Full Length Research Paper


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This study empirically examined the impact of foreign exchange fluctuation on the intermediation of banks in Nigeria with a view to enabling the banking system work efficiently and effectively towards the proper valuation of the Naira. The study used data sourced mainly from Central Bank of Nigeria publications. In conducting this relationship study, sample sizes of 34 years (1970 – 2004) were collected and analyzed. The analysis empirically examined the relationship between exchange rate fluctuation and commercial banks intermediation index with using annual average exchange rate as independent variables while Commercial Banks Intermediation Index (CBII) represented the dependent variable. Using SPSS to conduct the regression and correlation analysis, the study found that there is a positive relationship between foreign exchange fluctuation and CBII, that only about 28% of the changes in CBII is accounted for by variations in foreign exchange(that is, after adjusting for sample size), since the adjusted $R^2 = 0.278$. It also revealed that at 5% significance level, the critical T-value of 2.042 is less than the computed T-value of 3.754, hence, the rejection of $H_0$. The result led to the conclusion that exchange rate fluctuation has significant impact on banks’ intermediation. It was therefore, recommended that government should ensure a stable naira exchange rate through a right mix of policies and de-emphasis on cash-economy.

Key words: Foreign exchange fluctuation, banks’ intermediation.

INTRODUCTION

The fact that different currencies are used by different countries when they engage in transactions makes it necessary to have a measure of exchange for determining the relative conversion values for the goods and services expressed in different currencies of the respective countries where settlement in foreign exchange is required. Such measures of values for foreign exchange conversion termed exchange rate referred to as the domestic price of foreign currency has dominated the discourse in international economics and finance (Whiting, 1973; Cassel, 1918; Einarsson and Marquis, 2001).

Exchange rate being price in monetary terms is a vital element for resource allocation and the removal of distortions arising from valuations under the barter system of exchange or counter-trade arrangements. Exchange rate determination methods derive their titles from the techniques employed in obtaining value of the various currencies relative to each other, such as price mechanism method, and fixed exchange rate method.

However, this research work focuses on the determination of the impact exerted on commercial banks intermediation operations by the fluctuations in exchange rate. Exchange rate fluctuations refers to the change in the rate of major international currencies relative to the naira over a given period of time as a result of several factors including manipulative operations of banks and changes in the policies of the government. These policies are usually targeted at protecting the foreign exchange values, preserve the external reserves, maintaining
favourable balance of payment and financial equilibrium.

The banking operation is central to money supply mechanism in an economy as it provides the aggregate credit to the domestic economy as well as international liquidity through net foreign assets both of which are essential variables of money supply. Through the activities and policy measures on the foreign exchange market, intended to realize exchange rate policy objectives, banks’ aggregate credit to the domestic economy and international liquidity have been affected with extended implications for the economy. This has elicited some concerns over the application of exchange rate policies that appear to influence aggregates in the operation of banks having relationships with money supply variables. The basis of this concern is the subject of investigation in this research work.

Statement of the problem

The experimentation and discarding of foreign exchange policies by the monetary authorities in Nigeria over the years have been a major source of concern. Worries have been expressed over the ability of these policies to stabilize the naira exchange rate and solve the attendant macro-economic disequilibrium. While one school of thought opines that the monetary policy trust pursued by the Nigerian monetary authorities through banks is responsible for the excess liquidity prompting the macro-economic problems of inflation prevalent in the Nigerian economy (Ogwuma, 1996). Another school of thought thinks that the problem is lack of implementation and surveillance over the banks. It has been argued that operations on the foreign exchange market, a veritable component of banking operations has significant implications for banks credit to the domestic economy, external reserves and their general intermediation operations. The banks as the channel through which money supply process works by providing an array of interrelated facilities that interplay to provide financial services that facilitate transactions, mobilize funds and play the role of financial intermediation in the economy. The mechanism through which the foreign exchange market impact on these variables of money supply is identified as the exchange rate fluctuations and measures designed to control it.

This study therefore, tends to analyze the effect of exchange rate fluctuations on banks intermediation operations. The focus of this research is summarized in the following hypothesis:

1) There is no positive and significant relationship between exchange rate fluctuation and banks’ intermediation.

THEORETICAL FRAMEWORK

Studies on some exchange rate problems, banking and currency crises, intermediation and macro-economic disequilibrium and their implications, markets and the general economy, are not wanting. Some of these studies that draw evidence from all over the world include those of Masson (1999), Eichengreen, Rose and Wyplosz (1996), Murray, Zelmer and Anita (2000), Glick and Hutchison (2001), Hutchison and McDill (1999), Burkart (2000), Krugman and Obstfeld (1991), Krugler, Osakwe and Page (1998), Sacha, Tornell and Velasco (1996), Glick and Rose (1998). However, it is difficult to find any study on the impact of foreign exchange fluctuation on the intermediary role of banks in Nigeria, hence, this research work.

Exchange rate according to Demburg and McDougall (1980) is defined as the domestic price of foreign currency which can be determined either administratively or by the market forces of demand and supply of currencies through imports and exports respectively in the foreign exchange market.

The importance of this definition is that it focuses on the concept of price as a nature of exchange rate. The basis for exchange rate determination has been on the premise of purchasing power parity (PPP) concept as enunciated by Cassel (1918).

Purchasing power parity (PPP) concept defines exchange rate as the amount of the currency of one country, which endows the holder with the same amount of purchasing power. Expressed differently, purchasing power parity theory states that the same collection of goods purchased with different currencies should have same cost as measured in any of the currencies (Cooper and Fraser, 1990). The implication of the PPP in the short run is that a nation’s currency will tend to depreciate in the foreign exchange market when its rate of inflation exceeds that of other nations and appreciates when its inflation rate is the relatively lower (Cooksey, 1997). The concept is usually expressed in absolute form (PPP_A) or in relative form (PPP_R) where \( PPP_A \) is the ratio of domestic price \( P_d \) to world price or that of a major trading partner \( P_p \). Thus the mathematical symbol is given by:

\[
PPP_A = \frac{P_d}{P_b}
\]

\( PPP_R \) is \( PPP_A \) multiplied by the base period exchange rate \( r_0 \) in the domestic economy. This is given as:

\[
PPP_R = r_0 \times PPP_A
\]
The PPPr is usually utilized for policy decision in order to avert the inherent problems encountered with PPPa. Exchange rate fluctuations are dependent on market conditions and in the long run they tend to reflect the purchasing power parity (Mishkin, 1992). Much as the concept is criticized on several grounds, over time, there had been three outstanding theoretical developments on exchange rate determination namely:

(a) Traditional flow
(b) Portfolio balance
(c) Monetary model

Traditional flows or trade flows use the dynamics of import and exports. Portfolio balance compares the returns on assets of money and financial assets within the domestic economy as well as foreign assets. Monetary models looks at changes in money stock and inflation rate between an economy and its trading partner economy. Given these models, Auerbach (1988) observed that there are two broad exchange rate regimes which are:

(1) Floating exchange rate: This exists, according to him, in a situation where market forces are permitted to establish exchange rates. Depreciation and appreciation in exchange depends on increased demand (or fall in supply) or increased supply (or fall in demand) respectively with respect to imports and exports requiring foreign exchange for settlement.
(2) Fixed exchange rate: This is prevalent when a country’s administration fixes the exchange rate of its home currency. An essence of the fixed exchange rate regime is that it ensures stability in the decision making process devoid of the volatility characterizing the flexible exchange rate and external shocks which tend to be transmitted across international among countries using the unstable floating exchange rate.

Neither a rigidly fixed nor freely floating exchange rates are practiced in real life since there are frequent interruptions due to either government policies or direct interventions. Variations involving the two broad categories of exchange rate do exist as a result of policy mix blending the two extremes. This is a common practice among many nations in a bid to evolve an optimal exchange rate policy necessary for both domestic price stability and ensuring external balance.

Exchange rate determinants

An exposition on the determinants of exchange rate can be made by deductive reasoning. That is, the determinants can be deduced from the various measurement parameters of exchange rate. There have been several ways of measuring exchange rate, some of which are:

1) Currently rate method and price rate method recommended by Black (1990). The difference is in the use of either the home currency or the foreign currency as the principal determinants. By these methods, a currency is said to have depreciated if more units of it is exchange for another than before. Here therefore the determinant will be the quantities of the local currency and the foreign currencies available for exchange.
2) General price method, by which general price level is either recognized or not. When the general price level determines the exchange rate, the exchange rate is known as real exchange rate. Real exchange rate is the deflated nominal exchange rate and given as:

\[
fx = \frac{\text{Nominal Exchange Rate}}{\text{General Price Rate}}
\]

The above means that in addition to the quantities of foreign and local currencies available, the general price level in the country.
3) Transaction delivery method, by which time period for the entering and settlement of foreign exchange transaction is used to determine exchange rate. Where the transaction is for the immediate rate and immediate delivery the rate is known as SPOT exchange rate. On the other hand, where settlements are made for future delivery, the rate of settlement is known as FORWARD exchange rate. This latter type of rate usually serves as hedge against changes in foreign exchange (forex). From this, it will be seen that risk level in economic transactions involving the use of forex is also a determinant of the exchange rate.

Apart from the risk level, general price levels and the quantum of foreign currencies available in the economy for foreign transactions, exchange rate can be determined by factors identified by Amacher and Ulbrich (1986) as Tariffs/Quotas restrictions, preference for imports or domestic products, and a country’s productivity. Krugman and Obstfeld (1991) in their study on the theory of exchange rate determination identified the influence of the application of the asset demand approach in portfolio theory on exchange rate. Of course, the asset demand approach in portfolio theory stressed that the demand for an asset is determined by factors like the wealth of the buyer, the expected return from the asset, the risk inherent in the asset in terms of variability (σ) of returns and the liquidity
of the assets. By applying this theory to exchange rate, they considered foreign currency as an asset that are influenced by these factors.

This explains why there is the market for foreign currencies and the holding of foreign currencies like the British Pound and the US Dollar as assets (with changeable store of value). In the third world countries (TWCS), people hold world tradable currencies as assets (not as money), just as investors invest in stocks and shares or in time deposit accounts. By this therefore, the expected rate of return from investment in any foreign currency is given as the rate of interest plus any expected appreciation of the local currency.

Foreign exchange operations and the commercial bank intermediation operations

Perry (1979) regards foreign exchange as a means of payment for international transactions and thus a product with a price. The foreign exchange market according to Adekanye (1986) is a medium of interaction between the sellers and buyers of foreign exchange in order to establish a mutually acceptable price for the settlement of international transactions, through the intermediation of banks and bureaux de change. The major participants of the foreign exchange market are the authorized dealers (banks), the private and public sectors, and the correspondent banks abroad with the regulatory authority (Central Bank of Nigeria) acting on behalf of the government. The supply of foreign exchange is derived from exports, foreign loans, and expenditure by foreign tourists in a country, capital repatriations, etc. The demand includes imports, external debt payments, remittances to other countries, etc.

There are about three foreign markets in Nigeria today, namely, the official foreign exchange market and the autonomous foreign exchange market, and parallel (black) market. Though, this third market is not recognized officially, it however, plays a significant role in the foreign exchange market as a whole.

Multiple exchange rates tends have adverse effect on resource allocation in the Nigerian banking system intermediation process as it has failed to bridge the gap among the exchange rate regimes experimented just as it has been encouraging the depletion of external reserves. Multiple exchange rates is one major cause of arbitrage, a situation involving diversion of funds from a market commanding lower selling prices to one with relatively higher selling price for a premium. The naira foreign exchange rate progressively becomes higher as one goes through the official autonomous and parallel markets accordingly. This encouraged diversion of foreign exchange from official sources (official and autonomous) to parallel market.

This diversion is illegal in Nigeria because it violates the regulations and encourage round tripping. The premium between the official and parallel markets has become so attractive that operators (demanding units) in the foreign exchange market have devised ingenious methods of circumventing regulations in foreign exchange acquisition. Commercial banking in Nigeria is made up of several banking institutions, instruments, markets, operators and their interaction. They provide such financial services as follows:

(a) Facilitations of transaction
(b) Fund mobilization
(c) Financial intermediation

These financial services are rendered by banks to the financial disequilibrium between savings surplus and savings deficit units in the economy.

According to Burkart and Ellingsen (2004), Ezirim (1985) banks provide the economic system with the allocative conduct, which scattered saving of the masses of society are first aggregated and then disaggregated among economic units. By facilitating exchange, payments, international transactions and playing expedient financial intermediation role in the foreign exchange market, the market operations in turn influence the banks. Banking activities are therefore, influenced by exchange rate policies. The exchange rate policies in Nigeria according to Onwioduokit and Nwachukwu, (1998) has witnessed virtually all the main system of exchange rate regimes spanning from the administratively fixed exchange rate regime to the market oriented regime of floating exchange rate. The latter has seen various variants like guided deregulation, Dutch auction system (Akpankpan, 1994).

**RESEARCH METHODOLOGY**

This research is based on two dimensions of analysis categorized by the type of research data employed. Consequently, in the first analysis where secondary data (obtained from Central Bank of Nigeria statistical bulletin, and Annul reports and statements of accounts comprising time series data) was solely utilized, the population of the study consists of observations on the variables of the study. Here the sample of 34 is constrained by the period defined in the study, which is 1970 to 2004.

Since this study is investigative as it intends to determine the impact of exchange rate fluctuations (as in independent variable) on CBII (dependent variable), and in order to identify relationship, a regression model is suitable. Another advantage of the regression model is that it assists in estimating the value of the dependent variables and the coefficients of the independent values both of which are used in the following ways:
(a) Policy making and control  
(b) Forecasting and prediction and  
(C) Testing theories

The statistical analysis of data collected is to lead to the testing of the following null hypothesis: 
There is no positive and significant relationship between exchange rate fluctuation and banks intermediation index. 
In order to test this hypothesis, the regression equation was drawn.

\[ Y = m_0 + m_1 X_1 + U; \quad m_1 > 0 \]

Where:
\[ Y = \text{commercial banks intermediation index} \]
\[ X_1 = \text{Annual average exchange rate in Nigeria} \]

**DATA ANALYSIS**

Operational performance of commercial banks in Nigeria

The intermediation performance of commercial banks in Nigeria is summarized in Appendix 1. The table shows a distribution of aggregate credit to the economy, annual average exchange rate, interest rate, inflation rate, gross domestic product, commercial banks statement of assets and intermediation index, from 1970 to 2004. The distribution of aggregate credit of commercial banks to the domestic economy showed that they recorded N6.2615 billion in 1970.

The supply of loans (credit) also continued to grow all through the period and this could be attributed to the urgent need for rapid development and economic activities after the civil war and by 1980, it had doubled to N12.289 billion. This was also facilitated by the period of oil boom, which improved liquidity and economic activities. 

Also, the annual average exchange rate from the table shows a relatively fixed rate from 1970 to 1986 before it began its geometric rise following the introduction of the structural adjustment programme (SAP) and the deregulation of the foreign exchange market. This state of affairs obviously is attributable to the fixed exchange rate regime that prevailed. 

The trend shows that the naira which exchanged for 71 kobo to the US Dollar in 1970 exchanged for N2 on the official window in 1986, representing 64.5% depreciation in the value of the naira. As at 2004, N133.50 exchanged for US $1.00.

Thus, according to experts there is a moved from a situation of over-valuation of the naira to a situation of gross under-valuation.

**ESTIMATION AND INTERPRETATION OF RESULTS**

The regression results of the data analysis as shown in the SPSS results in appendix 2 of this study are interpreted below.

\[ Y = M_0 + M_1 X_1 + U \]
\[ \hat{Y} = 3.427 + 0.547 X_1 \]
\[ (3.288)^* (3.754)^* \]

\[ R = 0.547; \quad R^2 = 0.299; \quad AR^2 = 0.278, \quad F = 14.094 \]

Sig F = 0.001

Test statistic = ’T’ test

Critical value = \( t_{(0.05/2; \ df = n - k = 34 - 2 = 32)} = 2.042. \)

The computed t-value from the appendix is 3.754 as against the critical 2.042. This is further confirmed by the observe probabilities of 0.05 and 0.01, respectively. The study therefore, rejects the null hypothesis that there is no positive and significant relationship between exchange rate and commercial banks intermediation index in Nigeria.

Thus, the estimated regression model above indicates that on the average, the dependent variable, (commercial banks intermediation index, \( Y_i \)) within the duration of the study increases by 0.547 if exchange rate fluctuation (\( X_i \)) increases by N1.

The estimated model is consistent with the priori theoretical reasoning about the sign of the coefficient as established by economic theory. From the results, the regressor: (exchange rate) posted a coefficient of correlation (r) of 0.547. Thus, exchange rate and commercial banks intermediation index moved in the same direction during the period of the study. This positive relationship is weak as confirmed by both the observed value of the coefficient of determination (\( R^2 \)) and adjusted coefficient of determination (\( AR^2 \)). This weak relationship is also visible from Appendix 1. It will be observed that for more than half of the period of the study, the average annual exchange rate remained almost constant and stable with infinitesimal volatility up to 1986. With an observed \( R^2 \) of 0.299, it shows that only about 29.9% of the changes in commercial banks intermediation index (CBII) is cause by fluctuations in exchange rate.

Also an adjusted \( R^2 \) of 0.278 shows that after adjusting for the effects of sample size and the number of independent variables only about 27.8% of the variations in commercial banks intermediation index is accounted for by variations in exchange rate. This means that the explanatory power of the model is about 29.9%. The remaining 70.1% is accounted for by other quantitative and qualitative variables outside the model. However, despite the weak relationship between the
regressor and regressand, it was shown by an F ratio of 14.094* that the relationship is statistically significant at both 5 and 1% level. This is confirmed by the observed significant F of 0.001 (prob of 0.001 < prob of 0.05 and 0.01).

It should be noted that as the domestic price of foreign exchange rate rises (depreciated) it becomes more expensive to procure foreign products and services as their costs would have increased thereby requiring more units of domestic currency to acquire the same quantity of foreign goods and services than before. This results in an increase in the demand for bank credit to support finances for covering the additional expenditure required as a result of exchange rate depreciation. This is consistent with the results of Cookey (1997), Onuchukwu (1997) and Oyejide (1989).

Again, the depreciation in the international value of a domestic currency which makes demand for foreign goods and services more expensive usually prompts increased demand for bank credit in order to support financing of the acquisition of foreign products. This was established from the discovery in this research work whereby the hypothesis of a significant relationship between exchange rate and commercial banks intermediation was confirmed.

This agrees with the views of Ahmed (1989) that the depreciation of the domestic currency is as a result of excess demand for foreign exchange which leads to increased volume of financial services including lending by banks in the areas of foreign operations. According, the general price level is affected by exchange rate depreciation as it includes inflationary conditions which in turn increase the demand for loanable funds from the banking system.

Van-Horne (1990) asserts that increases (decreases) in the level of economic activity in an economy increases (reduces) the demand for banks' credit. The findings in this research corroborate this statement as it was revealed with the acceptance of the hypothesis that a positive relationship existed between exchange rate fluctuation and commercial banks intermediation index.

Movements in the foreign exchange market, and the policy measures taken to manage the movements, result in increase demand pressure on the commercial banks. This is as a result of the need to supply of credit facilities to meet import transactions. Credit facilities intended to finance international trade come in the form of direct granting of loans drawn on importers, using bankers' acceptances in form of letters of credit and credit confirmation (Brownbridge and Harvey, 2007). It must however, be noted that increased demand for foreign exchange to finance import operations which necessitates increase in supply of loanable funds even with exchange rate depreciation of the local currency depends on both profitability and elasticity of demand for the transaction by the importer.

Conclusions

Given the analysis and findings earlier discussed, the study concludes that a vital positive and significant relationship exists between foreign exchange rate movement and commercial banks' intermediation activities in Nigeria.

RECOMMENDATIONS

Based on these findings and conclusion, the following recommendations for policy are made. Firstly, having been revealed that exchange rate significantly and positively affects banks' intermediation operations, government should through the instrumentality of right policy mix ensure that the value of the naira remains stable. In fact there should be a policy of gradual but steady revaluation of the naira. Thus, a proper blend of variables in the policy mix aimed at achieving effective exchange rate policy devoid of disruptive reverberations in the banking sector, such as high cost of borrowing, depletion of external reserve and excess liquidity should be adopted to enable the banking sector function optimally. To ensure success in this direction it is necessary that the suggested mix of policies be consistent with existing measures of regulating the economy in order to have harmony in goal attainment. This can be achieved through appropriate intervention by the monetary authorities in all the market windows such as money market, discount market, and foreign exchange market within the Nigeria financial system.

In addition, the study recommends that efforts should be taken to deemphasize the cash economy with the aid of electronic monetary tools. It also recommend that the parallel market premium should not exceed 5% whatsoever, so as to discourage sharp practices like round-tripping and the continued prevalence of dual or multiple exchange rates.

Finally, there is also need for the government to provide enabling political and social environment that would be conducive for economic activities. There is an urgent need to alleviate or mitigate poverty in the land and empower the masses to increase the dismal levels of purchasing power which is critical to jump-starting the economy.

REFERENCES

Adekanye F (1986). The Elements of Banking in Nigeria.


### Appendix 1.

#### Regression. Variables entered/removed.

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables entered</th>
<th>Variables removed</th>
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<td>1</td>
<td>AAEXHR(^\text{a})</td>
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</table>

\(^{a}\)All requested variables entered

\(^{b}\)Dependent variable: CBINDEX.

### Model summary.

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<th>Adjusted R square</th>
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<td>1739.204</td>
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\(^{a}\)Predicator (constant) AAEXHR

\(^{b}\)Dependent Variable: CBINDEX.

### Coefficients\(^{a}\)

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\(^{a}\)Dependent variable: CBINDEX