KWARA STATE UNIVERSITY, MALETE, NIGERIA

SCHOOL OF POSTGRADUATE STUDIES (SPGS)

DETERMINANTS OF EXCHANGE RATE FLUCTUATIONS IN NIGERIA

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DETERMINANTS OF EXCHANGE RATE FLUCTUATIONS IN NIGERIA

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Kazeem AYUBA

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DECLARATION PAGE

I hereby declare that this thesis titled “Determinants of Exchange Rate Fluctuations in Nigeria” is a record of my research. It has neither been presented nor accepted in any previous application for higher degree.

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APPROVAL

This is to certify that this thesis by Kazeem AYUBA has been read and approved as meeting the requirements of the Department of Accounting and Finance, Faculty of Humanities and Management Science, Kwara State University, Malete, Nigeria for the award of Masters of Science (M.Sc.) Degree in Finance.

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DEDICATION

This research work is dedicated to the Almighty Allah, the most beneficent, the most glorified

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LIST OF ABBREVIATIONS

EXT : Exchange Rate Fluctuation

FDI : Foreign Direct Investment

BOP : Balance of Payment

GDP : Gross Domestic Product

SPE: Speculation

USD : United State Dollar

WBDI : World Bank Development Indicators

NEG : Nigeria Exchange Group

CBN: Central Bank of Nigeria

PPP : Purchasing Power Parity

GNP : Gross National Product

ARDL : Autoregressive Distributed Lag

ADF : Augmented Dickey Fuller

DF : Dickey Fuller

PP : Philips-Perron

ECM : Error Correlation Model

Max : Maximum

Min : Minimum

Std. Dev : Standard Deviation

APPENDIX 1----------

ABSTRACT

Exchange rate in any country across the globe is not stable because there are different economic factors that determined stability of foreign exchange in a country. Nigeria has experienced a serious fall in exchange earning to GDP, depletion of external reserve, scarcity of foreign exchange resulting from exchange rate fluctuation. Sequel to this, this study examines the determinants of exchange rate fluctuations in Nigeria. To achieve this, the specific objectives were to; (i) determine the effect of gross domestic product on exchange rate fluctuation; (ii) examine the effect of foreign direct investment on exchange rate fluctuation; (iii) ascertain the effect of Balance of Payment on exchange rate fluctuation; (iv) investigate the extent to which speculation influence exchange rate fluctuation in Nigeria. Data were collected from the Central Bank of Nigeria Statistical Bulletin (2021), covering the period of 1989 to 2020. The study employed Autoregressive Distributed Lag (ARDL) Model for analyzing the data obtained for the study. The result revealed that gross domestic product negatively and significantly affects exchange rate fluctuation evidenced by (β_1 = 0.0173; T = -2.583779) *P < 0.05 indicating that foreign exchange policies be adopted to stabilize the fluctuation of currency. This study also reveals that of foreign direct investment significantly affects exchange rate fluctuation evidenced by (*β_2 = 0.0376; T = -1.738381, *P < 0.05). However, this study found that balance of payment* (β_3 = 0.0201; T = 0.101584, *P < 0.05) have a positive and significant effect on exchange rate fluctuation and speculation (*β_4 = 0.4014; T = 0.856398, *P > 0.05) have a positive but insignificant effect on exchange rate fluctuation in Nigeria. The study concluded that gross domestic product, foreign direct investment and speculation are major determinants of exchange rate fluctuation in Nigeria while other determinants such as balance of payment have a positive significant effect. Therefore, the study recommends that the policy makers should concentrate efforts on stabilizing the surplus balance of payment in order to build strong and stable economy.*

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Across the globe, determinants of exchange rate fluctuations is an important macro-economic quest as it increases the performance of any economy, its stability and improve its economic growth & development (Rajakaruna, 2017; Briliant, Aditya & Buana, 2020). The exchange rate goal of any economy is to have a stable exchange rate with the countries it trades with, in order to increase their economy performance. Essentially, exchange rate plays a major role in the international economic integration because all nations are not hold autarky equilibrium so they are holding an international economic relation with other countries of the world (Priyatharsiny, 2017).

Determinants of exchange rate fluctuations have been an economic issue over time in every society of the world. The exchange rate reflects the relative prices of local product relative to foreign products. It can be an essential part in determining countries price competitiveness. The exchange rate, therefore, a key factor of economic development especially in developing countries rely on exports as a significant source of growth. Several factors can influence and determine how much relative value of a local currency to a foreign currency (the exchange rate). The exchange rate of a local currency to a foreign currency is principally determined by its demand for and supply of the foreign currency. Factors that increase the demand for dollar (such as higher imports) implies an increase in demand for the dollar thus increase in demand in the dollar value (vice-versa). The exchange rate plays a crucial role in international market by changing the local currency value in response to a change in economic conditions. The local

currency will therefore become stronger if the country has surplus balance of payment. Nevertheless, some factors under an economic condition (such as capital movement, speculation) can lead to sharp or small movement of the exchange rate to be too much or little (Kraipornsak, 2020).

Globally, the balance of payments of a country strongly determines the economic condition of a country (Sujianto, 2020), the deficit international balance of payment is an external problems experienced by many developing countries (Sujianto and Suryanto, 2018; Wulandari, Utomo, Narmaditya & Kamaludin 2019), in developing countries, the balance of payments deficit caused by trade balance deficit often raises many concerns. Therefore, policies to stabilize the balance of payments by promoting trade and maintaining economic growth are needed. Although, there are internal factors such as the conditions of a country's macroeconomic fundamentals and domestic economic shocks affect the balance of payment performance (Sujianto, 2020).

Furthermore, large financing of economic development for each country cannot be fully sourced from domestic capital flows in that country but financing originating from foreign capital is needed to meet the shortfall in financing a country's economic development. This condition applies to developing countries and economic development in the era of globalization. Foreign capital is also needed for developed countries because economic integration is increasingly expanding between the blocks of countries in the world. The most effective and potential foreign capital inflow received by the host country is an investment compared to raising capital originating from debt (Mukhlis & Viphindrartin, 2021).

An economy, be it developed or developing, Foreign Direct Investment (FDI), being a major component of economic development, also determined exchange rate fluctuation. It is a fundamental segment of an effective and open international economic system. For availing the

benefits of FDI for economic development, international investment architecture and national policies do matter for developing countries. At the same time, challenges like establishment of broad, transparent and investor friendly environment with institutional capacity to implement them are the major to be addressed by the host country (Alam, Akram & Iqbal 2017)

Over time, the Nigeria economy, like other economies, has suffered from the effect of persistent exchange rate fluctuation, instability in macroeconomic variables and the overall poor economic growth. Moreover, compared with the advanced countries with stable market conditions, emerging markets attached importance to macroeconomic factors because of the degree of uncertainties that characterizes their markets and the need to have a stable exchange rate to reduce the cost and risks associated with transactions in foreign exchange (Benjamin & Fatile 2019).

In Nigeria, the management of the exchange rate lies with the Central Bank of Nigeria (CBN) and since the introduction of the Structural Adjusted Programme (SAP) in 1986, exchange rate management has been a core macroeconomic policy function. The overriding objective has been to preserve the value of the domestic currency and maintain a favorable external reserves position and ensure external balance, internal balance and macroeconomic stability. In the country, exchange rate system has been more volatile in the recent years, and it might be safe to assume that much of these swings are largely driven by some psychological pseudo-fundamental dynamics which are not related to economic fundamentals. In addition to the associated uncertainties and adverse impact on the growth of exports and overall output, volatility in the value of the nation's currency could render monetary aggregates less credible as a key indicator in the monetary authority's toolkit (Adenekan, Ganiyu & Ahmed 2019).

Currently, exchange rate fluctuation is considered one of the issues threatening Nigerian currency has been very volatile in foreign exchange market, and this has made naira to be continuously depreciated and vulnerable to unstable international financial conditions and external shocks, (including terms of trade shocks, and excessive debt burden).

Several studies on the determinants of exchange rate fluctuations have been conducted in various countries (for instance, Al-samara, 2009; Nucu, 2011; Ajao, 2015; Kilicarslan, 2018, Lateef, 2020). In particular, these studies analyze whether and to what extent do exchange rate fluctuations specific variables like Trade openness, Government expenditure, money supply, productivity index, current account, foreign exchange reserve, Real interest rate, inflation rate, Real exchange rate, crude oil, but all these studies failed to provide a comprehensive picture of what exactly determines the exchange rate fluctuations. Moreover, a large body of research focused on naira exchange rate volatility impact on foreign trade and economic growth in Nigeria (Ajao, 2015; Benjamin et al., 2019)

However, the need for this study becomes vital as empirically determine the germane factors such as (Gross Domestic Product, Foreign Direct Investment, Balance of payment and Speculation) that have tendency to significantly influencing exchange rate fluctuations in Nigeria as majorly omitted by previous studies reviewed.

1.2 Statement of the Problem

Determinants of exchange rate fluctuations has become a global issue, which affects every countries and their economies, these problems arises as a result of exchange of currency in international trade which have direct impact on the economy and in the long-run causes damage to the economy which affects the society at large. Exchange rate management policy in Nigeria

nowadays has over a long time being the causes of this exchange rate fluctuation problem. Such exchange rate problems include; poverty, unemployment and under-development (Suleiman & Michael 2018). This is because of instability of exchange rate. Had there been appropriate regulatory measures, the issue would have reduced to its minimal or even attracted serious consideration by the management of exchange rate in Nigeria.

Nigeria has experienced a serious fall in exchange earning to GDP, depletion of external reserve, scarcity of foreign exchange, high cost of goods (inflation) and resulting from exchange rate fluctuations by management of exchange rate (Asher, 2016). Despite the series of exchange rate policies, regulation, deregulation measures in Nigeria, particularly the relatively fixed exchange rate policy used since 2013 till date, the economic and political considerations affect fluctuations in the country. The complex economic development problems which broadly summarized under huge internal and external debts, chronic fiscal deficit and serious economic decline, inflationary pressure and persistent balance of payment deficit. Though, there is general consensus in Nigeria that the primary goal of current macroeconomic policy is not only to achieve internal balance but also external balance (Nwanosike, Uzoechina, Ebenyi & Ishiwu 2017).

The stagnant growth of exchange rate, giving the high level of the exchange rate fluctuations in Nigerian economy, represents the high level of volatility toward exchange rate. As a result of this, there is lack of continuity and inconsistency in exchange rate policies by the monetary authority with unstable nature of the Nigerian currency (Umaru, Aguda & Davies 2018).

Without doubts, Nigeria government has not been running their activities without external borrowing, the acts which depress investment and lower the rate of economic growth, debt burden so large that an entity cannot take on additional debt to finance future projects leading to extreme poverty. Meanwhile, debt crisis is one of the prominent problems confronting some

African countries like Nigeria. Numerous of deficit budgets in Nigeria have propelled the country to resort to external funds from various international lenders like London Club and Paris Club. It has been established that foreign capital in the form of external debt has increased sporadically in the country (NBS, 2019), and it is expected to be repay in the nearest future. However, the effect of massive capital inflows could adversely affect the exchange rate of the domestic country's currency which could bring about less competitiveness of its trade and worsen the current account balance in the long run (Ghosh, 2010; De-Paula, Ferrari-Filho & Gomes 2012). Basically, foreign debt will cause negative impacts and serious problem in its repayment because of the loan's interest and principal, often times it is used to finance the budget (Yavas and Malladi 2020).

Furthermore, Nigeria experienced chronic deficit on the balance of payment account, fall in the price of naira and gross domestic product due to over-dependency of imported products, reliance of revenue from oil exports, massive imports of refined petroleum, and other related products and foreign debt stock as a result of political instability. David and Adekunle (2020) emphasized that exchange rate serves as one of the major macroeconomic variables that affect the trade positions of a country and ultimately balance of payments. Jayasooriya (2020) pointed that disequilibrium in real effective exchange rate has caused instability in current account balance. There is also a compromise that current account balance sustainability is very crucial for macroeconomic policy changes and decisions. Asinya and Takon (2014) noted that if foreign exchange rate is not properly managed, such economy can face balance of payment deficit, poor economic activities, low capital formation, increase in general price of goods and services and currency devaluation, which will automatically reduce level of economic growth. The major factor that causes higher fluctuation in the Nigeria exchange rate is over importation compared to

export that is very low; this has led to deficit in the Nigeria balance of payment and general increase in price (Aliyu, 2009; Obi, Oniore and Nnadi, 2016; Asinya and Takon, 2014). Symptom of a wider structural economic problem such as poor investment in new capital, a change in comparative advantage towards other economies. Large trade deficits replicates an unbalanced economy which is usually the result of the consumer demand for imported items at high level in addition to a weaker and local industrial sector, thus cause a sharp fall in the country balance of payment (Abdullahi, Fakunmoju, Abubarkar & Giwa 2017).

The problem with forecasting the stock market price is that the return distribution can change considerably over time. Volatility is an extremely complex thing to forecast because of the inherent instability of the variable (variability of the random). Securities markets are considered complex which usually is influenced by both country-level and internal factors. Internal dynamics can be taken to be investors and securities exchange market institutions, whereas country-level dynamics are reforms and announcements by governments or some important institutional events. Risk factors are key and significant for both local and global investors. Discrepancies in risk elements especially currency risk stand to carry diverse consequences on each nation's securities market performance (Koskei, 2021).

Majority of the previous studies (Al-samara, 2009; Raza and Afshan 2017; Kilicarslan, 2018) on determinants of exchange rate fluctuations were carried out mostly in Syria, Turkey, Thailand, Pakistan and other jurisdiction in Nigeria. The similar studies in Nigeria such as Oloyede & Isaac 2017; Ajao, 2015; Fapetu, Adeyeye, Seyingbo & Owoeye 2017; Alasha, 2020; Ihedioha, Kalu & Ogbonnaya 2020) focus on the import & export and economic growth; Stock market performance and international trade. Also, most of these studies were carried out utilizing either single or limited proxies studies of determinants (independent) of exchange rate fluctuations

(dependent) and not a wide range or a combination of them, that can address relevant issues of exchange rate fluctuations.

Therefore, to resolve some of these relevant issues, this study examine the Gross domestic product, Foreign Direct Investment, Balance of Payment and Speculation, as determinants of exchange rate fluctuations in Nigeria.

1.3 Research Questions

From the above established statement of problem, the study provides an answer to the following research questions:

i. To what extent does gross domestic product affect exchange rate fluctuation in Nigeria?
ii. What is the effect of foreign direct investment on exchange rate fluctuation in Nigeria?
iii. To what extent does balance of payment affects exchange rate fluctuation in Nigeria?
iv. What is the effect of speculation on exchange rate fluctuation in Nigeria?

1.4 Research Objectives

The general objective of this study is to investigate the determinants of exchange rate fluctuations in Nigeria. However, the following specific objectives are to:

i. Determine the extent to which gross domestic product affect exchange rate fluctuation in Nigeria.
ii. Examine the effect of foreign direct investment on exchange rate fluctuation in Nigeria.
iii. Ascertain the effect of balance of payment on exchange rate fluctuation in Nigeria.

iv. Investigate the effect of speculation on exchange rate fluctuation in Nigeria.

1.5 Research Hypotheses

In order to answer the questions raised above and to achieve the research objectives, the following null hypotheses tested:

H_{O1}: There is no significant relationship between gross domestic product and exchange rate fluctuation in Nigeria.

H_{O2}: Foreign direct investment has no significant effect on exchange rate fluctuation in Nigeria.

H_{O3}: Balance of payment has no significant effect on exchange rate fluctuation in Nigeria

H_{O4}: Speculation has no significant effect on exchange rate fluctuation in Nigeria.

1.6 Justification for the Study

The study contributes to the growing literature on determinants of exchange rate fluctuations from Nigeria point of view. Conceptually, the study investigates the determinants of exchange rate fluctuations with four macroeconomic variables which are Gross Domestic Product, Foreign Direct Investment, Balance of payment, and Speculation. However, this study uniquely contribute to conceptual knowledge by provides the inclusion of speculation as determinants of exchange rate fluctuations, given that the use of speculation in exchange rate fluctuations activities greatly contributes to currency movement as they are considered as important tools for economy stability.

Different studies such as Stancik, (2007), Ajao (2015), Ayhan (2016), Zakari (2017), Kilicarslan (2018), Ufoeze, Okuma, Nwakoby & Alajekwu (2018), Benjamin et al., (2019), Yusuf & Jelilov (2019), Chiappini & Lahet (2020), Anis & AlaaEldin (2020), among others examined the effect of exchange rate fluctuations on Nigerian economy.

However, majority of these studies have not employed speculation, gross domestic product, foreign direct investment and balance of payment as a measure for determinants of exchange rate fluctuations and how its affect exchange rate fluctuation in Nigeria. Meanwhile, the fear of financial and economic collapse led to panic buying, hoarding of foreign currency by individuals and businesses mostly for speculative reasons during economic recession in Nigeria. Thus, to the best of literature found, scanty study had employed speculation as a factor determining exchange rate fluctuation especially in Nigeria.

Furthermore, the result of this research will add insight and knowledge for the development of science in the field of international finance especially related to exchange rate volatility. More so, the significance of this study is also based on fact that it will provide opportunity to empirically test and validate prior finding in developing economies like Nigeria.

Practically, the study would increase the awareness of the monetary authority on the economy on the degree of exchange rate fluctuations exercised by policy maker and exchange rate stability may be lost due to this exchange rate volatility. It will also create more benefit to monetary authority as their attentions were directed strategies to enhance the policies in Nigeria. More so, it provides an insight and useful guideline to be used as policy by the monetary authorities.

Additionally, the study is useful to Nigeria government agencies and the monetary authority at the apex level to identify the germane determinants that require attention in exchange rate policy formulation since exchange rate fluctuations could possibly leads to instability, unemployment that is contribute to a country`s growth and development. Also, this study could help monetary authorities to take into account the determinant factors of exchange rate when make a monetary policy for Nigeria, due to their significant contribution to the growth and development and boost economy at large.

There is no universal consensus on measure fluctuation as different authors prefer different proxies (Chit, Rizov & Willenbockel 2010).

1.7 Scope of the Study

The study examines the determinants of exchange rate fluctuation, strands of literature has considered many determinants especially volatility determinants but this study tends to use; percentage of GDP, foreign direct investment percentage of GDP, balance of payment, speculation. This study covers from 1989 to 2020. 1989 was chosen to cover post- deregulation of Structural Adjusted Program (SAP) and 2020 was selected due to unavailability of statistical bulletin for year 2021 on Central bank of Nigeria, World Bank development indicator (WBDI), Nigeria Exchange Group (NEG) and appropriate model Autoregressive Distributed Lag (ARDL) was chosen to address this limitation. The naira/ dollar exchange rate was used because dollar account for about 80% of Nigeria's foreign transactions, thus, the study is limited using naira/ dollar exchange rate without including naira/pound sterling and naira/euro exchange rates.

CHAPTER TWO

LITERATURE REVIEW

This chapter provides summary of the previous literature on exchange rate fluctuations and its determinants. This covers the conceptual issues, theoretical review, empirical review as well as the summary and gap identified in the reviewed literatures.

2.1 Conceptual Review

The conceptual review serves to provide an in-depth understanding of the concepts under study which are; Exchange rate; exchange rate fluctuation; Gross domestic product; Foreign Direct Investment; balance of payment and speculation.

2.1.1 Exchange rate

Many studies have allowed the researcher to detect the different definitions of exchange rate. Firstly, exchange rate is the rate at which a currency is exchanged for another currency. It is referred to as the ratio at which a unit of currency of one country is expressed in terms of another currency. The rate is normally determined in the foreign exchange market. The foreign exchange market is a market where currencies of different countries are bought and sold. It is a market where the values of local and foreign currencies are determined (Egolum, Iliemena, & Goodluck 2020). An exchange rate is simply defined as the price of a nation's currency in terms of another currency and determined by the market forces of supply and demand (Çehreli, Dursun & Barlas 2017).

Dawlat, Hussain and Ayoubi (2021) exchange rate is said to be a conversion scale is known as the rate at which a nation`s money is converted to the money of another nation`s currency. It is the base number of unit of a nation cash required to get one unit of nation money.

Aladelusi, (2020) exchange rate is the cost of one currency to another. It is the proportion of foreign currency that may be bought for one unit of the domestic money or the cost in domestic cash of getting one unit of the foreign cash.

The exchange rate is the unit price of a currency against other countries' currencies used in economic transactions Muhammed & Eddy (2021). Exchange rate refers to the price at which one country exchanges its currency for other currencies. The increase or decrease of real exchange rate indicates strength and weakness of currency in relation to foreign currency and it is a standard for illustrating the competitiveness of domestic industries in the world market (Razazadehkarsalari, Haghir & Behrooznia 2011).

In addition, Mordi, (2006) as cited in Suleiman and Michael, (2018), David and Adekunle (2020) exchange rate has been defined as the price of one currency in terms of another currency. Iyoboyi and Muftau (2014) also opined that price of one country's currency in relation to another country currency. This means that exchange rate deals with price strength of one currency against another currency. Exchange rate can either appreciate or depreciate. It is appreciated if less unit of local currency is exchanged for a unit of foreign currency and depreciated if more unit of domestic currency is exchanged for a unit of foreign currency. Ikechi and Nwadiubu (2020) an exchange rate between two currencies is the rate at which a currency will be exchanged. It is also regarded as the value of one country's currency in terms of another currency.

Govil (2014) as cited in Hassan and Meyer (2020) defined exchange rate as a price of a single country's currency, defined concerning another country's currency. This definition of the exchange rate is also called the nominal exchange rate where a particular unit of the local currency has the ability to purchase a unit of currency from a foreign country. The real exchange rate is defined as the deflated price of the local export good by the price level in the domestic economy (Frankel, 2003; Macdonald, 1997) defines the real exchange rate as the ratio between domestic and a foreign price level, where the price level in a foreign country are converted, using nominal exchange rate units**.**

Azeez, Kolapo and Ajayi, (2012) as cited in Lawrence and Mohammed, (2015) noted that When there is deviation of this rate over a period of time from the benchmark or equilibrium, exchange rate is called exchange rate volatility. It also indicates that misalignment of exchange rate as occurred where there is multiplicity of markets parallel with the official market.

Aliyu (2011) noted that appreciation of exchange rate results in increased imports and reduced export while depreciation would expand export and discourage import. Also, depreciation of exchange rate tends to cause a shift from foreign goods to domestic goods. Hence, it leads to diversion of income from importing countries to countries exporting through a shift in terms of trade, and this tends to have impact on the exporting and importing countries' economic balance of payment.

Exchange rate plays a key role in international economic transactions because no nation can remain in autarky due to varying factor endowment (Oladipupo & Ogheneov, 2011). Movements in the exchange rate have ripple effects on other economic variables such as interest rate, inflation rate, unemployment, money supply; economic growth, balance of payment etc. These facts underscore the importance of exchange rate to the economic well-being of every country

that opens to international trade in goods and services. Therefore, nations in the pursuit of the macroeconomic goals of healthy internal and external stability of her economy, finds it imperative to articulate an exchange rate policy.

2.1.2 Exchange rate fluctuation

Exchange rate fluctuation refers to persistent fluctuations of exchange rate, which often results in persistent depreciation of the home currency. Therefore, exchange rate volatility exposes economic agent to a greater exchange rate risk. However, exchange rate fluctuations can be anticipated or unanticipated. The unanticipated fluctuation has more significant effect as it determines aggregate demand through exports, imports, and the demand for domestic currency, and determines aggregate supply through the cost of imported intermediate goods, (Ufoeze et al., 2018). Shehu and Youtang (2012) states that is an unanticipated exchange rate fluctuation boosts demand of exports and reduces imports level as it raises the price of importable goods and services. The exchange rate between the two countries' currencies is always associated with cross border capital and fund movements, thereby with cross border flows of goods and services. Changes in the exchange rate, depreciation or appreciation of the currency, have a significant effect on trade flows and profound implications for the overall economic growth. Domestic currency depreciation leads to an improvement in exports by the domestic country, and helps achieve positive trade balance.

In addition, Ikechi and Nwadiubu, (2020) exchange rate volatility explains a fluctuation in the economy's exchange rate, exchange rate volatility is the tendency for foreign currencies to appreciate or depreciate, thus affecting the profitability of foreign exchange trades. Volatility is the measurement of the amount that these rate change and the frequency of such changes. There are many instances of exchange rate volatility, including business dealings between parties in two different countries and international investments. Volatility in such circumstances is difficult

to avoid. Exchange rate volatility explains a fluctuation in the economy's exchange rate. In Nigeria, there has been a persistent fluctuation in the exchange rate. The major factors contributing to the exchange rate fluctuation include interest rate, inflation, the balance of payment, government intervention etc. Watkins (2014) pointed out that exchange rate fluctuations influence a country's prices through import prices of consumption and intermediate goods. Currency fluctuations enter directly into the import price, producer price and Consumer Price Index (CPI). Exchange rate fluctuations affect domestic prices through three channels; first is through prices of imported consumption goods, exchange rate fluctuation affects domestic prices directly, second is through prices of imported intermediate goods, exchange rate fluctuation affects production cost of domestically produced goods and third is through prices of domestic goods priced in foreign currency (Gatobu, 2013). The exchange rate volatility can arise from three different factors: Variations in basic issues (e.g., buying power of consumers), variations in the basic characteristics of foreign exchange market (e.g., noise traders, portfolio changes, excess rumors, and cause effects), and the noisy signal of expected fluctuations in future policy (e.g., interest rate, money supply, inflation rate and output growth) (Anyanwaokoro & Kalu 2020). Exchange rate fluctuations have an essential impact on international trade, the balance of payments, and overall macroeconomic performance (Abbas, Rashid, Niazi & Asghar 2020).

2.1.3 Determinants of Exchange rate Fluctuations

Rahman (2016) emphases that determinants of exchange rate can be divided into five areas viz; infrastructure, parity conditions, speculation, political risks, and cross and portfolio investment. More importantly, previous studies had used several factors as determinants of exchange rate fluctuations. For instance, (Hassan, Abubakar & Dantama 2017; Kilicarslan. 2018; Asiama and kumah, 2010; Insah and Chiaraah 2013) used Real exchange rate volatility (Net foreign asset,

fiscal balance, term of trade, oil price, gross fixed capital formation, nominal gross domestic product, interest, current account, monetary policy, external debt, domestic debt, foreign aids, money supply, foreign reserve, government expenditure, inflation, public consumption). Similarly, Mussa, (2020) used volatility which includes balance of payment, foreign direct investment. Also, (Chowdhury & Hossain 2014; Adusei & Gyapong 2017) also considered GDP growth rate as a determinant that affect exchange rate fluctuations.

For the purpose of this purpose of this study, four germane factors are identified as the determinants of exchange rate fluctuations. These include; gross domestic product, foreign direct investment, balance of payment and speculation.

2.1.3.1. Gross Domestic Product (GDP)

Mussa, (2020) Rate of economic growth has direct impact on variability of domestic currency value through the crucial key determinants of the economic activity such as trade flows of the country, investment sectors and employment opportunities. In summary, when a country has high exchange rate volatility to its currency direct effect by slowing down the development of economic growth of that country and also when the economic growth of a certain country is low direct effect exchange rates by appreciating the domestic currency of that country. Therefore the country must formulates appropriate policies and strategies to make strong economy and at the same to make stable its domestic currency. GDP growth is the variation, expressed in percentage terms, between two years (Ndu-Okereke, 2017).

Cited in Muhammed and Eddih, (2021), Economic growth is defined as the change in economic activities in the economy that cause the goods and services produced increases (Sukirno, 2013). Conventionally, the economic growth of one country can be measured by the percentage increase in gross domestic product (GDP). It is also applied for regional economic growth by using the

percentage increase in Gross Regional Domestic Product (GDRP). By measuring economic growth, it is also can be used in evaluating the effectiveness of the economic policies. Gross Domestic Product (GDP) is the total value of goods and services produced in a country over a specified period. It equals the total income of everyone in the economy, and the total expenditure on the economy‘s output of goods and services (Mankiw, 1994). It is also applied for regional economic growth by using the percentage increase in Gross Regional Domestic Product (GDRP). By measuring economic growth, it is also can be used in evaluating the effectiveness of the economic policies.

2.1.3.2 Foreign Direct Investment (FDI)

The UNCTAD (2017) defines FDI as the process comprising the acquisition of a foreign enterprise beyond economic boarders of the native country and in the interest of gaining majority vote in the enterprise or total ownership. Acquisitions of such enterprises are recorded as FDI inflows as capital flows in the foreign country. Capital flows from an FDI are recorded from cross-border transactions at a particular point in time either quarterly or yearly; the transaction include earnings from reinvestment; equity transactions and transactions relating to debt transactions. Outflows of FDI are calculated by subtracting transactions that may decrease investment in the foreign economy, such as borrowing and sales equities from equity purchases, representing an increase in the foreign economy’s enterprise. FDI comprises transactions relating to foreign investors in a resident enterprise, where increases in investment are subtracted by any expenses to the investment (OECD, 2018).

OECD (2019) foreign direct investment is a category of investment that reflects the objective of establishing a lasting interest by a resident enterprise in one economy (direct investor) in an

enterprise (direct investment enterprise) that is resident in an economy other than that of the direct investor.

FDI is an investment of a company in one country (foreign company) to another country's company (host company/country) (OECD, 2008). Cardillo, Patterson, Montanjees & Motala (2004) define FDI as any objective of one economy, pursuing and acquiring interest in a foreign economy with intentions to establish lasting interests; influence over managing the established enterprise constituted a 10 percent or more shares. Pilinkiene (2008) affirms that FDI relates to a long-term injection of capital to a foreign company in a form of ownership by an investor.

FDI is concept associated with developing a country through investing capital flows. Effects were generally positive; researchers, such as Kathuria 2000; Aitken, Ann & Harrison 1999 & Zilinsk 2010) established that when FDI flows increase, domestic productivity declines. As foreign firms usually invest in technologies, a series of increased unemployment can also be realized, attributable to a lack of skills. Artige and Nicolini, (2009) FDI can be classified as horizontal and vertical. Horizontal suggest that the foreign investing company is investing in the same company and its operations are similar to the domestic company they own in their native country; whilst vertical FDI is when investing to construct a distribution business in the foreign country to distribute services and products to the native company. The definition of FDI from foreign investors' perspective relates to the capital investment of any form, resulting in control of ownership. Domestic firms describe FDI as an instrument, improving the local economy through employment growth, poverty reduction, production stimulus and infrastructure development (Petrovic & Stankovic, 2009).

In defining this concept of foreign direct investment, it is important to mention that FDI forms part of the types of cross-border investments, including PI and other investments; FDI is when an

investor seeks to invest capital or erect a business in a country other than their own (Bayar & Gavriletea & Bayar 2018; Protsenko, 2003). Foreign direct investors seek a permanent interest in another country's company; this permanent interest is an obligation to link the investing firm and local firm, where long-term interests and the investors' plans for level of control in the newly established firm are harboured. The management plan and influence of the foreign investors are critical to the investment as they indirectly determine the capital to be invested, including business structures (Petrovic & Stankovic, 2009).

Razin (2002) and Ahmad *et al.* (2004) elude that FDI contributes positively to growth in output and domestic investments, compared to flows from portfolios and global loans. Informational value is a determinant of FDI; some host countries tends to gain immensely from the determinant as direct investors utilize the information to select the best sectors with prospects of good economic growth. Another positive attribute of information value includes positive spill-over effects for host economies and good economies of scale, as sectors enjoy capital flows and hands-on management.

Magoane, (2020) explain that during conceptualization of FDI, globalization should be considered. It provides support of FDI inflows/outflows across nations. Globalization reduces trade barriers in countries as it provides for open economies, industrialization and cross-border trade, resulting in FDI flows between regions. The concept of globalization is also called 'a global village' where no country can survive in isolation. The absence of space and distance allows for global interactions, either physically or digitally. FDI would be irrelevant if countries were predominately unnavigable (Daouas, 2001; Loots, 2001). Closed economies exhibit characteristics, such as regulatory restrictions, sanctions, tariffs on imported goods (to discourage foreign investment or trade). Examples of such countries are Brazil and Norway as they import

the least globally (World Bank, 2018; Jordaan, 2005). Foreign Direct Investment; this is an investment in the form of controlling ownership in a business entity in one country by an entity based in another country (World Bank (2019).

Cited by Kurnia, Taufiq, Adnan and Muizzuddin (2020) foreign debt is assistance provided by a country from abroad with the obligation to pay it back and the loan interest within a period agreed by both parties. Usually, foreign debt and loan transactions occur when a country's income is limited and is not balanced with the need or expenditure for development costs. Therefore, revenue in a country cannot meet the desired expenditure. It has an essential role in adding to and resolving domestic shortages to accelerate the growth of savings and foreign exchange (Todaro & Smith, 2011).

2.1.3.3 Balance of Payment

Abdullahi, Fakunmoju, Abubarkar and Giwa (2017) balance of payment refers as a summary review record and statement of an economy transaction with the global economies within a time period. The balance of payments account is divided into two main parts: the Current Account and the Capital Account. The Current Account measures the money flow, which is derived from the money gained and spent from the trade in goods and services and it is subdivided into three sections: balance of trade in goods, balance of trade in services and net income flows.

Iyoboyi and Muftau (2014) opined that Balance of payment (BOP) is a needed statement in a country because it will give an account of import of a country and this will act as signal for some domestic policies. On the export side, balance of payment (BOP) tells us our export composition and the extent to which a country depends on certain commodities for our foreign exchange earnings. Oladipupo and Ogheneov (2011) stated that if fiscal discipline is imposed, the depreciation in exchange rate will improve the Nigerian BOP position and also inappropriate distribution and misapplication of domestic credit, fiscal corruptions and misappropriation

expenditure control policies in government contribute to the continuous persistent of unfavourable balance of payment in Nigeria.

A country's balance of payments is an outline of its monetary exchanges with the remainder of the world. It is an orderly record of all payments to and receipts from foreign nations during a particular timeframe, typically a year. It is a stream and not a stock idea since it is characterized for a predetermined period required in a country since it will give a record of import of a country and this will go about as sign for some domestic arrangements (Adebayo, 1999).

According to Otaki (2005), balance of payments is an efficient record of every single financial exchange, noticeable just as undetectable in a period between one country and the remainder of the world. It shows the connection between one country's total payments to every single other country and its total receipts from them. BOP, in this way is an announcement of payments and receipts and universal transactions. Afolabi (1999) payments and receipts on worldwide record are of three sorts; (a) The noticeable balance of exchange (b) The imperceptible things and (c) Capital transfers. In addition, it gives premise to examination of exchange relations among nations in order to know whether a country is causing shortfall or overflow. Besides, it gives recorded information on import and export additional time and this could be utilized for arranging purposes. It likewise gives measurements to the net foreign speculation segment of the national income. Aladelusi, (2020) balance of payments is a factual record of all the progression of payments between inhabitants of one country and the remainder of the world in a given year. Muhammed and Eddy (2021) balance of payment can be defined as the systematic account that record the transaction undertake by the citizens include the organization and private sectors with foreign citizens in the period of one year. Balance of payment is useful because it shows the structure and composition of economic transaction and also international finance of one country.

On the other hand, balance of payment is also the important indicator about the situation of the economy of one country.

According to Babatunde and Adekunle (2017) balance of payments (BOP) are comprises of three distinct accounts: i. The Current Account (CA): The present record is a factual record of the exchange merchandise and ventures between a country and the remainder of the world. The present record comprises of the merchandise balance, the administration balance, the salary balance, and the one-sided transfer balance. a) Goods Balance: It is a record of trade in goods.

b) Service Balance: It is a record of all trade in services. c) Income Balance: It is a record of all investment income, the flow of earnings from the different forms of direct and portfolio investments made in prior periods ii. The Capital Account (KA): The capital record is a factual record of speculation streams between a country and the remainder of the world. The capital record records transactions that outcome from nonfinancial and financial resources (both portfolio and direct investment). Errors and Omissions (E&O): Errors and omissions reflect transactions that are known to have occurred but for which no specific measure was made.

i. Official International Reserves (DRFX): The net aftereffects of the exercises in the present record and the capital record must be financed by changes in official money related reserves. These records reflect changes available for later resources (gold, foreign monetary forms, stores, and protections), utilization of credit and advances from the IMF (SDRs), liabilities establishing foreign specialists' reserves (changes in private bank liabilities that are held as foreign exchange reserves by central banks of different nations, and remarkable financing.

The Balance of Payments (BOP): CA + KA + E&O - DRFX = BOP

If the balance of payment is in equilibrium, then BOP = 0

2.1.3.4 Speculation

According to Holbrook (1960) the commercial meaning of "speculation" was derived from earliest use of verb speculate in the sense of observe (the meaning of its Latin root, speculari), hence to try to see, or try to understand. Speculation refers to as economically necessary risk-taking. (Gare, 2020) speculation is the reflective observation'. According to the Oxford English Dictionary, the original English word meant 'To look or gaze at (something); to examine, inspect, or observe closely or narrowly' or 'To observe or view mentally; to consider , examine, or reflect upon with close attention; to contemplate; to theorize upon.'

As cited in Thontteh and Babarinde, (2018) and Chang, Newman, Walters, and Wills, (2016), speculative investors are those whose aim is to sell to other investors at a higher price as quickly as possible. Speculators, according to Andreasson, Bekiros, Nguyen, and Uddin (2015), are likened to high-risk traders almost akin to gamblers, whereas lower risk investments based on fundamentals and analysis fall into the category of desirable investments. Speculation is not caused by a shift in demand due to change in taste and fashion, a shift in consumption demand, a change in supply or a shift in certain fundamentals (Knittel and Pindyck, 2013).

Chang et al. (2016), speculative investor will first of all take stock of past failures and achievements and then take steps to avoid risks in future investment decisions. In doing so, risk-aversion is achieved through a risk-return trade-off to break-even or maximize profit. Participants involved in speculative practices have been grouped into three levels by (Triantafyllopoulos 2010). First, there are those who are "informed speculators" in the sense that they have access to both public and private information. They are otherwise known as public officials. Second, there are those who are "un-informed speculators" – these are individuals who

only possess public information and are otherwise known as either “investors” Third, there are “private purchasers” who are individuals that are not information-driven.

Alexandra and Matz (2021) speculators are a category of traders that do have a good reasoning behind their trading activities. They buy and sell currencies in the hope to make more profit. In general, the number of speculators in the FX market is not big compared to other categories but is usually increasing when the market sentiment is high. As a rule, speculators do not keep open positions in any currency for a long time – speculators take short position, a technique used when an investor anticipates that the price will decline in the short-term, to make a short-term profit.

2.2 Theoretical Review

The theoretical perspective provides a mirror to understand better, issues under investigation in this research. The review of various related theories provides a guide in the identification and analysis of various relevant theories, so as to give better clarification of perspective of the study which includes monetary, purchase power parity, economic growth & macroeconomic theories

2.2.1 Monetary Theory

The monetary approach to exchange rate emerged first in the 1950s as a model of balance of payments and later refocused on exchange rates. It was originally propounded by Polak in 1957 and later redefined by Mundell (1968, 1971), Johnson (1972, 1975, 1976, & 1977) and Johnson and Frenkel in 1976. The monetary model of exchange rate attempts to explain exchange rate fluctuations in terms of changes in supply and demand for money between countries (Nyong, 2015). Exchange rate movements between two currencies can be attributed to changes in the demand and supply of money in the two countries. The shortfalls of the portfolio balance theory led to the development of the monetary approach. Frankel (1979) posits that this model of exchange rate determination attains equilibrium when existing stocks of money in the two

countries are willingly held. Monetary approach attributes variation in exchange rate essentially to income and expected rates of return as well as to other factors that influence the supplies of and demands for the various national monies. Yusuf and Jelilov (2019) Monetary model with flexible prices developed by Jacob A. Frenkel, and M. Mus, (1976), "the value of the exchange rate as the relative price of the two monetary units is determined by relative indicators of money supply". "The increase in the money supply within the national economy, as compared with the money supply of another country, causes the devaluation of the national currency" (Pavlov et al., 2020).

This theory postulates that exchange rates are determined in the process of equilibrating or balancing the stock or total demand and supply of money in each nation. According to the monetary approach, the nominal demand for money is stable in the long run and positively related to the level of nominal national income but inversely related to interest rate. The nation's money supply is equal to its monetary base times the multiplier. The nation's monetary base is equal to the domestic credit created by its monetary authorities plus its international reserve (Anyanwaokoro & Kalu 2020).

Magoane (2020) said that the monetary approach focuses on the adjustment of stock imbalances of flows, whilst it also reiterates that changes in the domestic money supply eventually result in changes in the exchange rate through price and interest rate dynamics (Scobie, 1983). Boughton (1988) define the monetary approach as comprising stock or asset, where variations in relative prices of goods fulfill a minimal function. He explains the approach, emphasizing other exchange rate approaches, such as the flow approach, asserting shocks, resulting from fiscal and monetary policies, hampering trade flows through terms of trade and relations between output and local absorption. The monetary approach also recognizes the global movement of funds,

besides its relation to factors, comprising the balance of payments, such as financial capital (Bitzenis and Marangos, 2007). This theory contributes to the independent variables foreign direct investment, balance of payment and speculation since it explains how funds move from one country to another, balancing the stock, or total demand & supply of money in each nation adjustment of stock of imbalances of flows and assumes highly the integration of goods and capital market. Several scholars such as (Timothy & Abomaye-Nimenibo 2019; Nwanosike et al., 2017; Gregorius & Moschella 2018 and Mussa, 2020) among others on foreign direct, balance of payment and speculation have built their studies upon monetary theory.

2.2.2 Purchasing Power Parity (PPP) Theory

Purchasing Power Parity (PPP) Theory proposed and developed by Cassel 1918, Frenkel, 1978; Genberg, 1978; and Thurow, 1997, posits that a bundle of goods in one country should relatively cost the same in other countries after exchange rates are considered. In other words, the theory asks how much money would be needed to purchase the same goods and services in two countries, and uses that, to calculate an implicit foreign exchange rate. Yusuf and Jelilov (2019) noted that exchange rates between two countries will be equal to the national price level of these, this theory is also known as the law of one price and states in its absolute form that exchange rate between the currencies of any pair of countries should equal the ratio of the general price levels in the two countries, and it implies that exchange rates adjust to compensate for pricing differentials amongst countries. This means that if cakes are sold for one dollar in the US and the same cake is sold for 100 naira in Nigeria then the exchange rate should be 100 naira to one dollar.

The theory of purchasing power parity (PPP) is the first of the theories, its thorough analysis was carried out by Gustav Kassel, pointing out that “the willingness to pay a specified price for

foreign money depends on the fact that the money in a foreign country has a purchasing value in relation to the goods and services" (Kassel 1995). Such theory "assumes a causal link between the path of the price of a unit of one currency in terms of another and the relative dynamics of price levels in the respective two countries within a lengthy period of time" (Twarowska and Kąkol 2014). "The theory is aimed at searching for an "equilibrium course" that will maintain an equilibrium of payments balance. This is determined by its connection with the concept of automatic self-regulation of the balance of payments. Acknowledging the real exchange rate base, this theory emphasizes the role of market factors of alignment of exchange rates and thereby the balance of payments" (Markusenko 2015).

Karl Gustav Cassel, Sweden (1866 – 1945), explains that changes in exchange rate due to large change in the prices of goods and services in different countries. It suggests that currencies fluctuate because rates of inflation change. The higher the rate of a Country's inflation, the less valuable would be its currency in the International Market. Reason being that Inflation erodes the purchasing power. The theory of purchasing power parity (PPP) illustrates the relation between prices and exchange rate. As a principle of exchange rate determination; the easiest and powerful form of PPP (i.e. absolute PPP) is based on an international multi-good edition of the law of one price. Absolute PPP envisage that the exchange rate should adjust to equate the prices of national baskets of goods and services between two countries because of market forces driven by arbitrage. Purchasing Power Parity is price levels between two countries should be equivalent to one another after adjustment of exchange rate. The main base of this theory is the rule of one price, where the cost of identical goods should be the same around the world. If the difference in price is very large between two countries for the same product after exchange rate adjustment, an

arbitrage opportunity is created, because the product can be obtained from the country that sells it for the lowest price. (Anyanwaokoro et al., 2020)

As cited in Mensah, (2020), the theory states that if international arbitrage is possible, then one dollar will command the same purchasing power everywhere (Mankiv, 2010). According to Utazi (2017) this theory stated that in the absence of trade barriers and transport cost, similar goods in different Countries will command the same price. For instance, if cocoa is sold at a lower price in Country A than in Country B, then there will be higher demands for cocoa in Country A by residents of Country B. Arbitrageurs will then buy cocoa from Country A and sell it to Country B. This will drive the price of cocoa in Country A up and that of Country B down (due to excess supply). This will continue until an equilibrium price is reached. Based on the law of one price, changes in the nominal exchange rate are caused by changing prices only.

Magoane (2020) stated that the theory of the purchasing power parity (PPP) compares currencies of various countries, assuming that the two currencies will reach an equilibrium when goods and services of those countries are priced the same (Mohr & Mollentze 2016; Ignatiuk, 2009). The origin of the PPP stems from the law of one price (LOP), eluding that when a particular currency was converted to a common currency, the same good should be sold for the same price in varying regions.

They are two types of PPP namely the absolute PPP and the relative PPP; with the absolute PPP the equilibrium exchange rate is concerned with the base period and is a ratio, indicating two countries' price levels; the relative PPP theory is based on an equilibrium ratio concerning the period (Mohr et al., 2016) The purchasing power parity is distinguished in the terms, bilateral and multilateral; for example, an absolute PPP can be the famous Big Mac Index, asserting the notion that exchange rates globally should automatically adjust to the same level if the same

basket of tradable goods is compared across a range of countries (The Economist, 2017; Mohr *et al.,* 2016). The absolute PPP considers only account transactions; in the short-run the theory is disadvantaged, attributable to its unaccountability for financial flows and costs, such as tariffs (Van Der Merwe and Mollentze, 2012).

According to Egolum, lliemena and Goodluck (2020) Purchasing Power Parity theory posits that the value of homogenous goods is similar in different countries based on the currency of each country.

As used, when purchasing power is similar in different countries then the exchange rates between the country's currencies will be at equilibrium. This is similar to the earlier postulation of Reid and Joshua (2004) that ratio of commodities price levels should be equal the country's currency. By PPP, the prices of same commodity is different in different countries, it could be high in country A and low in B, and vice versa. This can be said to have direct implication on cost of sales. This theory contributes to the independent variables in the study since it explains how equilibrium of balance of payment and favourable appreciation of the exchange rate of currencies will increase the level of economic growth since the ensuing high demand for goods and services will lead to an increase in productivity which will increase the gross domestic product. Related studies like (Ettah 2016 & Rajakaruna 2017) among others employed purchase power parity theory as the basis theory for their studies on the link between balance of payment and gross domestic product. This theory only however not effective for this study as it is inadequate in detailing comprehensively the true position of exchange rate fluctuations in Nigeria

2.2.3 Theories of Economic Growth

The neoclassical growth theory pioneered by Solow (1956), argued that steady economic growth could be attained through progressive efforts in exogenous technical innovation. However, the endogenous growth theory popularised by Romer (1986) and Lucas (1988) argued that any country can achieve economic growth even without any exogenous technical progress but through deliberate efforts in endogenous activities such as external capital accumulation, foreign aid, human capital development or through existing product design among others. The endogenous growth theory hinges its arguments on sound economic policies that support and promote macroeconomic stability, increased investment and productivity. Moreover, the growth models posit that low inflation rates, low interest rates and trade openness can enhance productivity and economic growth through access to markets, transfer of capital goods, technologies and skills (Eriș & Ulașan, 2013; López-Villavicencio & Mignon, 2011; Benjamin et al., 2019).

Theories of Economic Growth abound. They include; the classical theory, Keynesian theory, Harrod-Domar growth theory, Solow's growth model, Rostow's stages of Growth, Neoclassical theory and endogenous growth theory among others. Considering the level of growth in Nigeria presently, considers the Rostow's stages of growth model most relevant. Rostow's model lays emphasis on the efficiency of modern concepts of free trade which is known to be the avenue through which exchange rate of a nation influences the level of growth of an economy (Inam, 2020). The effective economy is depends on growth and development of any countries. Therefore, this theory is particularly tailored toward creating value and promotes macroeconomic stability.

2.2.4 Macroeconomic theory

The exchange rate determination is known as macroeconomic (real) theory. This phenomenon centers its attention on the function played by the macroeconomic fundamentals (variables) in the determination of exchange rate behavior (Hassan et al., 2017).

This approach is divided into two: The Balassa-Samuelsson doctrine and the balance of payments approach. The Balassa-Samuelson approach was introduced in 1964. The doctrine centers its attention on the balance between tradable and non-tradable sectors. On the other hand, the balance of payments approach was introduced by Nurkse in 1945. According to this theory, exchange rate of a country is determined by its balance of payment. A favorable balance of payment overvalued the exchange rate, while unfavorable balance of payments undervalues exchange rate of a country. Thus, demand for and supply of foreign exchange play an important role in the determination of exchange rate in the foreign exchange market. The debit side of the balance of payments takes care of the demand for foreign exchange. This is due to payments made to the foreign country for goods and services traded from them plus loans and investments made outside the economy. Also, the supply side arises from the credit side of the balance of payments. It comprises payments for goods and services traded from the domestic economy, plus loans and investments made within the economy. The theory further states that, balance of payments account is balance, if debit side and credit side of the account are equal. If credit side of the account exceeds its debits side, it is known as favorable balance of payments. However, if the debit side exceeds credit side of the account, this results in an unfavorable balance of payments (Jhingan, 2008).

Balance of payments approach, many notions of equilibrium exchange rates have been introduced. One of them is the Capital Enhanced Equilibrium Exchange Rates-CHEER. The

central idea behind this notion is the combination of functions of both uncovered interest rate parity and purchasing power parity in obtaining well defined measures of the equilibrium exchange rate. It also focused on the interaction between exchange rate and capital account items. (Hassan, 2017).

As noted by Hassan, (2017 et al.,) Behavioral Equilibrium Exchange Rates (BEERs) is another notion that determines the behavior of exchange rate. The BEERs includes both current and capital account items of the balance of payments as determinants of real exchange rate behavior. This approach capture a set of long-run and medium term relationship between real exchange rate and macroeconomic fundamentals that are delivered from the determinants of saving, investment and current account and a set of transitory factors influencing the real exchange rate in the short-run (Villavicencio & Bara, 2008; Asiama & Kumah, 2010).

The Fundamentals Equilibrium Exchange Rates (FEERs) is another alternative measure to exchange rate behavior. FEERs is an internal – external approach to equilibrium exchange rate. The FEER is defined as the real exchange rate that achieves both internal and external balances at the same time. Internal balance is achieved when the economy is at full employment level of output and operating in a low inflation environment. External balance is achieved when the economy is at optimum balance of payments positions over the medium term, ensuring desired net flows of factors and external debt sustainability (MacDonald, 2000; Al-Samara, 2009). This theory contributes to all independent variables (Gross domestic product, foreign direct investment, balance of payment, speculation) both internal and external factors.

Therefore, this study views that with more stable and economic growth, a country is perceived to have more resources to provide optimum equilibrium. (Hassan, 2017) built his study upon macroeconomic theory.

2.3 Empirical Review

This section reviewed various studies that are conducted on determinants of exchange rate fluctuations in developed countries, developing countries and Nigeria in order to establish the existing coverage and bring out identified gap.

2.3.1 Empirical Studies on Developed Countries

In Russia, Sohag, Gainetdinova and Mariev, (2021) investigated the response of exchange rates to economic policy uncertainty. Dependent variable proxy with Exchange rate, independent proxies: economic policy uncertainty, international oil price, trade volume, use quantile autoregressive (QAR). The local currency appreciates in response to increased Russian economic policy uncertainty under different quantiles of the managed floating exchange rate, but it depreciates under most quantiles in a floating exchange rate period. Our findings confirm that the Russian currency appreciates with the rise in international oil prices and trade as Russia is an oil-exporting country.

In addition, Huchet-Bourdon and Korinek (2011) studied the extent to which exchange rates volatility affect trade flows in China, the Euro area and the United States in agriculture and manufacturing and mining sector. The study found that exchange volatility impacted trade flows slightly while exchange rate levels affected trade in both agriculture and manufacturing and mining sectors.

Also, Lee and Min (2011) conducted a study focusing on the function of exchange rate levels and volatility on multinational enterprises (representing FDI) for Korea and find that changes in foreign direct investment are rather affected by exchange rate volatility than levels and the effect of the exchange rate volatility is significant and persistent for FDI determination.

However, Gohin and Cordier (2017) analyzed the impact of speculation on cereals prices by analyzing the relationship, first, between assets under management of the commodity funds and the agricultural futures prices; second; they searched a sequential relationship between these variables through the commitment of commodity funds on related futures markets.

Similar to work of Ahmed, Mushtaq, Ahmed and Nadeem (2014), Ibarra & Blecker (2014) studied the structural change among real exchange rate and balance of payments in Mexico using both Ordinary Least Sqaure and Two Stage Least Square. The result indicated that a tightening of the balance-of-payments constraint may account for the post liberalization slowdown in Mexico's growth only during certain sub-periods, and that the impact of real exchange rate changes on the trade balance has diminished, most likely as a result of the increasing integration of export industries into global supply chains.

However, Lotfalipour and Bazargan (2014) investigated the impact exchange rate volatility on trade balance of Iran by using the GARCH approach and balance PANEL data model for the sample period from 1993 to 2011. The study found real effective exchange rate has no significant effect on the trade balance.

Jung, Das and McFarlane (2020) investigated the asymmetrical association between currency fluctuations and oil price variability over the period from 1992 to 2019 by employing a nonlinear ARDL modeling approach. Found showed that indicated dynamic causation between oil prices and US-Canadian dollar values.

Furthermore, Nagahisarchoghaei, Nagahi and Soleimani (2018) evaluate the impact of exchange rate movements on Indian firm performance for the time period from 2011-2012 and based on a multivariate regression model. The firm performance indices such as growth performance (internal growth), profitability (EBIT), firm specifics (Capacity Utilization), and stock

performance (P/E) have an obvious relationship to the changes of imports, foreign currency borrowings and total forex spending indexes and found a weak relationship between the real effective exchange rate (REER) and stock price per book value, stock price per sales, total assets value/shares outstanding and degree of operating leverage.

In addition, Muhammad, Ahmad & Dos-Santos, (2020) assessed whether forecast the future values of the exchange rate of the USD. Dollar (USD) and Pakistani Rupee (PR). Used the ARIMA model and for the period of 2014-2019. The result proved that ARIMA is the most suitable model to forecast the exchange rate. The difference between the forecasted values and actual values are less than 1%; therefore, found that the ARIMA is robust and model will be helpful for the government functionaries, monetary policymakers, economists and other stakeholders to identify and forecast the future trend of the exchange rate and make their policies accordingly.

More so, Anis and AlaaEldin (2022) carried out a research in china on the impact of exchange rate volatility on international trade from the period of 2003-2018 and variables used are; (Exports, Imports, Inflation rate, and Exchange rate). Used stationary test, granger-causality test, co-integration and error correlation model and residual test. Result indicated that there is a co-integration relationship among the variables. While the error correlation model showed that both exchange rate and inflation have a significant negative impact on imports. Additionally, there is a significant positive relationship between the exchange rate and exports. Result showed that there is a significant negative relationship between inflation and exports.

Similarly, Chavez, (2020) investigated on the determinants of real exchange rate: a behavioural and fundamental dynamic analysis in Latin American countries within 1980-2018 and used three estimates such as fixed-effects, random-effects, and System GMM. Other variables as monetary

aggregates, economic growth, domestic savings, and productivity, and the result showed that although the real exchange rate has a large random component, due to the high coefficient presented by the past values of that variable, there are other variables such as terms of trade, net foreign assets, tax revenue, monetary aggregates, savings rates and productivity, or real interest rate differentials, relative price and economic growth, which can impact negatively and positively respectively.

In addition, Oliinyk, Ksendzuk, Sergiienko and Lehan (2020). Research of functional changes in foreign exchange rate EUR/UAH under conditions of economic transformation in Ukraine and the investigated correlation between the dependence of the EUR / UAH exchange rate on a set of factors confirmed the tight correlation between the change in money supply and government debt and the rise / fall in the EUR / UAH national currency. Instead, other factors (GDP, budget deficit, export operations, the positive balance of payments, inflation, public debt) have statistically insignificant correlation to the studied indicator and are not included in the regression model. It is suggested to harmonize monetary policy that has the greatest influence on the formation of the exchange rate, as well as to analyze the connection this policy with the foreign trade policy of the country, which will enable to stabilize the exchange rate as well as to ensure the formation of suitable conditions for the economic development of foreign economic entities.

More so, Gnangnon, (2020) assessed the determinants of real exchange rate volatility by investigating the effect of Aid for Trade flows on real exchange rate volatility in recipient-countries. The study showed that over the full sample, Aid for Trade flows influence negatively the volatility of real exchange rate, with a lower reducing effect on least developed countries (LDCs) compared to Non LDCs. The channels through which this effect materializes include

export product concentration, institutional and governance quality, foreign direct investment inflows and terms of trade volatility. The study showed that Aid for Trade flows clearly matter for real exchange rate volatility.

Khairunnisa and Zuhroh (2022) investigated the determinants of the exchange rate in European Emerging Market and Developing Countries (EMDEs), including Albania, Bulgaria, Hungary, Rep. Moldova, Rep. North Macedonia, Romania, Russia and Ukraine from 2000-2019. Data was sourced from the United Nations Conference on Trade and Development, the International Monetary Fund, and the World Bank. A regression method was used for time series data to analyze each country, and panel data was used for eight countries. The results showed that exchange rate fluctuations in EMDE's European countries, GDP growth, and Terms of Trade (ToT) had a significant positive effect on exchange rates. It means that an increase in GDP and ToT growth affects the exchange rate appreciation, and a decrease in GDP and ToT growth affects the exchange rate depreciation in EMDE's European countries.

2.3.2 Empirical Studies on developing countries

In Kenya, Mutana, Winrose and Saina (2018) investigated the macroeconomic determinants of Kenya's trade balance for the period of 1963-2016, using Vector Error Correction mechanism. The study found that Foreign Direct Investment, gross domestic product, trade liberalization and terms of trade have positive relationship while exchange rate have a negative and significant relationship with trade balance.

Chiappini and Lahet (2020) assessed the determinants of emerging markets' exchange rate movements in the whole period of 2000-2015, implement a dynamic latent factor model to investigate the drivers of 24 emerging countries' exchange rate movements and decompose the patterns into three components: a global common factor, a regional factor and a country-specific

factor. Using a Vector Autoregressive (VAR) model and an Autoregressive Distributed Lag (ARDL) model, finding revealed that the bilateral exchange rate of China, both the onshore and the offshore rates, and the macroeconomic climate in China greatly influence the regional factor in Asia in the long-run. These results give some evidence of a Renminbi zone in the long-run and are robust to the inclusion of two other major currencies in Asia, the Japanese Yen and the Korean Won, notably in the long run.

Also, Mahmood, Ehsanullah, and Habib (2011) assessed the role of exchange rate in affecting the macroeconomic performance of any country is of leading nature. Hence, the study was conducted to investigate whether uncertainty or fluctuations in exchange rate affect the macroeconomic variables in Pakistan for the period of 1975-2005 and GARCH model used. The objective of a study was to what direction of this effect will be? Although, there are large numbers of macroeconomic variables, but out of these only four variables: GDP, FDI, growth rate and trade openness were included in this study. Finding of this study confirmed the impact of exchange rate volatility on macro economic variables in Pakistan. It was also concluded that exchange rate volatility positively affects GDP, Growth rate and trade openness and negatively affects the FDI.

In the same view with the finding of Asiama and Kumah (2010); Ajao and Igbekoyi, (2013) examine the researched on the influences upon which productivity, fiscal balance, current account balance, terms of trade, openness, oil prices, public consumptions, foreign direct investment and, foreign aids affects exchange rate variability in African countries within 1980-2008. The objective of a study was to investigate whether there is evidence of consistency between the theoretical and empirical framework. The authors utilized a panel co-integration approach. The study revealed that both theoretical and empirical frameworks were very

consistent, and the real exchange rate was strongly influenced by openness, terms of trade, and oil prices.

Furthermore, Insah and Chiaraah (2013) examined the factors affecting real exchange rate volatility in Ghana for the period of 1980-2012. The variables used; government expenditure, money supply, domestic debt, and external debt. Employed the ARDL model and the result revealed that there exists a positive relationship between government expenditure and exchange rate volatility, while money supply, domestic and external debts were negatively related to exchange rate volatility. The authors recommended that government expenditure should cut down its expenditure to control the persistence trends in the exchange rate.

More so, Sharma and Pal (2018) the study underscores the effect of exchange rate volatility on India's cross border trade with the United States, Germany, Japan and China. Auto regression conditional heteroscedastic based model adopted to estimate the volatility of the nominal exchange rate and used pooled mean group estimators. Result showed in the long run, nominal exchange rate volatility has a significant dampening impact on India's export rates to United States, Germany and China. Nevertheless, in the short run, the effect of the nominal exchange rate is mixed.

Also, Razzaque, Bidisha and Khondker (2017) assessed the impact of exchange rate movement on economic growth in Bangladesh from 1980-2012, the empirical findings revealed that real exchange rate does cause economic growth. The result further revealed that real exchange rate is negatively related to economic growth while government expenditure, credit to the private sector and term of trade are positively related to economic growth.

Similar to the work of Razzaque, Bidisha and Khondker (2017) aforementioned Sanginabadi and Heidari (2012) examined the influence of exchange rate volatility on Iranian economic growth

during the flexible exchange rate regime using the ARDL regression technique. The result showed that exchange rate volatility is negatively related to economic growth while government consumption, real exchange rate and money supply are positively related to economic growth.

In addition, Priyatharsiny (2017) investigated the impact of exchange rate on balance of payment sri lanca by using Johansen cointegration technique and data covering the period of 1978-2016. The result found that exchange rate has a positive and significant long-run relationship with balance of payments.

In Kuwait, Lawler and Sawsan (2018) assessed the exchange rate volatility in Kuwait within the period of 1980-2015, using VECM. Independent variable exchange rate and dependent proxies; Gross Domestic Product, Trade Openness, Foreign Direct Investment. The result revealed that if increased trade openness and attracted more foreign direct investment, exchange rate volatility would increase.

Likewise, Kilicarslan, (2018) studied factors determining the REER exchange rate in Turkey, variables used; General Government Expenditure, Trade Openness, Gross Domestic Product, General Fixed Capital Formation, the money supply, and foreign direct investment. The study results explained that the government's expenses, economic growth, and foreign capital investment negatively affected the REER value. Meanwhile, capital formation, money supply, and trade openness positively affected the REER value.

Similarly, Sugiharti, Esquivias and Setyorani (2020) examined the impact of exchange rate volatility on Indonesian's export. The effect of exchange rate volatility on export was estimated using ARDL and NARDL while volatility was estimated using GARCH. The empirical findings show that real exchange rate volatility has a negative significant impact on export of organic chemical from Indonesia to China but a positive significant impact on export of plastic from

Indonesia to China. It was also discovered that real exchange rate volatility has a positive significant impact on export of ore from Indonesia to India but a positive significant impact on export of chemicals, rubber and paper from Indonesia to India. Real exchange rate volatility has a significant impact on export of ore and paper from Indonesia to Japan. Real exchange rate volatility also has a significant negative impact on export of rubber, chemical and paper from Indonesia to Korea. Real exchange rate volatility is also positively related to export of chemical from Indonesia to United States.

In addition, Keshtgar, Pahlavani and Mirjalili (2020) examined the impact of exchange rate volatility as a determinant of banks' performance for the period 2007-2017 for 14 Iranian banks. The exchange rate has been volatile in the Iranian economy and have an adverse effect on banks' performance. Exchange rate fluctuations are derived by GARCH method and the effect of its fluctuations on bank performance examined used panel data method and to evaluate banks' performance, used two criteria, namely liquidity and profitability. Estimation of econometric model using panel data by random effects indicated that exchange rate volatility has a negative and statistically significant effect on banks' capital return ratio. Exchange rate volatility is also a determinant in increasing the ratio of lending to total bank deposits, as it increases the financial gap and creates the credit risk that the gap entails.

More so, Bošnjak, Bilas and Kordic (2020) also conducted a study on determinants of foreign exchange reserves in Serbia and north Macedonia within the period of 2005–2019, using descriptive statistic. Independent variable proxy foreign exchange reserve and dependent proxies; gross domestic product, real effective exchange rate, monetary aggregate, data was retrieved from the National Bank of Serbia. The result revealed quantile-dependent determinants

of foreign exchange reserves and enable comparison between the two countries, showing co-movements between monetary policy and economic fluctuations.

In addition, Briliant, Aditya and Buana (2020), assessed the determinants of Indonesian real effective exchange rate. Variables used in this research are General Fixed Capital Formation (GFCF), Government Final Consumption Expenditure (GFCE), Gross Domestic Product (GDP), Inflation, and the Ratio of Export to Import in the period of 2005-2019. Data was obtained from United States' Central Bank of The Federal Reserve. Autoregressive Distributed Lag (ARDL) that is modified with Newey-West HAC Estimator. The result showed that in the short run, GFCF and GFCE have no positive effects toward Indonesian REER, yet GDP and the Ratio of Export to Import have positive effects toward Indonesian REER, while Inflation has no a negative effect toward Indonesian REER. In the long run, GFCF, GFCE, and the Ratio of Export to Import have positive effects toward Indonesian REER. GDP has no a positive effect toward Indonesian REER, and Inflation has a negative effect toward Indonesian REER.

Also, Fianto, Laila, Sukmana and Madyan (2020) conducted a study on the predictors of exchange rate returns: evidence from Indonesia from period of 1983-2018. Employ nine predictors, namely stock price, gold price, oil price, commodity price, inflation, balance of payment, total exports, the US T-bill rate, and the US federal fund rate and found that employ nine predictors, namely stock price, gold price, oil price, commodity price, inflation, balance of payment, total exports, the US T-bill rate, and the US federal fund rate.

In India, Broll and Mukherjee (2020) assessed the cross-border investment under exchange rate uncertainty, from the exchange rate movements in a mean-variance decision-theoretic model. The framework based on the utility from the expected value and the standard deviation of the firm's random final profit. This modeling approach allows us to explore how much a risk-averse

firm optimally invests abroad when facing uncertainties regarding the exchange rate movements. All comparative static effects are described in terms of the relative tradeoffs between risks and returns.

In the same vein, Nor, Masron and Alabdullah (2020) titled macroeconomic fundamentals and the exchange rate volatility: empirical evidence from Somalia and used EGARCH (exponential generalized autoregressive conditional heteroskedastic) model. Domestic Price, Imports, Money Supply, and Hot Money are used as explanatory variables and exchange rate represent Somali of Somalia, the study founded that the unregulated exchange rate volatility of Somalia is influenced by its own shocks and the macroeconomic factors.

In light of the aforementioned study, Bayar, Remeikiene, Adroniceanu, Gaspareniene and Jucevicius (2020) examined the impact of IE and human development on FDI in a sample of 11 post-communist economies, used panel data covering the period from 1995-2015. The study found that IE and human development were significant determinants to attract FDI, and the long-run analysis showed a negative effect of IE on FDI, but FDI was positively affected by human development.

Furthermore, Koskei (2021) research on exchange rate fluctuations and the performance of Nairobi securities exchange market in Kenya during the corona virus pandemic for the 5 months period of the year 2020. Data was collected from Nairobi Securities Exchange, Central Bank of Kenya and Kenya National Bureau of Statistics for the period January to May 2020 and used multiple regression models. The result revealed that exchange rate fluctuations had a negative and statistically insignificant effect on the performance of Nairobi securities in Kenya during the Corona virus period. Also, exchange rate fluctuations do not affect the performance of Nairobi securities market in Kenya as measured by NASI.

Similar to finding of Mahmood, Ehsanullah, and Habib (2011), Mosbei, Samoei, Tison and Kipchoge (2021) examine the effect of exchange rate volatility and selected macroeconomic variables on intra-east Africa community regional trade from the period of 2000-2017. Longitudinal research design was adopted and the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model and fixed effect model. Independent variables are; exchange rate, money supply, population, and foreign direct investment and trade export is dependent variable. The study showed significant positive volatility ($\beta 0 = 1.0908$, $p= 0.000$). The results from the fixed effect model showed that exchange rate ($\beta 1 = -0.0008$, $p= 0.000$), money supply ($\beta 2 = 2.9468$, $p= 0.000$), population ($\beta 3 = 2.6362$, $p= 0.000$) and foreign direct investment ($\beta 4 = 0.2018$, $p= 0.000$) significantly determines intra-EAC regional trade. Inflation was however found not to be significant ($\beta 5 = -0.0010$, $p= 0.312$) at 95% level. The study concluded that exchange rate volatility exists in the Intra-East Africa region.

In addition, Abdinur and Elmas (2022) assessed the impact of exchange rate fluctuation on the economic growth of Somalia for the period of 2005-2020. Hence, the study was conducted on investigate the impact of fluctuating exchange rates and inflations rates on the economic growth of Somalia and used Ordinary least square (OLS) correlation and multiple regression analysis. Variables used in this research are Gross Domestic Product growth rate (GDP growth rate), Exchange Rate (EXR), Inflation Rate (IR). Data was obtained from Central Bank of Somalia. The result showed that the relationship between inflation rate and economic growth is a weak positive correlation with no significance statistically ($r = .205$; $p = .447$).

In the same vein, Celik (2022) investigated the dynamics of exchange rate fluctuations in Turkey, variables used; Exchange rate, Short Term Debt, Long Term Debt, Credit Default Swap, Uncertainty Index, Net Reserve, Net Capital Investment, Real Interest Rate and Real Interest

Rate. Symmetric and asymmetric causality analysis was used and quarterly data was employed from 2008 to 2020. The results showed that that negative shocks in net capital investment were the cause of negative shocks in the exchange rate, while it was determined that there was a causality relationship from positive shocks in the net reserves to positive shocks in the exchange rate.

2.3.3 Empirical Studies on Nigeria

Oladipupo and Ogheneov, (2011) investigated the impact of exchange rate on the Nigeria external sector (the balance of payments position) using the Ordinary Least Square (OLS) method of estimation for the period between 1970-2008. The study found that exchange rate has a significant impact on the balance of payments position. The exchange rate depreciation can actually lead to improved balance of payments position if fiscal discipline is imposed. It was also found that improper allocation and misuse of domestic credit, fiscal indiscipline, and lack of appropriate expenditure control policies due to centralization of power in government are some of the causes of persistent balance of payments deficits in Nigeria.

In addition, Amassoma and Odeniyi (2016) examined whether impact of exchange rate fluctuation on the Nigerian economic growth from the period of 1970-2013, using Multiple Regression Model, Johansen Co-integration test and the Error Correction Model (ECM) method. Evidence from this study exhibited that there exists a positive but insignificant impact of exchange rate fluctuation on Nigerian economic growth in both the long run and short run. The result showed attributed to the ability of the Nigerian government to effectively regulate some other important macroeconomic variables which can contribute to exchange rate which has thereby helped curtail the effects of exchange rate fluctuation during the study period.

More so, Ajao (2015) examined the determinants of real exchange rate volatility in Nigeria from 1981 through 2008. Employed GARCH technique and ECM were used to examine the

determinants of exchange rate volatility in Nigeria. The study further reveals that openness of the economy; interest rate movements, government expenditures as well as the lagged exchange rate were among major significant variables that influenced real exchange rate volatility during the period.

Furthermore, Orji (2015) investigated the determinants of real exchange rate in Nigeria by adopted the Ballassa-Samuelson hypothesis. Error Correction Model (ECM), technique. Findings also indicated that Interest rate differential and oil revenues and found to be the major determinants of real exchange rate in Nigeria while productivity differential was not a determinant in influencing real exchange rate.

Similarly with above Orji (2015); Oke and Adetan, (2018) conducted a researched on the determinants of exchange rate in Nigeria for the period of 1986-2016. Using ARDL Bounds test approach and finding revealed that GDP, Interest rate and inflation rate have positive effect on exchange while degree of openness exhibited a negative effect on exchange rate and concluded that GDP, interest rate and inflation rate are the major determinants of exchange rate in Nigeria.

Similar to work of Adelowokan, Balogun and Adesoye (2015); Ezeudu (2017) also examined the effect of exchange rate fluctuations on aggregate investments in Nigeria from 1990-2015. The variables used for the analysis comprises of gross fixed capital formation, exchange rate volatility, real exchange rate, terms of trade and inflation rate and using the Augmented Dickey Fuller (ADF) Approach. Data was extracted from CBN. The study revealed that there is only evidence of short-term influence ability for exchange rate volatility, real exchange rate, terms of trade and inflation rate in the aggregate investment model.

Additionally, Ettah (2016) conducted a study on the drivers of real exchange rate in Nigeria under the Behavioral Equilibrium Exchange Rate framework using annual data from 1970-2011.

Deploying the Hodrick-Prescott Filter, the long-run values of the fundamentals of the real exchange rate were decomposed to obtain and estimate the misalignment in the RER. Real exchange rate used to measured other variables; technological progress, degree of openness, government spending, net foreign asset, oil prices, index of monetary policy measured as the ratio of money supply to GDP. The results showed that increase in trade openness, technological progress and government expenditure depreciate Nigeria's RER in the long-run. Increase in oil prices and net foreign asset were found to boast the RER. Index of RER misalignment in Nigeria reveals that it was overvalued between the periods: 1980-86 and 1994-98.

Isola, Oluwafunke, Victor and Asaleye (2016) also conducted a study on the linkage between exchange rate volatility and economic growth in Nigeria from 2003-2013, the study employed the autoregressive distributed lag (ARDL) model. The result showed that there is no relationship between the variables in the long run.

In addition, Adamu and Sanusi (2016) also examined the effect of additional monetary tightening (AMT) on exchange rate volatility in Nigeria from 2007 to 2016, using GARCH model, the findings of the study show that AMT is effective in reducing exchange rate volatility. They recommend that AMT should be used as a complementary tool and only to stabilize short-term temporary pressure on the foreign exchange market.

Likewise, Lawal, (2016) assesed the effect of exchange rate fluctuations on manufacturing sector output in Nigeria from 1986-2014, for a period of 28 years. Data sourced from (CBN) statistical Bulletin and World Development Indicators (WDI) on manufacturing output, Consumer Price Index, Government Capital Expenditure and Real Effective Exchange Rate and the multiple regression analysis using Autoregressive Distribution Lag (ARDL). The result showed that exchange rate has a positive relationship with manufacturing sector output but not significant.

However, from the empirical analysis it was discovered that exchange rate is positively related to manufacturing sector output.

However, Sabina, Manyob and Ugochukwu (2017) analyze the effect of exchange rate volatility on economic growth in Nigeria using GMM estimation technique. The Empirical findings revealed that exchange rate volatility and foreign direct investment are negatively related to economic growth while external reserve and government expenditure are positively related to economic growth in Nigeria.

Additionally, Afolabi and Adekunle (2017) research the connection between exchange rate volatility and Nigeria's balance of payment. The data utilized was sourced from the Central Bank of Nigeria's statistical bulletin (2015) and the National Bureau of Statistics (NBS). The sample size utilized for the investigation covered a time frame of 30 years (1985-2015). The assessment procedures utilized in the exploration are; the Johansen co-integration test for long-run connections, while both ARCH and GARCH were additionally utilized to test for volatility of the Exchange Rates. The result revealed that there was no long-run connection between Exchange Rate and the Balance of Payment position of the Nigerian Economy during the period under survey, while the coefficient of the ARCH impact is discovered to be statistically significant. The GARCH impact was discovered to be measurably irrelevant.

More so, Zakari (2017) investigated the effect of fluctuations of the exchange rate and FDI impact on GDP in Nigeria for the period 1990-2015. Regression and correlation analysis techniques were employed. Study identified a strong positive relationship between the exchange rate and foreign direct investment, while a weak positive relationship was established for GDP and FDI. It was also revealed that an increase of the exchange rate led to increased FDI between the years 2005-2014.

Michael and Emeka (2017) conducted a study on the effect of monetary policy variables on net export of Nigeria from 1981-2016. Financial policy variables are the main tools used by monetary authorities to regulate money supply and to control the level of prices as well as stimulating investments and growth of an economy. The study used Auto Regressive Distributed Lag (ARDL) analysis. The study also engaged the following variables in the investigation: exchange rate, net export, total import, interest rate, foreign direct investment, total export and money supply. The ARDL model showed that there is both long run and short run relationships amongst the variables. The outcomes also verified that money supply had a positive and insignificant effect on net export of Nigeria whereas total export had a positive significant effect on net export of Nigeria. Equally, the outcomes revealed that total import exchange rate, interest rate, and foreign direct investment had a negative insignificant effect on net export of Nigeria. The result confirmed that there is no significant causality between NEX and the rest of the variables under the study.

Furthermore, Ufoeze, et al, (2018) investigated the effect exchange rate fluctuations on Nigerian economy for the period of 1970-2012. Exchange rate fluctuation was proxied using exchange rate, money supply, oil price, inflation while economic growth was proxy by Gross domestic product. They used ordinary least square method and data were sourced from CBN statistical bulletin 2015 and data were extracted from CBN in respect of the variables. The study revealed that oil revenue has positive effect in Nigeria and has remained the mainstay of the economy.

Yusuf and Jelilov (2019) investigated the determinants of Official and Parallel market exchange rates from 1986 to 2017 using Autoregressive Distributed Lags (ARDL) method. The result found that GDP, inflation, interest rates, oil exports, non-oil exports and reserves are the

determinants of exchange rate while inflation, non-oil exports and GDP are the major determinants of alternate or parallel exchange rate.

Similarly, Benjamin et al., (2019) conducted a study on the impact of exchange rate volatility on the Nigerian economic growth in Nigeria for a period of 1980-2017. The study employed the (GARCH) and (GMM) technique. The control variables used are; inflation, financial development proxy as credit to private sector, trade openness, money supply, human capital development, government expenditure, crude oil prices and independent proxy by GDP per capital and data sourced from CBN. The result revealed that exchange rate volatility has a negative and significant effect on the economic growth of Nigeria. The result suggests that excessive volatility due to low inflows is inimical to the growth of the Nigeria economy.

More so, Dania and Ogedengbe (2019) conducted an investigation on the impact of exchange rate volatility on Non-Oil Export Performance in Nigeria from 1981-2017 and using error correction method (ECM). The dependent proxy by non oil export and independent proxies; exchange rate volatility, interest rate (lending), foreign direct investment, total government expenditure The analysis of results showed that exchange rate has an ARCH effect on non oil export performance in Nigeria and more so, significantly and negatively on it.

However, Lateef (2020) effect of exchange rate volatility on Nigerian crude oil export to its trading partners (UK, USA, Italy, France, Spain, Canada and Brazil) for the period of 2006-2019, using GARCH and the effect of exchange rate volatility on crude oil export was estimated using ARDL. Crude oil export volume measured by index of industrial production, real exchange rate, volatility of real exchange rate. The result shows that the volatility of the exchange rate of Nigeria's trading partners is statistically significant for all the trading partners but with different a magnitude which means the volatility of exchange rate between Nigeria and its trading partners

is very imperative in determining the volume of crude oil exportation made by Nigeria to its trading partner. The real exchange rate of the trading partners is statistically significant for all the trading partners while the income of Nigeria's trading partners is statistically significant for 4 out of the 7 countries.

Aladelusi (2020) investigated the impact of exchange rate fluctuation on balance of payment in Nigeria within the period of 1990-2016. The data utilized was sourced from the Central Bank of Nigeria's statistical bulletin (2016). Used Ordinary Least Square, revealed Exchange rate has a positive effect on balance of payment but statistically insignificant with balance of payment. Inflation rate has negative effect on balance of payment and statistically insignificant. Interest rate has negative effect on balance of payment but statistically significant at 5%level of significance.

furthermore, Akinlo and Onatunji (2020) examined the dynamic relationship between exchange rate volatility and domestic investment for twelve ECOWAS countries over the period 1986-2017 and employed the ARDL bound testing approach for co-integration and error correction modeling techniques by incorporating real GDP, real interest rate, real exchange rate, and exchange rate volatility as essential drivers of domestic investment. The result showed the ARDL Bound test confirms the existence of long-run relationship among the variables in the selected countries. Furthermore, the findings show that exchange rate volatility is negative and statistically significant only in the case of Nigeria, Sierra Leone, Guinea, Gambia, Cote d'lvoire, Togo, and Liberia but insignificant in Cabo Verde, and Senegal. However, contrary to many theoretical predictions and hypotheses, exchange rate volatility is found to be positive but insignificant in Ghana, Benin, and Burkina Faso.

Likewise, Muhammed and Adindu (2021) research the trend of exchange rate volatility on the construction materials prices between 2011 to 2020 in the north central geo-political zone with quantitative data on exchange rate obtained from the Central Bank of Nigeria Statistical Bulletins (CBN) whereas cement, block, tile and reinforcement prices were obtained via market survey. Ordinary Least Square (OLS) technique was used and the study revealed p-values of <2.2e-16, <2.2e-16, <2e-16 and <2.2e-16 for cement, block, tile and reinforcement respectively, these implies that exchange rate volatility was statistically significant in forecasting the trend of the selected construction material prices. The construction materials used for this study were sourced off-shore.

Finally, Eze and Okotori (2022) examined the influence of innovations in monetary policy on the rate of exchange rate volatility in Nigeria from 2009 to 2019 and the data sourced from Central Bank of Nigeria statistical bulletin, World Bank and IMF database are Money Supply (M_2), Policy rate, Reserve requirement, Treasury bills rate, and External reserve was used Vector Error Correction Model (VECM). The results revealed that in the long run; all the monetary policy variables have a significant long run correlation with volatility in the exchange rate. Further findings on the volatility impulse response and the forecast error variance decomposition suggest a significant link between volatility in the exchange rate and money supply though the link was much more pronounced.

2.4 Summary and Gap Identified in Literature

Several remarks need to be emphasized regarding the selection of literature reviewed. Different terms have been used to conceptualize exchange rate fluctuation such as exchange rate volatility, and exchange rate movement. However, the concept of exchange rate fluctuation from various authors' perception provides that persistent depreciation of the home currency. It is appreciated if less unit of local currency is exchanged for a unit of foreign currency and depreciated if more

unit of domestic currency is exchanged for a unit of foreign currency. Many of this studies measured exchange rate as exchange rate fluctuation, while some used nominal exchange rate as measure of exchange rate. Some authors explored real exchange rate as measure of exchange rate In addition, most studies both developed and developing economies focus on exchange rate volatility as determinants of exchange rate fluctuations.

Conceptually, most of the studies conducted in Nigeria, developed and developing countries focused on real exchange rate such as economic growth, net foreign asset crude oil price, and domestic debt as determinants of exchange rate fluctuation while few studies focused on volatility balance of payment, foreign direct investment, and speculation) as determinants of exchange rate fluctuations ignoring other salient factors that would influence economies in exchange rate volatility. To best of researcher's knowledge, scanty study had employed speculation as an exchange rate to exchange rate fluctuation in developing countries and Nigeria.

From the methodology point of view, more of the previous studies on exchange rate volatility in Nigeria focused more on economic growth and balance of payment while few looked into trade focusing on two sectors; international trade and investment ignoring the fact that both internal and external investment such as foreign direct investment and foreign portfolio investments and they are the real sector which are contributed to the growth and development in Nigeria. Evidently, little or scanty research work had used exchange rate fluctuations in Nigeria. Thus, this study tends to fill the literature by studying the determinants of exchange rate fluctuations.

In addition, it has been observed that substantial number of studies on determinants of exchange rate volatility in developed, developing countries and Nigeria had only focused on different multiple regressions as estimation techniques. However, this necessitated the utilization of Autoregressive lag (ARDL), Augmented Dickey Fuller (ADF), Dickey Fuller (DF) and Philips-

Perron (PP), Hannan Quinn (HQ) & Cusum test the next line of action. Little or no studies had used this methodological approach. Hence this study aims to bridge the gap.

More so, few studies on exchange rate fluctuations in developed and developing economies were found to cover 2020 as research study period. To the extent of literature found, little or no study were found to cover 1989-2020 as a study period in Nigeria. Thus, the study tends to bridge the timing gap in the existing literature by covering the period 1989-2020 which will be adding to the recent scanty studies in exchange rate fluctuations literature.

Furthermore, many among the recent studies conducted on exchange rate volatility in Nigeria had captioned their research work little using various nomenclature such as impact of exchange rate volatility on the Nigerian economic growth in Nigeria (Benjamin et al., 2019), real exchange rate volatility in Nigeria (Ajao,2015), exchange rate volatility and Nigeria's balance of payment (Afolabi, et al, 2017), effect of fluctuations of the exchange rate and FDI impact on GDP in Nigeria (Zakari, 2017), the dynamic relationship between exchange rate volatility and domestic investment for twelve ECOWAS countries (Akinlo, et al, 2020). However, little or scanty studies had titled research work on the determinants of exchange rate fluctuations in Nigeria.

2.5 Theoretical framework

This study is underpinned by two theories which provide justification for the factor influencing exchange rate fluctuations consisting of monetary theory and Macroeconomic (real) theory

The monetary approach to exchange rate as propounded by Polak in 1957 and later redefined by Mundell (1968, 1971), Johnson (1972, 1975, 1976, and 1977) and Johnson and Frenkel in1976. The monetary model of exchange rate attempts to explain exchange rate fluctuations in terms of changes in supply and demand for money between countries (Nyong, 2015). Frankel (1979), in explaining the monetary theory, he explains the approach, emphasizing other exchange rate approaches, such as the flow approach, asserting shocks, resulting from fiscal and monetary

policies, hampering trade flows through terms of trade and relations between output and local absorption. The monetary approach also recognizes the global movement of funds, besides its relation to factors, comprising the balance of payments, such as financial capital. The model of exchange rate determination attains equilibrium when existing stocks of money in the two countries are willingly held. Monetary approach attributes variation in exchange rate essentially to income and expected rates of return as well as to other factors that influence the supplies of and demands for the various national monies. Monetary theory also underpins that the value of the exchange rate as the relative price of the two monetary units is determined by relative indicators of money supply. Therefore, the theory provides views of exchange rates are determined in the process of equilibrating or balancing the stock or total demand and supply of money in each nation, engagement monetary policies, and speculation.

Also, macroeconomic (real) theory credited to Balassa-Samuelsson (1964) and the balance of payments approach Nurkse (1945), assume that the balance between tradable and non-tradable sectors. However, exchange rate of a country is determined by its balance of payment. A favorable balance of payment overvalued the exchange rate, while unfavorable balance of payments undervalues exchange rate of a country. Therefore, the theory is particularly tailored towards creating value for both internal and external balances at the same time. Internal balance is achieved when the economy is at full employment level of output and operating in a low inflation environment. External balance is achieved when the economy is at optimum balance of payments positions over the medium term, ensuring desired net flows of factors and external debt sustainability.

Independent Variables **Dependent Variable**

Determinants of exchange rate fluctuations

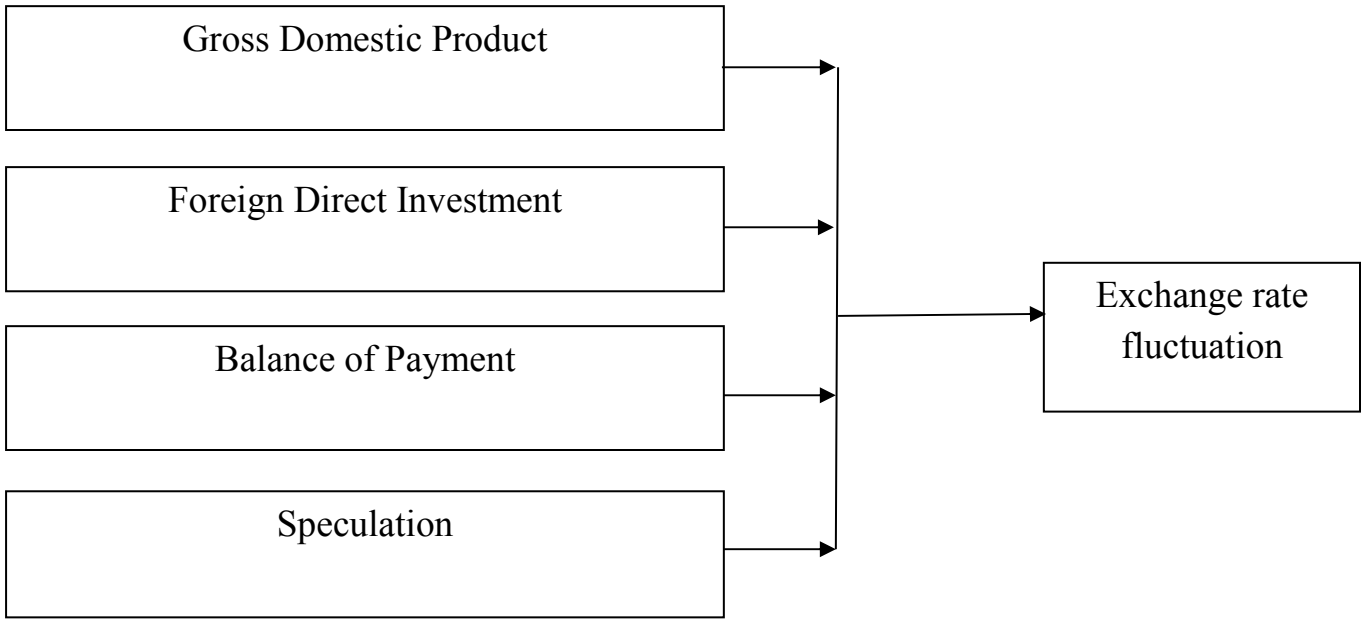


Figure 2.1 Conceptual Framework

▲

Source: Author's Framework (2022)

Figure 2.1 above provides a relationship between the dependent variable and independent variables. The dependent variable (exchange rate fluctuation) and the independent variable was proxy using factors such as gross domestic product, foreign direct investment, balance of payment and speculation as shown in the figure 2.1.

CHAPTER THREE

METHODOLOGY

This chapter highlights the research process, beginning with the research design, model specification sample size and sampling technique, sources of data collection, method of data analysis and measurement, and the definition of variables.

3.1 Research Design

This study adopted ex-post facto research design; ex-post facto research design is the most appropriate because the researcher has no interference with the data or fact of the study.

3.2 Model Specification

The model used to achieve the objectives of the study was adapted from the study of Lawler et al., (2018) which is stated as:

$EXR_t = f(GDP,FDI,TO)$……....……..(i)

This is expressed econometrically as follows:

$EXR_t = \beta_0+\beta_1 GDP_t+\beta_2 FDI_t+\beta_3 TO_t +\varepsilon_t$..... (ii)

EXR_t =Exchange Rate, β_0 = Intersect, GDP= Gross Domestic Product, FDI=Foreign Direct Investment, Trade Openness, ε_t = Error term

The model was modified and improved on for the purpose of this study, where one of their variable were replaced (with balance of payment, and speculation) because they were not relevant in achieving the objectives of this study. Therefore, since the aim of this study is to examine the determinants of exchange rate fluctuations raised in chapter one, the model for this study is specified thus:

$EXR_t = \beta_0+\beta_1 GDP_t+\beta_2 FDI_t+\beta_3 BOP_t+\beta_4 SPE_t+\varepsilon_t$..... (iii)

Where:

EXR_t =Exchange Rate, β_0 = Intersect, GDP= Gross Domestic Product, FDI=Foreign Direct Investment, BOP=Balance of payment, SPE=Speculation, μ_t=Error term.

The apriori sign are $\beta_1>0$, $\beta_2>0$, $\beta_3>0$, $\beta_4>0$

3.3 Bound Test for Cointegration (A R D L)

The short run and long run Determinants of exchange rate fluctuations in Nigeria between 1989 and 2020 is estimated using the bounds testing or Autoregressive Distributed Lag (ARDL) cointegration procedure as developed by Pesaran, Shin and Smith (2001).

The bound test was used when there is mixture of time series variable with different orders of integration unlike the Johansen approach where all the variables are expected to be stationary at first difference. i.e. I(1). According to Oyeniran, David and Ajayi (2015) the ARDL procedure is relatively more efficient in small or finite sample data sizes. However, it is not efficient in the presence of variables that are stationary at second difference.

Since the unit root properties of the time series variable has been established earlier, the ARDL model then requires testing for the existence of a long-run relationship between exchange rate, speculation and all other explanatory variables within a univariate framework.

Following Pesaran et al. (2001) and adopting the bounds test procedure by modeling the long-run equation as a autoregressive regressive lag (ARDL) model, the following model is obtained;

$$\Delta EXR_t = \beta_0 + \beta_1 EXR_{t-1} + \beta_2 BOP_{t-1} + \beta_3 FDI_{t-1} + \beta_4 GDP_{t-1} + \beta_5 ASIt_{-1} + \sum^{p}\varphi_1 \Delta EXR_{t-1} + \sum^{p}\varphi_2 \Delta BOP_{t-1} + \sum^{p}\varphi_3 \Delta FDI_{t-1} + \sum^{p}\varphi_4 \Delta GDP_{t-1} + \sum^{p}\varphi_5 \Delta SPE_{t-1} + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots \text{(iv)}$$

Where βi and φ are the long run and short run multipliers respectively, β_0 is the drift, p is the optimal lag length and μ_t is white noise error term.

The presence of cointegration or long-run relation among the variables is determined by estimating the equation iv above using the autoregressive lag (ARDL) technique and obtaining

the value of F-test for the joint significance of the coefficients of the lagged levels of the variables. i.e.

$H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$ (There is no long run relationship)

$H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq 0$ (There is long run relationship)

The calculated F-statistic from equation (iv) is compared with the critical value tabulated by Pesaran et al., (2001). If the calculated F-statistic exceeds the upper critical value, the null hypothesis of no long run relationship can be rejected regardless of whether the underplaying order of integration of the variables is zero or one (Pesaran et al,.2001).

3.3.1 Long run Autoregressive Distributed Lag (ARDL) Model

Once cointegration is established, the long run ARDL model can therefore be estimated as:

$$EXR_t = \beta_0 + \sum^{p}_{i=0} \beta_1 EXR_{t-1} + \sum^{q1}_{i=0} \beta_2 BOP_{t-1} + \sum^{q2}_{i=0} \beta_3 FDI_{t-1} + \sum^{q3}_{i=0} \beta_4 GDP_{t-1} + \sum^{q4}_{i=0} \beta_5 SPE_{t-1} + \mu_t \quad \text{(v)}$$

The order of lag i.e. ARDL (q1, q2, q3, q4, q5,) would be selected on the basis of Hanann Quinn (HQ). All variables are as previously defined.

3.3.2 Short run ARDL Model or Error Correction Model (ECM)

The ARDL bound procedure further requires obtaining the short run dynamic parameters by estimating an error correction model associated with the long- run estimates. Therefore, transforming equation 5 above will yield the introduction of first difference (Δ) and lag of error term by one period to measure the rate of adjustment in the equilibrium of the model. The lag of error term by one period is the Error Correction Mechanism (ECM) that measures the rate of adjustment of the variables from long run to short run (David, Noah & Agbalajobi, 2016). This is specified as follows;

$$\Delta EXR_t = \beta_0 + \sum^{p}_{i=1} \varphi_1 \Delta EXR_{t-1} + \sum^{p}_{i=2} \varphi_2 \Delta BOP_{t-1} + \sum^{p}_{i=3} \varphi_3 \Delta FDI_{t-1} + \sum^{p}_{i=4} \varphi_4 \Delta GDP_{t-1} + \sum^{p}_{i=5} \varphi_5 \Delta SPE_{t-1} + \delta_7 ECM_{t}\text{-}1 + \mu_t \text{..} \quad \text{(vi)}$$

Equation vi represent the ARDL model where Φ is short run dynamic coefficients of the model, δ indicates the speed of the adjustment which restores equilibrium in the dynamic model.

3.4 Sources of Data

The source of data for this study is annual time series data in respect of; Gross Domestic Product, Foreign Direct Investment, Balance of payment and Speculation in Nigeria for the period of (32) years were sourced from Central Bank of Nigeria Statistical Bulletin (CBN), Nigeria Bureau of Statistics (NBS), World Bank Development Indicators (WBDI), and Nigeria Stock Exchange (NSE) for the period of 1989 to 2020.

TABLE 3.5: VARIABLES AND THEIR MEASUREMENTS

VARIABLES	MEASUREMENTS	EXPECTED RELATION	DATA SOURCES	Previous researchers
Independent variables				
Rate of economic growth: The rate of change of real GDP	GDP and GNP	Positive	CBN WBDI	Chowdhury et al., (2014), Mordi, (2006), Mussa, (2020)
Foreign Direct Investment.	Net foreign investment/Nominal GDP	Positive	WBDI CBN	Rahman, (2016), kilicarslan, (2018)
Balance of Payment: Billion of Naira	Current account balance	Positive	WBDI, CBN	Nucu 2011, Gaomab et al., (2012), Imoughele et al, (2015), Mussa, (2020)
Speculation	Return of stock market	Positive	CBN NEG	Alquist et al, (2013), Harris & Buyuksahin (2011), Bohl, (2018), Maitra, (2019), Gao et., (2016)
Dependent variables				

Exchange rate volatility: Local currency unit per US dollar	Percentage change of the exchange rate between local currencies against US dollar	Positive or Negative correlation depends independent variables	WBDI, CBN	Sikiru,(2017), Hassan et al, (2017), Mussa, (2020), Sanusi, (2020), Lawler et al., (2018)

SOURCE: Researcher's Computation, (2022).

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Descriptive Statistics

This chapter presents the empirical results computed in my research that consist of the unit root test results, optimal lag lengths, serial correlation results, stability's test results, bound test results for long run and short run and the estimated coefficient for the dependent and independent variables.

Table 4.1: Descriptive Statistics

	SPE	BOP	EXT	FDI	GDP
Mean	9.285226	5.012500	125.5132	1.746875	4.839375
Median	9.941691	3.650000	127.2300	1.580000	4.030000
Maximum	10.96803	32.50000	358.8110	5.790000	33.74000
Minimum	5.784748	-13.30000	7.365000	0.200000	-1.790000
Std. Dev.	1.409182	9.988178	97.98781	1.275052	6.265290
Skewness	-1.063279	0.660694	0.702252	1.576892	3.151382
Kurtosis	3.034766	3.638530	2.835673	5.336290	15.33273
Jarque-Bera	6.031282	2.871716	2.666176	20.53947	255.7615
Probability	0.049014	0.237911	0.263662	0.000035	0.000000
Sum	297.1272	160.4000	4016.422	55.90000	154.8600
Sum Sq. Dev.	61.55957	3092.675	297649.9	50.39849	1216.870
Observations	32	32	32	32	32

SOURCE; AUTHOR'S COMPUTATION, (2022)

From the result obtain in table 4.1; it was observed that the mean value of SPE is 9.29% while the average of BOP 5.01. The average of EXT over the period is 125.5, FDI is 1.75 billion and the average value of GDP is 4.83. The standard deviation measures the dispersion around the mean, a high variation around the mean and vice versa. From the result EXT is the highest variation, while FDI has the lowest dispersion around the mean value. The skewness value of

zero means that these variables follow a normal distribution while when the skewness is greater than (less than) zero this suggest that the variable has a thick tail to the right/left. From the result it could be observed that all variables are positively skewed except for SPE which is the negatively skewed. Jarque-bera statistic which is the accurate measures of normality of the variables. The jarque statistic is based on a null hypothesis of normality. The result indicates that all the variables are normally distributed except SPE, FDI and GDP. This is because its corresponding p-value is less than 0.05.

Table: 4.2 CORRELATION MATRIX

Correlation Probability	**SPE**	**BOP**	**EXT**	**FDI**	**GDP**
SPE	1.0000 ------				
BOP	0.19186 0.3011	1.0000 ------			
EXT	0.72791 0.0000	0.01730 0.9264	1.0000 ------		
FDI	-0.39039 0.0299	0.016327 0.9305	-0.410927 0.0217	1.0000 ------	
GDP	0.13824 0.4583	0.46048 0.0091	-0.04364 0.8157	-0.01003 0.9573	1.0000 ------

SOURCE; AUTHOR'S COMPUTATION, (2022).

The table shows the correlation matrix of each variable. It is clear from the table that there is a strong positive correlation between exchange rate fluctuation and speculation. It shows that all the independent variables have a weak positive and negative correlation with the dependent variable.

4.3 UNIT ROOT RESULT

The result of the stationarity test of the time series data incorporated in the model as outlined in the previous chapter conducted using the Augmented Dickey-Fuller (ADF) test is presented;

4.3.1 Augmented Dickey Fuller Test

The results of the stationarity using Augmented Dick Fuller (ADF) and Phillips Perron (PP) test are abridged in Table 4.3. The analysis indicates that the variables are of H and G.

Table: 4.3

		ADF Null (H_0): Non-stationary				Phillips-Perron Null (H_0): Non-stationary			
		ADF_α				PP_α			
	V_t	T_{cal}	1%	5%	Prob.	T_τ	1%	5%	Prob.
Intercept without Time Trend	**EXT**	1.17*	-3.67	-2.96	0.99	1.55*	-3.67	-2.96	0.99
	BOP	-1.68	-3.69	-2.97	0.43	-2.57	-3.67	-2.96	0.11
	FDI	-3.02	-3.67	-2.96	0.04	-3.82	-3.67	-2.96	0.00
	SPE	-3.40	-3.67	-2.96	0.02	-5.96	-3.67	-2.96	0.00
	GDP	-4.32	-3.67	-2.96	0.00	-4.32	-3.67	-2.96	0.00
	ΔEXT	-4.64	-3.68	-2.97	0.00	-4.64	-3.68	-2.97	0.00
	ΔBOP	-5.93	-3.69	-2.97	0.00	-8.49	-3.68	-2.97	0.00
		-8.53	-	-	0.00	-11.8	-	-	0.00

	ΔGDP		3.68	2.97			3.68	2.97	
Intercept with Time Trend	**EXT**	-1.09*	-4.30	-3.57	0.91	-1.17	-4.30	-3.57	0.90
	BOP	-1.59	-4.32	-3.58	0.77	-2.51	-4.30	-3.57	0.32
	FDI	-3.77	-4.31	-3.57	0.03	-3.87	-4.30	-3.57	0.03
	SPE	-1.66	-4.30	-3.57	0.74	-1.55	-4.30	-3.57	0.79
	GDP	-4.24*	-4.30	-3.57	0.01	-4.24	-4.30	-3.57	0.01
	ΔEXT	-5.01**	-4.31	-3.57	0.00	-4.98	-4.31	-3.57	0.02
	ΔBOP	-5.82**	-4.32	-3.58	0.00	-8.12	-4.31	-3.57	0.00
	ΔSPE	-4.95**	-4.32	-3.58	0.00	-6.84**	-4.31	-3.57	0.00
	ΔFDI	-5.18**	-4.32	-3.58	0.00	-13.18	-4.31	-3.57	0.00

SOURCE: AUTHOR'S COMPUTATION, (2022).

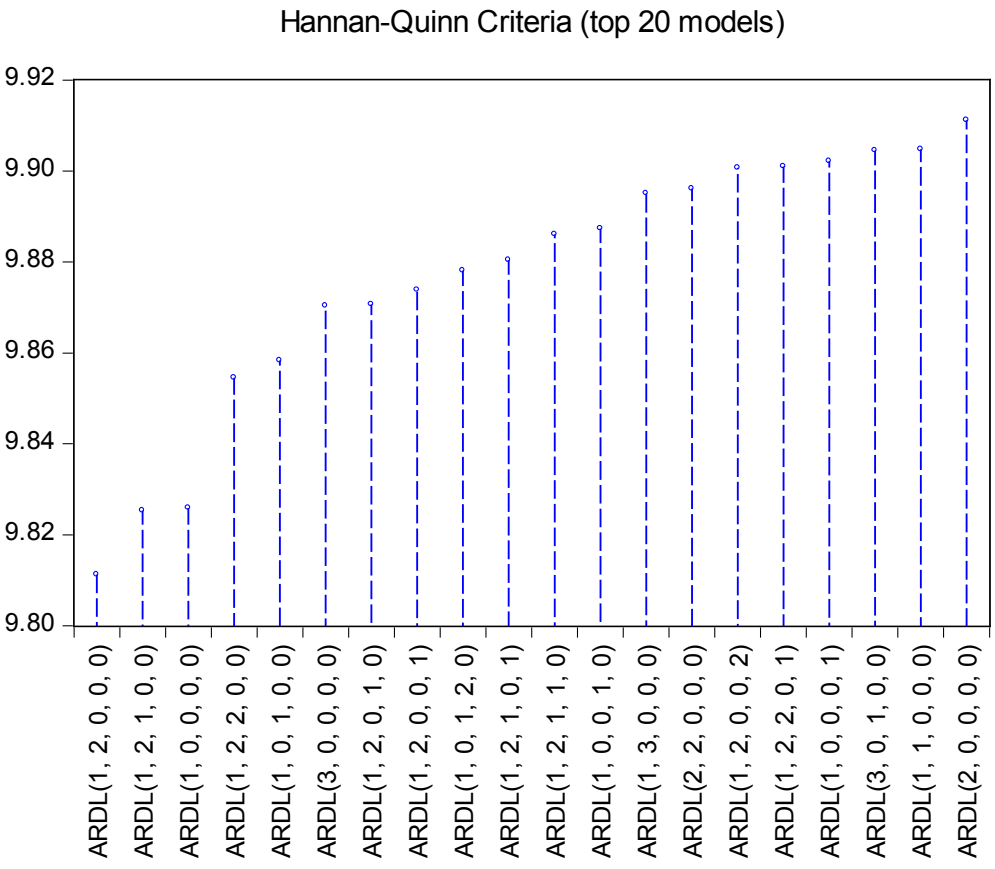
The variables are stationary if Augmented Dickey Fuller and Philips-Perron statistic is greater than the critical value at 5% level of significance. If the variables are non- stationary at levels, they are differenced once to become stationary. If after the first difference, variables still remain non-stationary, they will be differenced the second time. The result of the Dickey Fuller Statistic test for unit root revealed that three of the variables are stationary after the first difference, while the remaining two variables are stationary at level. Since, we have a mixture of both I(1) and I(0),(i.e H & G) therefore Auto Regressive Distributed Lag (ARDL) method is applied.

Summarily, we used the ADF, PP and DF statistics to show the robustness of the method being used and to further buttress the reason behind using the ARDL method since the ADF statistics alone will not be sufficient alone to give a concrete reason for using the ARDL method. Thus, the use of ADF, DF and PP tests was carried out so as to have a robust and an all inclusive idea behind the use of ARDL method.

4.4 Determination of Lags

This study uses the ARDL regression for lag one until lag two since it only involves annually data. There are only two maximum lags length use in the model because there are just 37 years of observation in this research. The results are shown in Table 4.4 below.

4.4.1 Determining the number of lag



SOURCE: AUTHOR'S COMPUTATION, (2022)

The table represents the lag length, using the Hannan Quinn Criterion (HQC). The Hannan Quinn Criterion is used to show the optimum lag selection, it is a measure of the goodness of fit of the statistical model, and it is often used as a criterion for model selection among finite set of models. It is clear that ARDL (1,2,0,0,0) is the best and optimum lag selection criteria

4.5 Bound test for cointegration

The results of the bound testing approach for the long run cointegrating relationship among the variables in the model is presented in the table 4.5

4.5.1 Bounds Test Result

Table: 4.5

Test Statistic	**Value**	**K**
F-Statistic	8.614469	4
	Critical Value Bounds	
Significance	**10 Bound**	**I1 Bound**
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

SOURCE: AUTHOR'S COMPUTATION, (2022)

Co-integration bound test hypotheses is stated as follows:

H_0: no long run co-integration

H_1: long run co-integration

From the table 4.5, the F-statistic value of 8.614469 is greater than the upper bound I(1) and the lower bound I(0) critical values of 5.06 and 2.45 respectively at 5% significant level.

Therefore, null hypothesis of no co-integration can be rejected. Hence, there is co-integration and long run relationship among the variables of this study.

4.6 Presentation of ARDL

Having established the presence of long run relationship between the dependent and independent variables, the ARDL method was applied to estimate the short run and long run parameters. The short run and long run results of the nexus between the dependent and independent variables estimated using the ARDL (autoregressive distributed lag) approach is presented. The lag length of both the short run and the long run model were selected on basis of Hannan Quinn (HQ).

4.6.1 Presentation of Long run ARDL model Results

The result of the estimated short-run dynamics of the determinants of exchange rate fluctuations in Nigeria;

Table: 4.6 Estimated Long run coefficients using the ARDL approach

Dependent variable : D(EXR)				
Independent variables	Coefficients	T-statistics	Prob.	Decision
D(SPE)	0.795731	5.034477	0.0000	Significant@5%
D(SPE(-1))	0.140242	1.677285	0.1070	Insignificant
D(BOP)	0.002513	0.936884	0.3586	Insignificant
D(FDI)	-0.405637	-1.012878	0.3217	Insignificant
D(GDP)	0.004721	2.922420	0.0077	Significant @5%
CONSTANT	2.341162	0.610171	0.5477	-
R^2	0.973304			
Adjusted R^2	0.966340			
F-statistics	139.7589			
P-value	0.00000			
DW	2.612178			

SOURCE: AUTHOR'S COMPUTATION, (2022)

4.6.1.1 Interpretation of the long run ARDL model results

4.6.1.1.1 Apriori criteria

On the basis of the result above, the value of the intercept which is 2.341162 shows that the exchange rate in the long run will experience 2.34 units increase when all other variables in the model are held constant.

The result shows that the past value of speculation (SPE) has a positive impact on exchange rate. It shows that a percent increase in past value of SPE will enhance the current SPE by 0.14%.

A positive relationship exists between balance of payment (BOP) and exchange rate in the long run. The long run positive impact of BOP on exchange rate fluctuation is 0.0025%. This shows that a 1% increase in BOP will lead to about 0.0025% increase in exchange rate fluctuation in Nigeria.

A long run relationship exists between FDI and exchange rate fluctuation in the country. The impact of FDI in the long run is -0.40 implying that a unit increase in FDI may lead to about 0.40 unit decrease in exchange rate fluctuation in Nigeria.

Gross Domestic Product (GDP) and exchange rate fluctuation were found to be positively related in the long run. It shows that a percent increase in GDP may lead to about 0.005% increase in exchange rate fluctuation.

4.6.1.1.2 Statistical criteria

Based on the probability value (p-value) of each of the variables as shown in table 4.6 above, only the past value of Gross Domestic Product (GDP) and SPE) were found to be statistically significant at 5% which implies that the variables contribute significantly to exchange rate fluctuation and therefore are major determinants of exchange rate fluctuation in the country.

Unexpectedly, BOP and FDI appear to be statistically insignificant. The implication of this is that FDI and BOP may not contribute significantly to exchange rate fluctuation in the long run. This result of BOP is however consistent with the findings of Aladelusi, (2020) who found a negative and insignificant relationship between balance of payment and exchange rate fluctuation in Nigeria. While the combined result of BOP and FDI is consistent with the findings of Okorontiah & Odoemena (2016); Sabina et al. (2017) & Wanyama (2018).

4.6.1.1.3 Econometrics Criteria

Coefficient of Determination (R^2)

The R^2 of the model is about 0.97% which signifies that about 97% total variation in economic growth in the long run is explained by all the explanatory variables included in the model. The 3% remaining may be due to the stochastic error term.

Adjusted R^2

The adjusted R^2 shows the actual variation in economic growth captured by the independent variables introduced in the model after considering the effect of additional explanatory variables on R^2. The adjusted R^2 still explains about 97% of the total variation in the measure of exchange rate fluctuation in Nigeria.

F-statistics

The F-statistics of the long run model is statistically significant since the p-value (0.000) is less than 0.005. Also, the F-statistics (139.7) is greater than the table value of F-statistics (2.37) with 6 and 27 degree of freedom. With this, the study rejects the null hypothesis that all the explanatory variables in the model are jointly significant in explaining exchange rate fluctuation in Nigeria.

Durbin Watson (DW) Statistics

The DW test statistics of 2.61 shows an absence of autocorrelation in the model. Since the calculated value of DW (2.61) is greater than the upper Durbin Watson value (d_u) (1.18), we accept the null hypothesis and reject the alternative hypothesis and conclude that the error terms are not serially correlated. It shows that the successive values of the error term are not related with their previous values

Table: 4.6.1: Estimated short run coefficients using the ARDL approach

Dependent variable : Δ(EXR)				
Independent variables	Coefficients	T-statistics	Prob.	Decision
Δ(SPE)	0.693578	2.856450	0.0095	Significant
Δ(SPE(-1))	0.052939	0.856398	0.4014	Insignificant
Δ(BOP)	0.000210	0.101584	0.0201	Significant@5%
Δ(FDI)	-0.476775	-1.733881	0.0376	Significant@5%
Δ(GDP)	-0.027212	-2.583779	0.0173	Significant@5%
ECM(-1)	-1.229055	-4.299503	0.0003	Significant@5%
CONSTANT	0.007251	0.162591	0.8724	-
R^2	0.597397			
Adjusted R^2	0.463196			
F-statistics	4.451508			
P-value	0.003573			
DW	1.815535			

SOURCE: AUTHOR'S COMPUTATION, (2022)

4.6.2.1 Interpretation of the short run ARDL model result

Analogous to long run model, the lag length is selected on the basis of Hannan Quinn Criteria (HQ). Table 4.6.1 above explains the short run linear relationship between determinants of exchange rate fluctuations in Nigeria.

4.6.2.1.1 Apriori Criteria

The short run analysis suggests that the estimated coefficient of the lagged error correction term ECM (-1) has the expected negative sign, it shows that the speed of adjustment is relatively low, and it shows that only about 1.23% of the disequilibrium within the model in the previous year is subsequently corrected in the current year. This conforms to the apriori expectation. The result of the error correction term provides strong evidence that there is indeed a long-run equilibrium

relationship between the exogenous variables (SPE, BOP, FDI and GDP) and EXT which is a proxy of exchange rate fluctuation.

FDI is the only variable in the short run equilibrium that retained its sign as in the long run equilibrium. (SPE) is positively related to exchange rate with a positive elasticity effect of 0.7% implying that a 1% increase in SPE holding other variables constant will lead to about 0.7% increase in exchange rate fluctuation in Nigeria. This is however in consonance with the apriori expectation of the variable.

The past value of SPE was found to be positively related to exchange rate fluctuation to the value of 0.05 showing that in the short run, one percent increase in SPE(-1) holding other variables constant will lead to about 0.05% increase in exchange rate fluctuation of the country. The result is not consistent with the apriori expectation speculation is positively related to exchange rate. It is however consistent with the findings of the work of (Maitra et al., 2019 and Dawlat et al., 2021).

Balance of payment which has a positive sign shows that BOP and exchange rate fluctuation are positively related; implying that a percent increase in BOP will lead to about 0.0002% increase in exchange rate fluctuation in the short run. This sign is in conformity with the apriori expectation. This result of BOP is consistent with the findings of Afolabi et al., (2017) which found a significant positive relationship between balance of payment and exchange rate in Nigeria between the periods of 1985 and 2015.

Deriving from table 4.5, a non-increasing relationship exists between FDI and exchange rate fluctuation in Nigeria. This indicates that one percent increase in FDI may lead to about 0.02% increase in exchange rate fluctuation. This result of FDI can be related to the findings of Kilicarslan, (2018). This do not conform to the sign expectation of the variable.

Further, in the result, GDP was found to have a negative impact on exchange rate fluctuation. It shows that one percent increase in GDP holding other variables constant may lead to about 2% decrease in exchange rate fluctuation. It is also not consistent with the apriori criterion.

The summary of the apriori expectation of the short run model is given in table 4.6.1

Table 4.6.2: Summary of the Apriori expectations of the short run model

Variables	Expected sign	Observed sign	Remark
Δ(SPE))	+	+	Conform
Δ(SPE(-1))	+	+	Conform
ΔBOP	+	+	Conform
ΔFDI	+	-	Not Conform
ΔGDP	+	-	Not conform
ECM(-1)	-	-	Conform

SOURCE; AUTHOR'S COMPUTATION, (2022)

4.6.2.1.2 Statistical Criteria

Still on the basis the probability value (p-value) of each of the variables as shown in table 4.6.2 foreign direct investment (FDI), GDP, and BOP were found to be significant and therefore do contribute to the exchange rate fluctuation of the country in the short run. Other variables such as SPE and the lagged value of the Error Correction Model ECM(-1) were found to be statistically significant at 5%. This implies that the variables contributes significantly to exchange rate fluctuation in the short run and therefore are major determinants of exchange rate fluctuation in the country.

4.6.2.1.3 Econometric Criteria

Coefficient of determination (R^2)

The R^2 of the model is about is 0.597. It indicates that about 60% of the total variation in the measure of economic growth in the short run is explained by all the explanatory variables included in the model. The 40% remaining is be due to the stochastic error term.

Adjusted R^2

The adjusted R^2 corrects the biasedness of the R^2. It shows the actual variation in the shows actual variations in exchange rate fluctuation captured by the independent variables introduced in the model after taking into considerations effect of additional explanatory variables on R^2. It can be seen that adjusted R^2, due to data transformation still explain about 46% of the total variations in economic growth and the remaining 54% is be due to error term.

F-statistics

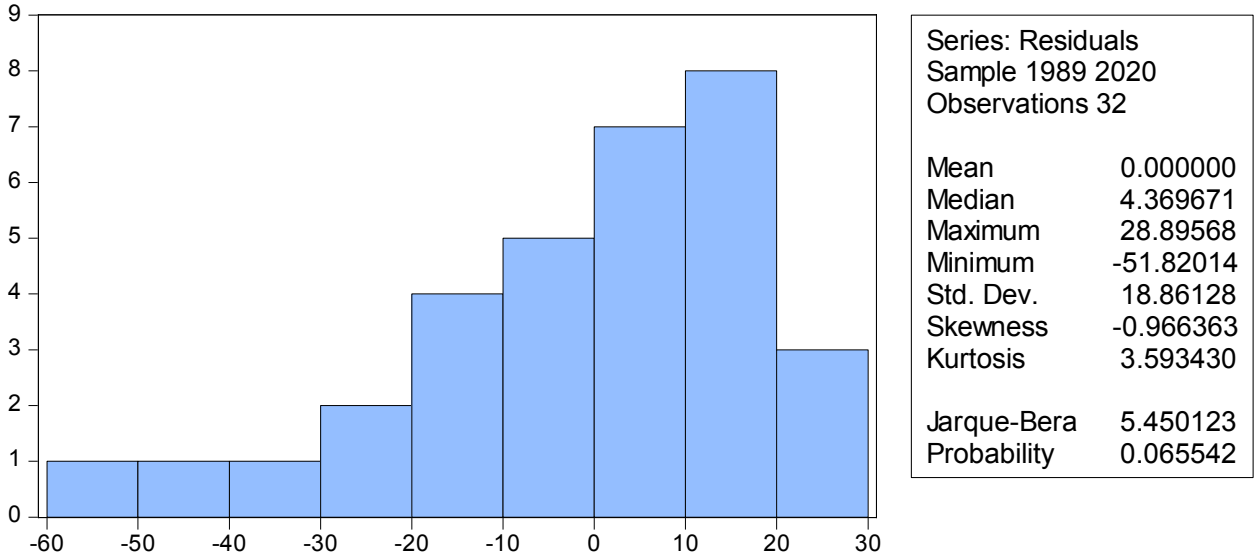
The F-statistics of the short run model is statistically significant since the p-value (0.000) is less than 0.005. Also, the calculated F-statistics (4.45) is greater than the table value of F-statistics (2.57) with 6 and 21 degree of freedom. With this, this study rejects the null hypothesis that all the explanatory variables in the model are jointly significant in explaining exchange rate fluctuation in the short run.

Durbin Watson (DW) Statistics

The DW test statistics of 1.81 shows an absence of auto or serial correlation in the model. It shows that the successive values of the error term are not related to their respective previous values. This is because the calculated value of DW (1.81) falls between the lower critical level and upper Durbin Watson value (D_u) and 2 at 5% level of significance. Hence, this study rejects the null hypothesis of the presence of serial correlation in the short run model

4.7 Normality Test

Figure 4.7: The normality test is shown below

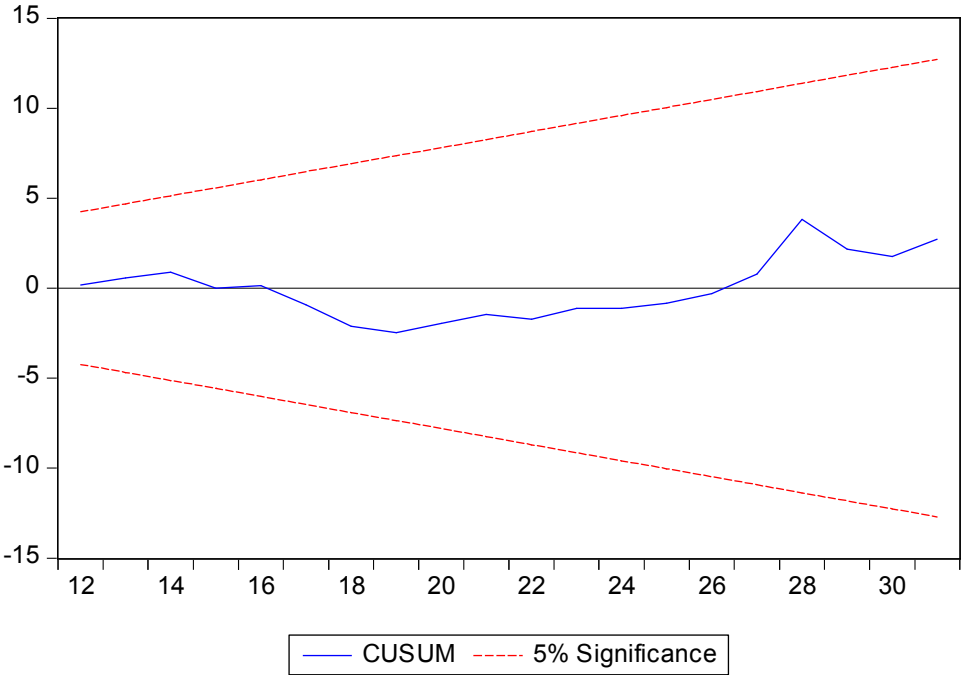


SOURCE; AUTHOR'S COMPUTATION, (2022)

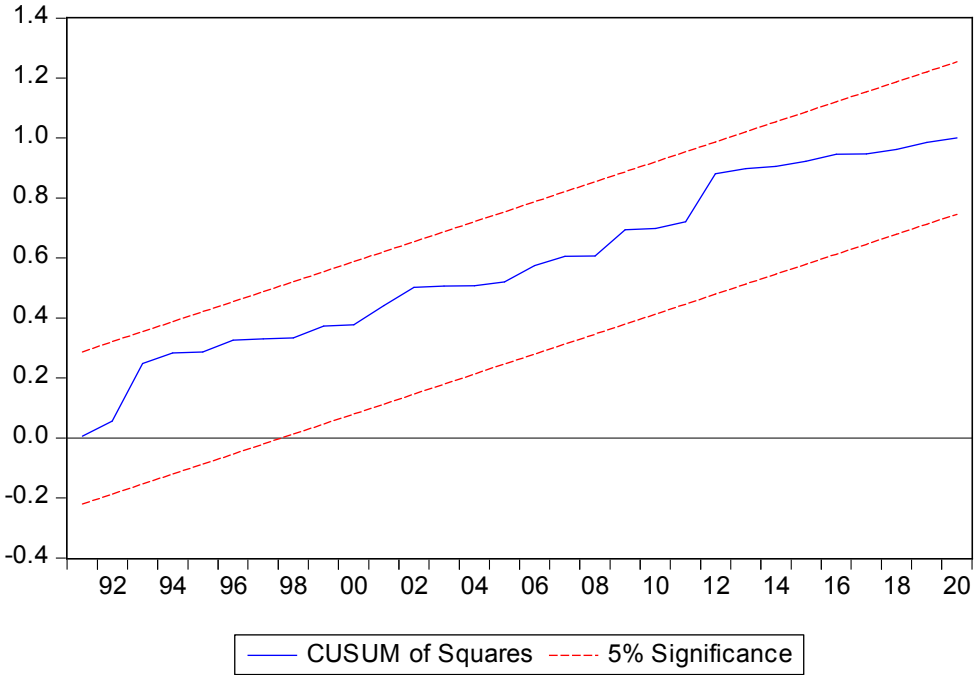
The result of the normality test is shown in the figure 4.7. The result shows that the residual is normally distributed with the probability value exceeding 0.05(five percent) which marks the acceptance of null hypothesis.

4.8 DIAGNOSTICS TEST

4.8.1 CUSUM Stability Test



SOURCE; AUTHOR'S COMPUTATION, (2022)

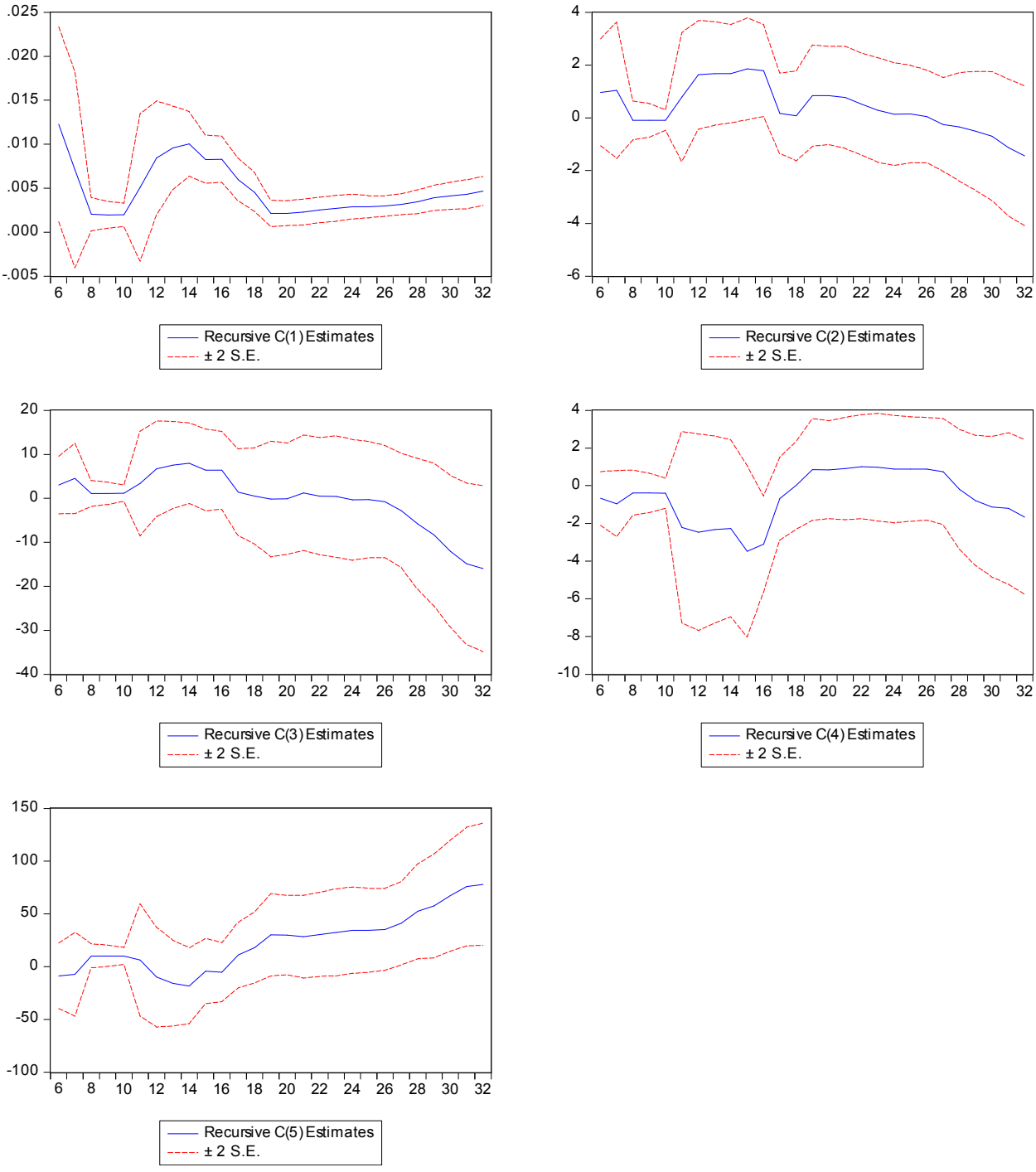


SOURCE; AUTHOR'S COMPUTATION, (2022)

Figure 4.8: Plot of Cumulative Sum of Recursive Residuals (CUSUM)

The results of the stability test are shown in the figure 4.8. As the guideline suggests that if the blue line falls between the two red lines (above and below), it implies that the residual is stable. Therefore, from the foregoing, using the Recursive Estimation Test (CUSUM of SQUARES and the Recursive Coefficient), we conclude that the residual is stable since the blue line falls between the two red lines (above and below).

4.8.2 Recursive Coefficient Stability Test



SOURCE; AUTHOR'S COMPUTATION, (2022)

The results of the stability test are shown in the figure 4.8.2. As the guideline suggests that if the blue line falls between the two red lines (above and below), it implies that the residual is stable.

Therefore, from the foregoing, using the Recursive Estimation Test (CUSUM of SQUARES and the Recursive Coefficient), this study conclude that the residual is stable since the blue line falls between the two red lines (above and below).

4.8.3 Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test			
F-Statistic	0.539146	Prob. F (2, 19)	0.5919
Obs*R-Squared	1.557427	Prob. Chi-Square (2)	0.4590

SOURCE; AUTHOR'S COMPUTATION, (2022)

H_0: error terms are not serially correlated

H_1: error terms are serially correlated

The Breusch-Godfrey Serial Correlation LM Test was applied to test for the possibility of existence of serial correlation among the variables. Further, from the result as shown in the table 4.8.3, the probabilities of the F-statistics and the value of R-squared is greater than 0.05, this study accept the null hypothesis and reject the alternative hypothesis and conclude that error terms are not serially correlated. It shows that the successive values of error term are not related to their previous values which signify that the residual is desirable.

4.8.4 Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Godfrey			
F-Statistic	0.564697	Prob. F (7, 21)	0.7760
Obs*R-Squared	4.594000	Prob. Chi-Square (7)	0.7094
Scaled explained SS	8.755536	Prob. Chi-Square (7)	0.2707

SOURCE; AUTHOR'S COMPUTATION, (2022)

Also, the table contains the homoskedasticity test using the following hypotheses:

H_0: The model residuals are homoskedastic;

H_1: The model residuals are not homoskedastic;

Looking at the table above the P-value of 0.7760 is over and above the critical value at 5% significance level which indicates acceptance of H_0; consequently, the residuals of the estimated model are homoskedastic and the estimator is efficient.

Table 4.6 reveals that a R^2 value of 97% in the long run shows that the variables included in the model are hugely responsible for the variations in exchange rate fluctuation in the long run, in comparison to the relatively low R^2 value of 60% in the short run equilibrium. This reveals that the explanatory potent of the variables in the model is relatively low in explaining exchange rate fluctuation in the short run. Theoretical and empirical investigations suggest that it takes time for the economy to react to changes in certain macroeconomic variables like balance of payment,

foreign direct investment, etc. Therefore, the gap between the long run R^2 and short run R^2 may be due to the adjustment of the short run equilibrium to the long run equilibrium.

Drawing from the both the long run and short run ARDL model results, speculation was found to have a statistically insignificant and a statistically significant positive relationship with exchange rate fluctuation in the long run and short run respectively. The positive impact and effect were 14% and 1% respectively. This implies that in the short run, *ceteris paribus,* an increase in speculation will lead to a greater positive effect on exchange rate fluctuation than in the long run.

Further, gross domestic product was found to be positive and significant in both the long run and short run with a long run impact of about 0.05 and a short run effect of about 0.03. This shows that exchange rate is relatively more effective in the short run compared to the long run.

Foreign direct investment inflow into the country was found to have an insignificant negative impact of 41% and an effect of 48% in the long run and short run respectively. This shows that in the long run, *ceteris paribus,* an increase in foreign direct investment may not lead to a 41% increase in exchange rate fluctuation while in the short run also; an increase in foreign direct investment may not lead to a 48% increase in exchange rate fluctuation since foreign direct investment is found to be insignificant in both periods.

Test of Hypotheses

In this section, the hypotheses enumerated in the chapter one of this study tested based on empirical analysis results carried out by the study. The hypothesis is therefore re-stated here for clarity purposes.

H_O: There is no significant relationship between gross domestic product and exchange rate fluctuation in Nigeria.

H_O: Foreign direct investment has no significant effect on exchange rate fluctuation in Nigeria.

H_O: Balance of payment has no significant effect on exchange rate fluctuation in Nigeria

H_O: Speculation has no significant effect on exchange rate fluctuation in Nigeria.

The focus of this study is on determinants of exchange rate fluctuations. Five major indicators of exchange rate fluctuation were used by this study. They include foreign direct investment and gross domestic product, balance of payment and speculation. These five variables used to test or validate the hypotheses stated.

Using the t-statistics or the probability value of the variables to test the individual significance of SPE and BOP, speculation was found to be insignificant (0.4014) while balance of payment was found to be significant (0.0201), foreign direct investment was found to be significant (0.0376) and GDP found to be significant (0.0173)

Further, using the probability value of the F-statistics to test the joint significance of speculation, foreign direct investment, balance of payment and gross domestic product (determinants) on exchange rate fluctuation, it is found that the p-value (0.003573) is less than 0.05. Therefore, all the variables are jointly significant in explaining exchange rate in Nigeria.

Therefore, it is clear that determinant has a significant but negative impact on the exchange rate fluctuation of Nigeria. Therefore the study reject the null hypothesis and accept the alternative hypothesis and conclude that a significant relationship exist between determinant and exchange rate fluctuation in Nigeria. Therefore in general, an increase in the determinant may lead to a significant decrease in exchange rate fluctuation of Nigeria.

4.9 Discussion of Findings

The study employed gross domestic product, foreign direct investment, balance of payment and speculation as the independent variables while the dependent variable is exchange rate fluctuation.

4.9.1 Gross domestic product as a Determinant of Exchange rate Fluctuation in Nigeria.

Specifically, the result revealed that gross domestic product has a negative effect on exchange rate fluctuation (via EXT proxy), evidenced by $\beta = 0.0173$; $T = -2.583779$, $p < 0.05$. This is consistent with the prediction of the economic theory that the avenue through which exchange rate of a nation influences the level of growth of an economy and particularly tailored toward creating value and promotes macroeconomic stability. The finding of the work of Benjamin et al., (2019) compliments the findings of this study. It shows that exchange rate volatility has a negative and significant effect on the economic growth of Nigeria. Also, Akinlo and Onatunji (2020) findings of the works show that exchange rate volatility is negative and statistically significant only in the case of Nigeria. This result is in tandem with (Alagidede and Ibrahim 2017).

4.9.2 Influence of Foreign direct investment on exchange rate fluctuation in Nigeria.

The empirical result shows that the foreign direct investment has a negative relationship with exchange rate fluctuation (via EXT proxy), as indicated by $\beta = 0.0376$; $T = -1.733881$, $P < 0.05$. The result corroborate with the assumption of monetary theory which recognizes the global movement of funds, beside its relation to factors such as financial capital. In addition, it

attributes variation in exchange rate essentially to income and expected rates of return as well as other factors that influence the supplies of and demands for the various national currencies. This finding is in conformity with the findings of Sabina et al., (2017), Lawler et al., (2018) and Fasina (2022), but it was contrary to the results from the studies of Zakari (2017), Okonkwo 2021 and Fasina (2022).

4.9.3 Influence of Balance of payment on exchange rate fluctuation in Nigeria.

The result revealed that balance of payment has a positive and significant determinant of exchange rate fluctuation (via EXT proxy), evidenced by $\beta = 0.00201$; $T = 0.101584$, $p < 0.05$. That is, an increase in balance of payment would lead to increase in exchange rate fluctuation. This is also supported by the Macroeconomic theory as stated in the theoretical review of this study that there is relationship between real exchange rate and macroeconomic fundamentals that are delivered from the determinants of saving, investment and current account a set of transitory factors influencing the real exchange rate in the short-run. The finding of the study conforms to previous studies such as in Mussa, (2020), Priyatharsiny, (2017) and Afolabi et al., (2017) that revealed a positive and significant relationship between balance of payment and exchange rate fluctuation in Nigeria.

4.9.4 Speculation as a Determinant of Exchange rate fluctuation in Nigeria.

The empirical results from hypothesis four revealed that speculation is positive but an insignificant determinant of exchange rate fluctuation in Nigeria ($\beta = 0.4014$; $T = 0.856398$, $P > 0.05$). This confirmed the economic theory that the avenue through which exchange rate of a nation influences the level of growth of an economy and particularly tailored toward creating

value and promotes macroeconomic stability. This finding is in line with *a prori* expectation of the study, as the researcher expect that use of speculation would influence exchange rate fluctuation. This empirical finding is in tandem with the work of Maitra et al., (2019) and Dawlat et al., (2020). The findings of the work of Dawlat et al., (2020), it was observed that speculation has a positive but insignificant effect on exchange rate fluctuation in Nigeria.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Determinants of exchange rate fluctuations have important role in determining growth & development in countries around the globe. Most countries have managed their domestic currencies in relation to major trading currencies to attain and sustain steady rates of long-term economic development; this premise establishes the assertion that an appreciation or depreciation of domestic currencies plays a key role in influencing Nigeria's trade balance and ultimately its growth & development

Consequently, exchange rate fluctuation has negatively affected exchange rate contributions to the growth and development of the most countries. Similarly, Nigeria has experienced a serious fall in exchange earning to GDP, depletion of external reserve, scarcity of foreign exchange caused by exchange rate fluctuation by management of exchange rate. Despite the series of exchange rate policies, regulation, deregulation measures in Nigeria, particularly the relatively fixed exchange rate policy used since 2013 till date, economic and political considerations affect fluctuations in the country resulting from huge external and internal debt, chronic fiscal deficit, serious economic decline, inflationary pressure and persistent balance of payment deficit. Therefore, given the role of exchange rate fluctuation in an economy, exchange rate is one of the tools used to assessing economic performance as they are crucial in international balance by changing the local currency value in response to a change in economic conditions. In view of this, this study examined determinants of exchange rate fluctuations in Nigeria. To achieve this objective, four (4) specific objectives were developed to proffer answers to the questions, these

include; to determine the extent to which gross domestic product affect exchange rate fluctuation in Nigeria; to examine the effect of foreign direct investment on exchange rate fluctuation in Nigeria; to ascertain the effect of balance of payment on exchange rate fluctuation in Nigeria; to investigate the effect of speculation on exchange rate fluctuation in Nigeria.

The study reviewed several extant literatures on exchange rate fluctuation. This was divided into three sub-chapters; the conceptual review, theoretical review and empirical review. The study critically examines the concept of exchange rate; concept of exchange rate fluctuation; and determinants of exchange rate fluctuations. Also, the study reviewed theories and monetary theory and macroeconomic theory underpinning this study. The empirical findings of the previous researchers were reviewed and divided into studies on developed, developing and Nigeria for easy understanding and to show the gaps on the previous studies on determinants of exchange rate fluctuations. The study also reveals a number of gaps in the extant literatures reviewed such as time gap, methodological gap, institutional gap and variable gap.

The study employed ex-post facto research design to examine the determinants of exchange rate fluctuations in Nigeria within the period of 1989 and 2020. The data was sourced from the World Data Bank Indicator, Nigeria Stock Exchange and Central Bank of Nigeria, (2021) and was analyzed through unit root tests, descriptive and Augmented Dickey Fuller (ADF), Dickey Fuller (DF) and Philips-Perron (PP), bound tests and diagnostic tests. The four hypotheses formulated were tested using Autoregressive Distributed Lag model and diagnostic tests (Cusum and Recursive test) model was used to confirm and estimate the long run relationship between the dependent and the independent variables of the model as well as the short run dynamics of the relationship between determinant and exchange rate fluctuation in Nigeria. Lawler (2018) model was adapted and modified in order to include some variable not captured by their study.

Exchange rate fluctuation (dependent variable) while the independent variable was proxy using gross domestic product, balance of payment, foreign direct investment and speculation.

The study revealed that balance of payment has a positive and significant effect on exchange rate fluctuation in Nigeria. The study also revealed that speculation has positive but insignificant relationship with exchange rate fluctuation in Nigeria. The study further revealed that gross domestic product and foreign direct investment have negative but significant effect on exchange rate fluctuation in Nigeria.

5.2 Conclusion

Based on the empirical results of the hypotheses tested in chapter four, the following conclusions are put forward:

i. The study concludes that gross domestic product has a negative relationship with exchange rate fluctuation in Nigeria. This means that 1% percent increase on gross domestic product will lead to 1% decrease on exchange rate.
ii. In the same way, the study concludes that foreign direct investment has a negative relationship with exchange rate fluctuation in Nigeria. This means that 1% percent increase on FDI will lead to 1% decrease in exchange rate. This signify that government needs to seriously monitor capital inflow as well as outflow in order control capital flight which could decrease the positive effect of foreign direct investment in a country
iii. The study also concludes that balance of payment constitutes a positive and significant determinant of exchange rate fluctuation in Nigeria. This is an indication that 1% increase on balance of payment will be lead 1% increase in exchange rate. Therefore, government needs to monitor change in exchange rate tenaciously.

iv. The study also concludes that speculation is positive but an insignificant determinant of exchange rate fluctuation in Nigeria. This shows that Nigeria Exchange Group for years under review has not felt the impact of return of stock market on the exchange rate fluctuation in Nigeria.

5.3 Recommendations

The following policy recommendations are suggested based on the findings of this study:

i. Based on the finding which shows that Gross Domestic Product has negative effect on exchange rate fluctuation in Nigeria. The study recommends that policies that will improve the economic growth should be pursued; this will help in stabilizing the exchange rate in Nigeria. This will have positive effects on our currency (Naira) and economic at large.

ii. Furthermore, it was revealed that foreign direct investment has a significant effect on exchange rate fluctuation in Nigeria. Hence, it is recommended that the Central Bank of Nigeria (CBN) should provide a favourable environment in terms of the implementation of the appropriate monetary policies, exchange rate etc in order to attract both domestic and foreign investment which will create employment opportunities for the Nigerian populace and in turn lead to the expansion of industrial sector in the country.

iii. Similarly, the finding revealed that the balance of payment have a positive and significant effect on exchange rate fluctuation in Nigeria. Based on this, the study recommends that Government should concentrate efforts on stabilizing the deficit balance of payment in order to build strong and stable economy. Since, it value yields positive effect on exchange rate fluctuation in the economy.

iv. More so, the finding of this study shows that speculation has a positive and insignificant effect on exchange rate fluctuation in Nigeria. This study therefore recommends that policy makers should also give due consideration on foreign exchange policy when devising the monetary policies as the development of the capital market is very much crucial for a sound economic and financial system as well as for a better economic growth.

5.4 Contributions to knowledge

This section focuses on the areas in which study contributes to knowledge on the determinants of exchange rate fluctuations in Nigeria. This study has contributed to knowledge in the following ways:

i. Most of the studies conducted in Nigeria, developed and developing countries focused on real exchange rate such as economic growth, net foreign asset crude oil price, and domestic debt as determinants of exchange rate fluctuation while few studies focused on volatilities balance of payment, foreign direct investment, and speculation) as determinants of exchange rate fluctuations ignoring other salient factors that would influence economies in exchange rate volatility. To best of researcher's knowledge, scanty study had employed speculation as an exchange rate to exchange rate fluctuation in developing countries and Nigeria.

ii. In addition, it has been observed that substantial number of studies on determinants of exchange rate volatility in developed, developing countries and Nigeria had only focused on different multiple regressions as estimation techniques. However, this necessitated the utilization of Autoregressive lag (ARDL), Augmented Dickey Fuller (ADF), Dickey Fuller (DF) and Philips-Perron (PP), Hannan Quinn (HQ) & Cusum

test the next line of action. Little or no studies had used this methodological approach. Hence this study aims to bridge the gap.

iii. Most of the previous studies reviewed had employed the assumption of one theory (such as macroeconomics theory, monetary theory, economic growth theory and purchase power parity theory) to link the relationship between the independent and dependent variables of their studies. The study differs by combining the assumptions of macroeconomics and monetary theory to explain the relationship among the independent variables and dependent

iv. More so, few studies on exchange rate fluctuations in developed and developing economies were found to cover 2020 as research study period. To the extent of literature found, little or no study were found to cover 1989-2020 as a study period in Nigeria. Thus, the study tends to bridge the timing gap in the existing literature by covering the period 1989-2020 which will be adding to the recent scanty studies in exchange rate fluctuations literature.

5.5 Limitation and Delimitation of the study

The findings of this study of this research work are limited to four germane determinants variables of the exchange rate fluctuations in Nigeria as they are few empirical evidences in extant literature. For instance, others variables to proxy determinants are not captured in the study because sufficient empirical evidences relating to them abound in previous literature and The naira/ dollar exchange rate was used because dollar account for about 80% of Nigeria's foreign transactions thus the study is limited using naira/ dollar exchange rate. Another limitation is that, the study failed to conduct naira/pound sterling and naira/euro exchange rates.

Furthermore, data collected was for 32 years (1989-2020), thus this research could not account for timing –lag effect of 2021, 2022, because of data of this sampled were not available for public access.

Despite these limitations, it has no effect on the empirical findings on this study as a result of adequate supportive and statistical evidence deployed to make the results reliable.

5.6 Suggestion for Further Studies

In order to improve on the study on the limitation and delimitation identified, the findings suggest the following for future researchers interested in this study area:

i. The study focused on mainly exchange rate fluctuation in Nigeria; further studies should be captured by using naira/euro, naira/pound sterling to proxy exchange rate fluctuation
ii. The study used secondary data for 32 years (1989-2020); further research should look into a wider ranging to include 2021, 2022 data for which access could not be gotten as at the time of carrying out this research work.
iii. The variables could be increased to captured as many as possible macroeconomic variables in Nigeria such as inflation, interest rate, growth rate, tax revenue etc.
iv. Further research could expand the scope of the study to capture the determinants of exchange rate fluctuations in other Africa countries.

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APPENDIX ONE

Unit root result

EXRT AT LEVEL

Null Hypothesis: EXRT__N_US$1 has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.167286	0.9971
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

SOURCE: AUTHOR'S COMPUTATION, (2022)

AT FIRST DIFF

Null Hypothesis: D(EXRT__N_US$1) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.640913	0.0009
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

*MacKinnon (1996) one-sided p-values.

SOURCE: AUTHOR'S COMPUTATION, (2022)

BOP AT LEVEL

Null Hypothesis: BOP has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.678241	0.4309
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

AT DIFF

Null Hypothesis: D(BOP) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.927877	0.0000
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

FDI AT LEVEL

Null Hypothesis: FDI____OF_GDP has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.023541	0.0444
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

SPE AT LEVEL

Null Hypothesis: ASI has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic		-3.403407	0.0188
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

GDP AT LEVEL

Null Hypothesis: GDP_GROWTH_RATE__ has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.317582	0.0020
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

DF. SPE AT LEVEL

Null Hypothesis: SPE has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic		-0.911287
Test critical values:	1% level	-2.644302
	5% level	-1.952473
	10% level	-1.610211

SOURCE: AUTHOR'S COMPUTATION, (2022)

AT DIFF

Null Hypothesis: D(SPE) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic		-3.848583
Test critical values:	1% level	-2.647120
	5% level	-1.952910
	10% level	-1.610011

SOURCE: AUTHOR'S COMPUTATION, (2022)

PP

At level SPE

Null Hypothesis: SPE has a unit root
Exogenous: Constant
Bandwidth: 9 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.959486	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

SOURCE: AUTHOR'S COMPUTATION, (2022)

BOP DF

AT LEVEL

Null Hypothesis: BOP has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic		-1.721629
Test critical values:	1% level	-2.650145
	5% level	-1.953381
	10% level	-1.609798

SOURCE: AUTHOR'S COMPUTATION, (2022)

AT DIFF

Null Hypothesis: D(BOP) has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic		-2.830274
Test critical values:	1% level	-2.653401
	5% level	-1.953858
	10% level	-1.609571

SOURCE: AUTHOR'S COMPUTATION, (2022)

BOP

PP AT LEVEL

Null Hypothesis: BOP has a unit root

Exogenous: Constant
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.566707	0.1109
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

SOURCE: AUTHOR'S COMPUTATION, (2022)

AT DIFF

Null Hypothesis: D(BOP) has a unit root
Exogenous: Constant
Bandwidth: 28 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-8.486611	0.0000
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

SOURCE: AUTHOR'S COMPUTATION, (2022)

EXRT DF

AT LEVEL

Null Hypothesis: EXRT__N_US$1 has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic		1.318121
Test critical values:	1% level	-2.644302
	5% level	-1.952473
	10% level	-1.610211

SOURCE: AUTHOR'S COMPUTATION, (2022)

AT DIFF

Null Hypothesis: D(EXRT__N_US$1) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic

Elliott-Rothenberg-Stock DF-GLS test statistic		-4.736902
Test critical values:	1% level	-2.647120
	5% level	-1.952910
	10% level	-1.610011

SOURCE: AUTHOR'S COMPUTATION, (2022)

EXRT PP

AT LEVEL

Null Hypothesis: EXRT__N_US$1 has a unit root
Exogenous: Constant
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		1.548368	0.9990
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

SOURCE: AUTHOR'S COMPUTATION, (2022)

AT DIFF

Null Hypothesis: D(EXRT__N_US$1) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.642728	0.0009
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

SOURCE: AUTHOR'S COMPUTATION, (2022)

FDI DF

AT LEVEL

Null Hypothesis: FDI____OF_GDP has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic		-2.351818
Test critical values:	1% level	-2.647120
	5% level	-1.952910
	10% level	-1.610011

SOURCE: AUTHOR'S COMPUTATION, (2022)

FDI PP

AT LEVEL

Null Hypothesis: FDI____OF_GDP has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.815516	0.0070
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

SOURCE: AUTHOR'S COMPUTATION, (2022)

GDP DF

AT LEVEL

Null Hypothesis: GDP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic		-4.386165
Test critical values:	1% level	-2.644302
	5% level	-1.952473
	10% level	-1.610211

SOURCE: AUTHOR'S COMPUTATION, (2022)

GDP PP
AT LEVEL

Null Hypothesis: GDP has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.320254	0.0020
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

SOURCE: AUTHOR'S COMPUTATION, (2022)

Intercept with time trend

AT LEVEL

Null Hypothesis: EXRT__N_US$1 has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.090378	0.9141
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: EXRT__N_US$1 has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.179834	0.8967
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: FDI____OF_GDP has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.770694	0.0331
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: FDI____OF_GDP has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.873171	0.0261
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: GDP has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.239283	0.0114
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: GDP has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.242509	0.0113
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.

SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: BOP has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 2 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.589008	0.7716
Test critical values:	1% level	-4.323979	
	5% level	-3.580623	
	10% level	-3.225334	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: BOP has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 5 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.509871	0.3214
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022

Null Hypothesis: ASI has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.664973	0.7417
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: ASI has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 8 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.551637	0.7880
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

Intercept with time trend

AT FIRST DIFF

Null Hypothesis: D(EXRT__N_US$1) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.006105	0.0019
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: D(EXRT__N_US$1) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.979200	0.0020
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

*MacKinnon (1996) one-sided p-values.

SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: D(BOP) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.825168	0.0003
Test critical values:	1% level	-4.323979	
	5% level	-3.580623	
	10% level	-3.225334	

*MacKinnon (1996) one-sided p-values.

SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: D(BOP) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 28 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-8.117759	0.0000
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

*MacKinnon (1996) one-sided p-values.

SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: D(SPE) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.946136	0.0023
Test critical values:	1% level	-4.323979	
	5% level	-3.580623	
	10% level	-3.225334	

*MacKinnon (1996) one-sided p-values.

SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: D(SPE) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 10 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.842657	0.0000
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	

	10% level	-3.221728

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: D(FDI____OF_GDP) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic - based on SIC, maxlag=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.179540	0.0013
Test critical values:	1% level	-4.323979	
	5% level	-3.580623	
	10% level	-3.225334	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

Null Hypothesis: D(FDI____OF_GDP) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 14 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-13.18165	0.0000
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

*MacKinnon (1996) one-sided p-values.
SOURCE: AUTHOR'S COMPUTATION, (2022)

Long run ARDL model result

Dependent Variable: EXR
Method: Least Squares
Date: 03/22/22 Time: 14:59
Sample: 1989 2020
Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.341162	3.836895	0.610171	0.5477
SPE	0.795731	0.158056	5.034477	0.0000
SPE(-1)	0.140242	0.083612	1.677285	0.1070
BOP	0.002513	0.002682	0.936884	0.3586
FDI	-0.405637	0.400479	-1.012878	0.3217
GDP	0.004721	0.001615	2.922420	0.0077

R-squared	0.973304	Mean dependent var	24.90799
Adjusted R-squared	0.966340	S.D. dependent var	1.122541
S.E. of regression	0.205949	Akaike info criterion	-0.121411
Sum squared resid	0.975547	Schwarz criterion	0.205536
Log likelihood	8.821158	F-statistic	139.7589
Durbin-Watson stat	2.612178	Prob(F-statistic)	0.000000

SOURCE: AUTHOR'S COMPUTATION, (2022)

Short run ARDL model results

Dependent Variable: D(EXR)
Method: Least Squares
Date: 03/22/22 Time: 15:04
Sample(adjusted): 1990 2020
Included observations: 31 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007251	0.044599	0.162591	0.8724
D(SPE)	0.693578	0.242811	2.856450	0.0095
D(SPE(-1)	0.052939	0.061816	0.856398	0.4014
D(BOP)	0.000210	0.002065	0.101584	0.9201
D(FDI)	-0.476775	0.274976	-1.733881	0.0976
D(GDP)	-0.027212	0.010532	-2.583779	0.0173
ECM(-1)	-1.229055	0.285860	-4.299503	0.0003

R-squared	0.597397	Mean dependent var	0.102761
Adjusted R-squared	0.463196	S.D. dependent var	0.247193
S.E. of regression	0.181111	Akaike info criterion	-0.350465
Sum squared resid	0.688824	Schwarz criterion	0.026720
Log likelihood	13.08174	F-statistic	4.451508
Durbin-Watson stat	1.815535	Prob(F-statistic)	0.003573

SOURCE: AUTHOR'S COMPUTATION, (2022)