

Empirical Analysis of Foreign Exchange Risk Management and Financial Performance of Deposit Bank in Nigeria

Etim Osim Etim (Corresponding Author)

Department of Accounting
Faculty of Management Sciences
University of Uyo, Nigeria
+234-8036729249, +234-8029192353
osimacc@gmail.com; etimosimetim@uniuyo.edu.ng
ORCID ID: 0000-003-0529-3212

Austine Uchechukwu Nweze

Department of Accountancy
Faculty of Management Sciences
Enugu State University of Science and Technology,
Enugu, Nigeria
+234-8063394611

David Johnny Ekanem

Department of Accounting and Finance
Faculty of Social and Management Sciences
Ritman University, Ikot Ekpene, Nigeria
Mobile: +234 – 0834902061
Email: ekaniem.david@ritmanuniversity.edu.ng

Augustine Brenden Inyang

Faculty of Management and Social Science (MASS)
TopFaith University Mkpatak, Nigeria
+234-8098680368

Ifeanyichukwu Utibe Akwaowo

Department of Insurance and Risk Management
Faculty of Business Administration
University of Uyo, Nigeria.
+234-8165938536

DOI: 10.56201/wjfir.v7.no4.2023.pg57.74

Abstract

This study examined the relationship between foreign exchange market and financial performance of banks. The objective of the study was to examine the relationship between official exchange rate, real exchange rate index, net demand for foreign exchange (NDX), and profitability and investments of banks. Quantitative research method was adopted. Secondary data on the variables of official exchange rate, real exchange rate index, net demand for foreign exchange (NDX), as independent variables, and profitability and investments of banks as dependent variables measuring financial performance, covering 2000 to 2021, were collected from the Central Bank of Nigeria (CBN) Statistical Bulletin 2021. These data were analysed using descriptive statistic techniques and multiple linear regression. From the findings, it was revealed that the exchange rate (EXR) has a positive and significant relationship with profitability and investments of banks in Nigeria; and real exchange rate index (RER) has a negative relationship with profitability of banks but a positive relationship with investments of banks in Nigeria. Also, net demand for foreign exchange (NDX) has a negative and significant relationship with profitability and investments of banks in Nigeria. Furthermore, official exchange rate, real exchange rate index, net demand for foreign exchange (NDX) explained 89.09% and 54.46% of the variations in the profitability and investments of banks in Nigeria. It was concluded that foreign exchange management in Nigeria poses mixed influences on the financial performance of banks in Nigeria. Recommendations made include the need for the Central Bank of Nigeria (CBN) to match supply of with the demand for foreign exchange especially the United States Dollars, to ensure adequate availability of foreign exchange in the market, and also the need for better government policies supporting deregulation in the determination of the exchange rate.

Keywords: Exchange Rate, Real Exchange Rate Index, Profitability, Investments

1.1 Introduction

Banks, especially commercial banks are known to generate a sizeable chunk of their income from interests collected on loans granted to their customers. However, that does not indicate that the only source of revenue for banks is loan selling. Other sources exist since banks are also allowed to engage in other statutorily permitted banking services such as the storage of valuables for clients, investment advisory to their customers, granting of overdrafts, engaging in short-term investments in the money market, and active participation in the foreign exchange market. Banks activities in the foreign exchange market in Nigeria has been indicated in many quarters as very huge especially concerning the demand and supply of foreign exchange, hence whatever foreign exchange management decisions made by the Central Bank of Nigeria (CBN) were bound to affect all the participants in the market [foreign exchange], including banks (Adeusi, Azeez & Olanrewaju, 2012). This is basically because banks are important conduits for effecting monetary and foreign exchange policies in any country including Nigeria.

With foreign exchange management objectives in Nigeria hinged on harnessing foreign exchange resources, preventing disequilibrium in foreign exchange markets, and preserving the country's foreign exchange reserves and the international value of the Nigerian Naira, the apex bank, the Central Bank of Nigeria (CBN), adopts several strategies in the management of foreign

exchange. These include trade and exchange controls, promotion of exports, demand management, external debt management, adoption of different exchange rate regimes, and methodical external debt management (Obaseki, 2013). Through these, the flow, cost and availability of foreign currencies especially the United States Dollars, the British Pound Sterling, the European Union Euro, and more recently based on currency swap arrangements and the emergence of China as a key trading partner of Nigeria, the Chinese Renminbi or Yuan. These exchange rate policies that has underlined the management of foreign exchange, and the dictates of the foreign exchange market include the flexible or the floating exchange rate system, the fixed exchange rate system, and the Dutch Auction System (DAS). Though, the fixed exchange system is no longer tenable in present day foreign exchange management, the supposed liberalisation of the foreign exchange market is known to face several challenges. These include the emergence of a virile parallel [black] market alongside the official foreign exchange market, incidences of hoarding of foreign currencies by banks and other participants in the market, delisting of several firms in different industries from accessing foreign exchange market, and the continuous devaluation of the domestic currency by the apex bank (Onuoha, 2015). These poses several limitations and inefficiencies in the foreign exchange market and foreign exchange market, which may possibly affect the performance of participants in the market, including banks in terms of income earned, foreign currency holdings, investments, and profitability. The extent to which foreign exchange market affects the financial performance of banks in Nigeria, as a contribution to existing literature in this regard is what is concerned in this study.

1.2 Statement of Problem

The level of foreign exchange fluctuations is high, and this constitutes a greater part of foreign exchange risks which affects the various participants in the foreign exchange market including banks. This is further made worse through the demand-supply mismatch in the market, the scarcity of foreign exchange, the prevalence of the black market, devaluation and depreciation of the Nigerian Naira, dollarisation of the Nigerian economy by politicians, and various unwholesome practices including insider trading and price-altering hoarding. These in one way puts pressure on the foreign exchange pricing, and could lead to the making of losses or abnormal profits by participants in the Nigerian foreign exchange market (FEM). The major concern of this study is the evaluation of the relationship between these idiosyncrasies in foreign exchange management and the financial performance of banks in Nigeria.

Again, there are economic difficulties in Nigeria characterised by high interest rate, high inflation, high level of inconsistencies in foreign exchange rates or pricing, unstable growth of the economy, decreasing real sector output, high unemployment, and as recently reported by the United Nations Development Programme (UNDP), high level of poverty going by the fact that more than 100 million Nigerian have been identified as multidimensionally poor. These millions of people are part of the over 100 million bank customers, as well as the few privileged who also are in need of foreign exchange from the banks too. Again, these banks operate within the ambit of the economic situations in the country, of which they are not immune to the various distortions and dislocations the economy presents to their business. Despite these, many banks continue to report high profitability levels, which appears contrary to the dictates of present-day economic realities in the country. The pertinent question is how these banks makes such profits with the existing economic challenges that theoretically is expected to have perhaps affected them adversely. This research focus on how financial performance of the banks is affected by foreign

exchange management in Nigeria, given the level and incessant nature of foreign exchange fluctuations.

1.3 Objectives of the Study

The general objective of this study is to examine the relationship between foreign exchange management and financial performance of banks in Nigeria. Specific objectives achieved in this study include:

- i. To examine the relationship between official exchange rate, real exchange rate index and net demand for foreign exchange, and profitability of banks in Nigeria.
- ii. To assess the relationship between official exchange rate, real exchange rate index and net demand for foreign exchange, and investments of banks in Nigeria.

1.4 Research Hypotheses

Two hypotheses were tested in this research. These are:

H₀₁: There is no significant relationship between official exchange rate, real exchange rate index and net demand for foreign exchange, and profitability of banks in Nigeria.

H₀₂: There is no significant relationship between official exchange rate, real exchange rate index and net demand for foreign exchange, and investments of banks in Nigeria

1.5 Scope of the Study

This study covered the examination of foreign exchange management and financial performance of banks in Nigeria from 2000 to 2021. The foreign exchange management was proxied by official exchange rate of the United States Dollars (US\$) to the Nigerian Naira (₦), the real exchange rate index, and the net demand of foreign exchange (the difference between the supply and demand of the US\$) in Nigeria. The financial performance of banks in Nigeria were measured by the profit reserve of the banks in Nigeria, and the total investments.

2.0 Literature Review

Key concepts and variables of the study are explained in this section.

2.10 Foreign Exchange Management

The foreign exchange market is a market where currencies of different countries are bought and sold. It is a market where the values of local and foreign currencies are determined. As noted by Jhingan (2004), the national currencies of all countries are the stock-in-trade of the foreign exchange market, and as such, it is the largest market to be found around the world which functions in every country. Furthermore, Bradley and Moles (2002) stated that exchange rate as the price of a unit of foreign currency against domestic currency. Exchange rate is the value of the one unit of foreign currency against local currency and Exchange rate serves as the basic link between the local and the overseas market for various goods, services and financial assets (Reid and Joshua, 2004). Additionally, Omagwa (2005) posits that exchange rates like any other commodity are explained by the law of demand and supply. The supply of foreign currency is explained by changes in fiscal policies whereas currency demand is influenced by a wide range of factors such as inflation rates and interest rates.

The framework for foreign exchange management in Nigeria is through the Foreign Exchange Market (FEM), and was conceived as a mechanism for the determination of an appropriate exchange rate for the Naira in order to reduce the pressure on foreign exchange

resources and stabilise the balance of payments. In effect, the exchange rate mechanism was expected to result in a more rational allocation and utilisation of foreign exchange resources and reduce foreign exchange volatility (Obaseki, 2013). Thus, through foreign exchange management, the major source of foreign exchange to the market is the Central Bank of Nigeria, which incidentally earns most of the nation's foreign exchange from crude petroleum exports. The main users of foreign exchange are the companies, mostly manufacturers and individuals (business men). In managing the foreign exchange, the CBN have constantly adjusted the modalities of operating the system to make it more efficient in order to be able to realise the objectives for which it was set up. Thus, in January 1989 the autonomous market was abolished and the inter-bank foreign exchange market (IFEM) emerge. A set of criteria were used to determine the exchange rate. However, due to the persistent decline in the value of the naira, the Bureau de Change was established in 1989 to enlarge the scope of the officially recognised foreign exchange market and make foreign exchange available to small users in a less formal manner. In addition, the Dutch Auction System (DAS) first operated in 1987 but abandoned in 1989 was re-introduced in December 1990. These practices have been maintained till date.

2.11 Financial Performance of Banks

Firm performance is considered a multidimensional construct that consists of four elements (Alam, Raza & Akram, 2011). Customer-focused performance, including customer satisfaction, and product or service performance; financial and market performance, including revenue, profits, market position, cash-to-cash cycle time, and earnings per share; human resource performance, including employee satisfaction; and organizational effectiveness, including time to market, level of innovation, and production and supply chain flexibility. Consistent with the theoretical foundations in the capabilities and resource-based perspectives, it is argued that organizational capabilities are rent-generating assets, and they enable firms to earn above-normal returns. For example, performance management capability influences various measures of firm performance by allowing business leaders to review and take corrective actions on any potential or actual slippages proactively and in a timely manner (Athanasoglou, Brissimis & Delis, 2008).

Financial performance measures how well a firm is generating value for the owners. It can be measured through various financial measures such as profit after tax, return on assets (ROA), return on equity (ROE), earnings per share and any market value ration that is generally accepted. Generally, the financial performance of banks and other financial institutions has been measured using a combination of financial ratios analysis, benchmarking, measuring performance against budget or a mix of these methodologies (Ahmad *et al*, 2011). Simply stated, much of the current bank performance literature describes the objective of financial organizations as that of earning acceptable returns and minimizing the risks taken to earn this return (Alam *et al*, 2011). However, for the purpose of this study, the financial performance of the banks was measured by the profit reserves and the total investments made.

2.2 Theoretical Underpinnings

The theories that underline this study are the foreign exchange exposure theory and the purchasing parity theory. These are discussed below:

2.2.1 Foreign Exchange Exposure Theory

Contemporary foreign exchange exposure theory made popular by Levi (1996), Buckley (2000); and Shapiro (2003) opinionated that exchange rate fluctuations should affect the value of a multinational company mainly via foreign sales and foreign (net) assets, which have to be denominated in the domestic currency of the parent company. This implies that foreign exchange has direct influence on the financial performance of firms. This has been corroborated by various studies by Bodnar and Gentry (1993), Bartov *et al* (1996), Gao (2000), and Jongen *et al.* (2006); who reported results that are more consistent with this financial theory and finding that exchange rate movements, through their effect on sales and net assets values, are an important factor in determining firm value. However, some empirical studies from Levi (2009); Amihud (2009); and Jorion (2010.), although focusing on firms with considerable operations abroad, fail to show a significant impact of fluctuations in exchange rates on the stock price of multinational companies. Regardless, of the dissenting results, this study is considered relevant because it has shown a direct effect of foreign exchange activities associated with foreign exchange market on the financial outcomes of forms.

2.2.2 Purchasing Power Parity Theory

The Purchasing Power Parity theory (PPP) was advanced by Menon and Viswanathan (2005). The theory explained that the value of homogenous goods is similar in different countries based on the currency of each country. According to Menon and Viswanathan (2005), when purchasing power is similar in different countries then the exchange rates between the country's currencies will be at equilibrium. In line with this, Reid and Joshua (2004) postulated that the ratio of commodities price levels should equal the country's currency. According Ross (2008), a country's currency may be incorrectly valued whereby money has no purchasing power against the country's commodities level.

This purchasing power theory is based on the assumptions that there are no transactional costs, no barriers to trade and the commodities being traded are homogeneous. If the trading currency is exchanged at the spot exchange rate, the price of a homogenous commodity should be identical across borders. The theory suggested the use of price indexes to determine the exact price of a homogenous commodity between countries. Purchasing power parity theory recognises imperfections of the markets; indicating what exchange rate changes rather than absolute exchange rates over time (Ross, 2008).

2.3 Empirical Review

Abubakar (2020) examined the effects of exchange rate volatility on financial performance of deposit money banks in Nigeria. The objectives of the study are to: assess the extent to which exchange rate volatility affects return on capital employed (ROCE) of selected deposit money banks in Nigeria and establish the extent to which exchange rate volatility affects return on asset (ROA) of selected deposit money banks in Nigeria. The study made use of ex-post facto research design. Secondary data were collected and used for the study. The population size of the study is made up of all the 9 deposit money banks with international authorization and listed under the Nigerian Stock Exchange (NSE). According to Central Bank of Nigeria (2019), these banks are: Access Bank, Fidelity Bank, First Monument Bank, First Bank, Guaranty Trust Bank, Skye Bank (Now Polaris Bank), Union Bank, United Bank of Africa and Zenith Bank. The researcher made used of judgmental techniques in determination of the sample size of the study which is 5 firms (First Bank, Guaranty Trust Bank, Union Bank, United Bank of Africa and Zenith Bank). The

study employed multivariate regression statistical technique to evaluate the differences in the observed values of the variables. The study found that exchange rate has no significant effect on Return on Assets and ROCE. Based on this finding, it was recommended that Government should formulate policies that will be very consistent in controlling or managing exchange rate volatilities, as exchange rate volatilities has the capacity of distorting labour rate and other cost of material inputs.

Eyanaku (2018) conducted a study to determine how the foreign exchange risk management affects profitability of deposit bank money in Nigeria. The researcher discussed the methods by which the various objectives earlier discussed in chapter one was accomplished. The researchers investigated the relationship between foreign exchange trading and financial performance of commercial banks in Nigeria and aim to shed some additional light on the topics of foreign exchange trading and risk. Ex post facto design and linear regression were adopted. From the findings, it was revealed that foreign exchange rate trading has a positive effect on the financial performance of commercial banks in Nigeria. The researcher recommended that relevant authorities for instance the Central Bank of Nigeria should adequately put measures to safeguard the value of the domestic currency. This would ensure that the value on the same does not fluctuate much day in day out.

Owoeye, and Ogunmakin (2013) examined exchange rate volatility and bank performance in Nigeria. This study investigated the impact of unstable exchange rate on bank performance in Nigeria using two proxies for bank performance, namely loan loss to total advances ratio and capital deposit ratio. Government expenditure, interest rate, real gross domestic product were added to exchange rate as independent variables. The two models specified show that the impact of exchange rate on bank performance is sensitive to the type of proxy used for bank performance. Loan loss to total advance ratio shows that fluctuating exchange rate may affect the ability of lenders to manage loans resulting into high level of bad loans while capital deposit ratio does not have significant relationship with exchange rate. A core recommendation of this study is that a stable exchange rate is needed to improve the ability of the banking sector to channel credit to the economy.

Ngerebo (2012) conducted a study on the impact of foreign exchange fluctuation on the intermediation of banks in Nigeria (1970 – 2004). The 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 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.

Onyancha (2011) examined the impact of exchange rate movements on the financial performance of International Non-Governmental Organizations (INGOs) based on three variables namely asset holding, investment capacity and liability management. Based on the data collected and after analysis, it was determined that out of the financial performance indicators tested, there was a significant indication that financial performance could be affected by foreign exchange gains and losses and other factors most importantly management support of INGOs.

Opaluwa, Umeh and Ameh (2010) examined the effect of exchange rate fluctuations on the Nigerian manufacturing sector during a twenty (20) year period (1986 - 2005). The argument was that fluctuations in exchange rate adversely affected output of the manufacturing sector. This was because Nigerian manufacturing was highly dependent on import of inputs and capital goods paid for in foreign exchange whose rate of exchange was unstable. The methodology adopted for the study was empirical. The econometric tool of regression was used for the analysis. In the model that was used, manufacturing output employment rate and foreign private investment were used as the explanatory variables. The result of the regression analysis shows that coefficients of the variables carried both positive and negative signs. The study showed that exchange rate fluctuations have effect on the Nigerian manufacturing sector from the statistical significance of the analysis.

3.0 Methodology

The research design adopted for this study is the quantitative research method. This method allows the collection of secondary data from the Central Bank of Nigeria (CBN) Statistical Bulletin of 2021 on the variables in this study from 2000 to 2021. The independent variables include the official exchange rate of the US\$ to the Nigerian ₦ (EXR), the real exchange rate index (RER), and the net demand of foreign exchange (the United States \$) (NDX), while the dependent variables include the profit reserves of banks in Nigeria (PROFIT) and the investments of the banks in Nigeria (INV). These variables were modeled in a multiple regression form and are presented as follows in line with the earlier stated two research hypotheses.

Model One

$$\text{PROFIT} = \alpha_0 + \beta_1 \text{EXR} + \beta_2 \text{RER} + \beta_3 \text{NDX} + \epsilon_1 \quad \text{Equation 1}$$

Model Two

$$\text{INV} = \alpha_0 + \beta_1 \text{EXR} + \beta_2 \text{RER} + \beta_3 \text{NDX} + \epsilon_1 \quad \text{Equation 2}$$

Where:

PROFIT is Profit of banks in Nigeria

INV is total investments of banks in Nigeria

EXR is the Official exchange rate of the US\$ to the ₦

RER is the Real Exchange rate Index

NDX is the Net Demand for the US\$

α_0 is the regression constant

$\beta_1, \beta_2, \beta_3$ are the estimators of the regressors in the model

ϵ_1 is the error term

3.1 Data Collection Method

Secondary data was collected through content analysis of the Financial (Section a) and External Sector (Section D) of the Central Bank of Nigeria (CBN) Statistical Bulletin of 2021. The data were collected as reported in the various sections. However, the data on net demand of foreign exchange was derived from subtracting the total amount of US\$ supplied the Central Bank of Nigeria (CBN) and total amount o US\$ demanded by individuals and corporate organisations in the foreign exchange market in Nigeria.

3.2 Data Treatment Technique

The data gathered from the secondary source for the evaluation of the relationship between foreign exchange management and financial performance of banks in Nigeria were analysed using descriptive and inferential statistics. In particular, multiple regression was used in determining the cause-and-effect relationship between he dependent and the independent variables in his study. Hypotheses were tested at 95% significance level.

4.0 Results and Discussion

The data for the study which shows the variables of foreign exchange management and financial performance of banks from 2000 to 2021 is presented in Table 1. These variables include the official exchange rate of the US\$ to the Nigerian Naira (₦) (EXR), the real exchange rate index (RER), net demand for foreign exchange (US\$) (NDX), the profit reserves of banks (PROFIT), and the total investments of banks (INV).

Table 1: Data for the Study

| YEAR | EXR (₦) | RER (units) | NDX (\$' Million) | PROFIT (₦' Million) | INV (₦' Million) |
|------|------------|----------------|----------------------|------------------------|---------------------|
| 2000 | 101.77 | 64.41 | -579.83 | 58.71 | 7.95 |
| 2001 | 111.49 | 72.67 | -1,315.25 | 97.25 | 15.92 |
| 2002 | 120.65 | 91.60 | -2,636.97 | 132.51 | 35.38 |
| 2003 | 129.22 | 128.87 | -2,729.46 | 168.52 | 62.93 |
| 2004 | 133.00 | 137.72 | -2,691.82 | 206.06 | 72.77 |
| 2005 | 131.10 | 138.05 | -4,679.48 | 419.42 | 88.38 |
| 2006 | 128.14 | 150.91 | -6,075.13 | 872.51 | 141.58 |
| 2007 | 125.07 | 154.29 | -10,998.30 | 1,560.03 | 292.30 |
| 2008 | 117.78 | 89.48 | -26,831.83 | 2,577.60 | 480.72 |
| 2009 | 147.27 | 97.24 | -5,065.16 | 1,982.33 | 890.33 |
| 2010 | 148.31 | 93.10 | -3,198.56 | 179.89 | 1,869.13 |
| 2011 | 151.83 | 90.15 | -11,518.57 | 2,266.76 | 2,574.66 |
| 2012 | 155.45 | 79.60 | -17,448.00 | 2,216.79 | 2,551.18 |
| 2013 | 155.25 | 74.49 | -23,368.85 | 2,395.26 | 1,836.91 |
| 2014 | 156.48 | 71.43 | -28,975.36 | 2,744.99 | 888.99 |
| 2015 | 191.80 | 70.58 | -17,531.90 | 3,190.86 | 1,223.20 |
| 2016 | 253.09 | 78.15 | -18,632.35 | 3,405.00 | 1,534.45 |
| 2017 | 305.29 | 97.12 | -17,883.80 | 3,082.88 | 1,513.59 |

| | | | | | |
|------|--------|-------|------------|----------|----------|
| 2018 | 305.58 | 92.07 | -26,631.54 | 3,697.42 | 1,816.18 |
| 2019 | 306.42 | 81.14 | -19,160.01 | 3,773.74 | 2,026.59 |
| 2020 | 358.31 | 75.03 | -5,704.07 | 3,929.82 | 2,095.70 |
| 2021 | 401.98 | 72.68 | -11,664.31 | 3,818.21 | 2,423.59 |

Source: Central Bank of Nigeria (CBN) Statistical Bulletin (2021)

4.1 Descriptive Statistics Analysis

The descriptive statistic result is presented in Table 2

Table 2: Descriptive Statistics Results of Variables

| Statistic | PROFIT | INV | EXR | RER | NDX |
|------------------|-----------|----------|----------|----------|-----------|
| Mean | 1944.389 | 1111.019 | 187.9688 | 95.49031 | -12060.03 |
| Median | 2241.773 | 1056.768 | 150.0684 | 89.81391 | -11258.43 |
| Maximum | 3929.820 | 2574.659 | 401.9847 | 154.2899 | -579.8277 |
| Minimum | 58.70680 | 7.948700 | 101.7740 | 64.40687 | -28975.36 |
| Std. Dev. | 1438.295 | 941.1365 | 89.53239 | 27.74509 | 9262.389 |
| Skewness | -0.111087 | 0.142984 | 1.147256 | 1.025682 | -0.406389 |
| Kurtosis | 1.496407 | 1.502617 | 2.903489 | 2.681571 | 1.806488 |
| Jarque-Bera | 2.117639 | 2.130273 | 4.834595 | 3.950369 | 1.911324 |
| Probability | 0.346865 | 0.344681 | 0.089162 | 0.138736 | 0.384558 |
| Sum | 42776.55 | 24442.43 | 4135.313 | 2100.787 | -265320.6 |
| Sum Sq. Dev. | 43442545 | 18600496 | 168337.0 | 16165.60 | 1.80E+09 |
| Observation s | 22 | 22 | 22 | 22 | 22 |

Source: Researchers' Computation (2022)

The descriptive statistics result shows that all the variables exhibit normality given the returned Jarque Bera probabilities which were all greater than 0.05. However, it must be noted that the variables PROFIT Of banks, and net demand for foreign exchange (NDX) exhibited high level of variability with standard deviation values of 1438.295 and 9262.389. This indicates high level of fluctuations or changes in the profitability performance of banks in Nigeria, and the unstable level of foreign exchange management. This is further shown in Figure 1. Furthermore, of all the variables in the study, only PROFIT and NDX showed negative skewness with values -0.1111 and -0.4064 respectively. This is an indication that their mean values were less than the median or mode values, an indication of fluctuations. Finally, all the variables were found to be platykurtic, with all their kurtosis values less than 3.0. This is an indication of the presence of tails in the data for these variables.

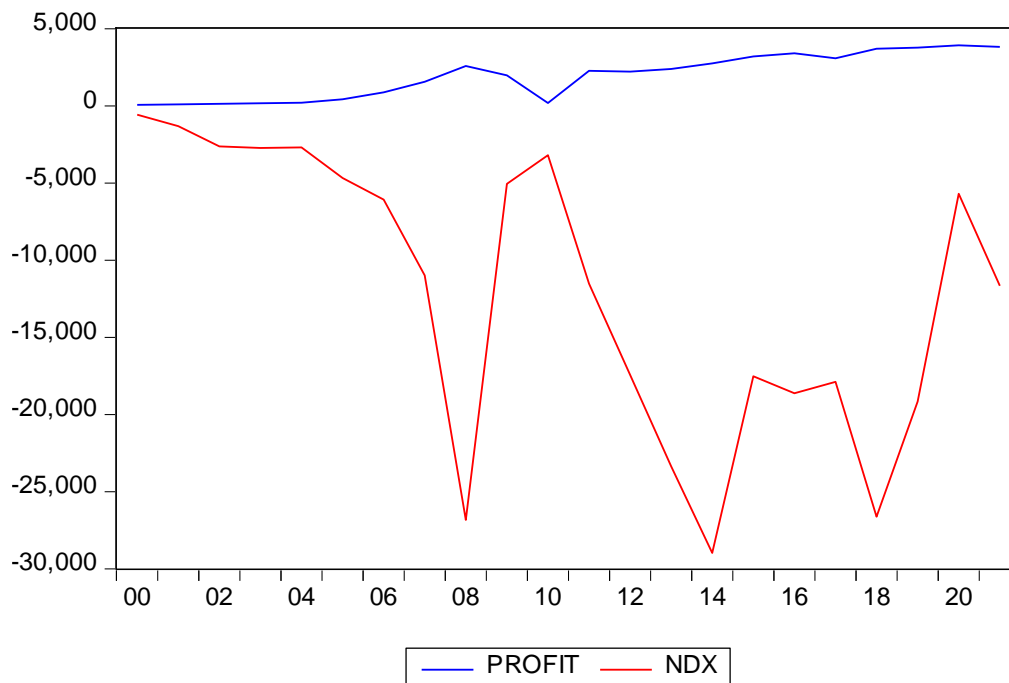


Figure 1: Relationship between Profit of Banks (PROFIT) and Net Demand for Foreign Exchange (NDX) (2000-2021)

Source: Researcher's (2022)

Figure 1 indicates, a high level of fluctuations in foreign exchange given the changing or unstable nature of the supply of and demand for foreign exchange in the foreign exchange market. However, it appears that within the years covered in this study (2000-2021), the financial performance of the banks in Nigeria in terms of profitability was somewhat also unstable but not like the net demand for foreign exchange. This could imply that changes in foreign exchange management was also affecting the financial performance of banks in Nigeria.

4.2 Hypotheses Testing

The hypotheses of the study are tested in this section of the paper

Hypothesis One

This states that official exchange rate, real exchange rate index, and net demand for foreign exchange have no significant relationship with profitability of banks in Nigeria.

The regression results for this hypothesis is presented in Table 3:

Table 3: Multiple Linear Regression Results for Hypothesis One

| | | | | | |
|--------------------|---|-----------|-----------|-----------|-----------|
| PROFIT | = | -567.47 | + 9.94EXR | -3.25RER | -0.08NDX |
| t-stat | = | (-0.9468) | (7.2821) | (-0.7309) | (-6.0081) |
| Prob. | = | (0.3563) | (0.0000) | (0.4742) | (0.0000) |
| R^2 | = | 0.8909 | | | |
| Adjusted R^2 | = | 0.8728 | | | |
| F-stat | = | 49.0346 | | | |
| Prob. (F-stat.) | = | 0.0000 | | | |
| Durbin-Watson stat | = | 2.12 | | | |

Source: Researchers' Computation (2022). See Appendix

Results in Table 3 shows that the profitability of banks in Nigeria will decline at an average of 567.47 units, if all the explanatory variables are held constant ($EXR=RER=NDX=0$). Additionally, a unit increase in the exchange rate (EXR) will lead to 9.93 units increase in the profitability (PROFIT) of banks in Nigeria. This positive relationship between EXR and PROFIT is statistically significant with a computed t-statistic value of 7.2821 and a probability value of 0.0000 ($0.0000 < 0.05$). Also, a unit change in real exchange rate index (RER) will lead to a decrease of 3.25 units in the profitability of banks. This inverse relationship between RER and PROFIT is however not statistically significant with an absolute computed t-statistic value of 0.7309 and a probability value of 0.4742 ($0.4742 > 0.05$). Furthermore, a unit increase in the net foreign exchange demand (NDX) will lead to a decrease of 0.08 units in the profitability of banks in Nigeria. This inverse relationship is statistically significant with absolute computed t-statistic value of 6.008 and probability value of 0.0000 ($0.0000 < 0.05$).

The coefficient of determination (R^2) value of 0.8909 indicates that 89.09% of the variations in profitability of banks in Nigeria have been explained by the variables of foreign exchange management while the remaining 10.91% of the variations unaccounted for by the explanatory variables could be attributed to other factors outside the model for this hypothesis. This is captured by the error term. The Durbin-Watson (DW-stat) value of 2.11 indicates the absence of autocorrelation since the value is equal to 2, going by the rule of thumb.

Finally, given that the computed F-statistic value is 49.0346, and the probability (F-stat) is 0.0000, the model used for this hypothesis could be said to be a good fit. Based on this, the null hypothesis will fail to hold, and is rejected. The alternative which states that there is a significant relationship between exchange rate, real exchange rate index and net demand for foreign exchange and profitability of banks in Nigeria is accepted.

Hypothesis Two

This states that official exchange rate, real exchange rate index, and net demand for foreign exchange have no significant relationship with investments of banks in Nigeria.

The regression results for this hypothesis is presented in Table 4:

Table 4: Multiple Linear Regression Results for Hypothesis Two

| | | | | | | | | |
|--------------------|---|----------|---|----------|---|----------|---|-------------|
| INV | = | 2.973 | + | 0.009EXR | + | 0.002RER | - | 0.000096NDX |
| t-stat | = | (2.0074) | | (2.8338) | | (0.1846) | | (-29588) |
| Prob. | = | (0.0600) | | (0.0110) | | (0.8556) | | (0.0084) |
| R^2 | = | 0.5846 | | | | | | |
| Adjusted R^2 | = | 0.5154 | | | | | | |
| F-stat | = | 8.4455 | | | | | | |
| Prob. (F-stat.) | = | 0.0010 | | | | | | |
| Durbin-Watson stat | = | 0.536 | | | | | | |

Source: Researchers' Computation (2022). See Appendix

Results in Table 4 shows that the investments (INV) of banks in Nigeria will increase at an average of 2.974 units, if all the explanatory variables are held constant ($EXR=RER=NDX=0$). Additionally, a unit increase in the exchange rate (EXR) will lead to 0.0009 units increase in the investments (INV) of banks in Nigeria. This positive relationship between EXR and INV is statistically significant with a computed t-statistic value of 2.8338 and a probability value of 0.0110 ($0.0110 < 0.05$). Also, a unit change in real exchange rate index

(RER) will lead to an increase of 0.0002 units in the investments (INV) of banks. This direct relationship between RER and INV is however not statistically significant with a computed t-statistic value of 0.1846 and a probability value of 0.8556 ($0.8556 > 0.05$). Furthermore, a unit increase in the net foreign exchange demand (NDX) will lead to a decrease of 0.000096 units in the investments (INV) of banks in Nigeria. This inverse relationship is statistically significant with absolute computed t-statistic value of 2.9588 and probability value of 0.0084 ($0.0084 < 0.05$).

The coefficient of determination (R^2) value of 0.5846 indicates that 58.46% of the variations in investments (INV) of banks in Nigeria have been accounted for by the variables of foreign exchange management while the remaining 41.54% of the variations unaccounted for by the explanatory variables could be attributed to other factors outside the model for this hypothesis. This is captured by the error term. The Durbin-Watson (DW-stat) value of 0.536 indicates the presence of autocorrelation since the value is less than 2, going by the rule of thumb. However, the regression results are robust enough, hence it is adjudged reliable going by the Akaike info and Schwarz criterion.

Finally, given that the computed F-statistic value is 8.4455, and the probability (F-stat) is 0.0010, the model used for this hypothesis could be said to be a good fit. Based on this, the null hypothesis will fail to hold, and is rejected. The alternative which states that there is a significant relationship between exchange rate, real exchange rate index and net demand for foreign exchange and investments (INV) of banks in Nigeria is accepted.

4.3 Discussion of Findings

The net demand for foreign exchange (NDX) which is the basis of foreign exchange management showed an inverse and significant relationship with profitability and total investments of banks in Nigeria. This indicates that an increase in the level of mismatch between the supply of and demand for foreign exchange in Nigeria, the likely a decrease in the level of financial performance of banks as it concerns profit and investments. Conversely, the less the mismatch between supply of and demand for foreign exchange in the foreign exchange market (FEM), the more likely the financial performance of the banks in Nigeria would improve. This implies that scarcity of foreign exchange is antithetical to improved financial performance of the banks, while its available could be a catalyst for enhance financial performance.

The exchange rate showed positive and significant relationship with profitability and investments of banks in Nigeria. This implies that the higher the exchange rate, the more the profit and investments banks in Nigeria will make and vice versa. This could be true given that most banks in Nigeria are known to cash-in on the irregularities between the official and the black foreign exchange markets, making more money during increased exchange rates from the Bureau de change operators. This finding agrees with the findings of Ngerebo (2012) and Owoeye and Ogunmakin (2013). Finally, real exchange rate index showed a positive relationship with investments of banks but showed a negative relationship with profitability of banks. This is an indication of existing disparities in the foreign exchange management in Nigeria, which of course lacks uniformity, and inconsistencies.

5.0 Conclusion and Recommendations

The conclusion and recommendation from the data analysis outcome is carried out in this section.

5.1 Conclusion

The examination of the relationship between foreign exchange market and financial performance of banks using secondary data on the variables of official exchange rate, real exchange rate index, net demand for foreign exchange (NDX), as independent variables, and profitability and investments of banks as dependent variables measuring financial performance, covering 2000 to 2021, has indicated various levels of relationships going by the findings generated from this study. These findings include:

- i. The exchange rate (EXR) has a positive and significant relationship with profitability and investments of banks in Nigeria.
- ii. Real exchange rate index (RER) has a negative relationship with profitability of banks but a positive relationship with investments of banks in Nigeria.
- iii. Net demand for foreign exchange (NDX) has a negative and significant relationship with profitability and investments of banks in Nigeria.

Given that foreign exchange management is very vital to a well-functioning foreign exchange market of which banks are important stakeholders to since they act as the middlemen to individuals and corporate bodies. When the foreign exchange market has some inherent defects, there is the possibility that it will adversely affect the performance of the participants in the market, banks inclusive. Also, when these the market [foreign exchange] is functioning as it should, there is no doubt whatsoever that it will support better financial performances of the participants including banks. The empirical results in this study showed that net demand for foreign exchange inversely relates with the profitability and investments of banks, and the exchange rate of the US\$ to the Naira relates directly with the profitability and investments of banks. It can then be stated that foreign exchange management in Nigeria poses mixed influences on the financial performance of banks in Nigeria.

5.2 Recommendations

Following the findings, the following recommendations are made:

- i. There is need for the Central Bank of Nigeria (CBN) to match supply of with the demand for foreign exchange especially the United States Dollars, to ensure adequate availability of foreign exchange in the market.
- ii. There is need for better government policies in the determination of the exchange rate. The best option is to fully deregulate the process to the whims and caprices of the demand-supply nexus.
- iii. There is need for government to ensure that participants in the foreign exchange market play by the rules rather than by exception to ensure a uniformed exchange rate.

5.3 Business Implications of the Findings

The implications of the findings stem from the fact that the Nigerian economy is almost fully import dependent, hence monetary policies must consider this fact to ensure the parallel exchange rate gap with the Official Exchange rate is minimized to reduce the pressure on banks' profitability and investment.

References

- Abubakar, U.Y. (2020). Effects of exchange rate volatility on financial performance of deposit money banks in Nigeria. *Edo Journal of Arts, Management and Social Sciences*, 2(1): 121-139
- Adeniran, J.O., Yusuf, S.A and Adeyemi, O.A. (2014). The impact of exchange rate fluctuation on the Nigerian economic growth: An empirical investigation. *International Journal of Academic Research in Business and Social Sciences*, 4(8): 224-233.
- Ahmed, L (2015) The effect of foreign exchange exposure on the financial performance of commercial banks in Kenya. *International Journal of Sciences and Research Publications*, 5(11): 115- 150
- Alam, H. M., Raza, A. and Akram, M. (2011). Financial Performance of Leasing Sector. The Case of China. *Interdisciplinary Journal of Contemporary Research in Business*, 2 (12):339-345
- Athanasoglou, P. P., Brissimis, S. N. and Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *International Financial Markets Institutions & Money*, 18: 121-136.
- Bartov, E. and Bodnar, G. M. (1996). Firm valuation, earnings expectations and the exchange rate exposure effect, *Journal of Finance*, 13: 1755-1785.
- Bodnar, G.M. and Gentry, W. M. (1993). Exchange rate exposure and industry characteristics: Evidence from Canada, Japan and the USA, *Journal of International Money and Finance*, 4: 29–45
- Central Bank of Nigeria (2021), *Statistical Bulletin*. Abuja: CBN, 493p
- Enyanaku, J.P. (2018) An analysis of foreign exchange management and profitability of deposit money banks in Lagos State, *Journal of Finance and Management*, 3(1): 17-41
- Jhingan, M.L. (2002). *Macroeconomic Theory*, 10th ed. New Delhi, Vrinda Publications
- Ltd. Kanagaraj, A. and Sikarwar, E. (2011). A Firm Level Analysis of the Exchange Rate exposure of Indian Firms. *Journal of Applied Finance & Banking*, 1(4):163- 184.
- Jorion, P. (2010). The pricing of exchange rate risk in stock market. *Journal of Financial and Quantitative Analysis*, 26(3):363–376.
- Ngerebo, T A (2012). The impact of foreign exchange fluctuation on then intermediation of banks in Nigeria (1970 – 2004). *African Journal of Business Management*, 6(11):3872-3879
- Obaseki, P.J. (2013) Foreign exchange management in Nigeria: past, present, and the future, *Central Bank of Nigeria Economic and Financial Review*, 29(1): 57-78:
- Otuori, O. H. (2013). Influence of exchange rate determinants on the performance of commercial banks in Kenya. *European Journal of Management Sciences and Economics*, 1(2): 86-98.
- Owoeye, T. and Ogunmakin, A. A. (2013). Exchange rate volatility and bank performance in Nigeria, *Asian Economic and Financial Review*, 3(2):178-185
- Ross, B. (2008) *Macroeconomic theory*. New York: Prentice, 734p.
- Shapiro, A. C. (2003). *Multinational Financial Management*, 7th ed. New York: Wiley, 367p.

Appendix

MULTIPLE REGRESSION RESULTS HYPOTHESES

Dependent Variable: PROFIT

Method: Least Squares

Date: 12/28/22 Time: 02:44

Sample: 2000 2021

Included observations: 22

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|----------|
| | - | | | |
| C | 567.4700 | 599.3239 | -0.946850 | 0.3563 |
| EXR | 9.937771 | 1.364675 | 7.282154 | 0.0000 |
| | - | | | |
| RER | 3.253697 | 4.451372 | -0.730943 | 0.4742 |
| | - | | | |
| NDX | 0.079151 | 0.013174 | -6.008121 | 0.0000 |
| R-squared | 0.890978 | Mean dependent var | | 1944.389 |
| Adjusted R-squared | 0.872807 | S.D. dependent var | | 1438.295 |
| S.E. of regression | 512.9547 | Akaike info criterion | | 15.48122 |
| Sum squared resid | 4736206. | Schwarz criterion | | 15.67959 |
| | - | | | |
| Log likelihood | 166.2934 | Hannan-Quinn criter. | | 15.52795 |
| F-statistic | 49.03462 | Durbin-Watson stat | | 2.116251 |
| Prob(F-statistic) | 0.000000 | | | |

Dependent Variable: INV

Method: Least Squares

Date: 12/28/22 Time: 02:45

Sample: 2000 2021

Included observations: 22

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|----------|
| C | 718.6285 | 798.2440 | 0.900262 | 0.3799 |
| EXR | 5.302207 | 1.817621 | 2.917114 | 0.0092 |
| RER | 8.851411 | 5.928816 | -1.492947 | 0.1528 |
| NDX | 0.019981 | 0.017547 | -1.138713 | 0.2698 |
| R-squared | 0.548296 | Mean dependent var | | 1111.019 |
| Adjusted R-squared | 0.473012 | S.D. dependent var | | 941.1365 |
| S.E. of regression | 683.2083 | Akaike info criterion | | 16.0544 |
| Sum squared resid | 8401924. | Schwarz criterion | | 16.25281 |
| Log likelihood | 172.5989 | Hannan-Quinn criter. | | 16.10117 |
| F-statistic | 7.283027 | Durbin-Watson stat | | 0.548389 |
| Prob(F-statistic) | 0.002124 | | | |

Dependent Variable: LOG(INV)

Method: Least Squares

Date: 12/28/22 Time: 02:46

Sample: 2000 2021

Included observations: 22

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|--------|
| C | 2.973644 | 1.481346 | 2.007393 | 0.0600 |

| | | | | |
|--------------------|---------|--------------------|-----------|--------|
| | 0.00955 | | | |
| EXR | 9 | 0.003373 | 2.833805 | 0.0110 |
| | 0.00203 | | | |
| RER | 1 | 0.011002 | 0.184634 | 0.8556 |
| | -9.63E- | | | |
| NDX | 05 | 3.26E-05 | -2.958896 | 0.0084 |
| | | | | |
| R-squared | 0.58464 | Mean dependent | | 6.1263 |
| Adjusted R-squared | 0.51542 | var | | 03 |
| | 1 | S.D. dependent var | | 44 |
| S.E. of regression | 1.26786 | Akaike info | | 3.4755 |
| | 28.9348 | criteria | | 16 |
| Sum squared resid | 1 | Schwarz criterion | | 88 |
| | - | | | |
| Log likelihood | 34.2306 | Hannan-Quinn | | 3.5222 |
| | 8 | criteria. | | 47 |
| F-statistic | 8.44553 | | | 0.5360 |
| | 6 | Durbin-Watson stat | | 59 |
| Prob(F-statistic) | 0.00102 | | | |
| | 6 | | | |