Modeling Structural Relationships of Exchange Rates of Naira to Some Foreign Currencies

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***Abstract*— This study investigates the existence of causality among exchange rates of Naira to three of the major foreign currencies (Euro, Pound Sterling and US Dollar). The work is aimed at determining the patterns of causalities that exist among these three foreign currencies to Nigerian Naira using multivariate time series modeling techniques. The data employed for this study were on daily exchange rates of Naira to Euro, Pound Sterling and US Dollar over a period of thirteen years beginning from 1st January, 2002 to 31st December, 2014. The rates were national datasets extracted from the published statistical bulletin of the Central Bank of Nigeria. The Vector Autoregressive (VAR) model which is useful for describing the dynamic behavior of economic and financial time series was fitted to the data. The potential causal relationships among the three exchange rates using the Granger Causality tests were examined. Results revealed that the future exchange rates of Naira to Euro can be predicted by the past values of Naira to Euro and Naira to US Dollar. Finally, the exchange rates of Naira to Pound Sterling was granger caused by Naira to Euro and Naira to US Dollar exchange rates, and the rate of exchange of Naira to US Dollar was granger caused by the Naira to Euro exchange rates. Results from this work would assist the government, policy makers and other interested stakeholders to be familiar with the inherent relationship among the notable currencies to the Naira for efficient business decisions.**

Keywords: *Granger Causality, Co-integration, Stationary, VAR.*

I. Introduction

The need for nations to transact business among one another is inevitable, but the currency of one country cannot be used for making payments in another country. Hence, it becomes necessary to convert money into the currency of other countries in order to pay for goods and services in those countries. This study focuses on the exchange rates of Nigerian Naira (₦) to Euro (€), Pound Sterling (£) and US Dollar ($) in order to investigate the structural relationships among these exchange rates. An exchange rate, otherwise known as foreign exchange rate or fix rate between two or more currencies, is the rate at which one currency will be exchanged for another. Inevitably, there are trades, travels and other transactions between individuals and business organizations of different countries. The use of foreign exchange rates evolved because different nations have different monetary units, and the currency of one country cannot be used for transactions in another country.

The exchange rate is one of the good indicators of a country's relative level of healthy economy and plays a vital role in a country's level of trade, which is essential to most or every free market economy in the world. Owing to this, exchange rates are among the economic measures which are frequently observed and manipulated by the government in order to position the country in good standing. Among others, exchange rates play vital roles in determining the value of imports into and exports from a country.

This study models the structural relationships that exist among exchange rates of Naira to US Dollar (USD), Pound Sterling (PS) and Euro. Dollar is the currency of the United States of America, Pound Sterling is the currency for Britain, Europe and few other countries, while Euro is the currency for European countries like France, Germany and Italy. These currencies were considered because they appear to be popular and are the common denominators of most World currencies, and of course, they are part of basket of currencies which determine the International Monetary Fund (IMF) special drawing rights.

The data sets used for this work were secondary data extracted from the Statistical Bulletin of Central Bank of Nigeria and personal daily recordings of exchange rates as announced by the Central Bank of Nigeria. The data consist of daily exchange rates from Naira to Euro, PS and USD for a period of thirteen years spanning January 1st, 2002 through December 31st, 2014.

Vector autoregressive (VAR) which is a special case of the more general class of ARMA models was employed for this study. Sims (1980) developed the approach of VAR systems as an alternative to the traditional simultaneous equations system approach. Starting from the autoregressive representation of weakly stationary processes, all included variables are assumed to be jointly endogenous. Thus, in a VAR of order *p* (VAR (*p*)), each component of the vector **x** depends linearly on its own lagged values up to *p* periods as well as on the lagged values of all other variables up to order *p*. With such a model we can find out whether or not a specific Granger causal relation exists in the system. The VAR methodology has been applied to a vast range of empirical areas, including monetary and fiscal policy analysis and short terms economic forecasting (see Caines et al., 1981).

In Domac (2003), VAR was used to study the relationship between the exchange rate, inflation, inflation expectations and money supply growth in 53 developing countries. The study utilized annual data for the period 1964 to 1998 to test the level of causality between the aforementioned economic variables. The results from his work showed that 67% of the variances in the rate of inflation in both long run and short run is explained by exchange rate depreciation and expected inflation explains about 10 to 20% of movements in the rate of current inflation both in the short run and long run.

Nigerian financial system has been characterized by series of financial and monetary policy changes as a result of frequent political instability in the country especially between 1970 and 2004. Babatope-Obasa (2004) stated that; "the period is very unique because it was faced by fiscal policy changes, trade liberalization, economic deregulations and actual devaluation of currency. Owing to this, many researchers have studied exchange rates of naira to other foreign currencies. For instance, Nwafor (2006) worked on the monetary perspective on determination of exchange rate of naira to dollar, while Shittu (2008) examined the impacts of financial and political instability on exchange rates in Nigeria. Forecast performances of models (ARIMA and ARFIMA) as applied to US dollar and pounds sterling exchange rates to naira was studied by Shittu and Yaya (2008). Meanwhile, Onasanya and Adeniyi (2013) studied forecasting models for exchange rates between naira and US dollar using time domain model approach.

This current study, therefore, considered the exchange rates of Euro, Pound Sterling and US Dollar to naira as being recorded on a daily basis using the techniques of vector autoregressive model developed by Sims (1980). The aim is to investigate the causalities that exist among the exchange rates of naira to these three foreign currencies as well as determining the directions of the causalities that exist between them. Finally, the type of relationship that exist between the chosen three foreign currencies with respect to their exchange rates within the period studied shall be established.

II. MATERIALS AND METHODS

VAR is a natural extension of the univariate autoregressive model to dynamic multivariate time series. The VAR model has proven to be especially useful for financial time series, forecasting and describing the dynamic behaviour of economic time series. It often provides superior forecasts to models from univariate time series.

Forecasts from VAR models are quite flexible because they can be made conditional on the potential future paths of specified variables in the model. The VAR model used for this study is specified as

$$\boldsymbol{X_t = c + \alpha_1 X_{t-1} + \alpha_2 X_{t-2} + \cdots + \alpha_p X_{t-p} + \varepsilon_{it}} \qquad \mathbf{1}$$

where $\boldsymbol{X_t} = \{X_{1t}, X_{2t}, \dots, X_{nt}\}$, $\boldsymbol{p}$ is the lag length, $\boldsymbol{\alpha_i}$ is an (n×n) matrix of coefficients (for i = 1 to p), $\boldsymbol{t}$ is the time period ($\boldsymbol{t}$ = 1, 2, 3, ...,T), $\boldsymbol{n}$ denotes the numbers of endogenous variables, **c** is an nx1 vector of constants and $\boldsymbol{\varepsilon_{it}}$ is a vector of generalization of white noise. Thus, a vector auto-regression is a system in which each variable is regressed on a constant and $\boldsymbol{p}$ of its own lags as well as on $\boldsymbol{p}$ lags of each of the other variables in the *VAR*. Note that each regression has the same explanatory variable(s).

The basic VAR (p) model may be too restrictive to represent sufficiently the main characteristics of the data. In particular, other deterministic terms such as a linear time trend or seasonal dummy variables may be required to represent the data properly. More so, exogenous variables may be required as well. The general form of the VAR (p) model with deterministic terms and exogenous variables is given by

$$X_t = \alpha_1 X_{t-1} + \alpha_2 X_{t-2} + \cdots + \alpha_p X_{t-p} + \phi D_t + G Y_t + \varepsilon_t \qquad \mathbf{2}$$

$$for\ t = 1, 2 \dots . T$$

where D_t represents an (l × 1) matrix of deterministic components, Y_t represents an n × 1 vector of exogenous variables, and Φ and G are parameter matrices.

2.1 Criteria for Determining the Lag Length of VAR Model

The lag length for the VAR model may be determined using some model selection criteria. The general approach is to fit VAR models with orders $\boldsymbol{m}$ = 0, 1, 2,.... ,P_{max} and choose the value of $\boldsymbol{m}$ which minimizes some model selection criteria (see Lutkepohl, 2005). The general form of model selection criteria have the form

$$C(\boldsymbol{m}) = \log\left|\widehat{\sum_m}\right| + C_T.\ \varphi\ (m, k) \qquad 3$$

where $\widehat{\sum}_m = T^{-1}\sum_{t=1}^{T} \widehat{\varepsilon_t}\widehat{\varepsilon_t}'$ is the residual covariance matrix estimator for a model of order m, φ(m, k) is a function of order ***m*** which penalizes large VAR orders and C_T is a sequence which may depend on the sample size and identifies the specific criterion. The term $\log\left|\widehat{\sum_m}\right|$ is a non increasing function of order ***m*** while φ(m,k) increases with ***m***. The lag order is chosen which optimally balances these two forces.

Three of the commonly used information criteria for selecting the lag order, Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC), Hannan-Quin Information Criteria (HQIC) which are stated as equations 4, 5 and 6, were used to select optimal lag order for this work.

$$\text{AIC } (\boldsymbol{m}) = \log\left|\widehat{\sum_m}\right| + \frac{2}{T}mk^2 \qquad 4$$

$$\text{SIC } (\boldsymbol{m}) = \log\left|\widehat{\sum_m}\right| + \frac{logT}{T}mk^2 \qquad 5$$

$$\text{HQIC } (\boldsymbol{m}) = \log\left|\widehat{\sum_m}\right| + \frac{2loglogT}{T}mk^2 \qquad 6$$

In each case φ (m, k) = mk^2 is the number of VAR parameters in a model with order ***m*** and ***k*** is number of variables. Thus, among the three criteria AIC always suggest the largest order, SIC chooses the smallest order and HQIC is in between. Of course, this does not preclude the possibility that all three criteria agree in their choice of VAR order.

The HQIC and SIC criteria are both consistent, that is, the order estimated with these criteria converges in probability or almost surely to the true VAR order ***p*** under quit general conditions, if ***p*** max exceeds the true order (see Lutkepohl, 2005).

2.2 Granger Causality Test

Granger causality have been found useful in determining if one time series can be used in forecasting another, because it goes beyond correlation to test for causation. The structure of the VAR model provides information about forecasting ability of a variable or a group of variables for other variables. The intuitive notion of a variable's forecasting ability adopted for this study is due to Granger (1969).

If a variable, or group of variables, $\mathbf{y_1}$ is found to be helpful for predicting another variable, or group of variables, $\mathbf{y_2}$ then $\mathbf{y_1}$ is said to Granger-cause $\mathbf{y_2}$; otherwise it is said to fail to Granger-cause $\mathbf{y_2}$. Formally, $\mathbf{y_1}$ fails to Granger-cause $\mathbf{y_2}$ if for all $\mathbf{s > 0}$ the MSE of a forecast of $\mathbf{y_{2,t+s}}$ based on $(\mathbf{y_{2,t}}, \mathbf{y_{2,t-1}}, \ldots)$ is the same as the MSE of a forecast of $\mathbf{y_{2,t+s}}$ based on $(\mathbf{y_{2,t}}, \mathbf{y_{2,t-1}}, \ldots)$ and $(\mathbf{y_{1,t}}, \mathbf{y_{1,t-1}}, \ldots)$. Clearly, the notion of Granger causality does not imply true causality. It only implies forecasting ability. If $\mathbf{y_1}$ causes $\mathbf{y_2}$ and $\mathbf{y_2}$ also causes $\mathbf{y_1}$ the process $(\mathbf{y_{1t}}', \mathbf{y_{2t}}')'$ is called a feedback system.

Basically, a time series **X** is said to Granger-cause **Y** if it can be shown, usually through a series of t-tests and F-tests on lagged values of **X** (and with lagged values of **Y** also included), that those **X** values provide statistically significant information about future values of **Y**.

III. Analysis

3.1 Model Specifications

Here, individual VAR model for each of the exchange rates (Euro, PS and USD) are stated as equations 7, 8 and 9 respectively.

$$X_t = C_1 + \alpha_{11}X_{t-1} + \alpha_{12}X_{t-2} + \beta_{11}Y_{t-1} + \beta_{12}Y_{t-2} + \gamma_{11}Z_{t-1} + \gamma_{12}Z_{t-2} + \varepsilon_{1t} \quad \text{(for Naira to Euro)} \qquad 7$$

$$Y_t = C_2 + \alpha_{21}X_{t-1} + \alpha_{22}X_{t-2} + \beta_{21}Y_{t-1} + \beta_{22}Y_{t-2} + \gamma_{21}Z_{t-1} + \gamma_{22}Z_{t-2} + \varepsilon_{2t} \text{(for Naira to Pounds Sterling)} \mathbf{8}$$

$$Z_t = C_3 + \alpha_{31}X_{t-1} + \alpha_{32}X_{t-2} + \beta_{31}Y_{t-1} + \beta_{32}Y_{t-2} + \gamma_{31}Z_{t-1} + \gamma_{32}Z_{t-2} + \varepsilon_{1t} \quad \text{(for Naira to US Dollar)} \quad \mathbf{9}$$

3.2 Time Plots for the Exchange Rates

First, the time plots of the exchange rates are presented in turn as Figures 1, 2 and 3 while appropriate deductions from each of the plots were made accordingly.

From Figure 1, there is an upward movement in the exchange rates of Naira to Euro and the movement continues until around October 2009 when the exchange rates decreased indicating a noticeable spike or trend in the graph, later the rates rose again over the time considered.

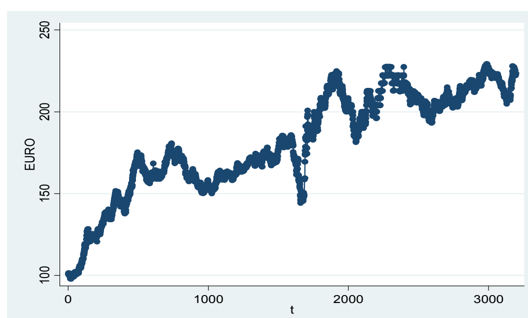

Fig 1: Time Plot for Naira to Euro Exchange Rates

In Figure 2, the plots shows an increasing movement with time in the rate of exchange of Naira to Pound Sterling, this movement continues until middle of October 2009 when the exchange rates of Pound Sterling to Naira fell drastically or declined for few days and later increased till the end of the year 2014.

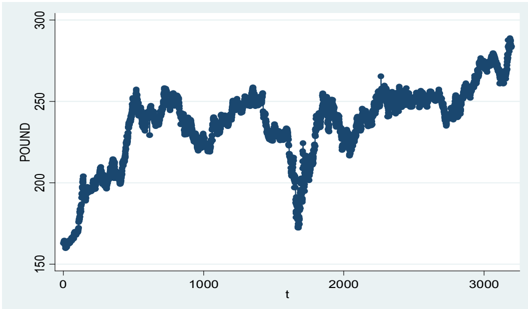

Fig 2: Time Plot for Naira to Pound Sterling Exchange Rates

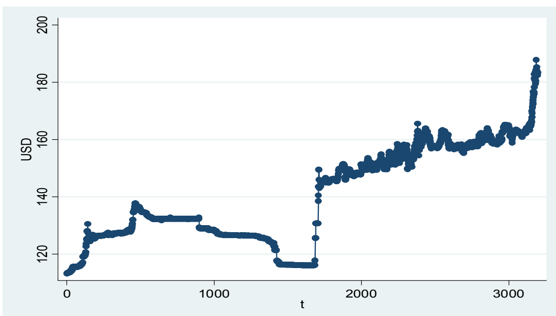

Fig 3: Time Plot for Naira to US Dollar Exchange Rates

The Figure 3 shows that the exchange rates of Naira to USD was increasing gradually with time from the first time considered till 2009 where the conversion rates fell drastically for about a week before it started rising again. But unlike the Euro and Pound Sterling rates, the exchange rates of Naira to USD was relatively stable over the period covered. The graph also indicates the non-stationary nature of the series.

3.3 Determination of Order of the VAR

Although, it was argued by some researchers that the choice of lag length is arbitrary, but determination of appropriate or optimal lag length is necessary. Therefore, the estimation of the VAR models was carried out at various lag lengths and it was discovered that lag 2 was the optimal lag length for this study. The Table 1 below has the summary of results for the selection of lag order.

Choosing too few lags could lead to systematic variation in the residuals whereas if too many lags are chosen, it comes with the penalty of fewer degrees of freedom. To determine the optimum or appropriate lag length for the VAR model the statistics discussed in Section 2.1 were used and it can be concluded that the fit is good at lag 2.

Table 1: VAR lag order selection results

Lag	AIC	SIC	HQIC
0	25.11133	25.11703	25.11337
1	9.215022	9.237841	9.223204
2	**9.040653***	**9.102003***	9.079379
3	9.044954	9.104994	9.065410*
4	9.065059	9.114817	9.067246

*** Indicates lag order selected by the criterion**

3.4 Unit Root Test

The existence of unit root was investigated using the approach of the Augmented Dickey-Fuller (ADF) test which involves running the regression stated as equation 10 below and testing the hypotheses that follow.

$$\Delta Y_t = \alpha Y_{t-1} + X_t'\delta + \beta_1 \Delta Y_{t-1} + \beta_2 \Delta Y_{t-2} + \ldots + \beta_p \Delta Y_{t-p} + U_t \quad \mathbf{10}$$

where $\alpha = \rho - 1$ and $\Delta Y_t = Y_t - Y_{t-1}$. The hypotheses to be tested is of the form;

H_0: The series is non-stationary ($\rho = 1$ or $\alpha = 0$)
versus
H_1: The series is stationary ($\rho < 1$ or $\alpha < 0$)

The results of ADF tests, with intercept but no trend, and with intercept and trend both at level and first-difference for each series are presented in Tables 2 and 3. The critical values used for the tests are the MacKinnon (1996) critical values. Test results, presented in Table 2, indicate that the null hypothesis that the series in levels contain unit root (i.e. non stationary) could not be rejected for all the three series. That is, the respective p-values are greater than conventional significance levels $\alpha = 0.05$

Table 2: Unit Root Test Result at Level

Series	**With Intercept**		**With Intercept and Trend**	
	Test Statistic	P-value	Test Statistic	P-value
Euro	-2.16	0.22	-3.03	0.07
PS	-2.58	0.10	-3.09	0.11
USD	-0.51	0.86	-1.44	0.82
Critical Value	-2.86		-3.41	

**Mackinnon (1996) one sided P-value*

Table 3: Unit roots test results after first-difference

Series	With Intercept		With Intercept and Trend	
	Test statistic	P-value	Test Statistic	P-value
Euro	-63.17	<0.001	-63.17	<0.001
PS	-64.72	<0.001	-64.72	<0.001
USD	-391.68	<0.001	-390.1	<0.001
Critical Value	-2.86		-3.41	

Since the null hypothesis cannot be rejected, in order to determine the order of integration of the non-stationary time series, the same tests were applied to the first-differenced series. The order of integration is the number of unit roots that should be contained in the series so as to be stationary.

The results in Table 3 indicate that the null hypothesis is rejected for the first-difference of the three currencies exchange rates since the p-values are less than 5% level of significance with intercept and trend. This implies that the three time series are integrated of degree one [I (1)]. Therefore, the ADF tests show that all series are non-stationary in the levels but are stationary after the first-difference.

IV. Results

4.1 Estimation of VAR Models

The estimated models for the three exchange rates (Euro, PS and USD) are presented as equations 11, 12 and 13 respectively.

$$\begin{array}{lllll} \widehat{X_t} = 0.427572 & + 0.84657X_{t-1} & + 0.15001X_{t-2} & + 0.02591Y_{t-1} & \\ (1.28453) & (37.3853) & (6.66242) & (1.40576) & \\ \{0.19905\} & \{0.00001\} & \{0.00001\} & \{0.159893\} & \\ - 0.029268Y_{t-2} & + 0.14653Z_{t-1} & - 0.140510Z_{t-2} & & \\ (-1.58607) & (3.67986) & (-3.52442) & & \\ \{0.11282\} & \{0.000237\} & \{0.000430\} & & 11 \end{array}$$

From results in equation **11** above, the t-values reported in ( ) when compared with the tabulated values were found to be statistically significant at both lags for Euro and US Dollar only, therefore the future of exchange rate values of Naira to Euro can only be predicted by the past values of Naira to Euro exchange rates and Naira to US Dollar exchange rates. It can therefore be concluded that Naira to US Dollar exchange rate granger causes the Naira to Euro exchange rate which could be interpreted as an increase in the Naira to US Dollar exchange rates will lead to an increases in the Naira to Euro exchange rate and vice versa.

$$\begin{array}{lllll} \widehat{Y_t} = 0.362394 & + 0.09699X_{t-1} & - 0.09879X_{t-2} & + 0.79598Y_{t-1} & \\ (0.87169) & (3.42926) & (-3.48988) & (34.5821) & \\ \{0.38344\} & \{0.000613\} & \{0.00049\} & \{0.00001\} & \\ + 0.19825Y_{t-2} & + 0.12761Z_{t-1} & - 0.11788Z_{t-2} & & \\ (8.60166) & (2.56585) & (-2.36742) & & \\ \{0.00001\} & \{0.01034\} & \{0.01797\} & & 12 \end{array}$$

The results in (12) show that the t-values are statistically significant at the lags of Euro, Pound Sterling and US Dollar, which indicates that the exchange rate from Naira to Pound sterling is being influenced by the exchange rates from Naira to Euro and from Naira to US Dollar. Therefore, the Naira to Pound sterling exchange rate is being granger caused by exchange rates of naira to Euro and from naira to US Dollar i.e. as the rate at which Naira is being exchanged for US Dollar and Euro rises the rate of exchanging Naira to Pound Sterling will also increase and a decrease in US Dollar and Euro rate will leads to a decrease in Pound Sterling exchange rate.

$$\begin{array}{lllll} \widehat{Z_t} = 0.349185 & + 0.032286X_{t-1} & - 0.031050X_{t-2} & + 0.001125Y_{t-1} & \\ (2.30542) & (3.13335) & (-3.01078) & (0.13421) & \\ \{0.02121\} & \{0.00174\} & \{0.00263\} & \{0.89325\} & \\ - 0.003994Y_{t-2} & + 0.734096Z_{t-1} & + 0.26683Z_{t-2} & & \\ (-0.47567) & (40.5163) & (14.7086) & & \\ \{0.63434\} & \{0.00001\} & \{0.00001\} & & 13 \end{array}$$

From the results in (13), the t-values are only significant at the lags of Euro and US Dollars, which show that the future of exchange rate values of Naira to US Dollar can only be predicted by the past values of Naira to Euro exchange rates and Naira to US Dollar exchange rates. It can therefore be concluded that Naira to Euro exchange rate granger causes the Naira to US Dollar exchange rate. As Naira to Euro exchange rates increases, Naira to Us Dollar also increases and as Naira to Euro decline, Naira to US Dollar exchange rate also decreases.

Generally, the F-statistic values for the three models are 241906.5, 90438.54 and 317821.9, for Euro, Pound Sterling and US Dollar respectively. Clearly, all the computed F-statistics are greater than the tabulated values and these further indicate the fitness of the models for Euro, Pound Sterling and US Dollar.

4.2 Direction of Causality

Consequent upon the results obtained above, the directions of causality for the three exchange rates were deduced and discussed below

Fig 4: Direction of Causality between US Dollar and Pound Sterling

From Figure 4 there exists a directional causality between the US Dollar and Pound Sterling which shows that the rate of exchanging Naira to US Dollar granger causes the Naira to Pound sterling exchange rates. This implies that an increase in US Dollar exchange rates will lead to an increase in the Pound Sterling exchange rates.

Fig 5: Direction of Causality between Euro and Pound Sterling

From Figure 5, there exists a directional causality between the Euro and Pound Sterling which shows that the exchange rate of Naira to Euro granger causes the Naira to Pound sterling exchange rates. This indicates that an increase in Euro exchange rates will lead to an increase in the Pound Sterling exchange rates but the reverse is not true; that is, an increase in the rate of exchanging Pound Sterling does not suggest an increase in the Euro exchange rate.

Fig 6: Direction of Causality between Euro and US Dollar

From Figure 6, it can be observed that there exists a bi-directional causality between the Euro and US Dollar exchange rates to naira which shows that the Naira to Euro granger causes the Naira to US Dollar and conversely the Naira to US Dollar granger causes the Naira to Euro, this implies that an increase in Euro exchange rates will lead to an increase in the US Dollar exchange rates and an increase in US Dollar exchange rates also suggests an increase in the Euro exchange rates but Euro and US Dollar affects one another.

V. Conclusion

Over the time period considered, all the three exchange rates showed an increasing pattern except for few decreasing trends indicating spikes in the graphs, the increasing patterns indicate that there are visible signs of non-stationarity in each of the currencies rates. In order to examine the VAR model, the unit root tests, identification of the number of lags, co-integration analysis, and granger causality test were conducted.

The unit root tests indicated that the exchange rates of naira to Euro, Pound Sterling and US Dollar are non-stationary at level but became stationary after the first difference. The Johansen's co-integration test suggested that there was no co-integrating vector. It was discovered that the appropriate number of lag was two and the Structural VAR model indicates a granger causality relationship among the currencies, the granger causality test was implemented to ascertain the direction of causality between the variables.

It was discovered that the future exchange rates values of Naira to Euro can be predicted by the past values of Naira to Euro and US Dollar, hence it was concluded that Naira to US dollar exchange rate granger causes the Naira to Euro exchange rate. In other words, as the conversion rate of Naira to US Dollar increases or decreases, the naira to Euro exchange rates will also increase or decrease accordingly.

The Naira to Pound Sterling is granger caused by naira to Euro and Naira to US Dollar exchange rates, literally it means that an increase or decrease in the exchange rates of Naira to both Euro and US Dollar will lead to an increase or decrease in Pound Sterling exchange rates.

Also, the Naira to US Dollar is also granger caused by the Naira to Euro exchange rates. This implies that the Naira to Euro exchange rates has a great influence or impact the US dollar significantly which means an increase in the rates at which Euro is exchanged for Naira will determine the rates at which US Dollar will be exchanged for Naira either an increase or decrease.

Finally, having decided the appropriate number of lag , the granger causality test indicated a uni-directional causality in the Euro to Pound Sterling and US Dollar to Pound Sterling respectively while a bi-directional granger causality exist between the US Dollar and Euro.

Based on the findings from this work, it can be recommended that the appropriate government bodies look into and regulate the fluctuations in the exchange rate values of Naira to other foreign currencies, especially the US Dollar because the findings showed that the exchange rates of Naira to US Dollar influences others and can be used to forecast the future exchange rate values of Naira to both the Euro and Pound Sterling. The increasing trends shown in the naira to US Dollar is a major disadvantage to the Nigeria economy, which has necessitated devaluation of naira over time.

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