



FOREIGN EXCHANGE RATE AND PROFITABILITY OF COMMERCIAL BANKS IN NIGERIA: AN EVALUATION OF ITS IMPACT

***HAUWA ALIYU YAMTA Ph.D; **DANJUMA TUSHA SUKANA; & ***YAKAKA GAMAMA**

Department of Banking and Finance, Faculty of Management Sciences, University of Maiduguri, Borno State, Nigeria. **Institute of Business Diplomacy and Financial Management, Wuse Zonne 5 Abuja. *Department of Marketing, Faculty of Management Sciences, University of Maiduguri, Borno State, Nigeria.*

ABSTRACT

Commercial Banks in Nigeria provide the highest liquidity in the Foreign Exchange (Forex) Market and account for almost all foreign exchange transactions. They also act as independent forex market participants (speculative or hedging operations) as well as act as intermediaries for their clients. In recent times, the Nigerian Banking Industry experienced a challenging fluctuation in foreign exchange rates which exposed commercial banks to foreign exchange risk resulting to instability in profit margin, expected future cash flows as well as significant losses. The objective of this study was to evaluate the impact of foreign exchange risk on the profitability of commercial banks in Nigeria between 1999 to 2018. The study's target population constituted all the 22 commercial banks operating in Nigeria as at 30th June, 2019. The study obtained data from secondary source which entailed data on the macro-economic environment facing the commercial banks and their financial performance/profitability records. In analysing the data, Unit root test, Co-integration and Autoregressive Distributed Lag (ARDL) were adopted in the study and it was found that exchange rates have a significant positive effect on the profitability of commercial banks in Nigeria. It also revealed that exchange rate, inflation rate and interest rate have a significant effect on the profitability of commercial banks in Nigeria. The Study

recommended that Government through the Central Bank of Nigeria should come up with effective measures and policies that will help control and stabilize the exchange rate between the naira and other foreign currencies. The study recommended that boosting external reserves is one effective method to stabilize exchange rate in order to reduce the volatility in foreign exchange rate and improve commercial banks' profitability.

Keywords: Foreign, Exchange, Profitability, Commercial, Banks.

Introduction

Commercial Banks in Nigeria play a major role in promoting economic development through financial intermediation. They assist in the channeling of funds from those with surplus to those in deficit for investment purposes, thereby, boosting the Nation's Gross Domestic Product (GDP) and serving as a catalyst for economic growth. Banks play a vital and substantial role in the development of any economy (Menicucci & Paolucci, 2016). They convert deposits into productive investments as a method to facilitate economic growth in any country (Tabash, 2018). However, the efficiency and effectiveness of both the management and operations of Commercial Banks in Nigeria largely depends on their profitability.

The strength or success of a commercial bank is often linked to its profitability. Profitability refers to an outcome which arises from the effectiveness of management and optimal utilization of resources at its disposal; thus leading to reaping of higher return on capital employed. Profitability is important to commercial banks' stakeholders, as Pitia (2015) states that in order for banks to sustainably carry out their intermediation function, they need to be profitable. The profitability of Commercial Banks in Nigeria is measured by three important variables namely, return on assets (ROA), return on equity (ROE) and net interest margin (NIM).

Foreign exchange risk also known as currency risk and exchange rate risk, describes the possibility that an investment's value may decrease due to changes in the relative value of the involved currencies. Omagwa (2015) observes that banks engage in a variety of transactions that expose them

to foreign exchange risk. These are purchase of foreign currency to facilitate domestic borrowing, funding by the parent banks, foreign loans to meet domestic demand, international foreign currency transactions, correspondent banking relations with banks abroad, customer deposits in foreign currencies and investments in foreign currencies. Foreign exchange risks are determined by some macroeconomic factors such as exchange rate, inflation rate and interest rate.

However, Commercial banks in Nigeria are involved in the buying and selling of other currencies of the world at foreign exchange rates which fluctuates on weekly, daily and even on hourly basis, thereby exposing them to foreign exchange risk resulting to instability in profit margin, expected future cash flows as well as significant losses (Gachua, 2017). Therefore, for the banks to remain competitive and thrive, they are necessitated to evaluate their external factors, which include foreign exchange market variability or fluctuations (Frederick, 2015).

Several studies have been conducted amongst which are those by; Clark, Tamirisa, & Shang-Jin (2014), conducted a study on the effect of foreign exchange exposure on commercial banks' performance and established that changes in foreign exchange rate can influence a firm's current and future expected cash flows and ultimately, profitability.

Ahmed (2015), conducted a study on the effect of foreign exchange exposure on commercial banks' performance and established that foreign exchange exposure has a negative effect on the performance of commercial banks. This relates to Manyo et al (2014), who conducted a study on the effect of foreign exchange transaction on the profitability of Nigerian banks for the period of 2010 to 2014 and also obtained that foreign exchange income has a negative and insignificant effect on the profitability of Nigerian banks for the period.

On the contrary, Wong and Leung (2008), examined the exposure of foreign exchange of Chinese banks and established that there exists no significant relationship between foreign exchange risk and profitability. Opaluwa, Umeh and Ameh (2010), investigated effects of exchange rate fluctuations on the Nigerian manufacturing sector and found that exchange rate fluctuations and performance have a statistically significant association. This study was conducted with a view to addressing this

research gap by exploring the impact of foreign exchange rate on the profitability of commercial banks in Nigeria between 1999 to 2018.

Literature Review

Commercial Banks' Profitability

Profitability connotes a situation where the income generated during a given period exceeds the expenses incurred over the same length of time for the sole purpose of generating income (Frederick, 2015). Profitability refers to the operating efficiency of the firm. It is the ability of the firm to make profit on sales and also get sufficient return on the capital and employees used in the business operation (Rasiah, 2010). Profitability is the essential prerequisite of a competitive banking institution and the cheapest source of funds (Gul, Irshad, & Zaman, 2011).

Commercial banks profitability is obtained by earning more money than what they pay in expenses. The major portion of a bank's profit comes from the fees that it charges for its services and the interest that it earns on its assets, while its major expense is the interest paid on its liabilities (Shapiro, 2012).

In this study, profitability has been defined as an outcome which arises from the effectiveness of management and optimal utilization of resources at its disposal; thus leading to reaping of higher return on capital employed. The management of any firm should be able to identify its strengths and weaknesses, likewise exploit opportunities and tackle threats if it is determined to make profits. There are several ratios that are typically used to measure the profitability of commercial banks, but three indicators, namely: return on assets (ROA), return on equity (ROE) and net interest margin (NIM), were identified to be widely employed in the literature (Abor, 2015).

Foreign Exchange Risk

Globalization has increased communication and awareness of business opportunities around the globe, and has resulted in greater interconnectedness among markets worldwide. However, when business is conducted across national borders, currencies have to be converted at some prevailing foreign exchange rate which changes from time to time.

This gives rise to foreign exchange risk otherwise called exchange rate risk. Exchange rates mostly affect those commercial banks that operate mainly with foreign currency and also do transactions beyond the borders (Farah, 2014). Foreign exchange risk is the risk associated with the unexpected changes in exchange rates which affect the value of a firm's assets or liabilities.

According to Nyandema and Langat (2016), foreign exchange risk is the exposure of an institution to the potential impact of movements in foreign exchange rates which arises from two factors: currency mismatches in an institution's assets and liabilities and currency cash flow mismatches. The amount at risk is a function of the magnitude of potential exchange rate changes and the size and duration of the foreign currency exposure. Foreign exchange risk is the risk that profits will change if foreign exchange rates change (Ahmed, 2015). A common definition of exchange risk relates to the effect of unexpected exchange rate changes on the value of the firm (Madura, 2016). According to Featherson, Littlefield and Mwangi (2017), foreign exchange risk arises when fluctuation in the relative values of currencies affects the competitive position or viability of an organization. Brucaite and Yan (2014) define exchange rate risk as the magnitude and likelihood of unanticipated changes in exchange rate. The increased volatility of international markets generates increased financial risk to the companies. Exchange rate risk is one of the financial risks where the increased volatility is reflected to the greatest extent.

Irene (2011) defines foreign exchange risk as the risk that an entity will be required to pay more (or less) or receive less (or more) than expected as a result of fluctuations in the exchange rate between its currency and the foreign currency in which payment must be made. Foreign exchange risk is the additional variability experienced by a firm in its worldwide consolidated earnings that results from unexpected currency fluctuations. According to Glaum (2011), firms are exposed to foreign exchange risk if the results of their projects depend on future exchange rates and if exchange rate changes cannot be fully anticipated. According to El-Masry (2016), **Foreign Exchange Exposure** refers to the risk associated with the foreign exchange rates that change frequently and can have an adverse effect on the financial transactions denominated in some foreign currency

rather than the domestic currency of the company. He further asserts that commercial banks are exposed to three types of foreign exchange risk: Transaction exposure, Economic exposure and Translation exposure.

This study defines Foreign exchange risk as the peril associated with unanticipated or unexpected fluctuations in the conversion/exchange rates of a country's local currency with that of another country. [Foreign exchange](#) risk also refers to the losses that an international financial transaction may incur due to currency fluctuations or exchange rate volatility. It describes the possibility that an investment's value may decrease due to changes in the relative value of the involved currencies.

Return on Assets

Return on Assets is an indicator of how profitable a company is relative to its total assets. It is sometimes referred to as "return on investment" (Mutua, 2013). Return on Assets shows the profit earned per unit of assets and reflects the management's ability to utilize the banks financial and real investment resources to generate profits (Sayilgan, & Yildirim, 2013). Since the return on banks' deposits is contingent on the outcomes of the projects that the banks finance, the return on assets reflects the management's ability to generate positive returns on deposits (Almumani, 2017).

Return on Assets is a major ratio that indicates the profitability of a bank. It is a ratio of Income to its total asset (Khrawish, 2011). It measures the ability of an organization's management to generate income by utilizing company assets at their disposal. Return on Assets is calculated by dividing a company's annual earnings by its total assets and is displayed as a percentage (Sanusi, 2012).

Therefore, return on assets ratio, often called the return on total assets, is a profitability ratio that measures the net income produced by total assets during a period by comparing net income to the average total assets. In other words, the return on assets ratio or ROA measures how efficiently a company can manage its assets to produce profits during a period.

Return on Equity

Return on equity determines the extent of efficiency of the bank's management in using shareholders' investments (Ling, Fayman, & Michael,

2014). It is a financial ratio that refers to how much profit a company earned compared to the total amount of shareholders' equity invested or found on the statement of financial position. Return on Equity is what the shareholders look in return for their investment (Olweny & Shipho, 2011). Return on equity is the ratio of net income to total equity (Farah, 2014). It is also defined as Profit Before Taxation (PBT) divided by shareholders' fund. It shows how effectively a bank's management is using shareholders' funds. It also measures the rate of return flowing to the bank's shareholders and the net benefit the shareholders receive from investing their capital in the bank i.e. placing their fund at risk in the hope of earning an appropriate profit (Murthy & Sree, 2013).

In other words, Return on equity is a measure of the profitability of a business in relation to the equity, also known as net assets or assets minus liabilities. ROE is a measure of how well a company uses investments to generate earnings growth.

Review of Empirical Literature

Many scholars have conducted empirical research in order to examine the impact of foreign exchange risk on the profitability of organizations in different sectors of the economy including the banking sector. However, it should be noted that these studies have produced mixed results depending on countries, sectors and factors such as Gross Domestic Product (GDP), inflation rate, exchange rate and interest rate (Sufian & Chong, 2008).

Ayodele (2014) evaluated empirically the impact of foreign exchange risk on the Nigerian economy. The study investigated how economic indices such as exchange rate and inflation rate affects changes in Gross Domestic Product (GDP) in Nigeria. The study used Secondary data collected from Annual Reports of Central Bank of Nigeria (CBN), Nigerian Stock Exchange (NSE), and Nigeria Securities and Exchange Commission (SEC) which were analyzed through the multiple regression analysis using the Ordinary Least Squares (OLS) method. The result showed that the two factors -exchange rate and inflation rate- impact significantly on the Gross Domestic Product and economic growth of Nigeria. Exchange rate has a negative impact on the GDP because as it increases, the economic growth is negatively affected, while inflation rate exerts a positive impact on GDP, indicating that firms

are more willing to produce when inflation rate is high and vice versa. The outcome of the research was that the government should make Nigerian economic climate investment friendly by restoring security of lives and property, infrastructural development and improvement of local production in order to reduce the pressure on the dollar and that this would go a long way to boost the exchange rate in favour of the naira and hence improve the Gross Domestic Product of the Country.

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 shows adverse effect and is all statistically significant in the final analysis.

Adetayo (2013) examined management of foreign exchange risks in a selected commercial bank in Nigeria. The study sought to determine how the risk involved in foreign exchange can be effectively managed, by determining the following specific objectives: to determine the various exchange risks which the treasurer of the selected bank is exposed to in its foreign exchange transaction; to investigate how these risks can be effectively managed and to identify risk and exposure management techniques required for treasury management. The selected firm used for this study was a Commercial Bank of International Standard, located in Lagos, the business centre of Nigeria. The study exploited both the primary and secondary sources of information. The primary source comprised of a structured questionnaire, to elicit pertinent responses from the respondents. A non-parametric measure based on chi-square statistics was employed to test the hypothesis and determine if there is any association between foreign exchange trading and risk management issues. Spot

transaction technique was found to be effective in minimizing foreign exchange risk.

Choi, Elyasiani, and Kopecky, (1992) had conducted study on 48 largest US commercial banks by using monthly data over the period of January 1975 to December 1987. They observed that bank stock returns respond negatively to interest rates and the impact of the exchange rate depends on the banks' net position in foreign currencies. Their results confirmed that a depreciation of foreign currencies negatively influenced bank stock returns.

Irene (2011) conducted a study on the impact exchange rates have on the Airlines performance. The study employed a causal case study approach to determine the relationship that existed between the variables. The population was the employees in the airline sampled by simple random sampling. The study found out that there existed a negative relationship between foreign exchange risk and performance of the Airlines of Kenya Airways.

Ahmed, (2015) investigated the impact that foreign exchange risk exposure has on commercial banks performance. Both primary and secondary data was used by the study with a census approach being used so as to include all the commercial banks. The study established changes in the rates had minimal to no risk at all to the banks, as they had placed mechanisms to counter the foreign exchange risks. The study only focused on the interest rates and inflation without considering other macroeconomic variables. Additionally, the study was not able to clearly establish the relationship that existed between the variables.

Majok (2015) investigated exchange rate fluctuations in commercial banks in Kenya. The study used a descriptive research survey. The target population comprised all 43 commercial banks operating in Kenya as at December 2014. The secondary data was collected from the banks' consolidated financial statements as well as Central Bank of Kenya offices. The study found that there was a positive relationship between foreign exchange rate fluctuations and the financial performance of banks as measured by the returns on assets ratio. The study did not consider other macro-economic variables such as interest rates.

Gachua (2017) examined the effect of foreign exchange exposure on a firm's financial performance: a case of listed companies in Kenya. This study developed a model of foreign exchange exposure dependent on three variables, the firm's imports, exports and their effect on profits formulating the problem statement of the effects that variations in the exchange rate has in the financial performance of the selected listed companies in the Nairobi Stock Exchange for the period covering years 2001 to 2010. The study was to find out whether foreign exchange exposure is minimized where firms have been able to match their foreign currency revenues and costs leaving them with little net exposure. The research design was descriptive involving the use of both qualitative and quantitative data. The sample size constituted of 38 firms except for financial and investment but the results of 32 firms were analysed after eliminating spoilt and inconsistent questionnaires. The research utilized questionnaires for data collection comprising of structured questions. In analysing the responses, the Microsoft Excel Spreadsheet tool was used to calculate descriptive statistics and the Statistical Package for Social Sciences (SPSS) was also used. These generated descriptive statistics are percentages, frequency distribution, measures of central tendency and graphical expressions. From the findings the study found that listed firms used the income statement and the owner's equity account to record foreign exchange differences.

Sangmi and Tabassum (2010) examined the effects of foreign exchange risks on Banks' operations and profits by applying Error Correction Model (ECM) on one of the commercial banks in India for the period of five years from 2006 to 2010. The results explain that exchange rate was significant determinant of profits.

Wanjohi (2013) also had a look at the Kenyan banks particularly on the exchange rate sensitivity of some listed banks on the Kenyan Stock Exchange (KSE) between the years 2005 and 2010. Qualitative and quantitative approaches were adopted while undertaking this study as well as econometric models. The study results showed that the banks under review engaged traded through foreign exchange and reported profits on those trading.

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 and real gross domestic product were added to exchange rate as independent variables. Using Vector Auto-regression (VAR) technique, the study revealed 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. Chris (2013) investigated the relationship between foreign exchange and the Nigerian economic growth using the annual data for the period of 1960 to 2012. Using Ordinary Least Square (OLS) technique, the result revealed that exchange rate explained and accounted for about 99% variation in economic growth.

Dada and Oyeranti (2012) examined the effect of exchange rate volatility on economic growth in Nigeria using the annual data for the period of 1970 to 2009. Using Vector Auto-regression (VAR) technique, the studied revealed that economic growth is negatively related to exchange rate in the long run while in the short run, a positive relationship exist between the two variables in Nigeria.

Pitia and Lado (2015) sought to test for the relationship between exchange rate and inflation in South Sudan for the period August 2011 to November 2014. Using Ordinary Least Square technique, the study revealed that there exists a unidirectional causality from exchange rate to CPI without feedback. This means depreciation of South Sudanese currency is detrimental to the economy of South Sudan. Although CPI failed to cause changes in exchange rate, there is no way to conclude with greater confidence that the results are true. The effect of the pressure of an increase in price level on exchange rate could have been from the response

of monetary authorities in bridging the gap between the price level and the purchasing power of people in the economy.

Methodology

The data adopted for this study is secondary data. Twenty-two (22) commercial banks operating in Nigeria was considered as population of the study. The data assessed included return on assets (ROA), return on equity (ROE) and net interest margin (NIM) of the banks obtained from their financial statements and the statistical bulletin of the Central Bank of Nigeria (CBN) for twenty years, 1999 to 2018. This was the period when the exchange rate between the naira and other foreign currencies especially the US Dollar started fluctuating. Data on the foreign exchange rate fluctuations (EXR), inflation rates (INF) and interest rates (INR) were also collected from the Central Bank of Nigeria.

Data generated was analyzed using descriptive statistics and various procedures for measurement of variables such as unit root test and co-integration. Autoregressive Distributed Lag (ARDL) using Eviews-10, a [statistical package](#) used mainly for time-series oriented [econometric analysis](#) was also used in the analysis of data.

Unit root tests can be used to determine if trending data should be first differenced or regressed on deterministic functions of time to render the data stationary. Moreover, economic and finance theory often suggests the existence of long-run equilibrium relationships among non-stationary time series variables. If these variables are $I(1)$, then co-integration techniques can be used to model these long-run relations. Hence, pre-testing for unit roots is often a first step in the co-integration modelling.

Co-integration is a [statistical](#) property of a collection (X_1, X_2, \dots, X_k) of [time series](#) variables. Co-integration tests analyze non-[stationary](#) time series or processes that have [variances](#) and [means](#) that vary over time. In other words, the method allows a researcher to estimate the long-run parameters or equilibrium in systems with [unit root variables](#) (Kothari, 2011).

An autoregressive distributed lag (ARDL) model is an ordinary least square (OLS) based model which is applicable for both non-stationary time series as well as for times series with mixed order of integration. Although,

ARDL is a relatively new method, it has the ability to test the presence of long-run relationship between variables and hence its choice for this research with a 20-year period from 1999 to 2018.

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Results

Return on Assets (ROA), Return on Equity (ROE), Net Interest Margin (NIM), Exchange Rate (EXR), Interest Rate(INR), and Inflation Rate(INF), are all the data presented and used in this study, and these are for the period of twenty (20) years, from 1999 to 2018. The Exchange rate here is the rate at which the domestic (Naira) currency is traded for Dollar (\$) and it is represented in percentage form. Interest Rate (INR) means real interest rate, it is the rate at which commercial banks give out loans and it is represented in percentage form. The Inflation rate (INF) means the persistent increase in the general price level within the economy which affects the value of the domestic currency and it is represented in percentage form.

Table 1. Return on Assets, Return on Equity, Net Interest Margin, Real Exchange Rate, Inflation Rate, and Interest Rate from 1999-2018

<i>Year</i>	<i>Return on Assets</i>	<i>Return on Equity</i>	<i>Net Interest Margin</i>	<i>Real exchange Rate N/US\$1.00</i>	<i>Inflation Rates (%)</i>	<i>Interest Rate (%)</i>
<i>1999</i>	<i>2.66</i>	<i>11.55</i>	<i>12.09</i>	<i>92.69</i>	<i>0.22</i>	<i>21.32</i>
<i>2000</i>	<i>2.16</i>	<i>16.13</i>	<i>11.00</i>	<i>102.11</i>	<i>14.53</i>	<i>17.98</i>
<i>2001</i>	<i>2.49</i>	<i>15.00</i>	<i>6.49</i>	<i>111.94</i>	<i>16.49</i>	<i>18.29</i>
<i>2002</i>	<i>0.28</i>	<i>6.10</i>	<i>10.60</i>	<i>120.97</i>	<i>12.17</i>	<i>24.85</i>
<i>2003</i>	<i>1.27</i>	<i>10.36</i>	<i>10.34</i>	<i>129.36</i>	<i>23.81</i>	<i>20.71</i>
<i>2004</i>	<i>0.35</i>	<i>12.44</i>	<i>12.12</i>	<i>133.5</i>	<i>10.01</i>	<i>19.18</i>
<i>2005</i>	<i>1.99</i>	<i>21.90</i>	<i>10.92</i>	<i>132.15</i>	<i>11.57</i>	<i>17.95</i>
<i>2006</i>	<i>0.71</i>	<i>18.87</i>	<i>7.53</i>	<i>128.65</i>	<i>8.55</i>	<i>17.26</i>
<i>2007</i>	<i>1.16</i>	<i>18.00</i>	<i>7.30</i>	<i>125.83</i>	<i>6.56</i>	<i>16.94</i>
<i>2008</i>	<i>1.13</i>	<i>17.78</i>	<i>6.83</i>	<i>118.57</i>	<i>15.06</i>	<i>15.14</i>
<i>2009</i>	<i>0.42</i>	<i>20.38</i>	<i>7.09</i>	<i>148.88</i>	<i>13.93</i>	<i>18.99</i>
<i>2010</i>	<i>1.85</i>	<i>26.40</i>	<i>7.20</i>	<i>150.3</i>	<i>11.8</i>	<i>17.59</i>
<i>2011</i>	<i>1.52</i>	<i>16.43</i>	<i>6.85</i>	<i>153.86</i>	<i>10.28</i>	<i>16.02</i>
<i>2012</i>	<i>0.63</i>	<i>14.88</i>	<i>6.65</i>	<i>157.5</i>	<i>11.98</i>	<i>16.79</i>
<i>2013</i>	<i>1.38</i>	<i>18.19</i>	<i>8.97</i>	<i>157.31</i>	<i>7.96</i>	<i>16.72</i>

2014	0.94	20.89	8.88	158.55	7.98	16.55
2015	2.57	30.90	7.70	193.28	9.55	16.85
2016	2.04	27.51	7.12	253.49	18.55	16.87
2017	2.05	26.37	6.84	305.79	15.37	17.58
2018	2.54	24.04	5.60	306.1	12.09	19.6

Source: Central Bank of Nigeria Statistical Bulletin

ARDL-ECM Results for Return on Assets and Exchange Rate

The ARDL-ECM result examines how the final equation changes to the long-run equilibrium. The ECM results and interpretation are presented as follows:

Table 2: ROA Model: ARDL (1) ECM Results
Dependent Variable: D(ROA)

<i>Dependent Variable: D(ROA)</i>				
<i>Method: Least Squares</i>				
<i>Date: 10/19/19 Time: 21:45</i>				
<i>Sample (adjusted): 2001 2018</i>				
<i>Included observations: 18 after adjustments</i>				
<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
<i>C</i>	<i>-0.145948</i>	<i>0.191452</i>	<i>-0.762324</i>	<i>0.4585</i>
<i>D(ROA(-1))</i>	<i>-0.168709</i>	<i>0.218886</i>	<i>-0.770761</i>	<i>0.4537</i>
<i>D(EXR(-1))</i>	<i>0.012941</i>	<i>0.008824</i>	<i>1.466615</i>	<i>0.1646</i>
<i>ECM(-1)</i>	<i>-0.510003</i>	<i>0.325738</i>	<i>-3.069962</i>	<i>0.0083</i>
<i>R-squared</i>	<i>0.651923</i>	<i>Mean dependent var</i>		<i>0.021111</i>
<i>Adjusted R-squared</i>	<i>0.577336</i>	<i>S.D. dependent var</i>		<i>1.049565</i>
<i>S.E. of regression</i>	<i>0.682350</i>	<i>Akaike info criterion</i>		<i>2.266582</i>
<i>Sum squared resid</i>	<i>6.518423</i>	<i>Schwarz criterion</i>		<i>2.464443</i>
<i>Log likelihood</i>	<i>-16.39924</i>	<i>Hannan-Quinn criter.</i>		<i>2.293864</i>
<i>F-statistic</i>	<i>8.740344</i>	<i>Durbin-Watson stat</i>		<i>2.133982</i>
<i>Prob(F-statistic)</i>	<i>0.001621</i>			

Notes: ***, ** and * indicate statistical significance at 10%, 5% and 1% levels, respectively

Source: Authors Computation, 2019 (Eviews-10)

As expected, the lagged error correction term ECT (-1) is negative, and statistically significant at 5 percent. The coefficient revealed that once there is disequilibrium in the system, it takes a high speed (51%) to adjust itself back towards long-run equilibrium level. The coefficient of determination (R-square), which was used to measure the goodness of fit of the estimated model, indicates that the model is reasonably fit in prediction. It showed that 65.19 percent changes in ROA were due to EXR while 34.81percent unaccounted variations was captured by the white noise error term. It showed that EXR has an impact prediction on ROA within the period under review.

The model also indicates that there is no autocorrelation among the variables as indicated by Durbin Watson (DW) statistic of 2.13. This shows that the estimates are unbiased and can be relied upon also for policy decisions.

Table 3: ROE Model: Short run ARDL (1) Result
Dependent Variable: D(ROE)

<i>Dependent Variable: D(ROE)</i>				
<i>Method: Least Squares</i>				
<i>Date: 10/19/19 Time: 22:37</i>				
<i>Sample (adjusted): 2001 2018</i>				
<i>Included observations: 18 after adjustments</i>				
<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
<i>C</i>	<i>0.661832</i>	<i>1.313967</i>	<i>0.503690</i>	<i>0.6218</i>
<i>D(ROE(-1))</i>	<i>-0.090861</i>	<i>0.252063</i>	<i>-0.360468</i>	<i>0.7235</i>
<i>D(INF(-1))</i>	<i>-0.175341</i>	<i>0.203308</i>	<i>-0.862443</i>	<i>0.4020</i>
<i>R-squared</i>	<i>0.603352</i>	<i>Mean dependent var</i>	<i>0.439444</i>	
<i>Adjusted R-squared</i>	<i>0.561535</i>	<i>S.D. dependent var</i>	<i>5.316087</i>	
<i>S.E. of regression</i>	<i>5.477208</i>	<i>Akaike info criterion</i>	<i>6.390080</i>	
<i>Sum squared resid</i>	<i>449.9971</i>	<i>Schwarz criterion</i>	<i>6.538475</i>	
<i>Lag likelihood</i>	<i>-54.51072</i>	<i>Hannan-Quinn criter.</i>	<i>6.410541</i>	
<i>F-statistic</i>	<i>0.507274</i>	<i>Durbin-Watson stat</i>	<i>2.076752</i>	
<i>Prob(F-statistic)</i>	<i>0.612103</i>			

*Notes: ***, ** and * indicate statistical significance at 10%, 5% and 1% levels, respectively*

Source: Authors Computation, 2019 (Eviews-10)

From table 3 we can see the short run ARDL Model result and their coefficient values. The short run dynamics was conducted because there was no long run relationship in the model. This implies that there is no long-run co-integration between ROE and INF. The coefficient of determination (R-square), which was used to measure the goodness of fit of the estimated model, indicates that the model is reasonably fit in prediction. It showed that 60.33 percent changes in ROE were due to INF while 39.67percent unaccounted variations was captured by the white noise error term. It showed that INF has an impact prediction on ROE within the period under review.

Table 4: Results of Residual Test of Return on Assets and Exchange Rate

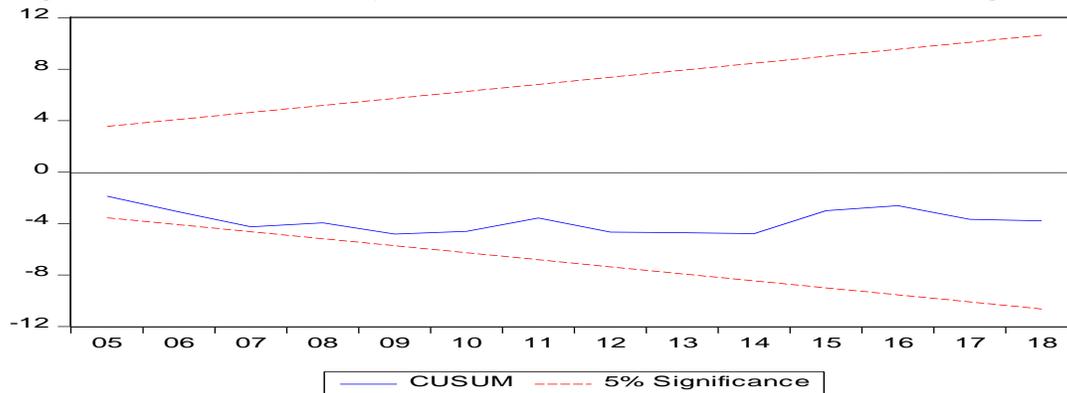
Tests	Outcomes		
		Coefficient	Probability
Heteroscedasticity-Breusch-Pagan-Godfrey Test	F-stat.	2.741864	0.0826
	NR ²	6.661720	0.0835
Breusch-Godfrey-Serial-Correlation Test	F-stat.	2.33633	0.4092
	NR ²	2.739425	0.0979
Normality Test	Jarque-Bera	1.340246	0.511646

Source: Authors Computation, 2019 (Eviews-10)

The Return on Assets model result as presented in Table 4.9 revealed that there were no evidences of serial correlation and heteroscedasticity in the estimated ARDL-ECM model as the p-values of both (0.0826 and 0.0835) were found to be greater than 0.05 or 5percent. Furthermore, Jarque-bera test for normal distribution revealed that the result attained a normal distribution with a bell shaped symmetrical distribution at 5percent significance level. This was captured by the Jarque-bera probability value of 0.511646 found to be greater than 0.05.

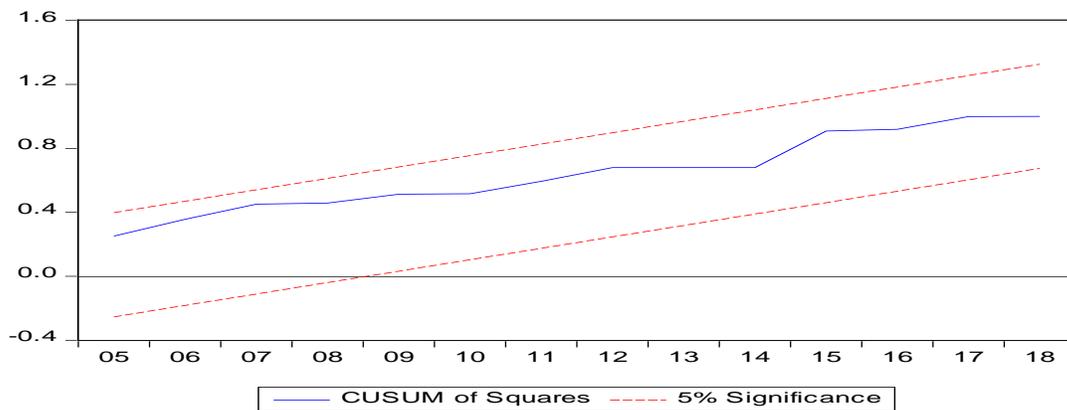
Lastly, the cumulative sum (CUSUM) stability tests (CUSUM and CUSUMSQ) in figure 4.1 and figure 4.2 revealed that the model is stable and the regression equation is correctly specified as the plots of the charts lie within the critical bounds at 5percent significant level.

Figure1: CUSUM Stability Tests of Return on Assets and Exchange Rate



Source: Authors Computation, 2019 (Eviews-10)

Figure 2: CUSUM Square Stability Tests of Return on Assets and Exchange Rate



Source: Authors Computation, 2019 (Eviews-10)

Findings from the study reveal that exchange rate has a significant effect on Return on Assets of commercial banks in Nigeria within the study period. This may be attributed to the constant fluctuation and rise in the rate of exchange between the domestic currency and Dollar. The result further implies that frequent depreciation of the naira due to fluctuations in exchange rates is always going to have adverse effects on the profitability of commercial banks in Nigeria. This research finding is similar to the findings of Majok (2015) who in his study investigated exchange rate fluctuations in commercial banks in Kenya. The research findings revealed that there was a positive relationship between foreign

exchange rate fluctuations and the financial performance of banks as measured by the returns on assets ratio. Furthermore, it was also observed that the study finding similar to the findings of Wanjohi (2013) who also had a look at the Kenyan banks particularly on the exchange rate sensitivity of some listed banks on the Kenyan Stock Exchange (KSE) between the years 2005 and 2010. The study results show that the banks under review engaged traded through foreign exchange and reported profits on those trading. This implies that there is a significant relationship between exchange rate and bank profitability.

Conclusion

The aim of this study was to provide a better understanding of the impact of foreign exchange rate on commercial bank's profitability. The result of the analysis provide support on the fact that foreign exchange rate has significant influence on commercial bank's profitability. In conclusion, the foreign exchange rate can in one way or the other influences profitability even though a times will have adverse effect due to exchange rate fluctuations. These changes and rise of exchange between domestic currency and dollar, could serve as a good basis for future study.

Recommendations

1. Government through its policy makers particularly the Central Bank of Nigeria (CBN), the Nigerian Stock Exchange (NSE) and the Securities and Exchange Commission (SEC) should come up with effective measures and policies that will help control and stabilize the exchange rate between the naira and other foreign currencies.
2. Boosting external reserves is one effective method to stabilize exchange rate. This will help reduce the volatility in foreign exchange rate and make it easier for commercial banks to acquire assets at minimal costs in both local and foreign currencies thereby increasing their return on assets.

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