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Foreign Exchange Market Liquidity and Currency Rate: A Causality Approach

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Abstract

The paper investigated the effect of foreign exchange market liquidity on exchange rate. Its objective is to determine the causal relationship between foreign exchange market liquidity and exchange rate.. While there is a relationship between foreign exchange market liquidity and the currency rate, the direction of such relationship is yet to be ascertained in both magnitude and size in Nigeria within the period under review. The secondary data were sourced from various issues of Central Bank of Nigeria Statistical Bulletin. Result indicated that there is a unidirectional causality between foreign exchange market liquidity and exchange rate. This implies that the foreign exchange market liquidity does not drive currency exchange rate in Nigeria hence foreign exchange market is not as liquid as it is always thought. Furthermore, foreign exchange liquidity is tied to the general market. It is not as independent as it is viewed to be. Its liquidity is also dependent on the liquidity of various classes of assets such as equity, bonds and others. This suggested that liquidity shocks are a cross-market phenomenon and not limited to the foreign exchange market only. The paper recommended that the monetary authorities should put in place exchange rate policy that will engender liquidity of the FEM. There is need to match the demand and supply of foreign exchange. The rate of inflation should be monitored to allow desirable rate that will engender liquidity in the foreign exchange market while efforts to restore confidence in the Naira should be pursued.

Keywords: *Foreign exchange market liquidity, foreign currency, currency rate, causality.*

JEL Classification; F31, F47

1. Introduction

Foreign exchange market (FEM), or currency market, can be seen as a financial institution that plays a major activity in the international money market (IMM). Anyanwu (1993) asserts that FEM is an international market in which national currencies are bought and sold against one another. It is a market in which foreign exchange transactions and dealings are made which, in the absence of controls, determine the rate of exchange of one currency with another.

On the other hand, foreign exchange (forex or FX) is the means of payment or instrument of short-term credits for various countries with different monetary units from the point of view of their purchase or sale against the national money, or that of their holding as reserves, (Fabunmi 1990).

Ideally, in a typical market economy, price is determined by the interplay of the forces of demand and supply otherwise called "invisible hands". This is further supported by the Economic Theory. Therefore, the FEM entails demand and supply of foreign exchange. These two variables are thus the components of the liquidity of the FEM. FEM can be seen as a clearing house through which purchase and sale of foreign exchange are offset against each other. Therefore, FEM involves the interactions of supply of foreign exchange and demand for foreign exchange (input variable), while the output variable is the rate of exchange. That is to say that the product of these interactions is the foreign exchange rate.

It becomes pertinent to state that this interaction is triggered when the FEM is liquid. Foreign exchange market is liquid when the foreign exchange supply is equal to the foreign exchange demand. It implies that currency pairs has the ability to be bought and sold (exchanged) without causing a noticeable change in the rate of exchange. Therefore a particular currency pair that has high liquidity means that it is easily bought and sold leading to significant quantum of trading activity for that particular currency pair. Then there is little or no transactions cost. In so doing the rate of exchange of the currency pairs is readily, easily and freely determined in the market. This means that the foreign exchange supply and demand of the currency pairs is in equilibrium.

Foreign exchange supply is described as the total domestic currency available for foreigners to exchange for their own currency. The supply of foreign currency arises from the credit side of the balance of payments (BOP) and according to Central Bank of Nigeria (CBN) (2011) is

equal to payments made by the foreign countries to our country for goods and services imported from our country plus loans disbursed and investment made in this country.

Foreign exchange demand is the foreign currencies available for exchange by the indigenes. The demand of foreign exchange arises from the debit side of the balance of payments; it is equal to the value of payment made to foreign countries for goods and services purchased from it plus loans and investments made abroad.

The exchange rate is determined by the foreign exchange supply and foreign exchange demand. There is equilibrium exchange rate where foreign exchange supply and foreign exchange demand are equal. This is the point where there is exchange rate stability. The exchange rate is the rate at which one currency is exchanged in terms with other currency or currencies and is determined by the interplay of foreign exchange supply and foreign exchange demand which is facilitated and operated in the FEM and triggered when the FEM is liquid..

From the above, it is obvious that FEM liquidity should drive exchange rate and its stability. Also exchange rate should trigger the interaction of the FEM liquidity. However the direction of such interaction is yet to be ascertained in Nigeria both in magnitude and in size. This calls for further investigation. This study is set to investigate this.

The relevance and need for this study becomes more pertinent in view of concerns in research and policy. The research interest is founded on the concern (direction of causality) that very few studies, if any, have been done on Nigeria. Therefore further study on this subject becomes pertinent. The policy concern emanates from the belief that the findings of the study will no doubt present to the monetary authorities in Nigeria and beyond to further enhance the policy tool for the purpose of achieving FEM liquidity and exchange rate policy decision and implementation.

The rest of the paper is comprised of Literature review in Section 2, while Section 3 is the methods and methodology, Sections 4 and 5 deal on the results and analysis, recommendation and conclusion respectively.

2 Literature Review

2.1 Conceptual Review

It is trite to state that the foreign exchange market FEM facilitates international trade and cross-border investments. It is the fulcrum of the global financial system. Despite the enormous role the market plays, little have been said of its liquidity. Yet these roles can only be facilitated when the market is liquid. Only that the public and private players in the market view the market as being highly liquid at all times. FEM liquidity implies that large sums of foreign exchange can be bought and sold quickly, easily and without turning the rate of exchange (price) against the investor more (little or no transaction cost). The market is usually thought to be highly liquid. Thus the Bank of International Settlements (BIS) (2010) affirms that the FEM has an estimated and daily trading of 4 trillion dollars so the market by far is the world's largest market.

However certain factors or conditions can trigger illiquidity in the market. When the foreign exchange demand is less or more than the supply of foreign currency, there is an imbalance and illiquidity sets in. Equally during periods of financial crises, political tensions and economic uncertainties may trigger lack of confidence on the participants in the market, illiquidity may also be imminent.

FEM illiquidity affects speculators, participants, the monetary policy makers and the rate of exchange. Indeed commonality in the FEM liquidity denotes that the situation of decreasing

liquidity triggering FEM illiquidity and therefore affects rate of exchange since the foreign liquidity risk cannot be diversified away easily. Mancini, Ranaldo and Wrampelmeyer (2012) state that the commonality in the FEM entails that liquidity risks impairs the efficacy of international and cross asset class diversification

Apart from such other factors as interest rate, inflation, exchange rate is one of the most important drivers of the country's economic health. This is because a higher valued rate of exchange implies making exports costly and cheap imports. At the long run the demand for imports and the supply of exports will be imbalanced. Also a lower valued rate of exchange leads to cheap exports and costly imports. This also implies imbalances in the overall trade flows. There is equilibrium when the demand of foreign exchange and the supply is in equilibrium. This is however facilitated when the FEM is liquid. On the other hand, the FEM may not be as liquid as it is always thought to be at all times.

The assumptions of the theory are that information and transactions costs are reduced and low. There is a free interaction between the borrowers and the lenders. In other words, there is free interaction between the demanders and suppliers of foreign exchange. The theory supports the *a priori* expectation of the study that FEM liquidity should drive exchange rate as it posits causality from FEM liquidity to exchange rate.

Vittorio (1992) studied the relationship between foreign exchange market liquidity and the rate of exchange. Results indicated that the exchange rate level depends on the share of the money used from asset transactions and that the liquidity effects of the bonds represents shocks, cause excess volatility of nominal exchange rate even when fundamental volume is constant.

Wai-Ming Ho (2004) examined the liquidity effect of foreign exchange intervention. The study carried out on a two-country, two-currency, and general equilibrium model that allows liquidity effect. It was found that there are circumstances in which response of exchange rate to intervention is perverse.

Aliyu (2009) studied the impact of oil price shocks and exchange rate volatility on economic growth in Nigeria. The result indicates that there exists a unidirectional causality from oil prices to gross domestic product and bidirectional causality from real exchange rate to real GDP

Akpan (2008) investigated the impact of real exchange rate on economic growth in Nigeria . The result indicated a positive correlation between real exchange rate and economic growth in Nigeria. Similarly Akpan (2009) studied the effect of FEM on economic growth in an emerging economy found a positive relationship between exchange rate volatility and economic growth in Nigeria.

The study by Akpan and Atan (2011) using the generalized method of moments (GMM) suggest that there is no evidence of a strong direct relationship between changes in exchange rates on output growth. Rather in Nigeria economic growth has been affected by monetary variables.

Tarawalie (2010) in the study on exchange rate and economic growth found a positive relationship between exchange rate and economic growth. The study therefore supports the Ballassa-Samuelson hypothesis.

Terte (2020) studied the foreign exchange market demand pressure and economic growth in Nigeria between 1986 and 2018. Using the auto regressive distributed lag (ARDL) and

causality tests as tools. The results indicate a negative relationship between the foreign exchange market demand pressure and economic growth in both the short run and long run on one hand, and negative relationship between inflation and economic growth on the other hand, in both the short and long run. It therefore concluded that the foreign exchange market demand pressure affect economic growth in Nigeria directly and indirectly via exchange rate pass – through on domestic prices.

Manasseh, Ogbuabor and Obiorah (2016) investigated the effects of the volatility and commodity price dynamics in Nigeria, using the general auto regressive conditional heteroskedascity (GARCH) and Granger causality found that there is a positive relationship between changes in commodity prices and growth of the economy.

In a study in Bangladesh, Mohammed & Sayema (2012) investigated exchange rate and economic growth . Results indicate that a long run 10 per cent depreciation of the real exchange rate is associated with, on average, a 3.2 percent rise in aggregate output, while a contraction effect is observed in the short run so that the same magnitude of real depreciation would result in about a half percentage decline in gross domestic product; also in the long run, there is expansionary effect of the real depreciation.

From the reviewed literature, it is obvious that there exists little or dearth literature on whether it is the foreign exchange market liquidity that drives the rate of exchange in Nigeria between 1970 to 2021 or vice versa . This paper bridges the gap and goes further by making recommendations in order to chart a way forward

3. Research Methods

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3.1 Method

The study seeks to examine the relationship between foreign exchange market liquidity and the rate of exchange in Nigeria for the period spanning from 1970 to 2021. The study is an *ex post facto* or causal comparative therefore time series data is employed. It is *ex post facto in that* time series has to do with sequence of data points that consists of successive measurements made over time.

The explanatory variables are the foreign exchange demand, the foreign exchange supply, denoted by and the currency rate denoted as ExR, while the foreign exchange market liquidity is the dependent variable. Data collection is by secondary sources gotten from the Central Bank of Nigeria (CBN) Statistical Bulletin of various issues. The results of the tests is interpreted which forms the basis of the findings of the study and enable the recommendations to be proffered in the study.

The study as mentioned earlier adopted the descriptive and econometric tools and statistical tests. The mean, median, standard deviation etc. are employed for the descriptive statistic. For the econometric statistic the following augmented model is estimated:

$$L\Delta \text{ FEMLq} = \beta_0 + \beta_1 \text{LFxS} + \beta_2 \text{ LFxD} + \beta_2 \text{ ExR} + _t \quad \ldots \quad (3.1)$$

where,

L = logarithm, Δ= rate of variations in the employed variables

FEMLq = Foreign exchange market liquidity, β_0 =constant,β_1, β_2 = explanatory power of the variables, FxS = foreign exchange supply FxD foreign exchange demand, FxS = foreign exchange supply, ExR= exchange rate, $_t$ = stochastic error term.

3.2 Estimation technique and Procedure

As earlier stated, both descriptive and econometric tools are adopted. For the descriptive tool,, thee mean, median, standard deviation, minimum and maximum range, kurtosis, skewness etc were used to explain theoretical relationship between the dependent and independent variables. The econometric tools employed in the study are the unit root test (URT), the Augmented Dickey Fuller (ADF) ,the co-integration test – the Johansen Test and the - Granger Causality test- Pairwise Granger Causality Test.

3.2.1 The unit root test (URT)- the Augmented Dickey Fuller (ADF)

Usually the ordinary least squares (OLS) statistic is adopted for time series tests. However, the OLS at times is associated with simultaneity bias and spurious influences. To avoid this problem, it is important that the time series properties of the data set employed in estimation of the equations is ascertained. We perform the Augmented Dickey Fuller (ADF) unit root test in order to test the stationary of the variables. The Unit Root Test is a series statistics. Dickey and Fuller (1979) opines that "a series, say, X_t is said to be integrated of order *k*, that is, X_t [] $I(k)$, if it is stationary after differencing it *k* times". If calculated t-ratio is less than the critical value (table value), the null hypothesis of unit root (non stationary) is rejected in which case the level of time series X_t is characterized as integrated of order zero i.e. I (0). But if it is observed that the individual time series in the equation are integrated of order one I(1), then the series is said to be non stationary. If the variables are integrated of the same order I(1), we move a step further to employ the Johansen (1991) co integration test procedures to test the co -integration among the variables. The ADF test is based on the following equation

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$$\Delta X_t = \alpha_o + \alpha_1 t + \beta X_{t-1} + \sum_{j=1} \mathbf{Y_j}\ \Delta X_{t-j} + \mu_1 \quad \ldots \quad (3.2)$$

where

X_t is integrating series (independent variable), β is coefficient, $_{Yj}$ is integrating series (dependent variable), Δ is the first difference operator; t is the time trend; α_o is a drift; $_t$ represents the linear time trend; *m* is the lag length; $\boldsymbol{\mu_1}$ is a white noise process.

3.2.2 The Cointegration test – the Johansen Test

The next step is testing for co integration among the variables. The co integration test is a group and descriptive statistics. The Johansen methodology is the generalization of the ADF test. Two likelihood ratio tests (Trace and Maximum Eigenvalue) were used to test the presence of no co integration regarding the co-integrating vectors. In other words, the trace and maximum eigenvalue is used to test the presence of cointegrating vector among the variables at 5% significant level.

A set of variables are said to be co integrated if a linear combination of their individual integrated series I(d) is stationary. Generally speaking, " two variables are said to be co integrated if they have a common stochastic trend, that is, if they move together for a long period of time. Succinctly put, a set of variables that are stationary in their first differences but not stationary in their levels are said to be co integrated if their exits a stationary linear combination between them". To test for co integration among the variables, we used the Johansen (1991) co integration test as in equation 3.3 below;

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$$X_t = \sum_{j=1}^{m} A_i X_{t-Ii} \quad \ldots \quad (3.3)$$

where

μ_i is the column vector of error term,X_t is the vector of the variable to be determined.

Adding $X_{t-1}, X_{t-2}, \ldots X_{t-m}$ and$A_1X_{t-1}, A_2X_{t-2}, \ldots A_mX_{t-m}$ to both sides of sides of equation (ii), equation (i) can now be expressed in first difference form as

$$\Delta X_t = \sum_{i=1}^{m-1} di\, \Delta X_{t-m} + \prod X_{t-1} + \mu_1 \quad \ldots \quad (3.4)$$

where

$\prod_{rxq} = (K_{rxq} - A_1 - A_2 \ldots A_m)_t$, $K = -K + A_1 A_2 + \ldots Am$ and K is $n \times n$ square matrix. Also, the coefficient matrix $\prod$ contains the long run relationship among the variables in the vector of data

The Johansen's co-integration proposed two test statistics through Vector Autoregressive (VAR) model that are used to identify the number of co-integrating vectors, namely the trace test statistic and the maximum eigen value test statistic. These test statistics can be constructed as,

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{n} In(1 - \hat{\lambda}) \quad \ldots \quad (3.5)$$

$$\lambda_{max}(r,r+1) = --T\, In\,(1-- \hat{\lambda}_{r+i}) \quad \ldots \quad \ldots \quad (3.6)$$

where

$\hat{\lambda}$ are the eigenvalues obtained from the estimate of the $\boldsymbol{A_k}$ matrix

T is the number of usable observations.

The λ_{trace} tests the null that there are at most ***r*** cointegrating vectors against the alternative that the number of cointegrating vectors is greater than ***r*** , $\boldsymbol{\lambda_{max}}$ tests the null that the number of cointegrating vectors is ***r***, against the alternative of ***r*** + 1.

Critical values for the $\boldsymbol{\lambda_{trace}}$ and $\boldsymbol{\lambda_{max}}$ statistics are provided by MacKinnon–Haug–Michelis (MacKinnon, Haug, & Michelis, 1999).

If the calculated values of the individual time series in the equation are greater than the critical values, using Johansen-Juselius (1990), it means that the independent variables are not statistically significant in influencing or affecting the dependent variable. Hence, the null hypothesis is accepted.

3.3.3 Granger Causality test- Pairwise Granger Causality Test

As always is the case, if the series are discovered to be cointegrated, we go a step further to construct the standard Granger causality test by augmenting with an appropriate error correction term derived from the co-integration equation. The concept of causality according to Granger (1969), is appropriate and by most of the studies for testing the relationship between economic growth and exports. Ighodaro and Oriakhi. (2011) employed this test in determining the causality of economic growth.

The test for Granger causality was performed by estimating equations in the form:

$$\Delta LFEMLq_t = \sum_{i=1}^{m-1} \beta \ \Delta LExR_{t-1} + \sum_{i=1}^{m-1} \delta_j \Delta LFEMLq_{t-j} + \varepsilon_t \qquad (3.7)$$

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$$\Delta LExR = \sum_{i=1}^{m-1} \beta \Delta ExR_{t-1} + \sum_{i=1}^{m-1} \lambda_j \Delta LFEMLq_{t-j} + \mu_1 \quad (3.8)$$

where

$LFEMLq_t$ is the log of foreign exchange market liquidity, $LExR$ is the log of exchange rate varibles i.e. ExR, FxD, FxS, μ_1 is the white noise disturbance term, ε is also the white noise disturbance term

The impact of one period-lagged error correction term on the left –hand – side variable captures the extent that the variables are out of equilibrium and can be interpreted as long-run causality. There are four possible scenarios of causality- unidirectional causality running from X to Y; unidirectional causality running from Y to X; feedback or bi-directional causality running in both directions; and no causality.

The decision rule is thus- if the probability value (the probability) is equal to, or greater than 0.05, we accept the null hypothesis that there is no causality (or that one variable does not Granger cause the other) between the variables; hence we reject the alternative hypothesis. However, if the p-value (the probability) is lesser than 0.05, we reject the null hypothesis that there is no causality (or that one variable does not Granger cause the other) between the variables hence we accept the alternative hypothesis that one variable Granger cause the other. Thus if probability = or > 0.05, accept (do not reject) the null hypothesis, if probability < 0.05, reject (do not accept) the null hypothesis.

4. Result and Analysis

4.1 Descriptive Statistic Results

The descriptive statistic presents a yardstick test of the relationship between the foreign exchange market liquidity and the currency rate in Nigeria within the period under review. It therefore shows the results of the descriptive, statistical and econometrical tests as used in this study. It further identifies the significance and findings from the results. This will no doubt enable the researcher accomplish the stated objectives and provide basis for accepting or rejecting the hypothesis formulated in the study. The results are as depicted in Tables below.

Table 4.1 Descriptive Statistic (mean, standard deviation kurtosis etc) Results

	FEMLq	FxS	FxD	ExR
Mean	862021.6	2343482.	1426663.	52.73452
Median	-0.800000	89373.60	126164.4	17.29950
Maximum	6055964.	12311044	9767331.	189.9000
Minimum	-593483.1	253.2000	254.0000	0.546400
Std. Dev.	1816995.	4061504.	2318958.	64.91065
Skewness	1.857905	1.527958	1.792155	0.753131
Kurtosis	5.186312	3.627871	5.549778	1.870227
Probability	0.000000	0.000100	0.000000	0.036022
Observations	50	50	50	50

Source- Researcher's computation using EView 10 softeware

The descriptive results compare the statistical averages and standard deviations of the dependent and independent variables as to explain the theoretical relationship between the variables. Table 1 shows the mean values, standard deviation etc of the parameters. The average mean is 862021.6, 2343482, 1426663, and 52.73452 for foreign exchange market liquidity, foreign exchange supply, foreign exchange demand, and currency rate respectively. The variables dispersal from the mean (standard deviation) is between 1816995, 4061504., 2318958, and 64.91065 also for for foreign exchange market liquidity, foreign exchange

supply, foreign exchange demand, and currency rate, respectively . The variables also exhibit an asymmetrical distribution with long fail to the right depicting high positive skew as above zero having values of 1.857905 for the dependent variable and1.527958, 1.792155, 0.753131, for the independent variables . The probability of zero of the variables also explains relationship, the values of the kurtosis which quantifies whether the shape of the data of the distribution matches are 5.186312 for the dependent variable and 3.627871, 5.549778, 1 887220 for the explanatory variables- FxS, FxD, ExR respectively.

Interestingly, all the variables showed reasonable sign of relationship except , of course , ExR in few cases. While appreciating the fluctuating nature the trends might have affected the normalcy of the variable distribution, we make theoretical case that such trends are likely to lead to causality between the independent and dependent variables. However the claim is further subjected to further econometric tests.

Table 4.2 Unit Root test result

Variable	Intercept Only	Decision	Trend and Intersect	Decision
L*FEMLq*	-3.6616 (-3.4803)*	I (1)	-4.2845 (-3.1690)*	I (1)
L*FxS*	-3.5924 (-3.3030)*	I (1)	-4.2050. - (1.8983)*	I (1)
LFxD	-3.5924 (-3.5392)*	I (1)	-4.2118 (-3.1995)*	I (1)
LExR	-3.6394 (-1.3186)*	I (1)	-4.1864. - (6.020)***	I (1)

* (**) *** Significant at 1% (5%) 10% level of significance

Source- Researcher's Computation using E-Views 10 Software

The results of the integration between FEM liquidity and foreign exchange supply, the Augmented Dickey Fuller unit root test strongly revealed that the both the dependent and

independent variables (FEMLq and FxS respectively) are integrated of order 1, i.e. I(1) at 1 percent 5 percent and 10 percent level of significance. This is depicted in Table 4.2. In the results of the intercept only, FxS calculated value of -3.5924 is less than critical foreign exchange supply value of -3.3020, while FEM liquidity calculated value of -3.6394 is less than the critical value of -1.3721. For trend and intercept, foreign exchange supply calculated value of -4.2050 is less than critical foreign exchange supply value of - 1.8983, similarly the FEMLq calculated value of -4.2528 is less than the critical value of -2.0589.Therefore, the individual series are non stationary and thus quite suitable for the purpose intended. So we then proceed to perform the co integration test. For trend and intercept, foreign exchange demand calculated value of -4.2118 is less than critical FxD value of - 3.1995, similarly the InLq calculated value of -4.2528 is less than the critical value of -2.0589.Therefore, the individual series are non stationary and thus quite suitable for the purpose intended. So we then proceed to perform the co integration test.

In the results of the integration between foreign exchange market liquidity and foreign exchange rate, the Augmented Dickey Fuller unit root test strongly revealed that the both the dependent and independent variables (InFxL and ExR respectively) are integrated of order 1, i.e. I(1) at 1%, 5% and 10% level of significance. This is depicted in Table 2. The results of the intercept only, ExR calculated value of -3.6394 is less than critical ExR value of -1.3186, while FEMLq calculated value of -3.6394 is less than the critical value of -1.3721. For trend and intercept, ExR calculated value of -4.1864 is less than critical ExR value of - 6.020, similarly the FEMLq calculated value of -4.2528 is less than the critical value of -2.0589.Therefore, the individual series are non stationary and thus quite suitable for the purpose intended. So we then proceed to perform the co integration test.

Table 4.3 Results of Co-integration Test

Sample: 1970-2019
Included observation:
Series: LFEMLq LFxS LFxD LExR
Lag interval 1 to1

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.959443	222.9138	79.34145	0.0000
At most 1 *	0.784342	85.09655	55.24578	0.0000
At most 2	0.246752	19.13196	35.01090	0.7601
At most 3	0.143508	6.947427	18.39771	0.7869

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
For hypothesis 1,

Source -Researcher's computation using EView 101 software

Since the variables are integrated of the same order I(1), we move a step further to employ the Johansen (1991) integration test procedures to test the cointegration among the variables. The Johansen methodology is the generalization of the ADF test. Two likelihood ratio tests (Trace and Maximum Eigenvalue) were used to test the hypothesis regarding the cointegrating vectors.

The results of the co integration between foreign exchange market liquidity and the explanatory variables (FxS, FxD and ExR) are depicted. The results suggest the existence of an underlying long run stationary steady state relationship The trace test indicates two co-integrating equations at 0.05% level, hence, that the variables exhibit no co-integration cannot be accepted, i.e. r=0 among the variables. This is depicted in Table 4.3.

4.4.2 Pairwise Granger Causality Result

The Pairwise Granger Causality test which is a bidirectional test for causality vis a vis, only two variables is employed. Result for the relationship between FEM liquidity and rate of exchange in Nigeria is as depicted in Table 4.4

Table 4.4 Pairwise Granger Causality Result

Null Hypothesis	F- statistic	Probability	Decision	Type of causality
LFEML≠>L*FxS*	0.7975	0.3770	Not Rejected	No Causality
L*FxS*≠>*LFEML*	18.7222	9E-05	Rejected	Causality
LFxD≠>L*FxS*	4.1161	0.0490	Rejected	Causality
LFxS>*LFxD*	1.8020	0.1869	Not Rejected	No Causality
LExR≠>L*FxS*	14.7009	0.0004	Rejected	Causality
LFxS≠>*LExR*	0.0016	0.9675	Not Rejected	No Causality
LFxD≠>*LFEML*	13.5752	0.007	Rejected	Causality
LFEML≠>L*FxD*	3.1070	0.0854	Not Rejected	No Causality
LE*xR*≠>*LFEML*	5.2862	0.0267	Rejected	Causality
LFEML≠>LE*xR*	0.1187	0.7321	Not Rejected	No Causality
LExR>*LFxD*	2.6780	0.1094	Not Rejected	No Causality
LFxD>*LExR*	0.0569	0.8125	Not Rejected	No Causality

Source- Researcher's computation using EView 10 software

The probability of the causality from FEMLq to Exchange rate (i.e. 0.7321) is greater than 0.05 depicting no causality. Conversely, the probability of the causality from ExRr to FEMLq which is (0.0267) is lesser 0.05 showing causality. This indicates a unidirectional causality

between foreign exchange market liquidity and exchange rate running from currency rate to FEM liquidity. There is also a unidirectional causality between foreign exchange demand and foreign exchange market liquidity running from FxD to FEMLq as the probability is 0.007 for FxD and 0.085 for FEMLq respectively

There is also a unidirectional causality between foreign exchange supply and foreign exchange market liquidity running from FxS to FEMLq as the probability is 9E-05 for FxS and 0.337 for FEMLq respectively, There is unidirectional causality between FXd and FxS however running FxD to FxS. The same scenario is depicted between the variables of ExR and FxS but running from ExR to FxS. No causality exists between the rate of exchange and ExR.

5. Summary and Policy Implication

5.1 Summary

The finding depicted from the descriptive statistic show fabulous result. Be it as it may, although, all the variables showed reasonable sign of relationship except, of course, exchange rate, in some cases, there was need to go a step for more authentic and realistic and reliable findings. While taking into cognizance that the fluctuating nature of the trends might have affected the normalcy of the variable distribution and therefore may have depicted reliable results, yet we make theoretical case that such trends are likely to lead to causality between the independent and dependent variables. However the claim is further subjected to further econometric tests.

This then led to the findings exhibited by the econometrical statistic. The novel findings in the study are that there is a unidirectional causality between the foreign market liquidity and exchange rate in Nigeria within the reviewed period running from exchange rate to foreign

exchange market liquidity. The exchange rate drives the FEM liquidity. The foreign exchange market liquidity does not drive nor trigger the rate of the domestic currency within the reviewed period. There exists a unidirectional causality between foreign exchange demand and foreign exchange market liquidity. However this causality runs from foreign exchange demand to foreign exchange market liquidity (FEMLq). This is as depicted in the probability of 0.007 for foreign exchange rate and 0.085 for foreign exchange market liquidity respectively

5.2 Policy Implications of the Findings

The foreign exchange market liquidity has not triggered the rate of exchange and hence the instability and fluctuations in the rate of the domestic currency in terms of other currencies over the years. It implies that the foreign exchange market is not really as liquid as is generally envisaged. The foreign exchange supply and foreign exchange demand are notably in disequilibrium resulting to the illiquidity of the market and its handicap in engendering stability in the rate of exchange. However the rate of exchange drives the FEM liquidity. This implies that the foreign exchange market is not as liquid as it is always thought. Furthermore foreign exchange liquidity is tied to a general market. It is not as independent as it is viewed to be. Its liquidity is also dependent on the liquidity of various classes of assets such as equity, bonds and others. this suggests that liquidity shocks are a cross-market phenomenon and not limited to the FEM only. When illiquidity is triggered, exchange rate is adversely affected and the market cannot drive the rate. Furthermore, the reasons why the foreign exchange market liquidity could not drive the currency rate are discernable from the findings. For instance the FxD (imports) is greater than the FxS (exports). This implies disequilibrium in the market. The demand of the domestic currency cannot measure up with supply. This means the existence of

illiquidity in the market. Therefore such currency does not provide confidence to the investors and other participants in the market. This explains the instability of the rate of exchange of the currency. Also the finding negates the Financial Intermediation Theory which posit that FEM should not only be liquid but also provide liquidity and drive the rate of exchange. This finding is also contrary to the *a priori* expectation of the study.

5.3 Recommendation

I.The monetary authorities should put in place exchange rate policy that will make the FEM to be liquid.

II.There is need to match the demand and supply of foreign exchange.

III. The rate of inflation should be monitored to allow desirable rate that will engender liquidity in the FEM. The political and insecurity issues should be nipped at the bud to forestall lack of confidence on the Naira by investors, buyers and sellers in the FEM. Confidence in the domestic currency should be restored and maintained.

IV. The dependence on a mono-product should be jettisoned while the diversification of the revenue sources should be vigorously pursued.

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