Value**	**Max-Eigen Statistic**	**0.05 Critical Value**	**Probability**
r = 0*	r = 1	0.362929	26.23146	21.13162	0.0116
r ≤1*	r = 2	0.158227	1 6.200809	14.26460	0.0187
r ≤2*	r = 3	0.029024	11.060337	3.841466	0.0031

Source: Extracts from E-Views 10, 2025

Keep in mind that r stands for the number of co-integrating vectors. Both trace statistics and max-eigen statistics display three co-integrating equations. * denotes a 0.05 level rejection of the hypothesis. The Max-Eigen and Trace statistics show that the variables in the series have a long-term equilibrium connection. The null hypothesis that there is no co-integrating equation is thus rejected because their statistics are greater than their respective critical values for the co-integrating equation at the 5% significance level. As this implies a stationary linear combination, the non-stationary time series are thus co-integrated.

VAR Lag Order selection Criteria

An ideal lag is chosen for the empirical model based on Schwarz Information (SC), Akaike Information Criterion (AIC), Sequential Modified LR Test Statistic, Final Prediction Error (FPE), and Hannan-Quinn Information Criterion (HQ). The outcomes of the VAR order selection criterion are displayed in Table 4.

Table 4: VAR Oder Selection Criterion

Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	-209.7834	NA	54.76707	12.51667	12.65135*	12.56260
1	-198.0750	20.66193*	46.85243*	12.35735*	12.89607	12.54107*
2	-190.8349	11.49890	52.72854	12.46088	13.40363	12.78238
3	-188.5447	3.233296	81.09636	12.85557	14.20236	13.31486

Source: Extracts from E-Views 10, 2025

The findings of four different information criteria—Sequential Modified (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), and Hannan-Quinn Information Criterion (HQ)—clearly show that the optimal lag length is one (1), as indicated by the asterisk (*) having the lowest values.

Structural VAR Estimates

The main objective of structural VAR (SVAR) estimation is to get non-recursive orthogonalization of the error terms for impulse response analysis. The user must apply sufficient constraints to distinguish the orthononal (structural) components of the error terms when using this substitute for the recursive Cholesky orthogonalization. The outcomes, as displayed in the matrix below, illustrate how the different parameter estimations relate to one another in table 5.

Table 5: Estimated Contemporaneous Structural Parameters

A =

0.046843	0	0
−0.867452	−3.419213	0
−60.09757	−34.25676	80.54734

DOL

EXR

INT

Source: Extracts from E-Views 10, 2025

Note: The formula (n2 – n)/2 is used to determine the number of limitations, where n is the number of variables in the SVAR model.

The likelihood ratio test of over-identified limitations can be rejected at the usual significance level because the results in Table 5 demonstrate that the model has just recently been recognized. The hypothesis that the model is over-identified is rejected by the likelihood ratio test, which reveals that the p value of achieving a chi-square value of as much as -214.5869 is statistically not different from zero. In light of this, the predicted contemporaneous coefficients in the structural model shown in equation 3.5 are reported in the table. Table 5 shows that dollarization has a negative impact on interest rates and exchange rates by 60.1% and 0.87%, respectively.

Diagnostic Test Estimates

The study employed the post-estimation test to determine the residuals of the estimated model for reliable and accurate results. Table 6 displays the findings of the tests for serial correlation, heteroskedasticity, and normality.

Table 6: Diagnostic Test Results

Test	Null Hypothesis	F-statistics	Prob. Value
Residual Portmanteau Tests for Autocorrelations	: No serial correlation	11.37928	0.2506
Residual Heteroskedasticity Tests (Levels and Squares)	No Hetroscedasticity	60.03507	0.5072
Residual Normality Tests	Residuals are multivariate normal	16.39016	0.1118

Source: E-Views 10 Version (2025)

The model is put through a serial correlation test based on table 6 above to verify the accuracy of the estimations or the contrary. The null hypothesis is that there is no serial correlation in the residuals up to a specified lag order. The aforementioned findings show that the null hypothesis cannot be rejected since the probability value for F-statistics is more than the 5% significance level (0.2506>0.05). Serial correlation is therefore not a problem for the model.

Likewise, the heteroscedasticity test has been employed to ascertain whether the disturbance term's variance varies for every observation. The null hypothesis for the test is that there is no heteroskedasticity. The null hypothesis cannot be rejected since the F-statistics' p-value is more than the 5% significance level (0.5072 > 0.05). Thus, the model is homoscedastic.

When the series residuals are tested for normality using the Jarque-Bera (JB) statistic, the p-values of the JB statistic are greater than the 5% significant level (0.1118), indicating that the null hypothesis—that the residuals are multivariate normal—is accepted.

Discussion of Major Findings

The argument is based on the study's objective and the structural VAR estimations' results. The main objective of the study is to assess the impact of

dollarization on Nigeria's currency rate. The structural VAR model predicts that dollarization has a negative effect on the exchange rate. When dollarization has a negative impact on the exchange rate, the value of the local currency falls relative to the US dollar or other foreign currencies, which could lead to economic instability and complicate economic management. Nigeria's financial systems are dependent on the stability of other economies, making them more vulnerable to economic shocks in the US or other countries. The findings supported a related study by Udoh and Udeaja (2019), which showed that Nigeria's degree of financial dollarization drives nominal exchange rate volatility. This is because, whereas good news about appreciation raises the nominal value of the home currency, news about depreciation triggers an increase in foreign currency holdings, which further depreciates the local currency exchange rate. Additionally, it is in line with studies by George, John, and Michael (2019) and Ustaoğlu (2021), which discovered that dollarization had a major effect on the USD exchange rate. The analysis also highlights the critical roles that financial development and exchange rate depreciation played in the evolution of dollarization. Financial progress reduces the trend of using foreign currency, whereas depreciation encourages it. The findings, however, go counter to a study by Alagidede and George (2016) that showed financial dollarization improved Ghana's nominal exchange rate volatility; that is, as demand for US dollars increases, so does the volatility and instability of the cedi/dollar exchange rate.

The study's second goal looks at how much dollarization affects interest rates in Nigeria. Dollarization and interest rates have a negative association, according to the estimated structural VAR model. When dollarization has a negative impact on interest rates, it suggests that the nation's capacity to regulate inflation and establish its own monetary policy is compromised, which could result in increased borrowing costs and unstable economic conditions. The nation gives up authority over its own monetary policy, including interest rates, when it accepts a foreign currency as legal tender. This implies that when its currency is not in use, Nigeria cannot employ interest rate changes to fight inflation or spur economy. Nigeria might have to pay higher interest rates when borrowing in dollars since it will no longer have control over monetary policy. The study's findings are consistent with those of Uduakobong and Babatunde (2019), whose empirical research showed that dollarization had no appreciable positive impact on interest rates. Additionally, It corroborated Ahmed's (2023) study, which discovered a poor long-term correlation between currency substitution and typical business indices such as interest rate differentials, inflation, and the depreciation of the Nigerian Naira.

5. Conclusion and Recommendations

According to the study's findings, dollarization has a negative impact on exchange rates since it devalues the value of the home currency relative to the US dollar or other foreign currencies, which could cause instability and make it harder to manage the economy. Additionally, they come to the conclusion that dollarization has a negative impact on interest rates, which weakens the nation's ability to manage inflation and create its own monetary policy. This could result in greater borrowing costs and economic instability. The study also comes to the conclusion that variations in the degree of dollarization have an impact on the structure and level of interest rates in Nigeria, which may restrict the nation's ability to control inflation or economic

conditions through its own interest rate policies. Additionally, exchange rates have an impact on one another, resulting in a feedback loop where changes in one have an impact on the other. Financial market participants should not anticipate that changes in interest rates will inevitably result in predictable movements in exchange rates, and vice versa, as the study concludes that interest rate and exchange rate changes do not predictably lead to changes in the other, indicating that they are independent or influenced by other factors. The following suggestions are put out in accordance with the study's findings:

1. The Central Bank of Nigeria (CBN) should adjust prudential regulations by implementing currency-differentiated reserve requirements, raising the reserve requirements for dollar-denominated deposits above those for local currency deposits and adjust prudential regulations for foreign currency credit, such as higher provisions for foreign currency loans
2. CBN should also impose higher reserve requirements on foreign currency denominated assets held by banks compared to those held in local currency. This incentivizes banks to reduce their exposure to foreign currency by making it more costly to hold dollar deposits, thereby encouraging a shift towards local currency instruments.
3. Central Bank of Nigeria might need to consider other factors when setting monetary policy targets for attracting foreign exchange and enhancing the value of the local currency, because the conventional correlation between interest rates and exchange rates may not be a trustworthy indicator. The Central Bank should, maintain monetary policy independence, and communicate its strategy transparently to the public so as to ensure a predictable monetary policy environment, and implementing open market operations to manage liquidity and inflation.

Lastly, only agents involved in legitimate international transactions should have access to dollars, and the monetary authorities should restrict their movement within the financial system.

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