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Exchange Rate Fluctuations and Its Impact on Deposit Money Banks Returns in Nigeria: 1991-2019

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Abstract:

This study assesses the impact of exchange rate fluctuations on deposit money banks returns in Nigeria from 1991 to 2019. It specifically aimed at finding out the relationship that exist between movements in exchange rates and deposit money banks return on assets. Other proxies that serve as independent variables were external reserve, lending rate and inflation rate. Expost research design was adopted. Twenty-four (24) existing deposit money banks in Nigeria were used. Data were collected from CBN statistical bulletin and NDIC annual report. In other to comprehensively analyze the quantitative data to be used for the purpose of this study Ordinary Least Square method, Augmented Dickey Fuller, Johansen Co integration and Error correction model were employed. Findings revealed that exchange rate has positive relationship with deposit money banks' returns on assets but insignificant. It equally found that external reserve has negative but significant relationship with return on assets. In addition, inflation and lending rate both have negative and insignificant relationship with return on assets. It concludes that exchange rate stability has become a necessity to ensure deposit money banks have better returns in Nigeria. It therefore recommends that CBN pursue policies that strengthen the value of Nigeria currency. The depletion of external reserve should urgently be addressed while caution must be taken at its effect on deposit money banks stream of revenue.

Keywords: Exchange Rate, Exchange Rate Fluctuations, Bank Performance, Revenue, Return on Assets

1. Introduction

Over the years, various economies around the world have had to grapple with the attendant effect of their exchange rate on their economies. Exchange rate is generally referred to as the value of the money of one country when compared to the money of another country (Oladipupo & Onotaniyohuwo, 2011). This implies a unit price of a nation's currency as it compares with another nation's currency. It has been argued that various countries adopt various forms of exchange rate policy, which is aimed at strengthening the value of the currency at the international market (Yakub, Sani, Obiezue & Aliyu, 2019). Obadan (1994) provides more in-depth exposition on the importance of exchange rate as serving as the pivot of investment environment and argued that a sustained period of exchange rate misalignment (over-valuation or under-valuation) can result in macroeconomics disequilibrium which spells doom for the country's economy.

Every economy has a financial system, which is dominated by the banking sector (Solomon, 2018). The banking industries in any financial system across the globe are the most important financial sector because of their ability to mobilize funds from the savings sector to the deficit sector of the economy. They have been documented to mobilize the largest amount of fund due to their ability to accept all form of deposits from the public, government and its agencies while using such fund to create credit facilities in the form of loans, overdraft and investment (Onoh, 2002). Thus, the environment in which banks operates can adversely affect their performance. Banks revenue performance have been measured by Return on assets (ROA), Return on capital employed (ROCE) or Net profit margin (NPM). Most banking operations are now link with global environment. Therefore, fluctuations in exchange rate, which affects banking customers can also affect, banks themselves. Profitability is essential for any bank to remain in business and to instill confidence on investors. It is also a sign that the bank's statement of financial position shows more revenue than expenses as well as solvency under any environment.

Fluctuations in exchange rate or exchange rate volatility have been described as periods of domestic currency appreciation or depreciation (Jongbo, 2014). The exchange rate is therefore an important relative price as Victor (2017) decried that exchange rate fluctuation mounts pressure on activities of the economy such as inflation and international competitiveness of domestic goods. The combination of these factors can affect deposit money banks profitability. Studies have shown that exchange rate has an inducing factor on production of cost as a result of changes in domestic and international prices of goods and services. Consumers therefore bear the burden either in form of loss or gain while banks who are linked with these customers are also affected (Gatobu, 2012; Olabisi, Afolabi, Kajola & Ariyibi, 2019). Osuagwu (2014) noted banks profitability is a function of their credit risks, that is, when Naira rate continues to depreciate, the liquidity position of the banks is at risk which in turn will reflect on their revenue position. Takatoshi and Kiyotaka (2008) argued in line with the traditional school of thought that exchange rate volatility brings uncertainty in profits and reduces

revenue of organizations. Again, domestic banks that have links with international financial institutions are mostly affected by exchange rate volatility.

Thus, exchange rate has received considerable attention in terms of its influence on investment and economic growth. Policy makers have often been confronted with the problem of determining an appropriate exchange rate system that will have improvement on macroeconomic factors such as bank credits (Işık, Radulescu and Fedajev, 2019; Osisanwo, Tella & Adesoye, 2019). Deposit money banks like any other bank are creditors and it has been argued that creditors usually bear the burden of loss during exchange rate instability. Soludo (2004) attributed to the fact that banks' assets which are usually in form of papers tends to be bigger than their liabilities; thus, their capital investment made in form of paper assets devalue during inflation along with the bank's capital. Exchange rate trading is an important factor to banks as foreign exchange income, commissions and fees from foreign exchange operations has been considered one of the major revenue sources to banks. Exhaustive examination on banks activities as regards foreign currency trading reflects that banks rely on rate variation as their stock-in-trade. In other words, banks trade on exchange rate by advantageously utilizing the opportunity arising from exchange rate volatility. Exchange rate variation will encourage speculative activities on the basis of expectations that the exchange rate will appreciate. Based on the maturity structure and currency denomination of assets and liabilities in the economy, sharp exchange rate movements could result in liquidity shortages and trigger significant balance sheet effects (Babazadeh & Farrokhnejad, 2012).

In Nigeria, the naira exchange rate has witnessed series of fluctuations since independence in 1960 while various exchange rate policy has been adopted such as fixed exchange rate, floating exchange and managed floating exchange rate (Sanusi, 2004). Agbeja, Adelekan and Udi (2016) were of the view that exchange rate fluctuations tends to expected cash flows as well as the returns of companies through changes in the domestic currency of foreign currency denominated revenues (cost). Foreign exchange markets, which represent a global means of communication among banks, also serve as financial intermediaries for such exchange as deposit money banks use international lending as their primary form of international investment. Studies have reported that real exchange rate has negative impact on banks performance (Taiwo & Adesola, 2013; Lambe, 2015; Osundina, Osundina, Jayeoba and Olayinka, 2016) while some others found positive relationship between the two. This present study takes more in-depth look at how recent exchange rate fluctuations in Nigeria may have impacted on deposit money banks' returns.

1.1. Statement of the Problem

Over the years, Nigeria has experienced rapid slide in its exchange rate value. In fact, at post-independence, naira was exchanged for approximately \$1 in 1960. The exchange rate of US Dollar to naira from 1997- 2000 rate was fixed at ₦21.8861 and then increased to ₦92.6934 in 2001. The rate further moved to ₦133.504 in 2006 but reduced in 2008 to 121.21. In 2009, the exchange rate increased to ₦127.7880 but reduced to ₦118.5669 in 2011 while in 2012 and 2013 it increased to ₦148.9017 and ₦150.2980 respectively. Currently, it exchanges for ₦381 to \$1 despite all efforts put in place by the Central Bank of Nigeria which is responsible for managing the exchange rate. The over dependence in oil as a major source of revenue for the government has had significant effect on the volatility of the Nigerian currency as fluctuations in oil price affects government revenue, external reserve and cost of goods and services at the international market. Deposit money banks in Nigeria which depends more on government rather than the private sector are thus affected by such fluctuations. Again, fluctuations in exchange rates tend to work for or against the private sector and their profitability and in most cases erode their profit margins or lead to loss. Several large companies in Nigeria have left the shore owing to the problem of naira instability that has affected their credit worthiness with banks. Instability has also been found to lead to higher defaults and nonperforming loans thus making banks' statement of financial position toxic. Presently, very few studies exist on how exchange rate fluctuations affect deposit money banks return on assets in Nigeria hence the need for this study.

1.2. Objective of the Study

This study aimed at achieving the followings:

- To find out the relationship between Exchange rate and deposit money banks' returns on assets in Nigeria.
- To determine the impact of external reserve on deposit money banks' returns on assets in Nigeria.
- To assess the relationship between inflation and deposit money banks' return on assets in Nigeria.
- To determine if there is significant relationship between Lending rate and deposit money banks returns on assets in Nigeria.

1.3. Hypotheses

- H_{01} : Exchange rate has no significant relationship with deposit money banks' returns on assets in Nigeria.
- H_{02} : There is no significant impact of external reserve on deposit money banks' returns on assets in Nigeria.
- H_{03} : There is no significant relationship between inflation and deposit money banks' return on assets in Nigeria.
- H_{04} : There is no significant relationship between Lending rate and deposit money banks returns on assets in Nigeria.

2. Review of Related Literature

2.1. The Concept of Exchange Rate Fluctuation

Exchange rate or foreign exchange rate is the price of one country's currency in relation to another country (Azeez, Kolapo, & Ajayi, 2012). According to Mordi, (2006), the increase or decrease of real exchange rate indicates strength and weakness of currency in relation to foreign currency while Razazadehkarsalari, Haghiri and Behrooznia (2011) see exchange rate as a standard for illustrating the competitiveness of domestic industries at the international market. Studies have argued that there are two basic forms of exchange rate which are nominal exchange rate and real exchange rate. Nominal exchange rate (NER) is rate that measures the relative price of two foreign currencies and vice versa; for example, Naira versus the U.S. dollar (N365.00: USD1.00). Ndubuaku, Onwuka, Onyedika and Chimezie (2019) opined that exchange rate tends to appreciate or depreciate, in other words, appreciation implies less units of a domestic currency exchanges for one unit of another currency while depreciation implies more units of a domestic currency exchanges for one unit of a foreign currency. The authors added that devaluation is synonymous to depreciation and most studies use them interchangeably. Devaluation implies the reduction in the value of a currency in terms of a designated unit of gold (or other standard of measurement). Depreciation on the other hand, refers to reduction of the value of a currency in terms of a specific foreign currency.

Exchange rate fluctuation also known as volatility refers to deviation of the rate over a period from the benchmark or equilibrium. Exchange rate fluctuation indicates the extent of misalignment of exchange rate, which has occurred at the beehive of multiplicity of markets parallel with the official market. Akpan (2008) sees exchange rate fluctuation as the volatility and/or movements of the exchange rate. He stressed that fluctuation means short-term variation (volatility/instability) of real exchange rate in relation to long-term trends while noting that changes in world price or fluctuations in nominal exchange rate give rise to instability in international commodity trade. Azeez, Kolapo and Ajayi (2012) believed that appreciation of currency tends to expand imports thereby reducing export while depreciation tends to increase cost of importation while discouraging import and thus encouraging export. Sichoongwe (2016) decrying the adverse effect of exchange rate fluctuations says thus 'A major concern is the consequence of exchange rate volatility which is a prominent feature of flexible exchange rate systems. Exchange rate volatility has been a source of concern in many economies...'. (114).

2.2. The Business of Deposit Money Banks and Returns

The banking sector stands out in the financial system and their relative importance has been well documented in economies around (Mckinnon, 1963, Scholtens and Van Wesveen, 2000; Pandey, 2003, Okwo, Mbajaku, & Ugwunta, 2012, Olokoyo, 2013, Solomon, 2018). They serve as the only financial institution, which attracts private savings on a large scale. According to Adekanye (1986) in making credit available, banks render great social services because through their activities, production is increased, capital investment are expanded and a higher standard of living is realized. Solomon (2015) contributed that deposit money banks have the business of collecting and mobilizing customer's deposits and invest them in various short term and long-term investment outlets while most of the savings are used for loan business. Therefore, the more loans and advances they extend to borrowers, the more the profit they make. Pandey (2003) supporting noted that the major source of deposit money banks capital is customer deposits, which is in fact, their business while the major outlet is loans and advances. In a similar explanation, Owolabi and Fayemi (2017) describing how banks make returns posit that banks attract savings from depositors with excess funds which are saved in the bank who pay interest known as savings deposit rate to encourage the savers. The savings are then lent to investors who in return pay interest on the loans borrowed, which is referred to as lending rate. The lending rate tends to be higher than the savings rate, the difference between these two rates forms the major profits earned by banks. Other forms of profit come from investment in projects, various business outlets, trading of stocks at the capital market, buying and selling of government bills, exchange rate buying and selling to clients as prescribed by the CBN. Therefore, interest rates by nature constitute the Deposit money banks major source of revenue. Deposit money banks therefore serve as intermediary between those saving and those borrowing and that is their core function.

Banking business like every other business have the major objective of earning more profit which is very essential in the payment of tax, interest to depositors, wages and salaries to staff, dividend to shareholders and meeting other miscellaneous and expenses (Ogunbiyi & Ihejirika, 2014). Thus, except they make returns unless it will be difficult for them to perform these roles effectively. Profitability is essential for any bank to remain in business and to instill confidence on investors. It is also a sign that the bank's statement of financial position shows more revenue than expenses as well as level of solvency under any environment. Returns are a bank's first line of defense against unexpected losses because it improves its capital and future profitability through the investment of its retained earnings. Any firm or organization that makes loss persistently will deplete its capital base, which in turn puts equity and debt holders at risk. Moreover, since the ultimate purpose of any profit-seeking organization is to preserve and create wealth for its owners, the bank's return on equity (ROE) needs to be greater than its cost of equity in order to create shareholder value.

2.3. Exchange Rate Policy and Exchange Rate Fluctuations in Nigeria

The exchange rate is regarded as a reflection of an economy's worth in comparison to another economy. Jongbo (2014) argued that the more the exchange rate depreciates, the lower the value (in real terms) of the goods and services (including salaries and wages of workers) produced in a country vis-à-vis its trading partners. Countries with strong economic background and conscious of the need to diversify an economy do support a depreciating currency which is expected to maintain international competitiveness. However, those with nationalistic and patriotic flavor get

uncomfortable and jittery where the exchange rate depreciates against foreign currencies, arguing that it cheapens the economy and makes it easy for foreigners to dominate the domestic economy, thereby perpetrating external dependency (Ndubuaku, Onwuka, Onyedika & Chimezie, 2019; Thuy and Thuy, 2019). For them, a strong and appreciating currency is considered a source of national pride and aspiration, and is indicative that the economy is doing well.

The exchange value of a country's currency is largely determined by economic forces (called economic fundamentals), with political factors playing only complementary roles. Thus, attempts to impart greater value to a currency by political means probing into the underlying economic forces, may lead to greater instability in the foreign exchange market and instability in the rates. For instance, an increase in the terms of trade causes output in the non-tradable sector to decline causing an excess demand in non-traded goods and shifting the internal balances locus upward. Simultaneously, the external balances (downward sloping) locus shifts upwards as well, reflecting the necessity of having an appreciated exchange rate to maintain sustainable trade balance (Jongbo, 2014).

Similarly, a positive productivity shock in the tradable sector stimulates expansion in output in the sector relative to the non-tradable sector and the exchange rate appreciates. Positive productivity shock improves the trade balances, which also requires a real appreciation to maintain the current account at a sustainable level. Literatures have shown significant relationship between exchange rate and macroeconomic variables (Simon-Oke & Aribisala, 2010; Usman & Adejare, 2012; Solomon, 2018). This therefore brings us to the effect it has on deposit money banks.

In 1892, the first banking business was introduced to Nigeria with the subsequent establishment of the African Banking Corporation, which was later acquired by the Bank of British West Africa in 1894. Adekanye (1986) assert that during this time no monetary system existed in Nigeria until 1912 when the West African Currency Board (WACB) was established. The West African Currency Board therefore introduced the West African Pound to replace the variety of circulating media of exchange in these territories, which was convertibility at par with the English Pounds. In an attempt to manage the exchange rate currency in Nigeria, financial liberalization was introduced which began with the establishment of a second – tier foreign exchange market (SFEM) in September 1986 as an auction-based forum where the sales and purchases of foreign exchange which was rigidly controlled through the use of import-licenses and the exchange rate was forced by fiat. In addition, a first – tier market was retained to take care of government debt security and other transfers to Nigerian missions abroad (Ikhide & Alawode 2001). According to Ikhide and Alawode, the liberalization of exchange rates which was adopted in 1987 involves the full deregulation of both deposit and loan rates of banks implying that all rates had become market determined. It can be deduced from this period that exchange rate deregulation was synchronized with banks interest rate deregulation thus serving as an exposition that a link must definitely exist between the two.

This fear was exposed in the study of Adegbite (2005) who observed that as reforms were taking place in the financial sector so were, they taking place in the trade and exchange sectors. In 1987, the two foreign exchange market in Nigeria were united with the establishment of a single foreign exchange market (FEM) by 1988 aimed at providing a mechanism for absorbing some of the demand pressure for foreign exchange. This subsequently led to the establishment of bureau de exchange, which operates as private exchange by small dealers in an informal manner (Ikhide & Alawode, 2001). Consequently, banks were stripped of the duty as dealers in exchange rate currencies.

In addition, a uniform accounting standard practice was introduced for banks which aimed at ensuring accuracy, reliability and comparability of their financial statement vis a vis balance sheet. The new accounting framework defined and standardized methods of treating credit risks, syndicated loans, and non-performing loans off balance sheet items. Within the same period, the foreign exchange market was transformed from an auctioning –based one to a full inter-banker market. Weekly auction of foreign exchange was abolished while banks were permitted to obtain foreign exchange from any available source. The Central Bank of Nigeria became an active participant, free to buy and sell foreign exchange at market determined rates. The arrangements functioned until December 1992 when they were suspended owing to allegations of malpractice against commercial banks and the attendant ineffectiveness in directing credit controls (Ikhide & Alawode 2005).

2.4. Link between Exchange Rate and Deposit Money Banks' Returns

Deposit Money Banks, popularly referred to as Commercial banks in the bank finance literature, play a vital role in the economic resource allocation of countries (Otuori, 2013). They contribute to economic growth of the country by making funds available for investors to borrow as well as promoting financial deepening in the country. In the case of developing countries such as Nigeria, Deposit Money Banks are the major engine for mobilizing savings for investment which subsequently boosts economic growth. Savings are attracted from depositors who have excess funds and therefore save some in the bank in return for interest by the bank, referred to as savings deposit rate. The banks in paying the savings deposit rate to savers do so as the savings of depositors are lent to investors for profitable investment and the investors in return pay the banks interest on their loan borrowed otherwise referred to as lending rate. This interest rate charged by the bank to investors for loans lent, however tends to be higher than the savings deposit rate of the bank and hence the difference between the bank's rate of interest charged for loans and that paid to savers for their deposit, referred to in the bank literature as the interest rate spread, constitutes the banks reward to financial intermediation. Therefore, interest rates by nature constitute the Deposit money banks major source of revenue.

Foreign exchange rate fluctuations have been said to have significant impact on banks performance as studies have shown that the rise in the value of the dollars versus other baskets of foreign currencies will enhance the earnings of U.S. dollar-based institutions (He, Fayman and Casey, 2014; Lambe, 2015). Again, some studies have shown that there exists a significant but negative relationship between floating foreign exchange and domestic investment in developing countries (Obadan, 1994; Bakare, 2011). The banking sector is influenced by the internal and external environment.

Macroeconomic variables, which form the external environment, have been suggested to affect banking functions and their statement of financial position. Ani, Ugwunta and Okanya (2013) argued that the role played by banks in financial intermediation makes them susceptible to fluctuations at the foreign exchange market.

Owoeye and Ogunmakin (2013) in their study found that exchange rates affect interest rates which have an indirect impact on returns through cost of loans. Similarly, Sayedi (2013) found that high exchange rate increases the value commercial banks earn from selling foreign currency and thus increased profitability while stressing that high interest rates leads to increase in deposit money banks' interest revenue how be it resulting in low demand for the loans and reduction in interest income. The naira exchange rate is not fixed which implies that it is subjected to variations and adopting floating exchange rate policy makes it more volatile. Naira value at the exchange rate have been fluctuating owing to several factors which are manipulating operations of banks and changes in the policies of the government which are targeted at protecting the foreign exchange values, preserving the external reserves, maintaining favorable balance of payment and financial equilibrium (Ngerebo, 2012). The naira exchange rate is not fixed, it is however subject to variations; therefore, floating exchange have been found to be more volatile.

The effects of currency depreciation can be positive or negative depending on the strength of the devaluing economy. However, studies have shown that exchange rate fluctuations can have negative effect on goods manufactured locally that rely on intermediate foreign products while domestic exports are positively affected by cheaper prices (Victor, 2017). The volume of borrowing by investors is also affected while stock prices traded in an economy will fall due to domestic currency depreciation (Umoru & Osemwegie, 2016). Among the reasons is that investors who hold local stocks where the currency is depreciated would receive a lower return on investments. Carter, Rogers and Simkins (2013) opined that firms' input cost increase devaluation in a characteristic semi-industrialized economy where manufacturing inputs are mostly imported and hardly manufactured locally. The most significant point to note is that currency depreciation escalates net exports and production costs whereas currency appreciation cuts down the net exports and production costs (Soludo, 2004). The common effects of demand and supply networks fix the net outcomes of exchange rate variations on price and real output (Umoru & Osemwegie, 2016).

The over dependence on import by the Nigerian industrial sector and the continued depreciation of the naira against other currencies of major trading partners, implies that more resource was needed to increase domestic output. Jongbo (2014) decried that depreciating exchange rate in the absence of domestic sources for input and inadequate infrastructure tend to raise the cost of production, which in turn makes locally produced goods less competitive when compared to the imported counterparts consequently reversing the benefit of cheaper exports expected from depreciation of any currency. Again, the over-dependence of the economy on imported capital goods implies that a depreciating exchange rate would crowd out marginal investment as a result of high investment cost (Jongbo, 2014). Over the years, the depreciation in the naira has resulted in a shift in finance from the productive sector to the trading sub-sector. Obadan (1994) lamented that the efficiency of real exchange rate adjustment in Nigeria was in serious doubt and pointed out the need for caution in relying on real exchange rate changes to achieve external balance without re-directing the production structure away from imported input in a significant manner.

Economist have argued that currency tends to lose value if the country's level of inflation is relatively higher, level of output is expected to decline, or if a country is troubled by political uncertainty; Speculative selling can also cause prices to fall below 'true value' in a similar fashion; and finally the higher the interest rates of a country, the greater the demand for that currency. Some of the factors driving exchange rate movement in Nigeria include; GDP growth rate, macro-economic shocks, Balance of Payment position, external reserves, interest rate movements, external debt position and speculation contagion. Studies by Bakare (2011), Babazadeh and Farrokhnejad (2012), Lambe (2015), Osundina, Osundina, Jayeoba and Olayinka, (2016) concluded that there is link between exchange rate and bank's returns while Ejem, Ogbonna and Ogbulu (2020) did not find any link between exchange rate and profitability of banks.

2.5. Theoretical Framework

In this section we consider theories that have been propounded on the expected relationship between exchange rate and deposit money banks financial returns.

2.6. Purchasing Power Parity

The purchasing power parity (PPP) shows the association between exchange rate and economic prices. The origin of the PPP theory has been traced to the Salamanca School in Spain back in the Sixteenth century; however, its development as a theory has been attributed to Professor Gustav Cassel of Sweden in 1921. Cassel first recommended PPP as a theory of adjusting pre-World War I exchange rate parities. He proposed this theory for countries that resolved to return to the gold standard system after the war ended. Some modification became important because some countries that abandoned the gold standard system in 1914 experienced different inflation rates during and after the war. According to Ndubuaku, Onwuka, Onyedika and Chimezie (2019), PPP is based on the 'law of one price' which suggests that exchange rate would amend to equate the prices of national baskets of goods and services between two nations and occurs because the market forces is determined by arbitrage. The purchasing power parity (PPP) is also referred to as the inflation theory of exchange rates as it proposes that the exchange rate would adjust so that the price of a specific good or service will be unchanged no matter where it is bought.

It is simply stated as $E = P / P^*$

Where; E = Nominal exchange rate

P = Domestic prices in domestic currency

P* = Foreign prices in foreign currency

The equation suggests that 'E' depends mostly on the factors that affect domestic price level. Therefore, 'E' could be said to be determined by endogenous factors (factors derived from within). Another version of PPP theory restates the equation in terms of changes in the nominal exchange rate to changes in relative prices. This is known as relative PPP: Showing that;

$$\% \Delta E = \% \Delta P - \% \Delta P^*$$

Where $\% \Delta$ = Percentage change

In relation with our present study, it worth noting that inflation affects the cost and value of goods and deposit money banks are adversely affected by changes in prices. The value of assets can depreciate very fast owing to inflation. Again, inflation affects loan quality as borrowers pay less over the same value of money borrowed. Since most banks' portfolio are paper based, inflation instilled by changes in exchange according to the theory may render some of the portfolio assets less valuable except hedge funds. Thus, increase in foreign prices of imported goods will raise domestic prices of manufactured goods and raises prices of goods and services which implies that companies will result in borrowing from the capital market rather than from banks who are forced to raise interest rate when the CBN makes attempt to target inflation by using money policy tools such as increase in cash reserve and higher monetary policy rate.

2.7. Structuralist Theory

The structuralist theory pioneered by Clark in 1973 holds that exchange rate volatility increases risk of trade which depresses trade flows. The theory stresses that contractionary exchange rate policy can have effect on economic demand. Studies by Meade (1951) and Hirschman (1949) had earlier pointed out that currency depreciation from an initial trade deficit reduces real national income and most times leads to a fall in aggregate demand. Similarly, Kandil and Mirzaie (2002) posit that currency depreciation tends to give with one hand, by lowering export prices and takes away with the other by raising import prices. They observed that if trade is in balance and terms of trade remain unchanged, these price changes offset each other, especially when the famous Marshall-Lerner² condition is not satisfied. If imports exceed exports, the end result is a reduction in real income within a country.

Supporting the theory, Salako and Adebuseyi (2002) argued that a stable exchange rate encourages, local and foreign investors into investing in any economy, which are basic factors for improving banking returns. This is because; an over-valued exchange rate discourages export and negatively affects the foreign and domestic investment. A high foreign exchange rate increases the prices of goods and services and discourages exportation while at the same time encourages importation of goods which is cheaper. This has negative effect on the investment and with such factors, investors withdraw their money from such an economy with banks the most affected since they serve as the major financial intermediary and custodian of investors' funds. Therefore, increase in exchange rate volatility reduces international trade and profits tend to be uncertain for both the business and banks.

2.8. Empirical Review

Agbeja, Adelakun and Udi (2016) in their study focused on the effect of counterparty risk and exchange rate risk on the profitability of deposit money banks in Nigeria. Seven banks were selected on a cross-sectional basis for five years. Secondary data collected covering a period of five years was analyzed using auto regression. The study revealed that counterparty risk and exchange rate risk have significant effect on banks' profitability. Maigua and Mouni (2016) investigated influence of interest rate determinants on the performance of 43 commercial banks in Kenya. The study used primary and secondary data with focus on interest rate, inflation rate, discount rate, exchange rate and reserve requirement as independent variables. Analysis carried out using ordinary least squares regression showed that discount rate, inflation rate and exchange rate leads to higher returns for commercial banks in Kenya, while higher level of reserve requirement ratio results in lower banks returns. Takon, Nsofor and Ugwuegbe (2016) studied the effect of foreign exchange transaction on returns of Nigerian banks. Employing data from annual report of ten (10) publicly quoted banks in Nigeria, the Kao panel co-integration test result showed that a long run relationship exists between the two. The DOLS result further suggested that foreign exchange income has a negative and insignificant effect on the profitability of the banks.

In a more recent study, Jayeola, Adegboyega, Kajola and Oluwaseun (2019) using Ex-post facto research design investigated the influence of currency depreciation on the financial performance of Nigeria deposit money banks from 2008 to 2017. The study covered ten (10) banks while data on Inflation Rate, Interest Rate, Exchange Rate and Return on Asset (ROA) collected from the annual financial reports of the selected deposit money banks and CBN publications were analyzed using multiple regressions. The result showed that inflation has negative and significant effect on ROA while exchange rate has positive and insignificant effect on ROA. Recent study by Ehigiamusoe and Lean (2019) on the effects of real exchange rate volatility on the finance-growth nexus in the West African region showed that financial development has a long-term positive impact on economic growth, but this impact is weakened by real exchange rate and its volatility. It also found that the higher the real exchange rate volatility the lesser finance spurs growth. Similarly, Ejem, Ogbonna and Ogbulu (2020) examined the relationship between exchange rate as a macroeconomic variable and performance of deposit money banks in Nigeria. Other proxies used were money supply, GDP and interest rate. Using econometric tools for analysis, their study found that exchange rate alongside economic growth rate, interest rate; inflation rate and money supply have no significant relationship with bank performance. In addition, findings using VECG ranger Causality/Block Exogeneity Wald Test indicated that the independent variables do not influence bank performance both in the short run and long run. From the foregoing, it can be deduced that there are very few literatures on exchange rate relationship with deposit money banks performance. This gap in literature coupled with recent events of economic recession and oil price fall, which has adversely affected the naira further, has necessitated this study as it looks at exchange rate fluctuations and deposit money banks returns in Nigeria.

3. Methodology

3.1. Research Design

This study will make use of ex post facto, which involves the use of time series data to determine past events. This is used because the study focuses on time series of events and correlation between two or more economic variables.

3.2. Sources of Data

Data were collected from CBN statistical bulletin and NDIC annual report. Twenty-four (24) deposit money banks in Nigeria were used. The time series of data cover the period of 1991 to 2019. The data include:

Independent variables- Interest rate proxied by foreign exchange rate (FXR), lending rate (LDR), Inflation rate (INFR) and external reserve (EXTR).

Dependent variables- Return on Assets (ROA).

3.3. Model Specification

To specify the model, it is imperative we identify the variables and explains their roles in the models.

- H_{01} : Exchange rate has no significant relationship with deposit money banks' returns on assets in Nigeria.
- H_{02} : There is no significant impact of external reserve on deposit money banks' returns on assets in Nigeria
- H_{03} : There is no significant relationship between inflation and deposit money banks' return on assets in Nigeria
- H_{04} : There is no significant relationship between Lending rate and deposit money banks returns on assets in Nigeria

The most commonly use form of banks returns is return on assets (ROA), which is measured by the ratio of profit after tax to total assets.

Return on Assets = F (Lending rate, Inflation rate, External Reserve, Exchange rate, μ)i

Where; Y = Return on Assets (ROA).

X_1 = Exchange rate (FXR).

X_2 = External Reserve (EXTR)

X_3 = Inflation rate (INFR)

X_4 = Lending rate (LDR)

μ = unexplained variable

To examine the relationship between the variables, we adopt the multiple regression equation which is estimated as follows:

$ROA = b_0 + b_1FXR_t + b_2LDR_t + b_3INFR_t + b_4EXTR_t + \mu$

b_0 is a constant term, 't' is the time and ' μ ' is the random error term.

In other to comprehensively analyze the quantitative data to be used for the purpose of this study Ordinary Least Square method, Augmented Dickey Fuller, Johansen Co integration and Error correction model were employed.

4. Data Analysis and Findings

The aim of this chapter is to verify the research hypotheses postulated in chapter one using various statistical tools of analysis according to the methodology shown in the previous chapter.

Year	Exchange rate	External Reserve (\$,billions)	Inflation Rate (%)	Lending Rate (%)	Return on Assets
1991	9.909500	4149.300	5.60	20.01000	1.88
1992	17.29840	1554.610	8.20	29.80000	1.52
1993	22.05110	1429.590	13.90	18.32000	1.57
1994	21.88610	9009.110	10.10	21.00000	1.41
1995	21.88610	1611.110	3.60	20.18000	1.22
1996	21.88610	3403.910	29.30	19.74000	1.15
1997	21.88610	7222.210	10.70	13.54000	8.35
1998	21.88610	7107.500	7.90	18.29000	6.79
1999	92.69335	5424.600	6.60	21.32000	9.03
2000	102.1052	9386.100	6.90	17.98000	8.46
2001	111.9433	10267.10	18.90	18.29000	11.31
2002	120.9702	7681.100	12.90	24.85000	8.87
2003	129.3565	7467.780	14.00	20.71000	8.93
2004	133.5004	16955.02	15.00	19.18000	2.58
2005	132.1470	28279.06	17.90	17.95000	4.07
2006	128.6516	42298.11	8.20	17.26000	3.47
2007	125.8331	51333.15	5.40	16.94000	3.64
2008	118.5669	53000.36	11.60	15.14000	4.29
2009	148.8802	42382.49	12.50	19.55000	-64.72
2010	150.2980	32339.25	13.70	15.74000	3.91
2011	153.8616	32639.78	10.80	16.75000	-0.04

Year	Exchange rate	External Reserve (\$,billions)	Inflation Rate (%)	Lending Rate (%)	Return on Assets
2012	157.4994	43830.42	8.00	16.54000	2.62
2013	157.3112	42847.31	8.00	17.01000	2.33
2014	158.5526	34241.54	9.60	15.88000	3.39
2015	193.2792	28284.82	9.10	16.96000	2.34
2016	253.4922	26990.58	10.60	17.09000	1.48
2017	305.7901	39353.49	16.50	17.71000	0.48
2018	306.0802	42594.84	12.09	16.90796	0.88
2019	306.9205	38092.72	11.40	15.21000	0.96

Table 1: Data for Analysis (1991-2019)

Source: CBN Statistical Bulletin 2019

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4.1. Analysis and Interpretation of Data

Analysis of the data was carried out using E-views software

Figure 1: Graphical Representation of the Variables

The figure 4.1 shows that FXR and EXTR which represent exchange rate and external reserve show upward movements. INF and LDR which represents inflation and lending rates show fluctuating movements while return on assets (ROA) shows a flattened shape.

Date: 07/13/20 Time: 05:33					
Sample: 1991 2019					
	FXR	EXTR	INFR	LDR	ROA
Mean	125.7387	23144.03	11.34448	18.47752	1.454138
Median	128.6516	26990.58	10.70000	17.95000	2.580000
Maximum	306.9205	53000.36	29.30000	29.80000	11.31000
Minimum	9.909500	1429.590	3.600000	13.54000	-64.72000
Std. Dev.	87.74039	17447.51	5.075842	3.149795	13.10851
Skewness	0.570136	0.164544	1.524744	1.756619	-4.625525
Kurtosis	2.805506	1.482267	6.548787	7.221926	24.05346
Jarque-Bera	1.616811	2.914274	26.45437	36.45240	639.0033
Probability	0.445568	0.232902	0.000002	0.000000	0.000000
Sum	3646.422	671177.0	328.9900	535.8480	42.17000
Sum Sq. Dev.	215554.5	8.52E+09	721.3967	277.7939	4811.327
Observations	29	29	29	29	29

Table 2: Descriptive Statistics

Source: E-Views 8

The information provided in the table 4.2 shows average lending rate for the period under review is 18.4472%, which implies that companies are borrowing at a high rate. Exchange rate value averaged 125.7387 to 1 dollar while

Inflation has an average of 11.34% which is double digit which implies highly volatile exchange rate and inflation that may affect the banks. External reserve as an average of \$23144.03 annually. In addition, ROA for deposit money banks has an average of 1.445% for the period under review.

Variables	ADF Unit Root Statistics at 1 st difference	Order of integration
LDR	-6.178834	1 (1)
INFR	-7.877781	1 (1)
FXR	-3.697056	1 (1)
EXTR	-3.030260	1 (1)
ROA	-5.436659	1 (1)
Critical values: 1%=-3.711457, 5%=-2.981038, 10%=-2.629906		

Table 3: Summary of Augmented Dickey Fuller (ADF) Unit Root Test Result

Source: Author's computation

The unit root test conducted shows that all the variables become stationary at order 1 and level 1, meaning that they become stationary after the first difference.

Date: 07/13/20 Time: 05:46 Sample (adjusted): 1993 2018 Included observations: 26 after adjustments Trend assumption: Linear deterministic trend Series: FXR EXTR INFL LDR ROA Lags interval (in first differences): 1 to 1					
Unrestricted Cointegration Rank Test (Trace)					
Hypothesized		Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None	0.699339	78.87394	0.000010	0.0001	
At most 1	0.634198	47.62783	0.007401	0.0001	
At most 2 *	0.384140	21.48056	0.004500	0.0001	
At most 3	0.167899	8.877435	0.007401	0.0001	
At most 4	0.145841	4.098589	0.008401	0.5000	
Trace test indicates 5 cointegrating eqn(s) at the 0.05 level					
* denotes rejection of the hypothesis at the 0.05 level					
**MacKinnon-Haug-Michelis (1999) p-values					
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)					
Hypothesized		Max-Eigen	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None	0.699339	31.24611	0.000100	0.5000	
At most 1	0.634198	26.14727	0.007401	0.0001	
At most 2	0.384140	12.60312	0.004500	0.0001	
At most 3	0.167899	4.778846	0.007401	0.0001	
At most 4	0.145841	4.098589	0.008401	0.5000	
Max-eigenvalue test indicates 5 cointegrating eqn(s) at the 0.05 level					
* denotes rejection of the hypothesis at the 0.05 level					
**MacKinnon-Haug-Michelis (1999) p-values					

Table 4: Johansen Cointegration Test

The result of the trace co-integration shows there are 5 co-integrating equations amongst the variables. Also, the maximum Eigenvalue statistics reveals that there are 5 co-integrating equations at 5% level of significance. Therefore, we can conclude that there is long run relationship amongst the variables. It is therefore necessary to use the framework of the Ordinary Least Square (OLS) regression to estimate the short run relationship between the variables.

Dependent Variable: ROA Method: Least Squares Date: 07/13/20 Time: 05:48 Sample: 1991 2019 Included observations: 29				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	35.21486	21.25347	1.656899	0.1106
FXR	0.027952	0.039067	0.715497	0.4812
EXTR	-0.000447	0.000218	-3.047805	0.0417
INFR	-0.311647	0.496310	-0.627928	0.5360
LDR	-1.266554	0.937367	-1.351183	0.1892
R-squared	0.167573	Mean dependent var		1.454138
Adjusted R-squared	0.028835	S.D. dependent var		13.10851
S.E. of regression	12.91814	Akaike info criterion		8.110727
Sum squared resid	4005.077	Schwarz criterion		8.346468
Log likelihood	-112.6055	Hannan-Quinn criter.		8.184558
F-statistic	1.207840	Durbin-Watson stat		2.262107
Prob(F-statistic)	0.333308			

Table 5: Ordinary Least Square Analysis

In table 5, the researcher regressed ROA on values of FXR, LDR, INF, EXTR for a sample of 28years. In the work, four models were considered:

$ROA = f(FXR, EXTR, INFR, LDR)$

Where f = function.

The regression results as shown in table 5 are presented as:

$ROA = 35.2148565066 + 0.0279524327*FXR - 0.000446645720566*EXTR - 0.311646769227*INFR - 1.26655369964*LDR.$

Using the p value (i.e., the exact level of significance), we test the various hypotheses.

The model shows that Exchange rate has positive relationship with deposit money banks' returns on assets in Nigeria, that is, 1-unit increase in FXR will result in 0.027952 unit rise in firms' capital. This conforms to apriori expectation. The t-Statistics shows a value of 0.715497 with a prob.value of 0.4812, which is greater than 0.05 or 5% confidence level of significance. From our result, we accept the null hypothesis that exchange rate has no significant relationship with deposit money banks' returns on assets in Nigeria.

The model equally shows that external reserve has negative relationship with return on assets, that is, 1 unit decrease in EXTR will result in 0.000447 unit rise in ROA. The t-Statistics shows a value of 3.047805 with a prob.value of 0.0417, which is less than 0.05 or 5% confidence level of significance. From our result, we reject the null hypothesis and accept the alternative hypothesis that there is significant impact of external reserve on deposit money banks' returns on assets in Nigeria.

The model equally shows that inflation has negative relationship with return on assets, that is, 1 unit decrease in INFR will result in 0.311647 unit rise in ROA. This conforms to apriori expectation. As it implies that high inflation rate results in constraint of finance and depreciate assets' value, which impacts negatively on banks' ability to make returns. The t-Statistics shows a value of -0.627928 with a prob. value of 0.5360, which is greater than 0.05 or 5% confidence level of significance. From our result, we accept the null hypothesis that there is no significant relationship between inflation and deposit money banks' return on assets in Nigeria.

The model shows that lending rate has negative relationship with return on assets, that is, 1 unit decrease in LDR will result in 1.2665 unit rise in ROA. This does not conform to apriori expectation as high lending rate is meant to increase banks returns. The t-Statistics shows a value of -1.351183 with a prob. value of 0.1892, which is greater than 0.05 or 5% confidence level of significance. From our result, we accept the null hypothesis that there is no significant relationship between lending rate and deposit money banks returns on assets in Nigeria.

The overall goodness of fit of our regression model, usually measured by the coefficient of determination, R^2 , is 0.1675, which is 16.75%. This means that the proportion of the variation in the dependent variable, or regressed and explained by the explanatory (or independent) variables or repressors, is 16.75% which implies poorly fitted.

The adjusted R^2 (or R^2), a summary statistic for R^2 , is 0.028835. Adjusted R^2 adjusts for the degree of freedom (df) associated with the sums of squares entering into R^2 equation. R^2 and R^2 , as goodness of fit measures, were used to establish the adequacy of our regression model.

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Figure 2

The assumption of non-autocorrelation of our model relates to the population disturbances or error terms, u_i , which are not directly observable. The residuals, u_i , can be obtained through the OLS procedures, are the proxies for u_i . The Durbin- Watson d test, based on the estimated residuals and reported in the model, is 2.262107, approximated to 2.3. If the d test statistic is 2, there is no serial correlation (no first- order autocorrelation). According to Davidson (2000), the closer d is to 2, the greater the evidence that there is no First -order autocorrelation. The d test statistic in our model is 2.3 is above 2; we conclude that there is no first- order autocorrelation in regression model.

4.2. Discussion of Findings

From the result, it can be observed that truly the state of the economy is a crucial factor that can influence the financial decisions and returns on deposit money banks. Exchange rate fluctuations as the major macroeconomic condition examined in this study has shown that the higher the value of exchange rate, the higher the returns on assets of deposit money banks. This goes to show the extent, stability if exchange rate is needed to ensure financial sector stability since banks are the major and biggest player in the financial sector. As rightly observed by Obadan (1994), a stable exchange rate is a mirror of how stable the economy is which determines the level of investment that will be carried out in such host economy. Again, when exchange rate conditions are good, local manufacturing firms tends to perform well as opportunities especially financing opportunities would be available for them while production will increase and more returns will be made by both the firms and banks alike.

Findings showed that exchange rate has positive impact on banks' return on assets which implies that fluctuations in exchange rate affect the ability of firms in Nigeria to raise capital for investment. This therefore supports the findings of earlier studies carried out by Bakare (2011), Babazadeh and Farrokhnejad (2012), Lambe (2015), Osundina, Osundina, Jayeoba and Olayinka, (2016), Ndubuaku, Onwuika, Onyedika and Chimezie (2019).

There have always been arguments that exchange rate and external reserve of the host countries are positively linked. Thus, an unstable exchange rate may deplete external reserve while the volume of external reserve could also influence the strength of exchange rate. Banks as a financial intermediary between the two could have their stream of revenue affected. Our findings show that external reserve has negative effect on deposit money banks' returns on assets. It implies that the higher the external reserve the lower the returns, which does not conform to expectation.

It has been argued that exchange rate volatility affects interest rates as the central bank has to make the decision of raising lending rate if exchange rate is devalued or depreciates. This can have adverse effect on business decisions. A high lending rate makes it difficult for organizations to borrow and thus rely on the stock market for funding. However, investors may also borrow if the returns on their investment will be higher than the cost and thus borrow at any given rate as the case of Nigeria. The negative relationship between lending rate and returns on assets shows that most of the banks find it difficult to break even with high interest rates. Since there will be more defaults as inflation sets and exchange rate remains unstable. Thus, the findings are in line with those of Hatzinikolaous, Katsimbris and Noulas (2002); Hackbarth, Miao and Morellec (2006), Cook and Tang (2010) and contradicts Drobetz & Nanzénried (2006), Sinha and Gosh (2010). Again, inflation has negative impact on deposit money banks return on assets which is not surprising. It has been argued that inflation makes the real cost of debt lower such that the demand for debt increases during inflationary period. During inflationary period when the real cost of debt becomes cheaper firms employ more debt to mitigate the agency related problems which thus is in line with our findings. Our findings are in line with those of Noguera (2001), Korajczyk and Levy (2003), Bokpin (2009), and Yinusa, Alimi and Ilo (2017) but contradicts Cebenoyan, Fischer and Papaioannou (1995) and Sinha and Ghosh (2010).

5. Conclusion and Recommendations

The focus of this study has been on the impact of exchange rate fluctuations on deposit money banks returns from 1991 to 2019. Analysis carried out has shown that exchange rate has positive link with deposit money banks' return on assets, which implies that, the higher the value of exchange rate, the higher the expected returns of the banks. Other proxies associated with exchange rate instability such as inflation and lending rates were found to have negative effect on

their returns. Obviously, exchange rate stability has become a necessity to ensure deposit money banks have better performance in Nigeria.

From the foregoing, it is hereby recommended that CBN must continue to pursue policies that strengthen the value of Nigeria currency. Again, the depletion of external reserve, which has been found to affect the naira, should urgently be addressed while caution must be taken at its effect on deposit money banks stream of revenue as without revenue they cannot remain in business. Inflation targeting must be maintained. Policies that helps maintain price stability should be enforced which includes reduction in fuel price, increase budget allocation for local development of industries, higher tariffs on products that can easily be produced in Nigeria to reduce the burden on naira demand for dollar. Banks should aim at building strong assets and capital base to enhance their profitability and cushion against any effect of exchange rate volatility, external reserve depletion and inflation.

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