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Broken Naira: A Study of the Impact of Exchange Rates Movement in Nigeria

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ABSTRACT
Multinational Corporations involved in international business operations are exposed to movement in the exchange rate. The purpose of this study is to identify the factors that are responsible for exchange rate movements and to assess the impact they have on such organizations using the Nigerian market as a case study. A quantitative research approach and a descriptive ex-post facto research strategy was adopted for this study. During a span of ten years, a sample of exporting and non-exporting sector companies listed in the Nigerian stock exchange are analysed. The findings revealed that the manufacturing company showed a high level of sensitivity with the movement in exchange rate to the returns from the firm compared to the non-manufacturing company, and the correlation analysis indicated the inflation and debt levels to be key factors. The results from the study have revealed significant relationship between some systematic factors and exchange rate movement which can be useful to multinational corporations, government entities, and other key international business stakeholders in Nigeria.

1. INTRODUCTION

The importance of foreign exchange rate cannot be over emphasized as it determines the level of international business operations in a country. As such, the performance and position of a multinational corporation can be affected positively or negatively by the movement of foreign exchange (FX) rates. The level of global merchandise and services reached $24 trillion in 2014 (WTO, 2015). One of the drivers of the FX market is the Foreign direct investment (FDI) which increase from $1.0 - $1.4 trillion a year to as high as $1.815; growing by 88% from 2021 after the effect of the Covid pandemic with the United States leading as the destination for FDI, followed by China, Brazil and Canada respectively (OECD, 2022). Therefore, exchange rate movement plays a critical role in the movement of trade across international borders (both export and import) acting as a major concern for international business transactions.

The exchange rate policy in Nigeria is controlled by the Central Bank of Nigeria, which currently uses both the fixed and floating exchange rate system in the country. In the 1960's, 70's and mid 80's, the country used a fixed exchange rate system (CBN, 2016) which helped the country maintain a favorable external reserve position and promoted price stability. However, this allowed dealers to make arbitrage profits that necessitated the introduction of the Structural Adjustment Programme (SAP) in 1986 to help the ailing economy (Onourah & Usuji, 2014). Nonetheless, the introduction of the SAP had an adverse effect on the exchange rate as it depreciated the Nigerian Naira from a 1:1 US$ to Naira rate in 1990 to 1:360 respectively by 2020 as the official market rate (Oanda, 2022).

The effect of movement of exchange rate should be seen from a macro perspective rather than from a micro perspective as there is a connection between exchange rate and economic growth, especially in developing countries (Uddin & Quaosar, 2014). The macro approach sees the effects arising from these factors to be outside the control of those in charge as they are more in line with systematic factors that are difficult for businesses to avoid. Due to these effects, businesses would prefer a more stable exchange rate as a depreciating home currency will create foreign exchange risk to the business (Danladi & Uba, 2016).

The objective of this study is to gain an understanding of the factors responsible for movement in the exchange rate and how these factors could potentially affect multinational organization's international business operations. Thus, the aim of this study is to

1. Determine the relationship between a country systematic factors and exchange rate.

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2. Identify the number of factors that exist in a country that influences the movement in exchange rate.

This study will focus on the Nigerian Foreign exchange (Forex) market and the effects of fluctuating exchange rate in Nigeria. The stability of the exchange rate is important to international transactions and overall economic survival of the country since the exchange rate can have a direct effect on inflation, interest rate, government spending etc. (Oladipupo et al., 2011).

The rest of the paper is structured as follows: section 2 will discuss the background and literature review. This will be followed by the methodology of the research in section 3. In section 4, the analysis and findings will be discussed. Finally, the research conclusions will be presented.

2. LITERATURE REVIEW

According to Bahmani-Oskooee and Hegerty (2012), there are no universally accepted measures for exchange rate movement, and no theoretical justification of how the volatility will either increase, decrease or have no impact on a country's trade flow. This statement contradicts widely accepted norm that exchange rate risks reduces trade flow. Several researches have been carried out (Cote, 1994) where it was concluded that volatility in exchange rate can affect the flow of trade, and in return affect the level of international business transactions that can be carried out in a country due to the level of uncertainty that the volatility brings about. The fluctuations of exchange rate are significant as the gains or losses can distort the real performance and position of the company (Azu & Nasiri, 2015). Unrealized gains and losses will influence the financial statements on the net income of multinational companies (i.e., Statement of profit and loss and other comprehensive income) or the owners' equity reserve (Equity). These will also affect the companies' level of import, payables account, receivables account and external sales (export).

The level of foreign direct investment (FDI) is another factor that affects the level of volatility of exchange rate in a country. The FDI, which is also referred to as long term capital, is one of the two international capital flows made up of both short-term and long-term capital. The short-term capital can also be referred to as foreign portfolio investment (FPI), which basically comprises of temporary capital (Rashid and Hussain, 2010). When there is a high level of FDI coming into a county, it strengthens the home country currency, and when a country incurs lots of capital flights i.e., where there is outflow of capital, the depreciation of the currency occurs since the demand for foreign currency will be on the increase to settle the foreign currency transactions (Oaikhenan and Aigheyisi, 2011).

Another systematic factor that affects exchange rate is the balance of payment i.e., trade deficit, that represents either a surplus or deficit in the international business flow. This balance indicates the kind of currency surplus that will take place, which will influence a particular country's currency exchange rate. In other words, the balance of payments depends on the level of exports and imports, the level of productivity or production, the level of cost. and the foreign services which include international business conjecture (Voinea, et al., 2018). When a country is experiencing a balance of payment deficit, there will be a higher demand for the foreign currency as import would have been higher than export.

Another factor that could adversely affect movement of exchange rate is the existence of speculation especially in an inefficient market. A study by Rod Hayward (2013) concluded that speculation has a real effect on the movement of exchange rate, even in the medium term. When speculative activity is added to a model of capital flows, it showed that speculative activity can have significant influence on the level flows of equity, bonds & FDI. When a reversal on speculative activity becomes hard to predict, it will create a difficult situation for economic modelling and policy makers. Li (2017) explained that the Asian financial crises that started in 1997 was as result to the speculation of the Thai Baht, which then spread to other countries like Indonesia and South Korea that had low foreign reserve, causing several financial institutions to collapse.

The interest rate also plays a crucial role. Lee & Boon (2007) highlighted that there was a relationship between the interest rate and the exchange rate, as well as the variability of exchange rate becoming a concern for different parties which included its impact on the economy and especially on the international currency markets.

3. RESEARCH METHODOLOGY

For this research, mixed method would be adopted i.e., both qualitative and quantitative method will be deployed. The study employs the use of secondary data sourced from: the financial statements/annual reports from selected sampled companies, the end of the year report/publication from the Nigerian stock exchange, the annual report from the Nigerian Bureau of Statistics (NBS), annual average exchange rate from the bulletin of the Central Bank of Nigeria (CBN), and quoted companies from the Nigerian stock exchange (NSE). Samples will be taken from companies trading in the NSE from both the exporting and non-exporting sectors, allowing the investigation of the effect of exchange rate movement from either sector.

The relationship between the exposure from exchange rate movement and the returns from a firm can be calculated using the Alder & Dumas (1984) model; the economic exposure can be measured as a slope coefficient from the regression of the stock returns on exchange rate. Additionally, this paper will also use the Jorion approach (1991), by measuring the sensitivity of the movement in exchange rate and the return rates from the companies.

Finally, ratio analysis will be used to assess the impact on the performance and position of the sampled companies' exposure to foreign exchange rate movement. This will measure the proportion of the exchange gain/loss arising from translation or transaction of foreign operations as a percentage of the profit for the year.

The inflation data collected for this research was that of Nigeria and the U.S.A. These two countries are among the major trading currencies in the world and most of the multinational companies based in Nigeria uses high Forex transactions in dollars. Data was also collected on the prevailing average exchange rate (i.e., spot rate) between the Nigerian Naira and the U.S Dollar, over a period of ten years from 2011 – 2020.

4. Analysis and Discussions

To examine the effect of Nigeria's systematic factor on exchange rate, a comparison of the inflation rate between two countries will be used. This research uses the purchasing power parity model (PPP) to measure the inflation rate of the three countries (i.e., Nigeria, U.S.A, and the UK).

The PPP equation uses the relative inflation rates between two countries to predict the future spot rates/exchange rate (Farouk & Oktay, 2019). The equation is as follows:

$$S_1 = S_0 (1+h_c) / (1+h_b) \quad (1)$$

Where:

S_1 = the expected spot rate i.e., the future exchange rate between the two countries.

S_0 = the current spot rate i.e., today's exchange rate (at the beginning of the period)

h_c = the inflation rate of the counter/foreign country

h_b = the inflation rate of the home/base country (usually expressed in one unit of the other currency)

This model will forecast the future exchange rate between the Nigerian naira (=N=) and a major world currency, the US ($) by analyzing the inflation rate of the two countries for a period of ten years (2011 – 2020) thereby identifying the effect of the exchange rate movement with a common systematic factor (inflation).

Between 2011and 2016 the variance identified in table 1 above between the forecasted rate and the actual spot rate was minimal. However, a shift was noted and became significant from 2017 onwards.

Table 1: Nigerian vs US 10-year inflation rate (Source: CBN, 2022)

Year	Nigerian Inflation Rate (h_b)	U.S inflation rate (h_c)	Expected spot rate (future rate using PPP) (S_1)	Official exchange rate (spot rate) (S_o) $1: =N=	Variance +/- =N=
2011	10.8%	3.2%	131.4	155.9	24
2012	12.2%	2.1%	144.4	158.8	14.4
2013	8.5%	1.5%	149.2	159.3	10.1
2014	8.05%	1.6%	158.7	165.2	6.5
2015	9.01%	0.1%	171.2	179.9	8.7
2016	15.7%	1.3%	195.5	197.3	1.8
2017	16.5%	2.1%	223.1	333.2	110.1
2018	12.1%	2.4%	244.3	361.3	117
2019	11.4%	1.8%	267.26	360.1	92.84
2020	13.3%	1.2%	299.3	380.3	81

Table 2: Nigerian vs US PPP Correlation analysis

	Nigerian Inflation	Expected spot rate	Official spot rate
Nigerian Inflation	1		
Expected spot rate	0.46	1	
Official spot rate	0.49	0.95	1

The correlation analysis results showed that there was a 46% and 49% correlation between the Nigerians inflation rate and the US$ to =N= expected spot rate, and official spot rate respectively. The expected spot rate versus the official spot rate had an outstanding 95% positive correlation.

The interest rate parity (IRP) equation uses the interest rates of two countries to predict/forecast the forward foreign exchange rate. The equation is expressed as follows:

$F_o = S0\ (1+i_c) / (1+i_b)$ (2)

Where:

F_o = The Forward rate i.e. the future exchange rate between two countries

S_0 = the current spot rate (at the beginning of the period)

i_c = the Interest rate of the counter/foreign country

i_b = the Interest rate of the home/base country (usually expressed in one unit of the other currency)

Table 3: Nigerian vs US Interest Rate Parity

Year	Nigeria Interest Rate (i_b)	U.S interest rate (i_c)	Forward rate (future rate using IRP) (F_o)	Official exchange rate (spot rate) (S_o) $1: =N=	Variance +/- =N=
2011	12%	0%	210.7	155.9	54.8
2012	12%	0%	236.0	158.8	77.2
2013	12%	0%	264.3	159.3	105.0
2014	13%	0%	298.7	165.2	133.5
2015	11%	0.25%	323.4	179.9	143.5
2016	14%	0.50%	351.1	197.3	153.8
2017	14%	1.25%	395.3	333.2	62.1
2018	14%	2.25%	440.7	361.3	79.4
2019	13.5%	1.50%	492.8	360.1	132.7
2020	11.5%	0.1%	544.0	380.3	163.7

The Interest rate parity (IRP) uses the same method as the PPP but in this case the interest rate is used to forecast what the exchange rate will be in the future. The variance identified in table 3 between the forecasted rate and the actual spot rate was high (about 25%) of what was forecasted and continued to increase over the next five years. Such inaccuracy in the forecast might be due to the fact that the U.S had a stable interest rate at 0% compared to Nigeria. The trending results of the IRP are similar to that of PPP in table 2 where the variances were lower and relatively stable until 2017, then started to increase at a disproportional rate afterward.

Table 4: Nigerian vs US IRP Correlation Analysis

	Nigeria Interest rate	Forward rate	Official spot rate
Nigeria Interest rate	1		
Forward rate	0.29	1	
Official spot rate	0.40	0.93	1

The results showed that there is a 29% and 40% correlation between the Nigerian Naira with the forward rate and official rate respectively. A very strong correlation between the forward rate and the official rate at 93% is noted in table 4 above.

Table 5: Nigerian vs US Trade deficit

Year	Trade Deficit	% increase/ decrease	Exchange rate $1:=N=
2011	10.67B		155.9
2012	17.37B	62.80%	159.8
2013	19.05B	9.70%	159.3
2014	0.91B	-100.70%	165.2
2015	-15.44B	-1796.70%	179.9
2016	5.08B	132%	197.3
2017	12.69B	148%	333.2
2018	6.26B	-50.70%	361.3
2019	-14.63B	-333.70%	360.1
2020	-16.98B	-16.10%	380.3

Table 5 above shows a positive net balance position from 2011 to 2014 followed by a huge deficit of =N= -15.44B in 2015. It is not clear as to what caused the drop in 2015 which then sees a shift back to a surplus in 2016 through 2018 and then a decline thereafter. A quick analysis shows that between 2011 and 2016, the exchange rate between the US$/=N= was stable but this situation changed as soon as the trade deficit starts experiencing a reduction in its surplus from 2018 onwards.

Table 6: Nigerian National Debt vs Exchange Rate (Source: World Bank)

Year	Debt Amount =N= (Trillions)	Exchange rate $1:=N=
2011	6.2	155.9
2012	7.6	159.8
2013	10	159.3
2014	11.2	165.2
2015	12.6	179.9
2016	17.4	197.3
2017	21.7	333.2
2018	24.4	361.3
2019	27.4	360.1
2020	32.9	380.3

Another systematic factor identified that could have a possible effect on the movement of exchange rate is the level of debt profile of a country (Ogunjimi, 2019). As seen in Table 6 above, the debt profile of Nigeria experienced a continuous increased from 2011 to 2020 by a whopping 430% with an average growth rate of 51.3% year-over-year through the ten years period. Meanwhile, the exchange rate between the Naira and US dollar also experienced a steady decline over the same period, with the exchange rate between the declining by more than 143% during this time frame. The correlation analysis between the national debt and the exchange rate is 95%, indicating a very strong correlation between the two variables.

5. CONCLUSIONS

This study identified some systematic factors which included inflation rate, interest rate, balance of payments (trade deficit) and level of debts. In this study, the Nigerian economy was used as a case study in identifying the relationship between the mentioned variables above. The PPP and IRP model were used, and the result of the research showed strong relationship between inflation rate and the forecasted exchange rate versus the official spot rate. This indicates that it is highly probable that as inflation rate of one country is higher relative to another world counter currency such as the US dollar, that country's inflation rate will lead to a depreciating currency (i.e., the country with the higher inflation rate).

On the interest rate being a systematic factor, a weak relationship was identified with the relationship between the Naira/dollar exchange rate at 29%. One of the limitations of using these models is that if the counter country interest rate and inflation rate remain very low or the same over a long period of time, it will show a low relationship. Finally, when considering the country's level of debt, the exchange rates showed a strong relationship between the two variables with a correlation level of 95%. This may be since a country's earnings could be majorly used to service borrowings thereby reducing the earnings that will used to support the local currency especially in a period of inflation, eventually leading to the depreciation of the local/home currency.

One of the limitations of this study is the use of IRP and PP models when comparing the economies of Nigeria versus US. These models are most appropriate to use when both countries have an increasing inflation and interest rate but becomes less reliable when either of the country's inflation or interest is static over a long period. Also, the models may become less reliable as a predictive model when the movement in exchange rate are highly influence by other factors.

Another major limitation of this study is to not include factors such as speculations and a countries tense period during political presidential elections. These factors also have a tremendous influence on the exchange rates, especially in a country such as Nigeria.

In future, further research could be carried to identify non-systematic factors that exist in a business environment, and to what extent these affect multinational organization's business operations.

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