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Foreign Exchange Management and Trade Openness in Nigeria (1980 - 2018)

Dr. Nwobia, A. N.
Senior Lecturer, Department of Accounting, Babcock University, Ogun state, Nigeria
Dr. Oguntodu, J. A.
Senior lecturer, Department of Finance, Babcock University, Ogun state, Nigeria
Sulu Kehinde Kayode
Accountant (ACCA), Computerized Accounting Technology, Nigeria

Abstract:
This study examined the effect of foreign exchange management on trade openness in Nigeria between 1980 and 2018. The study employed an ex-post facto research design. The data were sourced from the Central bank of Nigeria statistical bulletin of 2018. Data were analyzed using descriptive statistics, unit root test, bound testing and Auto regressive distributed lag model. Inferences were drawn at 5% significance level. The findings of the study showed that Exchange rate is positive and statistically significant to export in Nigeria at 5% level [β = 1.702; P – value = 0.000]. Similarly, the results revealed that the Foreign direct investment is positive and statistically significant to export at 5% level [β = 1.229; P – value = 0.043]. Also, the results revealed that the Exchange rate is positively and statistically significant to import at 5% level [β = 1.353; P – value = 0.000] during the year is observed. Equally, the results revealed that Foreign direct investment is positive and statistically significant to import at 5% level [β = 0.383; P – value = 0.037]. The study concluded that exchange rate and foreign direct investments affect export and import in Nigeria. The study recommended that there should be increase in the supply of foreign exchange to solve the problem of instability in exchange rate. This increase in the supply of foreign exchange will meet local demand for foreign exchange. This involves serious adoption of measures to boost export and reduce import other than tempering with exchange rate via monetary policies by the state. Putting more attention on export than on import should also be a good priority to the state so as to improve its external reserves position for effectiveness of trade openness in Nigeria.

Keywords: Trade openness, foreign exchange rate management, export, import, foreign exchange reserve and foreign direct investment

1. Introduction

The concept of globalization and international trade liberalization is becoming more important in the world of economics which makes most countries compete to take advantage of its opportunities in terms of trade openness based on the demand and supply of scarce resources as well as products and services. These countries interested in the benefits of trade openness use different strategies in ensuring that their economies are structured in the right balance of payment position. The exchange rate may be an effective tool where a weaker currency stimulates export or a stronger currency makes importation of scarce resources cheaper. Conversely, a weaker currency may also make importation expensive while a stronger currency would make exportation expensive to compete in the global economy of international trade market. The impact of foreign exchange policies on exchange rate has a vital effect on international trade and the globalization of the world economy. The components of international trade can exercise an adequate level of influence on both consumers and the entire economy. In recent global economy, there is an increased level of international trade activities where consumers are used to viewing products and services available to them from every corner of the world. Several researchers have different opinions about the relationship between foreign exchange fluctuations and trade openness, for example Zhang, (2019); Gantman & Dabós, (2018); Nkalu, Urama & Asogwa (2016); Ollivaud, Rusticelli, & Schwellnus (2015); and Ahmed, Appendino, & Ruta (2016). Zhang (2019) explored how trade openness influences the monetary transmission mechanism and found that greater exposure to regular trade or to offshoring significantly reduces the effect of monetary policy. Gantman and Dabós (2018) using a panel time series of fifty years and a dataset of one hundred and one countries opined in their findings that an increase in trade openness produces a depreciation of the Real Effective Exchange Rate while other factors of productivity, trade balance, terms of trade, and exchange rate regime have an insignificant effect that is robust to different sample compositions and alternative statistical estimators. Nkalu, Urama and Asogwa (2016) in their study investigated the relationship between trade openness and exchange rate fluctuation in Nigeria and discovered that trade openness impact positively about fifty-nine percent magnitude on the exchange rate fluctuations or volatility in Nigeria and there was an existence of unidirectional causality between trade openness and exchange rate fluctuations without a feedback response. Some scholars also argue that there seem to be disconnection

between exchange rate and trade. Recent studies by Ollivaud, Rusticelli, and Schwellnus (2015) and Ahmed, Appendino, and Ruta (2016) suggested that the increased participation in global value chains is a source of the apparent disconnect. The ideology that foreign exchange fluctuations have significant influence on trade is not new in the world of research today and also the nature of the effect is highly debated. Standard theoretical models predict that adverse or favourable movement of foreign currency pass through into consumer prices. An adverse movement in a domestic currency will increase import prices and reduce export prices which may be suitable for a diversified and industrialized economy to compete globally. This is the expenditure switching effect of currency depreciation (Obstfeld & Rogoff, 2007).

Basing his analysis on the above reasoning, Krugman (2015, 2016) predicted that the recent exchange rate movements will have a strong effect on trade. Bussière, Matthew, Gaulier and Walter (2016) argued that exchange rate changes can play an important role in addressing global trade imbalances by estimating trade elasticities for systemically important economies. Other scholars based their research on either foreign exchange or trade openness and their relationships to economic growth, economic development, manufacturing capacity utilization, trade balances, trade flows and inflation using different methodologies. However, in reality based on statistical figures, Nigeria does not seem to conform to the expenditure switching effect of currency depreciation as advised by the IMF in 2016 since the import has increased tremendously over the past three decades. This is because Nigeria is a mono-economy, and this has reduced drastically the activities of industrialization, output and thus export to meet with the demand of a fast-growing population within its country. Based on current situation, there has been a drastic change in import, export, interest and inflation rates as well as exchange rates policies resulting to multiple exchange rates. Technology advancement such as online stores and automated payment systems have also increased the level of import in to the country mainly from China due to its lower exchange rate as compared to the western developed countries with stronger currencies. This research studied put special interest on the assessment of the effect of foreign exchange management dimensions on export in Nigeria as well the determination of the effect of foreign exchange management dimensions on import in Nigeria.

2. Literature Review

2.1. Trade Openness

Trade Openness is a measure of economic policies that either restrict or invite trade between countries. A country may set a stringent policy of tariff to restrict the desirability of international trade which may hinder other countries from both exports and imports from that country. According to World Bank (2018), trade openness is measured as the ratio of the sum of import and export to the GDP of an economy. Dominating economic theory asserts that trade restrictions as a sign of lack of trade openness may have a negative effect on the economy thus decelerating both economic growth and development (Silajdzic & Mehic, 2018). It is argued that trade openness may attract many economic benefits such as increased technology transfer, increase in labour, transfer of skills, factor productivity, economic development and growth. Although, the use of trade openness as a measure of economic development and growth has been criticized by several researchers in different contexts, Mohammed (2019) in his study reveals that government size measured by percentage share of total government expenditure in GDP and share (percentage) of recurrent expenditure in GDP significantly affects trade openness in the long run but percentage share of capital expenditure in GDP as a measure of government size does not impact on trade openness in the long run. Wajahat and Azrai (2015) specifically defined international trade openness as low international trade cost which is an abstraction of transport cost, tariffs, subsidies taxes and non-tariffs barriers. Kim (2011) supports that trade openness could be synonymous with the idea of neutrality, the indifference between earning a unit of foreign exchange by exporting and saving a unit of foreign exchange through import substitution. International trade openness is a channel through which FDI, capital inputs, goods and services flow to host countries or regions (Adhikary, 2011). These are sources of economic growth to developing countries (Tahir & Omar, 2014). Openness raises imports and exports of goods and services and improves domestic technology (Musila & Yiheyis, 2015). Contrarily, Georgios (2003) showed that trade openness has a negative effect on economic growth.

Trade openness or Trade flows allow countries to penetrate different markets, become competitive and consequently increase their market size (Karadam & Ocal, 2014). Another important advantage of trade openness is the transfer of technology from the source (usually developed) to destination countries (in most cases developing countries) (Brueckner & Lederman, 2015). Trade openness has been measured in various ways in the hundreds of studies investigating the issue (Bonga-Bonga, 2019). Firstly, the most basic measure of openness is trade shares (outcome openness measure), which is exports plus imports divided by GDP, used by a large number of studies that find a positive and strong relationship with growth. The second category includes measures of trade barriers (policy openness measures), such as average tariff rates, export taxes, taxes on international trade and indices of non-tariff barriers (NTBs) which measure the trade restrictiveness of countries. Tariffs, defined as the ratio of tariff revenues to import values, directly measure trade restrictions but their impact on growth is a quite controversial issue (Chang & Mendy, 2012). Exchange rates are another group of measures (Bonga-Bonga & Phume, 2018). Black market premium is the most widely used measure in this group and indicates the severity of trade restrictions (Meniago & Asongu, 2018). Nevertheless, it is argued that the black-market premium, reflecting general poor economic management is a good proxy for the overall degree of external sector distortions rather than being a measure of trade policy, due to its high correlation with a number of bad policies, such as high inflation or high degree of corruption (Kremer, Bick & Nautz, 2013). Chakraverty and Singh (2008) argued that trade openness is a multi-dimensional concept that implies that a country can choose to be opened or slightly opened with respect to the capital or financial market that could be based on technology, culture, science, culture, inward and outward orientation.

2.2. Foreign Exchange Management

Foreign Exchange rate is the relationship or ratio of one currency to another currency. Generally, there are four macro markets in an open economy; these are the financial, labour, goods and services and foreign exchange with prices for each as interest rates, wages, prices and exchange rates respectively. The interaction of these four key elements in an economy determines and stabilizes the level of each and the entire four. Foreign Exchange is the means of payment for international transactions or foreign trade. No country is an island to itself; countries buy and sell goods and services to and with other countries. Such goods and services must be paid for in a particular standard of exchange. Some currencies are generally acceptable as convertible currencies. These include the currencies of the industrialized countries, for example, The US Dollar, The Pound Sterling, The Canadian Dollar, The Euro, The Japanese Yen, The Chinese Yuan etc.

Exchange rate policy in Nigeria has undergone a number of changes. It has developed from a fixed parity in 1960 when it was solely tied with the British Pound Sterling. By 1967, following the devaluation of the Pound Sterling the US dollar was included in the parity exchange. In 1972, the parity exchange with the British Pound was suspended as a result of the emergence of a stronger US dollar (CBN 2007). In 1973, Nigeria reverted to a fixed parity with the British Pound following the devaluation of the US dollar. In 1974, in order to minimize the effect of devaluation of a single individual currency, Nigerian currency was tied to both the pound and dollar. Almost throughout the 1970s there was persistent appreciation of the nominal exchange rate of the naira occasioned by increases in the price of oil in the international market. These appreciations in the nominal exchange rates gave rise to over-reliance on imports with its accompanying capital flight, discouraging non-oil exports which ultimately led to Balance of Payments problems and depletion of external reserves. The increase in the marginal propensity to import collapsed the agricultural sector in Nigeria (Osaka, Mashe& Adamgbe, 2003). In 1978, the naira was pegged to a basket of 12 currencies comprising Nigeria's major trading partners. However, the 1978 policy was jettisoned in 1985 in favour of quoting the naira against the dollar.

Before 1986, the prevailing exchange rate policies encouraged over-valuation of the naira. To solve the problems associated with the over-valuation the naira was deregulated in September 1986 under the Structural Adjustment Programme Package. To enhance the implementation of the Structural Adjustment Programme was the introduction of the Second-tier Foreign Exchange Market (SFEM). SFEM was expected to usher in a mechanism for exchange rates determination and allocation in order to ensure short term stability and long-term balance of payments equilibrium (CBN 2012). As stated by Mordi (2006) the essential objectives of SFEM include to achieve a realistic naira exchange rate through the market forces of demand and supply, more efficient allocation of resources, stimulation of non-oil efforts, encourage foreign exchange in flow and discourage outflow, eliminate currency trafficking by wiping out unofficial parallel foreign exchange market, and lead to improvements in the Balance of Payments. Several modifications were made in order to achieve the objectives of SFEM, from Foreign Exchange Market (FEM) to Autonomous Foreign Exchange Market (AFEM), to Dutch Action System and, to the wholesale Dutch Auction System. The FEM was introduced as a result of the problem arising from the first and second tier market rates in July 1987. Bureau de change was introduced in 1989 with a view to enlarging the scope of FEM. In 1994, the fixed exchange rate system was reintroduced. In 1995 there was a policy reversal of guided deregulation referred to as the Autonomous Foreign Exchange Market (AFEM). In 1999 the interbank foreign exchange market (IFEM) was reintroduced. This brought about the merger of the dual exchange rates, following the abolition of the official exchange rate from January 1, 1999. In 2002 was the reintroduction of the Dutch Auction System (DAS) as a result of the intensification of the demand pressure in the foreign exchange market and the persistence in the depletion of the country's external reserves. Finally, was the introduction of wholesale DAS in 2006, which further liberalized the market in an attempt to evolve a realistic exchange rate of the Naira. As at the first quarter of 2019 exchange rate regime in Nigeria is characterized as oscillating between fully managed and freely floating regimes (CBN, 2019).

2.3. Theoretical Underpinning

This study is hinged on the Purchasing Power Parity (PPP) and the International Fishers Effect (IFE) Theories. The purchasing power parity (PPP) theory states that equilibrium exchange rate between two inconvertible Paper-Currencies is determined by the equality of their purchasing power. Put differently, the rate of exchange between two countries is determined by the relative price levels. According to the theory, the equilibrium exchange rate between two countries is determined at a point which expresses the equality between their respective purchasing powers of the two currencies. This is the purchasing power parity which is a moving par as under the gold standard. The most known theoretical explanation of long-term stability and consistency of bilateral exchange rate is the purchasing power parity hypothesis. It is therefore rational to test for long run stability of PPP (Jhingan,2012; Duke, Adesanya & Ahmadu,2012). Other researchers, have used the PPP to link domestic economic development with international trade (Babatunde & Akinwale,2010; Emerah, Adeleke & Olusegun, 2015).

The PPP hypothesis is directly significant to this study because the study is attempting to situate the parity of the naira in terms of other countries' currencies, in the face of its continuous depreciation. The nominal or real exchange rate between the naira and the US Dollar or the Pound Sterling for instance, should be equal to the ratio of goods and services in exchange, not an eroded value of the naira in favour of the other two currencies. On the other hand, the International Fisher Effect theory basically contends that real interest rates among countries are equal because of the arbitrage opportunities possibility which normally arises in the form of capital flows between financial markets. Real interest rate equality denotes that the higher interest rate country ought to possess an inflation rate that is higher which, sequentially, establishes the ideal currency value decrease of the country in a precise time period. Also, the International Fishers Effect theory proposes that relatively high rates of interest in foreign currencies ought to disparage due to the nominal interest rates that are high reflecting the expected inflation rate. The IFE theory also suggests that spot exchange rate changes

between two countries ought to equate their nominal interest rates differences. In relevance to this study, the International Fishers Effect theory links the nominal risk-free rates of interest which comprises of a real return rate and the expected inflation.

2.4. Empirical Review

There are wide range of studies on the effect of foreign exchange management and trade openness around the world. The study carried out by Cheong, Mehari, Pattichis and Williams (2002) on exchange rate volatility on U.K exports revealed that exchange rate volatility negatively affects export trade. No evidence was found to support the theoretical proposition that exchange rate uncertainty has a positive impact on international trade. In Kenya, Osoro (2013) employed Johansen Cointegration approach and error correction modelling to investigate the long-run and short-run determinants of trade balance using annual data for the periods 1963 to 2012. Results indicated a positive correlation between exchange rates and trade balance in Kenya in the long-run. The study revealed that in the long-run, elasticity of exchange rate has positive sign indicating that devaluation leads to improvement in trade. The results further showed that foreign direct investment positively affect trade suggesting that FDI flows motivate investors to increase import substitutes in order to improve trade balances. Jayachandran (2013) studied the impact of exchange rate volatility on the real exports and imports in India from 1970 to 2011. The study results confirmed that real exports and imports are co-integrated with exchange rate volatility, real exchange rate, gross domestic product and foreign economic activity. The results indicated that exchange rate has significant negative impact on real exports and imports implying that higher exchange rate fluctuation tends to reduce real exports in India. The empirical results also revealed that GDP has a positive and significant impact on India's real exports in the long-run, but the impact turns out to be insignificant in the short-run.

Another study from Sri Lanka, Herath (2010) examined the impact of trade liberalization on economic growth and trade balance before and after the trade liberalization from 1960 to 2007. The regression analysis showed a significant positive relationship between trade liberalization and economic growth of Sri Lanka. Similarly, Sun and Heshmati (2010) applied both qualitative and quantitative approaches to discuss the relationship between international trade and China's economic growth. Both econometric and non-parametric approaches were applied based on a 6-year balanced panel data of 31 provinces of China from 2002 to 2007. For the econometric approach, a stochastic frontier production function is estimated and province specific determinants of inefficiency in trade were identified. For the non-parametric approach, the Divisia index of each region was calculated to be used as the benchmark. The study demonstrated that increasing participation in the global trade helps China reap the static and dynamic benefits, stimulating rapid national economic growth. Both international trade volume and trade structure towards high-tech exports result in positive effects on China's regional productivity.

Godfrey and Cosmas (2014) made investigation on the impact of exchange rates on exports, imports and national output in Tanzania from 1990 to 2011. He adopted Vector Error Correction model, Impulse Response Function, Variance Decomposition and Time series Simulation. The variables have long run relationship and converging at equilibrium as times passes but lower long run impact on export and import. Muhammed (2014) studied whether exchange rate instability in Pakistan affects import, export, trade balance, foreign exchange reserve and GDP. The study used yearly data from 1952 to 2010. Correlation removal method, multi co-linearity detection and granger causality test was used for the analysis. The result showed that depreciation of exchange rate has positive effect on exports.

Aman, Ullah, Khan& Khan (2013) explored the relationship between exchange rate and economic growth in Pakistan for period of 1976 to 2010. Using simultaneous equation model and employing two, three stage least square (2SLS and 3SLS) techniques, the study revealed that exchange rate has a positive association with economic growth through the channel of export promotion incentives, enlarging the volume of investment, enhancing FDI inflow and promoting import substitute industry. Mahmood, Ehsanellah and Ahmed (2011) researched on the effect of exchange rates fluctuations on macro-economic variables in Pakistan. They used monthly data from 1975 to 2011. Generalized Autoregressive Condition Heteroskedasticity (GARCH) method was used for the analysis. The result showed that exchange rate positively affected the GDP and manufacturing products. Akpolodje and Omjimite (2009) studied the effect of exchange rate volatility on imports of ECOWAS countries over the period of 1986 to 2006 when the countries operated flexible exchange rate system through estimation of import model with exchange rate volatility as one of the independent variables and found that exchange rate volatility exerts negative effect on imports. Coric and Pugh (2010) using applied meta-regression analysis (MRA) to the empirical literature studied US trade flows between 1978 and 2003 and found similar results of negative impact on trade flows which were consistent with Alam (2012) study on Pakistan imports in the long run where he estimated import function using quarterly time series data between 1979 and 2005.Using autoregressive distribution lag approach, the study found that exchange rate volatility adversely affects imports.

In Nigeria, Odili (2015a) analysed the long and short run impact of real exchange rates volatility and level of economic growth on international trade (exports and imports) in Nigeria. He used vector error correction model for the analysis and employed time series data from 1971 to 2012. His result revealed that in both short and long run, exports and imports were influenced by real exchange rate, exchange rate volatility, foreign income, gross domestic product, term of trade and changes in exchange rate policies. The findings also revealed that exchange rate depressed import and export at the long run. The result of pairwise Granger Causality test, revealed unidirectional Causality running from export to exchange rate volatility; and from exchange rate to import. Also, there is unidirectional causality flow from real GDP to import and export. Ibikunle and Akhanolu (2011) studied the impact of exchange rates volatility on the trade flow in Nigeria. They used Generalized Autoregressive Condition Heteroskdasticity (GARCH) for the analysis and annual data from 1970 to 2009 were used. The result revealed an inverse and statistically insignificant relationship between aggregate trade and exchange rates volatility in Nigeria.

In another study by Odili (2015b) similar to his previous work examined the effect of real exchange rate volatility on Nigerian imports from 1971 to 2011. Co-integration and Parsimonious Error Correction were used. The result showed that exchange rate has positive and significant effect on import only in the long run and there is unidirectional causality from exchange rate and import. Oyovwi (2012) studied the effect of exchange rates volatility on economic growth in Nigeria using annual data from 1970 to 2009. He also employed the Generalised Autoregressive Conditional Heteroscedasticity (GARCH) technique to generate exchange rates volatility. His findings showed that in the short run, economic growth had positive responsive effect on exchange rates volatility, while in the long run; a negative relationship existed between the two variables.

Omoju and Adesanya (2012) investigated trade and growth in developing countries using Nigeria as a case study. The study made use of secondary data from 1980 to 2010 and applied the Ordinary Least Square (OLS) regression method. The study documented that foreign trade, foreign direct investment, government expenditure and exchange rate have a significant positive impact on economic growth in developing countries. In the same vein, Eravwoke, and Oyivwi, (2012) studied growth perspective via trade in Nigeria. They employed the Ordinary Least Square (OLS) method, Augmented Dickey Fuller (ADF) and the Johansen co-integration statistical approach on data covering the period 1970 - 2009. The OLS result revealed that total trade and export are not statistically significant in explaining economic growth in Nigeria but exchange rate is statistically significant in explaining growth in Nigeria.

3. Methodology

The study adopted an *ex-post facto* research design. For the purpose of this study, secondary data was obtained from Central Bank of Nigeria annual reports and statistical bulletin, National Bureau of Statistics**,** and Transparency International. The pre-estimation tests like Unit root test and co-integration test with respect to bound test are carried out to determine the suitability of each of the model. This is necessary because it will inform the researcher if there is need for modification in terms of variables. Autoregressive Distributed lag modelling was employed for the study. The study has group of variables which include dependent, independent and control variables. The dependent variable is trade flow measured by exports and imports while independent variable is foreign exchange management with exchange rate, external reserve and foreign direct investment as proxies. The control variables are Inflation rate and interest rate. The independent and dependent variables for this research are Foreign exchange management (X) and Trade flows (Y) in Nigeria.

The operationalization of variables is represented with the following equation:

$Y = f(X)$

$Y = f(XZ)$

Trade Openness = f(Foreign Exchange management)

Hence, Trade openness is proxy by Import trade and Export trade

The functional form for the models is

$IM_t = f(EXR_t, ER_t, FDI_t)$

$EP_t = f(EXR_t, ER_t, FDI_t)$

Were the control variables were:

Inflation rate

Interest rate

$Y = f(X)$

The empirical model were

$EP_t = \beta_0 + \beta_1 EXR_t + \beta_2 ER_t + \beta_3 FDI_t + \beta_4 INFR_t + \beta_5 INTR_t + u_t$ ....equation 1

$M_t = \beta_0 + \beta_1 EXR_t + \beta_2 ER_t + \beta_3 FDI_t + \beta_4 INFR_t + \beta_5 INTR_t + u_t$ ....equation 2

Some variables were log while some were left in their rate form, this gives the model a semi log-linear functional form:

$LnEP_t = \beta_0 + \beta_1 LnEXR_t + \beta_2 LnER_t + \beta_3 LnFDI_t + \beta_4 INFR_t + \beta_5 INTR_t + u_t$ ....equation 3

$LnIM_t = \beta_0 + \beta_1 LnEXR_t + \beta_2 LnER_t + \beta_3 LnFDI_t + \beta_4 INFR_t + \beta_5 INTR_t + u_t$ ....equation 4

Where: $\beta_0 =$ Constant term

$\beta_1 - \beta_5 =$ Coefficient of the sub-independent variables

Variables	Indicator	Measurement
Export	EP	Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. Data are in constant local currency and measured in million naira.
IMPORT	IM	Imports of goods and services represent the value of all goods and other market services received from the rest of the world. Data are in current local currency and measured in million naira
Exchange rate	EXR	It is calculated as an annual average based on monthly averages (local currency units relative to the U.S. dollar). In Naira, this is gotten by 1 US Dollars to naira i.e. $1= Naira.
External reserve	ER	Foreign external reserves are the foreign currencies held by a country's central bank. It is measured in million naira
Foreign direct investment	FDI	Foreign direct investment refers to direct investment equity flows in the reporting economy. It is measured in million naira

Variables	Indicator	Measurement
Inflation rate	INFR	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used and measured in rate.
Interest rate	INTR	This is banks' lending rate; it is measured in rate.

Table 1: Variable Measurement

3.1. Results

3.1.1. Descriptive Statistics

Table 2 depicts the descriptive statistics of the variables used in the model. The results show that Export (EP) has an average value of N4, 820.08 billion for the years under consideration, in which its middle value in the list of Export (EP)values is found to be N1,526.86billion with its lowest and highest values being N7.50billion and N19,280.04billion respectively. There exists wide range of spread in the EP values, as it is found to be N5,816.79billion. In the list of values of Import (IM) which is expressed in Naira Billion (N'B), the median value is found to be N923.77billion when the Import (IM) values are arranged in either ascending or descending order, having the mean value of N3,345.33billion from the set of values ranging from N5.98billion (lowest value) to N13,445.11billion being the highest value; a wide range of dispersion is observed in the set of the values, as standard deviation (std) is found to be N4,282.48billion. Exchange rate (EXR) which is expressed in US dollar per Naira ($/N) is found to have the mean value of N88.66/USD and its middle value from the set of values of the recorded during the years is N97.40/USD. Standard deviation (std) which tells how the values spread out or dispersed abroad, is found to be N87.19/USD, which depicts that there exists vast range of variation in the Exchange rate (EXR) values for the years. The maximum and minimum values are N306.08/USD and N0.61/USD respectively, with observation number being 38.More so, External reserve (ER) expressed in Billion dollar ($'B) is seen to have $17.14billion as the mean value from the list of values whose highest and lowest values are $58.47billion and $0.46billion respectively; the median value is $7.73billion. It is deduced that, there exists wide range of variation in set of values of External reserve (ER) of the companies for the years, as standard variation (std) is seen to be 17.30.The results in the table give the average value of Foreign direct investment (FDI) which is expressed in Billion US dollar ($'B) as $2.61billion, with $1.61billion median value; having set of values ranging from $0.19billion to $8.64billion as its lowest and highest values respectively. With observation number remain 38, standard deviation (std) is found to be 2.64, which shows that, there exists relatively wide variation in the set of values for the years in question. Inflation rate (INFR) is seen to be 19.35% on average, from the set of values for the years under consideration. The maximum and minimum values are found to be 72.84% and 5.39%; arranging the values orderly, the median is 12.72%. The standard deviation (std)of 17.24 depicts that there is a wide range of dispersion in the set of inflation rate (INFR) values for the years under study. Interest rate (INTR) expressed in percentage (%) is found to have 17.58% as the mean value and 17.54% as the median when the values of the rates for years are properly arranged, be it in ascending order or descending order. With number of observations at 38, and 7.75% to 29.80% as minimum and maximum values respectively, the standard deviation (std) of 4.63, indicates less range of dispersion in the set of values for the companies for the years.

	EP (N'B)	IM (N'B)	EXR ($/N)	ER ($'B)	FDI ($'B)	INFR (%)	INTR (%)
Mean	4,820.08	3,345.33	88.66	17.14	2.61	19.35	17.58
Median	1,526.86	923.77	97.40	7.73	1.61	12.72	17.54
Max.	19,280.04	13,445.11	306.08	58.47	8.84	72.84	29.80
Min.	7.50	5.98	0.61	0.46	0.19	5.39	7.75
Std.	5,816.79	4,282.48	87.19	17.30	2.64	17.24	4.63
Skew.	0.93	1.03	0.80	0.79	1.04	1.74	0.20
Kurt.	2.50	2.49	2.96	2.15	2.82	4.84	3.67
J-Bera [Sig.]	5.834 [0.054]	7.178 [0.028]	4.046 [0.132]	5.125 [0.077]	6.932 [0.031]	24.57 [0.000]	0.971 [0.616]
Obs.	38	38	38	38	38	38	38

Table 2: Summary Statistics
Source: Authors' Computation, 2020

3.1.2. Unit Root Test

Table 3 presents a summary of unit root results regarding the order of integration based on different unit root criteria such as Augmented Dickey-Fuller test (ADF) and Phillips-Perron test (PP) for the selected series under consideration. The ADF results presented shows that while EP, IMP, EXR and FDI are integrated of order one as the data sets for these variables have unit root problem in their original value, however, after the first differences of the variables, they become stationary, hence they are integrated of order one (1). ER, INFR and INTR are integrated of order zero (0). This presumes that ER, INFR and INTR are stationary at their original values. Also, the PP results also coincide with the

results of the ADF, i.e. while EP, IMP, EXR and FDI are integrated of order one, ER, INFR and INTR are integrated of order zero (0). This shows a mixed integration among the variables, which calls for bound cointegration test.

		Ln(EP)	Ln(IMP)	Ln(EXR)	Ln(ER)	Ln(FDI)	INFR	INTR
ADF	Level	-1.272	-0.883	-1.946	-3.636	-1.620	-3.970	-5.069
		[0.879]	[0.947]	[0.610]	[0.040]	[0.765]	[0.019]	[0.001]
	1st Difference	-5.229	-6.909	-4.548		-9.823		
		[0.001]	[0.000]	[0.005]		[0.000]		
PP	Level	-1.272	-1.522	-1.129	-3.826	-2.822	-3.936	-49.454
		[0.879]	[0.804]	[0.910]	[0.026]	[0.200]	[0.020]	[0.000]
	1st Difference	-7.446	-6.896	-4.380		-9.823		
		[0.000]	[0.000]	[0.007]		[0.000]		
Order of Integration		I(1)	I(1)	I(1)	I(0)	I(1)	I(0)	I(0)

Table 3: Unit Root Tests
Source: Authors' Computation, 2020. Note: P – values in square bracket [ ]

3.1.3. Co integration Tests

Before the estimation of the autoregressive distributed lag (ARDL) regression models, it is important that we look at our series whether they have long-run relationships or not since the time series unit root results show that the order of integration is mixed [combination of I(0) and I(1)]. For this purpose, the ARDL / Bounds Testing approach of Pesaran and Shin (1999) and Pesaran *et al.* (2001) is considered. Table 4 contains the results from the cointegration tests carried out in this study. The first three columns of the Table show the significance level and Pesaran *et al.* (2001) critical value bound. Furthermore, the last three columns show the computed F- statistic figures from the Bound cointegration test. More specifically, the computed F- statistic figures from the Bound cointegration test in the upper panel of the Table are for base models while the computed F- statistic figures in the lower panel of the Table are for the augmented base models. Results indicate that the computed F- statistic figures exceed the 5% lower and upper critical values that are proposed by Pesaran et al. (2001). For this reason, the null hypotheses of no cointegration (long-run relationships) are rejected and this means that the alternative hypotheses of cointegration (long-run relationships) among the variables in question are supported.

Sig.	Critical Value Bound		Export and Foreign Exchange Model	Import and Foreign Exchange Model
	I0 Bound	I1 Bound	Base Model	
			Model with Control Variable	
10%	2.26	3.35	3.957**	8.702**
5%	2.62	3.79		
2.5%	2.96	4.18		
1%	3.41	4.68		

Table 4: Co-integration Bounds Test
Source: Authors' Computation, 2020
*Note: ** Denotes Significant at 5% Level*

3.2. Testing of Hypothesis One
- H_{01}: Foreign exchange management dimension has no significant effect on export in Nigeria.
- H_{02}: Foreign exchange management dimension has no significant effect on import in Nigeria.

Variables	A: ARDL: Export and Foreign Exchange Modelwith Control Variables	B: ARDL: Import and Foreign Exchange Modelwith Control Variable
	Short-Run	
DLOG(EXR)	0.580 (3.736) [0.001] **	0.297 (2.062) [0.021]**
DLOG(ER)	0.106 (0.626) [0.538]	0.006 (0.072) [0.943]
DLOG(FDI)	0.080 (0.574) [0.572]	-0.020 (-0.244) [0.810]
DLOG(FDI(-1))	-0.241 (-2.085) [0.049]**	-0.230 (-3.625) [0.002]**
D(INFR)	0.009 (1.600) [0.124]	0.011 (4.020) [0.001]**
D(INFR(-1))	-0.016 (-2.586) [0.017]**	-0.019 (-5.516) [0.000]**
D(INTR)	0.047 (1.627) [0.118]	0.021 (1.827) [0.081]
D(INTR(-1))	0.068 (2.914) [0.008]**	0.042 (4.06) [0.001]**
CointEq(-1)	-0.341 (-2.732) [0.012]**	-0.417 (-6.253) [0.000]**
	Long-Run	
LOG(EXR)	1.702 (4.410) [0.000]**	1.353 (11.805) [0.000]**
LOG(ER)	-0.985 (-1.211) [0.239]	0.014 (0.072) [0.943]
LOG(FDI)	1.229 (1.981) [0.043]**	0.383 (2.224) [0.037]**
INFR	0.060 (1.957) [0.063]	0.039 (3.805) [0.001]**
INTR	-0.103 (-1.504) [0.147]	-0.083 (-2.611) [0.016]**
C	3.356 (3.480) [0.002]**	2.527 (5.110) [0.000]**
Diagnostic Tests	F-stat = 6.000 [0.000]	F-stat = 11.882 [0.000]
	R2 = 0.640; Adj. R2 = 0.533	R2 = 0.754; Adj. R2 = 0.681
	D-Watson = 1.949	D-Watson = 2.360
	Normality Test = 0.117 [0.800]	Normality Test = 0.745 [0.689]
	Hetero. Test = 0.144 [0.866]	Hetero. Test = 0.461 [0.450]
	Auto-Correl.= 1.108 [0.350]	Auto-Correl.= 0.461 [0.635]

Table 5: ARDL: Trade Openness and Foreign Exchange Models with and without Control Variables
*Source: Authors' Computation, 2020. Note: P – values in square bracket [ ]. ** denotes significant at 5% level*

3.3. Interpretations

3.3.1. Model with Export and Foreign Exchange Model

According to the results from Export and Foreign Exchange Model with Control Variable in Table 5, the Adjusted R² value of 0.533 shows that the explanatory variables explain about 53.3% of the variation in export. Furthermore, the F-Statistics of 6.000 (P=0.000) suggests that the model is also significant and the explanatory variables are jointly significant

in explaining variances in export. The value of D-Watson statistics = 1.95 (approximately 2) shows that the model is free from autocorrelation problem.

The negative and significance of the coefficient of error correction term (*CointEq(-1))* [-0.341 (P –value = 0.012)] at 5% level in the short-run model provides the evidence that the current export values in Nigeria responds to disequilibrium from the current values of Exchange rate (EXR), External reserve (ER) and Foreign direct investment (FDI), Inflation rate (INFR), Interest Rate (INTR) and their lag during the period. This negative and significant value also confirms the existence of long-run relationship among the variables. Additionally, the results reveal that the short-run effect of Exchange rate (EXR) improves and it remains statistically significant at 5% level [β = 0.580; P – value = 0.001]. The improved and statistically significant effect also remains positive, suggesting that 0.580 percent increase in Export (EP) during the year is as a result of 1 percent increase in Exchange rate (EXR). As well, Foreign direct investment (FDI) at lag 1 (previous value) exhibits significant effect on Export (EP) at 5% level [β = - 0.241; P – value = 0.049] during the year. The significant effect remains negative, suggesting that 1 percent increase in FDI in previous year causes about 0.241 percent decrease in current Export (EP) value in the short-run. Inflation rates (INFR) and Interest rate (INTR) at lag 1 are found to have negative and positive significant effect on Export (EP) at 5% levels respectively. Contrariwise, the effects of current External reserve (ER) and Foreign Direct Investment (FDI) on Export (EP) are found to be insignificant in the short-run during the period.

Focusing on the long-run effect, the results reveal that the long-run effect of Exchange rate (EXR) is statistically significant at 5% level [β = 1.702; P – value = 0.000] and the statistically significant effect is seen to be positive as well. This is suggesting that 1.702 percent increase in Export (EP) during the year is caused by 1 percent increase in Exchange rate (EXR) during the year. Similarly, the results reveal that the long-run effect of Foreign direct investment (FDI)) becomes statistically significant at 5% level [β = 1.229; P – value = 0.043] after controlling for Inflation rate (INFR) and Interest rate (INTR) and the statistically significant effect is seen to be positive as well. This is suggesting that 1.229 percent increase in Export (EP) during the year is caused by 1 percent increase in foreign direct investment (FDI). Alternatively, this means that the effect of FDI on Export in the long-run is conditioned on Inflation rate (INFR) and Interest rate (INTR). On the contrary, the long run effects of other explanatory variables are insignificant.

3.3.2. Model with Import and Foreign Exchange Model

From the Import and Foreign Exchange Model in Table 4B, the Adjusted R^2 value of 0.681 shows that the explanatory variables jointly explain about 68.1% of the variation in Import. Besides, the F-Statistics of 11.000 (P=0.000) shows that the model is as well significant and the effects of explanatory variables are jointly significant in explaining variances in Import. The value of D-Watson statistics = 2.36 (approximately 2) shows that the model is free from autocorrelation problem.

The negative and significance of the coefficient of error correction term (*CointEq(-1))* [-0.417 (P –value = 0.000)] at 5% level in the short-run model provides the evidence that the current Import values in Nigeria responds to disequilibrium from the current values of Exchange rate (EXR), External reserve (ER) and Foreign direct investment (FDI), Inflation rate (INFR), Interest Rate (INTR) and their lag during the period. This negative and significance value also confirms the existence of long-run relationship among the variables. In addition, the results reveal that the short-run effect of Exchange rate (EXR) becomes significant and at 5% level [β = 0.297; P – value = 0.021]. The improved and statistically significant effect remains positive, suggesting that 0.297 percent increase in Import (IM) during the year is as a result of 1 percent increase in Exchange rate (EXR). As well, Foreign direct investment (FDI) at lag 1 (previous value) exhibits significant effect on Import (IM) at 5% level [β = - 0.230; P – value = 0.002] during the year. The significant effect remains negative, suggesting that 1 percent increase in FDI in previous year causes about 0.230 percent decrease in current Import (IM) value in the short-run. Inflation rate (INFR) and Interest rate (INTR) at lag 1 are found to be having negative and positive significant effect on Import (IM) at 5% levels respectively. In reverse, the effects of current External reserve (ER) and Foreign Direct Investment (FDI) on Import (IM) are found to be insignificant in the short-run during the period.

Focusing on the long-run effect, the results reveal that the long-run effect of Exchange rate (EXR) is statistically significant at 5% level [β = 1.353; P – value = 0.000] and the statistically significant effect is seen to be positive as well. This is suggesting that 1.353 percent increase in Import (IM) during the year is caused by 1 percent increase in Exchange rate (EXR) during the year. Equally, the results reveal that the long-run effect of Foreign direct investment (FDI)) becomes statistically significant at 5% level [β = 0.383; P – value = 0.037] after controlling for Inflation rate (INFR) and Interest rate (INTR) and the statistically significant effect is seen to be positive as well. This is suggesting that 0.383 percent increase in Import (IM) during the year is caused by 1 percent increase in Foreign Direct Investment (FDI). Alternatively, this means that the effect of FDI on Import in the long-run is conditioned on Inflation rate (INFR) and Interest rate (INTR). On the contrary, the long run effect of Exchange Reserve (ER) is insignificant.

4. Discussion of Findings

In this study, one of the major findings is that long-run relationships exit among Exchange rate (EXR), External reserve (ER), Foreign Direct Investment (FDI) and Export. This result aligns with the study of Mukhtarov, et al. (2019) who investigated the impact of Foreign Direct Investment on Exports in Jordan from 1980 to 2018, using Autoregressive Distributed Lag Bounds Testing (ARDL BT) Co-integration approach. More specifically, this study finds evidence of positive short-run and long-run effect of Exchange rate on Export. This result is not in line with the result of Ngondo et al. (2018). Ngondo et al (2018) studied the impact of Exchange rate on Exports in South Africa. They used time series data in South Africa between the periods 1994 to 2016 and applied the Autoregressive Distributed Lag (ARDL) approach. The results obtained reveal that Exchange rate has a significant negative relationship with Exports in South Africa. Similar to this

result is the result of Vinh Nguyen et al. (2018). They investigated the impact of Exchange rate volatility on Exports in Vietnam using quarterly data from the first quarter of 2000 to the fourth quarter 2014, with the Application of autoregressive distributed lag (ARDL) bounds testing approach. Their results show that Exchange rate volatility negatively affects the Export volume in the long run. These differences in our findings may be due to some economic and environmental factors. Also, Foreign Direct Investment (FDI) is found to be having negative and significant effect on export in the short-run and positive effect on the long-run. Bishnu Kumar Adhikary, (2012) also have similar result from a study of Trade openness, Domestic demand, and Exchange rate on the Export performance of Bangladesh between 1980 and 2009 using the vector error correction (VEC) model under the time series framework. He concluded that "FDI is found to be an important factor in explaining the changes in exports both in the short run and long-run". However, result shows that external reserve has no significant effect on export and both inflation and interest rates are important moderating variables when the relationship between foreign exchange management dimensions and export are to be examined.

Another major finding in our current study is the existence of long-run relationships among Exchange rate (EXR), External reserve (ER), Foreign Direct Investment (FDI) and Import. Fapetu and Oloyede (2014) who examined the relationship between Foreign exchange management and the Nigeria economic growth between 1970 and 2012 reported similar outcome. The result of the co-integration as revealed in their study show that there is a unique long run relationship among exchange rate, external reserve, imports, inflation and foreign direct investment. Also, effect of FDI on import is found to be negative in the short-run and positive in the long-run when it is conditioned on inflation and interest rates. The positive effect in the long-run is consistent with the result of Osoro (2013). Osoro in his study Titled "Long-run and short-run determinants of trade balance in Kenya" for the periods 1963 – 2012 found that Foreign Direct Investment (FDI) positively affect trade suggesting that FDI flows motivate investors to increase import substitutes in order to improve trade balances. Also, effect of Exchange Rate (EXR) on Import (IM) is found to be positive both in the short and long-run when it is moderated by Inflation rate and interest rate. As noted earlier, the effect of exchange rate on import in Nigeria is conditioned on inflation and interest rate. This is also similar to the findings of Osoro (2013). Furthermore, Odili (2015) investigated the long and short run impact of real exchange rates volatility and level of economic growth on international trade (exports and imports) in Nigeria using Vector error correction model and Granger Causality test. They found that in both short and long run, exports and imports were influenced by real exchange rate. Another major finding in this study is that of the positive effect of external reserves on import when inflation and interest rates are not accounted for. This is relatively closed to the findings of Alasan and Shaib (2011) who investigated the management of external reserves and economic development in Nigeria between 1980 and 2008 and found that there is statistical significant relationship in the management of Nigerian external reserves.

5. Conclusion and Recommendations

This study examined the effect of foreign exchange rate management on trade openness in Nigeria between 1980 and 2018. The exchange rate management is an important determinant of any economy's performance and its competitiveness. The inflation rate and interest rate are important indicators which affect foreign exchange rate and are correlated with the evolution of the currency market. When the exchange rate of the national currency is stable, it may be a factor that influences competitiveness because its evolution may attract a high trust in usage of that currency. The study concluded that exchange rate and foreign direct investment are positively and statistically significant to export and import in Nigeria. Due to the significant effect of exchange rate on import in Nigeria, the empirical analysis indicates that foreign exchange rate management is a sufficient stimulus for higher imports' volume. Foreign exchange rate management is a significant factor that affects trade openness and their attractiveness for the export of goods. Therefore, most measures will be focused on improving the competitiveness through other channels, besides the "traditional" exchange rate. The implication of the results indicate that import have a competitiveness influenced by the exchange rate. In addition, an inflation altered by accession reflects on the increase in exports, while decrease of the interest rate implies financial resources that are more accessible to producers, affecting the exports to increase. Increase in imports always accompanied by the increase of exports, indicating that international trading modification is concomitant both for imports and exports. Increase of direct foreign investments and portfolio investments is associated with exports' increment, but the indices have low values and show instead an influence of circumstantial factors.

Based on the major findings of this study, the following recommendations are provided;

- To favour appreciation of foreign exchange rate in Nigeria, the volume of exportation should be greater than the volume of importation. Nigeria is largely categorised as a country that heavily depends on consumption of foreign goods which makes exchange rate to fluctuate frequently which affects the international trade.
- There should be increase in the supply of foreign exchange to solve the problem of instability in exchange rate. This increase in the supply of foreign exchange will meet local demand for foreign exchange. This involves serious adoption of measures to boost export and reduce import other than tempering with exchange rate via monetary policies by the state. Putting more attention on export than on import should also be a good priority to the state so as to improve its external reserves position for economic prosperity.
- Import-Substitution industrialization policies should be the utmost concern of the government. Thus far, Nigeria has not been able to make an appreciable progress in industrial development due to policy failure. Industrial policies such as Import-Substitution Industrialization Policy in the 1960s failed due to a number of internal and external forces. Therefore, government should fully implement these policies and should also be consistent, effective and efficient in order to achieve stability in various sectors of the economy.
- The export processing zones are excellent policies that could lead to stability in the Naira exchange rate if properly managed. Government should implement the ban fully on items considered not contributing to the value

chain of the country. However, it should provide more incentives to the importation of capital and intermediate goods so to boost and improve the productive capacity of the sector of the economy.

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