NEAR EAST UNIVERSITY

INSTITUTE OF GRADUATE STUDIES

DEPARTMENT OF BANKING AND FINANCE

INVESTIGATING THE IMPACT OF THE CURRENCY EXCHANGE RATE ON SUSTAINABLE DEVELOPMENT IN NIGERIA (1980-2019)

MSc. THESIS

FAITHFUL JUSU ZUBAH

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FAITHFUL JUSU ZUBAH

Supervisor

Assoc. Prof. Dr. Turgut Tursoy

Chairman, Banking and Finance Department

Nicosia

JANUARY, 2023

Approval

After careful scrutiny of the thesis titled: **"INVESTIGATING THE IMPACT OF THE CURRENCY EXCHANGE RATE ON SUSTAINABLE DEVELOPMENT IN NIGERIA (1980-2019)**. submitted by **FAITHFUL JUSU ZUBAH**. It has met the unanimous consensus and in our combined opinion, it is fully adequate, in scope and in quality, as a thesis for the degree of Master Educational Sciences, and hereby recommended for approval and acceptance.
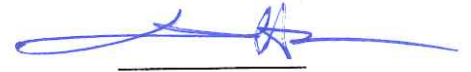
Examining Committee:	Name-Surname:	Signature:
Head of the committee:	Prof. Dr. Turgut Tursoy	
Committee Member:	Asst. Prof. Dr. Mehdi Seraj	
Committee Member:	Asst. Prof. Dr. Ala Fathi Assi	
Supervisor:	Prof. Dr. Turgut Tursoy	

Approved by the Head of the Department

17 /01 /20 23

Prof. Dr. Turgut Tursoy

Head of the Department

Approved by the Institute of Graduate studies

____ / ____ /20 ____

Prof. Dr. Kemal Husnu Can Baser

Head of the Institute

Declaration

I, the undersigned, hereby declare that all of the information that is being presented in this thesis with the title " Investigating the impact of the currency exchange rate on sustainable development in Nigeria (1980-2019), was collected, analyzed, and tailored in accordance with all of the academic rules and ethical guidelines of the institute of Graduate School, Near East University. I further declare that all supplementary materials that were utilized in the process of preparing this thesis have been appropriately credited, acknowledged, and referenced to the best of my abilities.

FAITHFUL JUSU ZUBAH

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Abstract
INVESTIGATING THE IMPACT OF THE CURRENCY EXCHANGE RATE ON SUSTAINABLE DEVELOPMENT IN NIGERIA (1980-2019)
FAITHFUL JUSU ZUBAH
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The aim of this dissertation is to look at the influence of the present exchange rate on Nigeria's sustainable development. Introduction (1980-2019). According to Jhingan (2003), the rate at which the currency of one nation may be exchanged for the currency of another nation is referred to as the exchange rate. He went on to examine the worth of one nation's currency in terms of the value of another nation's currency. Consider the current value of one dollar in relation to the naira, Nigeria's second currency. In other words, it is the total amount of Naira required to acquire one US dollar. The phrase "exchange rate" relates to the cost in terms of money for which one nation's currency may be purchased or sold on the global currency exchange market. For a long time, exchange rate volatility has been a difficult problem to address, both theoretically and practically. One of the outstanding issues is the examination of the elements that influence the equilibrium conversion rate. In the 1970s, when the Bretton Woods agreement fell apart, the prices of different countries' currencies were able to change. For data analysis, the ARDL technique was applied in this study. The findings indicate that the exchange rate and FDI are important and have a beneficial impact on Nigeria's economic development. The impact of trade is considerable, with a detrimental impact the near future and a favorable impact the lengthy run. The analysis resulted in the proposal that Nigeria's economy be diversified. This would allow non-oil and service businesses to significantly contribute to the country's overall foreign currency revenues. This has grown significantly due to the high degree of volatility associated with oil earnings. Crude oil's importance will gradually decline over the next several decades due to the spread of other energy sources such as solar, wind, and nuclear power. Economic planners and policymakers in Nigeria should adopt these methods in order to move the attention away from the oil business and toward other non-oil and service sectors of the economy. This would be accomplished by shifting the focus away from the oil industry.

Keyword: Economic growth, Foreign Direct Investment, Trade, Exchange rate, ARDL model

Özet
NİJERYA'DA DÖVİZ KURUNUN SÜRDÜRÜLEBİLİR KALKINMA ÜZERİNDEKİ ETKİSİNİN ARAŞTIRILMASI (1980-2019)
FAITHFUL JUSU ZUBAH
OCAK 2023 ,Sayfa 99

Bu tezin amacı, mevcut döviz kurunun Nijerya'nın sürdürülebilir kalkınması üzerindeki etkisine bakmaktır. Giriş (1980-2019). Jhingan'a (2003) göre, bir ülkenin para biriminin başka bir ulusun para birimiyle değiştirilebileceği kur, döviz kuru olarak adlandırılır. Bir ülkenin parasının değerini başka bir ülkenin parasının değeri açısından incelemeye devam etti. Nijerya'nın ikinci para birimi olan naira ile ilgili olarak bir doların bugünkü değerini düşünün. Başka bir deyişle, bir ABD doları almak için gereken toplam Naira miktarıdır. "Döviz kuru" ifadesi, bir ulusun para biriminin küresel döviz piyasasında satın alınabileceği veya satılabileceği para cinsinden maliyetle ilgilidir. Döviz kuru oynaklığı uzun bir süredir hem teorik hem de pratik olarak ele alınması zor bir problem olmuştur. Öne çıkan konulardan biri de denge dönüşüm oranını etkileyen unsurların incelenmesidir. 1970'lerde Bretton Woods anlaşması bozulunca farklı ülke para birimlerinin fiyatları değişebiliyordu. Bu çalışmada veri analizi için ARDL tekniği uygulanmıştır. Bulgular, döviz kuru ve DYY'nin önemli olduğunu ve Nijerya'nın ekonomik kalkınması üzerinde olumlu bir etkiye sahip olduğunu göstermektedir. Ticaretin etkisi, yakın gelecekte zararlı bir etki ve uzun vadede olumlu bir etki ile dikkate değerdir. Analiz, Nijerya ekonomisinin çeşitlendirilmesi önerisiyle sonuçlandı. Bu, petrol dışı ve hizmet işletmelerinin ülkenin genel döviz gelirlerine önemli ölçüde katkıda bulunmasına olanak sağlayacaktır. Bu, petrol kazançlarıyla ilişkili yüksek derecede oynaklık nedeniyle önemli ölçüde arttı. Ham petrolün önemi, güneş, rüzgar ve nükleer enerji gibi diğer enerji kaynaklarının yaygınlaşması nedeniyle önümüzdeki birkaç on yılda kademeli olarak azalacaktır. Nijerya'daki ekonomik planlamacılar ve politika yapıcılar, dikkati petrol işinden ekonominin diğer petrol dışı ve hizmet sektörlerine çekmek için bu yöntemleri benimsemelidir. Bu, odağı petrol endüstrisinden uzaklaştırarak başarılabilir.

Anahtar Kelime: Ekonomik büyüme, Doğrudan Yabancı Yatırım, Ticaret, Döviz kuru, ARDL modeli

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Abbreviation

ARDL: Autoregressive Distributed Leg

ADF: Augmented Dickey-fuller

IFEM: Interbank Foreign Exchange Market

OLS: Ordinary Least Squares

FERS: Fixed Exchange Rate System

CBN: Central Bank of Nigeria

ECM: Error Correction Model

FDI: Foreign Direct Investment

GDP: Gross Domestic Product

IMF: International Monetary Fund

M&A: Mergers and Acquisitions

MNC: Multinational Companies

UN: United Nations

R&D: Research and development

PC: Phillips Curve

PPP: Purchasing Power Parity

AV: Absolute Version

RV: Relative Version

MPT: Mint Parity Theory of Exchange Rates

IRP: Interest Rate Parity

IFE: International Fisher Effect

UERT: Undervaluation Exchange Rate Theory

EXR: Exchange Rate

GNP: Gross National Product

ERCBE: Exchange Rate Corresponds to Behavioral Equilibrium (BEER).

MS: Money Supply

RI: Rate of Inflation

EC: Equilibrium Correction

PP: Phillip-Peron

SD: Sustainable Development

CHAPTER I

Introduction

According to Jhingan (2003), the rate at which the currency of one nation may be exchanged for the currency of another nation is referred to as the exchange rate. As he went on, he discussed the worth of the currency of one nation in relation to the value of the currency of another nation. Consider, for instance, the current worth of one dollar in light of the fact that other currency used in Nigeria, the naira. It is the number of Naira that must be paid in order to purchase one USD. On the global market for currency exchange, the term "exchange rate" refers to the value in terms of another currency that one nation's money may be bought or sold for. A typical method for determining how much of one nation currency may be obtained in exchange for one unit of currency from another country is to use an exchange rate. Rates of interest and the system that governs exchange rates are still key problems in both developing nations and international finance. This is due to the fact that an increasing number of economies recognize that the acceptance of trade liberalization is a necessary condition for economic progress (Obansa, et.al 2013). The rates of exchange are vital to the majority of free market economies around the world, as stated by Investopedia (2009). Because of this, exchange rates have a huge influence on the amount of trade that occurs inside a nation. The maintenance of a nation's ability to remain competitive depends heavily on its exchange rates. As a result, the exchange rate is taken into consideration as one of the economic indicators is observed particularly attentively, analyzed extensively, and politically manipulated. When a country's currency is overvalued, the prices of that country's exports go up on global markets, but the prices of that country's imports go up as well decreases within the country. An undervalued currency has the reverse effect. Therefore, rising exchange rates may cause the nation to have a trade balance that is lopsided.

The instability of the exchange rate has been a challenging topic, both in theory and in reality, over a considerable period of time. The research of the factors that influence the equilibrium exchange rate is one of the issues that have yet to be resolved despite the fact that it is one of the concerns that still needs to be addressed. As a direct consequence of the disintegration of the Bretton Woods agreement in the 1970s, the

values of several nations' currencies were able to fluctuate. Because of this, economists and people in decision-making positions continue to concentrate their efforts on empirical studies regarding exchange rates. It has become an important challenge for policymakers all over the world to have an understanding of the factors that may be modified to lessen the swings in the value of their own currencies. Since the 1970s, a significant amount of time and effort has been spent conducting extensive empirical research on the topic of how to predict fluctuations in the prices of real currencies, which is an important policy matter. A flood of empirical studies on the exchange rate has been inspired by considerable breakthroughs in econometrics and the increased accessibility of high-quality data. This has led to an increase in the number of empirical studies (Ajao and Igbekoyi, 2013).

One of the most important principles of macroeconomics that has an impact on an economy is the exchange rate. It is the rate at which one currency may be exchanged for another of a different kind, and it has an effect on the capacity of a nation to compete globally. In an open economy where there is a greater need than there is available foreign currency, the exchange rate and the impact that its volatility has on economic activity may have substantial repercussions for the economy (Adewuyi, et.al 2013). Nigeria's economy is dominated by a single ethnic group. Given that Nigeria generates more than 78% since the country generates % of its total revenue from the sale of crude oil on international markets, fluctuations in the price of oil in various parts of the world are likely to have a substantial impact on the economy of the country given that it draws that percentage of its income.

There have been many attempts made by academics to comprehend the behavior of exchange rates; but, so far, they have only met with occasional levels of success. Due to the fact the fact that it's tough to predict where the conversion rate will finally become stable, the concept of currency fluctuations will continue to be arbitrary. There is no straightforward response available to the question of what factors result in a certain level of the exchange rate equilibrium. In the field of macroeconomics, the most difficult empirical problem to solve is determining how much things change and how variable they are. The authorities in charge of monetary policy aren't always able to keep a tight rein on swings rate of currency exchange in effect. Only specific events that are

migration of foreign money, greater productivity brought on by technical advances, and changes in trade circumstances, among other variables, may induce shifts   of trade in international commerce in ways that were not anticipated. It will be necessary to implement strategies such as the depreciation of the currency rate and demand management if the foreign disequilibrium balance is to be properly corrected.

The Nigerian economy cannot function without the vital imports of raw materials, technological advances, and several other necessary goods from foreign countries. The country's foreign exchange is strained by the importation of these raw materials, which in turn raises the demand for foreign currency above the need for domestic currency. The fluctuating exchange rate of currencies is a result of this mismatch in demand. Nigeria's economy has been severely impacted by the recent volatility in its currency exchange rate, which has resulted in unstable macroeconomics and below-average economic growth when compared to other nations.

In addition, developing trade gives significance to this variable when contrasting the economy of Nigeria with that of developed nations that have stable market conditions. This is due to the high degree of unpredictability that characterizes the markets of developed nations and the requirement of having a stable exchange rate in order to reduce the costs and risks associated with dealing in foreign exchange. A high degree of fluctuation in exchange rates will have a substantial influence on the economy, which will, in turn, cause market instability and have an effect on a variety of other economic concerns. If investment levels fall and unfair competition gives an advantage to foreign companies in terms of product pricing, then the economic instability caused by the volatility in exchange rates would result in a significant decrease in the amount of business conducted across international borders. Stable exchange rates, according to models of economic growth, may lead to reduced inflation rates, more trade and investment, and eventually higher levels of productivity and economic growth.

Capital inflows, which are one of the primary variables determining the real currency rate, which greatly affects the total equilibrium of the currency pair. According to the Dutch Disease hypothesis (Corden and Neary, 1982), considerable capital inflows result in a rise in the market's exchange rate in real terms because these inflows have an effect on the trade industry as well as the non-trade sector. This is why the theory was

developed. On the other hand, the degree of redox potential of the capital inflow has a considerable influence on the magnitude of the appreciation that arises from the inflow of capital. This is because redox potential is inversely proportional to the size of an appreciation. Some inflows are more likely to be related to outflows than others, and those that are more likely to do so are the ones that are more prone to reversal. This implies that their effects on tax revenue and the actual exchange rate that the country experiences are different from one another.

These risky and short-term flows had a severe impact on the exchange rate industry; these inconsistencies contentedly decreased the value of emerging economies, which resulted in regression capital flows and currency devaluation; most countries increased their density of state quality of foreign currency reserves after the 1990s; and banking meltdowns. Capital reform increased capital inflows, which increased the amount of foreign reserves; however, these risky and short-term flows had a severe impact on the exchange rate industry; these inconsistencies Even if doing so stabilizes the exchange rate and causes it to be revalued, according to (Akdogan 2010 & Mendoza 2004), accumulating a significant amount of foreign exchange reserves is an ego-driven reason for unexpected changes in the economy. This is the case even if doing so causes the exchange rate to be revalued.

Alterations in the value of the currency exchange market can have repercussions for individuals, corporations, and the government. According to Benita and Lauterbach (2004), shifts in the value of a nation's currency might vary from time to time have a major influence on both the stability of the nation as a whole and the profitability of its enterprises.

Since the country's especially in the post period, when it maintained a fixed parity with the British pound, through the 1970s oil boom, and on to the floating of the monetary system in (since) 1986, following the economy's nearly total collapse between 1982 and 1985, the country's exchange rate policy has a significant shift. This transformation came about as a result of the nearly total collapse of the economy between 1982 and 1985. In the years between 1982 and 1985, this alteration took place. (2012) Akpan and Atan Between 1970 and 1985, the value of the Naira was determined with reference to a number of other prominent currencies, most notably the United

States Dollar. Because of this approach regarding the exchange rate, the value of the Naira was artificially inflated, and from 1970 to 1985, its value in relation to the dollar ranged between 0.71 to 0.89. As a direct result of this, imports of all other sorts have been encouraged, while exports of items other than oil have been shunned.

The ability of the – Central Bank of Nigeria (CBN) to monitor the market, which could prevent it from investing excessive amounts of money in the market, lower inflationary pressures, the CBN's equipment autonomy and quick access to budgetary control tools, as well as the fact that auctions were held every two weeks rather than every two weeks, which maintained a steady supply of financial products. On February 20, 2006, the CBN launched a whole new system of Dutch auctions for wholesale transactions. (WDAS). As a result of the new structure, the prices converged, which resulted in a reduction in the official interbank and bureau de-change arbitrage costs. As a direct result of this, the advantages of using the commercial Dutch Auction System have been improved, and the size of the foreign exchange market has grown in order to achieve a naira exchange rate that is more reflective of actual market conditions. For the purpose of reselling the currency to their customers, authorized dealers were granted permission under this system of exchange to participate in foreign exchange transactions using their own personal funds. These shifts in currency exchange rates have had a variety of diverse effects on economic performance over the course of recent history.

Nigeria's currency rate has fluctuated more than normal during the post-structural adjustments program (SAP) period due to the nation's high vulnerability to the impacts of external shocks. The naira's value against the dollar surged as a result of the recent worldwide economic crisis. Between 2008 and 2009, the naira's value against the dollar increased from around N120 to about N180, which is a jump of over 50%. This phenomenon occurred in Nigeria's currency. Nigeria's foreign revenue has significantly decreased as a result of the declining price of crude oil, which reached some all high of US$147 per barrel in July 2007 and a low of US$45 per barrel in December 2008. This trend began in July 2007 and has continued to this day. (CBN, 2008). Understanding currency rates requires more than just thinking about supply and demand; we also need to understand how foreign investors feel and behave, particularly when dealing with fluctuating exchange rates. Understanding how foreign investors feel and behave is

essential to understanding currency rates. It is believed that positioning and worldwide financial investors' rebalancing of their currency holdings portfolios, in addition to international commerce in commodities and services, are both linked to the daily foreign exchange trading of billions of Naira. Because of this, the policy that a country chooses regarding its exchange rate is extremely susceptible to the effects of macroeconomic shocks. As a consequence of this, nations usually implement rules regarding their exchange rates in order to protect themselves against the effects of shocks in internal as well as international commerce.

The impact that the fluctuation in the value of the naira has had on the economy of Nigeria has been the subject of debate among policymakers, economic experts, and private businesses. This discussion is gaining in significance as a growing number of countries choose a system in which currency rates are allowed to fluctuate, as the financial market began to become more open in the 1980s, and as the recent global economic crisis has had an effect on economic development. Additionally, a number of studies have been done to look at how changes in currency exchange rates affect business, especially in emerging nations like Nigeria.

This data indicates recent fluctuations in the currency rate in Nigeria, which began in the fourth quarter of 2015. This was one of the causes that led to the economic crisis that occurred in 2016, although there were other reasons as well. Due to the extensive dependence placed on economic activities, it is conceivable for fluctuations in exchange rates to put a halt to economic activity at any one time, necessitating constant research. Researchers, investors, and other economic forces are all expressing significant worry over this action taken by the government. Due to the lack of consistent data in developing economies regarding exchange rate volatility and its effects on global commerce, additional research is required to resolve the open question regarding the relationship between the variables. This is because there is currently no clear answer to the question. Therefore, additional research and analysis is still required to fully understand the nature of exchange rate volatility and how it affects commerce, particularly when it is viewed as a key factor in product pricing on the global market. This is especially true given the fact that exchange rates are a major factor in the pricing of products.

Furthermore, this research will help you comprehend the impact of the current exchange within Nigerian economics. What is the Nigerian government's approach to having a stable exchange rate that will contribute toward sustainable development? What are the benefits and drawbacks of the impact of the current exchange in Nigeria? This essay is formatted as follows: The first section contains the introduction. The study is broken down into five sections: Section 2 presents the literature review, Section 3 displays the data and methodology, Section 4 displays the findings and comments, and Section 5 wraps everything up.

Statement of the problem

Nigeria joined the International Monetary Fund's (IMF) Structural Adjustment Program (SAP) in 1986, which led to the country's monetary system changing from a fixed exchange rate regime to a floating exchange rate one. One of SAP's objectives in Nigeria is to expressly restructure commerce in order to support the nation's currency and economic development. A certain degree of economic flexibility results from the interaction of this element, strengthened institutional reforms, and market liberalization initiatives, which in turn improves the efficiency of the incentive system. Since then, several historical eras have seen variations in the rates at which the value of the Nigerian naira has changed in relation to other currencies, most notably the US dollar (Adeoye & Atanda, 2011).

Because of the current flexible policy on exchange rates, the value of the naira has become more volatile in comparison to major currencies such as the dollar. The volatility in the value of the foreign currency has a negative impact on the value of the country's net exports. Considering how important exports are to the Nigerian economy, policymakers should not make the assumption that the consequences of the volatility of the Naira are not important, but rather give them significant consideration. This is because policymakers should not assume that the consequences of the Naira's volatility are unimportant. This research project will employ empirical evidence while also suggesting prospective remedies in order to better understand how the current volatility of currency rates affects economic growth, exports, and imports (Azaikpono, et.al 2006).

This research is to investigate every aspect of the connection that exists between the economy of Nigeria and the currency exchange rate of the nation. It may be more challenging for farmers to develop their land if there is an increased risk of flooding and an overall increase in unpredictability. Losses of an additional $35 billion in foreign reserves might potentially lead to a significant devaluation of the currency as well as inflation. These concerns have grown as a direct consequence of the patients affected by COVID-19 making a full recovery. The country of Nigeria is still having trouble overcoming its problems, which include a high rate of unemployment (27%) and poverty (40%) as well as growing inequality.

Purpose of the study

The primary objective of the research is to investigate how the value of the naira compared to other currencies impacts the economic growth of Nigeria. Consuming items that are produced in other countries is not only common in today's age of globalization, but it is also becoming increasingly usual to consume goods that are produced in one's own country. The value of your currency has a significant impact on how much money you will need to spend on products that are imported. When one nation's currency loses value the cost of products and services in comparison to other countries that are imported into that nation goes up significantly. If the value of the national currency goes up, the price of goods that are brought in from other countries can go down. In conclusion, Investigating the effects of currency exchange rates on Nigeria's GDP development is the goal of this study.

Research Questions
1. What is the causal relationship between the exchange rate and sustainable development in Nigeria
2. Does the current exchange rate affect the growth of Nigeria's economy?
3. What is the influence of the exchange rate on the development of the Nigerian Economy?
4. How will Nigeria manage to keep the value of the naira under control?

5. What are the factors that influence the appreciation of the Nigerian exchange rate in the economy?

Research Hypothesis

H1: There is a significant relationship between exchange rate and the sustainable development of Nigeria.

H0: There is no significant relationship between exchange rate and the sustainable development of Nigeria.

H2: There is a significant relationship between GDP and the sustainable development of Nigeria.

H0: There is no significant relationship between GDP and the sustainable development of Nigeria

H3: There is a significant relationship between trade and the sustainable development of Nigeria.

Ho: There is no significant relationship between trade and the sustainable development of Nigeria.

H4: There is a significant relationship between FDI and the sustainable development of Nigeria.

Ho: There is a significant relationship between FDI and the sustainable development of Nigeria.

Significance of Research

It is hard to exaggerate the significance of the exchange rate since it directly influences the pricing structures that are used inside Nigeria, as well as the feasibility of commodity flows, the distribution of resources, and the decisions that are made about finances. The following are some of the ways in which the people of Nigeria, the Nigerian government, and the country's central bank population of Nigeria may all profit from this study.

As a result of the study, the government will be better equipped to provide directions for the distribution of foreign money to particular or significant economic sectors. Investors will be encouraged to put their money into this business as a result of this. The purpose

of this endeavor is to raise economic output by making better use of the opportunities that are presented by these many sectors.

The findings of the research may be helpful to financial institutions like the Central Bank of Nigeria as they work to establish a currency rate policy that is compatible with market conditions. As a direct consequence of the Apex Bank's control of the exchange rate, the value of the local currency as compared to the value of other currencies will be preserved.

The results of the research will contribute to a greater public awareness of the impact that exchange rates have on the Nigerian economy. As a direct result of this, the general public will not only be able to advise the government on how to develop better foreign exchange policies for the economy, but they will also be able to advise some of these financial institutions, such as the Central Bank of Nigeria, on how to develop, modify, and implement better foreign exchange policies for the economy. In addition, the general public will be able to advise the government on how to develop better foreign exchange policies for the economy.

In conclusion, it is probable that scholars will find this study beneficial in the future as a source of information for future investigations.

Objective of the Study:

This research aim is to ascertain how the present exchange rate has affected the growth of the Nigerian economy. It will paint a precise picture and demonstrate how much FDI and commerce have entered the Nigerian economy. It will look at how trade has changed and aided Nigeria's economic growth. This study's goal is to better understand how the currency rate, inflation, and their effects on the Nigerian economy are related.

Contribution to the study

Nevertheless, Rodrik presented another another significant piece of study in the year 2008. Rodrik (2008) departed from the orthodoxy when he came to the conclusion that an imbalance, more precisely a real exchange rate undervaluation, was advantageous to economic expansion. The number of individuals interested in studies

that look at how real exchange rates affect economic development has increased as a direct consequence of this. This article is consistent with the recently mentioned current literary masterpieces. More specifically, it seeks to determine whether or not a currency's undervaluation, which causes a real exchange rate disequilibrium, has a favorable effect on economic expansion.

This is done by analyzing time series data and determining how an undervaluation of the exchange rate impacts economic development using Rodrik's (2008) essay titled "The Real Exchange Rate and Economic Growth" as a point of reference. Data were gathered in Nigeria between 1980 and 2020 for the thesis. We used an approach that was based on the underlying equilibrium exchange rate in order to provide an accurate evaluation of the misalignment parameter known as Undervaluation (FEER). Then, in our research on normal growth, we employ this measurement as an explanatory variable.

We hope to make the following two contributions to the existing body of research: To begin, we utilize the ARDL dynamic econometric estimating strategy, which resulted in more accurate estimates than any other method we've tried. This paper utilizes the dynamic estimating approach in this subject for what we believe to be the first time ever, according to our best knowledge. In the second place, we made advantage of the undervaluation of the native currency as a variable in our explanation. There aren't a lot of studies that have been conducted like this one before on this subject.

Limitation

Investigating the connection between the nation's exchange rate of currency and the expansion of the Nigerian economy is the goal of this research.
This research is only concerned with the economy of Nigeria during the years 1980 and 2019.
II. The study's sample size is too small to generalize the findings to all of Nigeria's citizens, hence the findings cannot be applied to the whole country.

Due to the fact that research is dependent on data gathered from previous studies as well as work that has already been done in the field. Nigeria in particular, as well as the rest of sub-Saharan Africa, has not had enough of this study done there. Because of

this, there isn't adequate study on the subject of how the exchange rate affects Nigeria's economic development. Few studies have been done, therefore it's unclear how the exchange rate affects economic growth. As a result, this study's conclusions could not be applicable to all Nigerians, which is a severe flaw. The following order is used to arrange and modify this research: A summary of the background information relevant to the research that was conducted for the study is given in the first chapter, which serves as an introduction. Additionally in this chapter are a description of the issue, the goal, the research question, the research hypothesis, the importance of the study, the target, and the study's limitations a visual depiction of the Nigerian economy from 1990 to 2020.

Definition of key terms

Exchange rate: The exchange rate is the price that the market assigns to one country's currency relative to another nation's currency. The term "fixed" refers to an exchange rate that is determined by a country's usage of gold or another widely accepted benchmark. This means that a set amount of gold or another benchmark is equal to one unit of each currency. When market forces or forecasts, rather than the government, decide the value of an exchange rate, the situation is referred to as "floating" (conversion units). The increase in the volume of imported goods raises the exchange rate, which raises the price of those goods for local customers to buy.

FDI refers to investments made in companies by an investor in nations other than their own. By way of Greenfeld, these investments often entail the creation of regional manufacturing facilities or the merger and acquisition-based acquisition of an already-existing business. FDI is the practice of a company from one nation providing financing for an existing or freshly founded firm abroad (Jonathan & Colin, 2006). The word "FDI" refers to a nation A's sustained investment in a country B. It also covers management, joint venture, technology transfer, and knowledge contributions (Shim et al.1995).

Macroeconomics is the subfield of economics that investigates the ways in which a particular economy operates on a more fundamental level. The estimates of economic costs, such as inflation, GDP, unemployment, and growth rates, are the primary emphasis of this section.

Economy Growth: Growth A country's capacity to produce more products and services overall within a specific time period compared to the prior time period may be characterized as having achieved sustainable development.

Neo-classical Theory The theory was familiar during the period between the 1980s and 1990s. It was devoted to the beneficial functions of open economies, free markets, and the privatization of pointless state programs. It has also been suggested that too intrusive government regulation and meddling in the economy is to blame for the failure of certain economies to grow. The market economy, new political economics, and the market-friendly approach are the three strategies promoted by neoclassical counter-revolution economists. Every method was designed to refute the global dependency paradigm. The neoclassical growth theory was developed by Robert Solow, who highlighted the importance of capital accumulation via saving, investing, and other methods.

The real Exchange Rate

The difference between local and international prices index is used to alter the bilateral nominal exchange rate, which is what is meant by the term "real exchange rate" (RXR) (P). Mathematically, it is written as RXR = e P Pf.
By this interpretation, a rise inside the real rate of exchange index indicates a rise in the value of the air, while a fall denotes a decrease in the value of the air. In this study, it serves as a dependent variable.

Nominal Exchange Rate

The price of one currency in relation to the currency of another nation is known as the initial exchange rate. Due to the initial exchange rate growth rate, it is projected that the real exchange rate will have a somewhat positive sign. As a result, changes in the initial exchange rate cause an increase or decrease in the actual exchange rate. The

effectiveness of initial exchange rate variations to affect the real exchange rate depends on how closely macroeconomic policies align with the nominal exchange rate's goal. One strategy to hasten the actual exchange rate adjustment may be to alter the nominal exchange rate.

CHAPTER II

Literature Review

Introduction

In the past, a variety of research has been carried out in order to identify the fundamental factors that promote real exchange. In particular, several empirical research has been carried out in Nigeria in order to uncover the possible factors that contribute to fluctuations in real exchange rates. A review of the relevant literature is the primary emphasis of this chapter. The entirety of the text may be broken down into three sections: Nigeria's Exchange Rate Policy, conceptual, theoretical, and empirical review.

Nigeria's Exchange Rate Policy

In order to acquire the goods and services that are essential for fostering growth and development, many nations, whose national currencies are not used as reserve currencies, are required to collect foreign cash through a variety of sources. This is because their national currencies are not used as reserve currencies. Because its currency is difficult to convert, Nigeria is a member of this group of nations. As a result, the country needs to generate foreign currencies in order to foster growth and improve the welfare of its population. This can be accomplished through exporting goods and services, attracting foreign investment, or taking out loans. The availability of foreign exchange becomes an essential resource when one seeks to successfully preserve macroeconomic stability and avoid problems with external reserves.

One of the goals of Nigeria's public policy is to strengthen the value of the currency, which is an important mechanism for managing the country's foreign reserves. In other words, a foreign exchange policy is the overall institutional framework and set of measures that are maintained to stabilize the exchange rate towards its desired level. This is done with the goal of boosting the productive sectors, ensuring internal balance, controlling inflation, increasing export levels, and drawing direct foreign investment and other capital inflows (Oladapo and Oloyede, 2014). When discussing the topic of currency rates and administration in Nigeria, the most important points that come up are the excessive volatility, actual exchange rate overvaluation, and the demand for a system for market-determined rates when the government is the only supplier of foreign cash.

All of these factors contribute to the fact that the Naira is overvalued. (2013) Ajao and Igbekoyi.

There have been several different exchange rate regimes implemented in Nigeria over the course of the country's history. These can be broken down into three distinct time periods: the formally pegged system, which was in place from 1970 until 1985; the flexible system that was in place during the time of the Structural Adjustment Program; and the post-SAP period, which featured a number of different mixed exchange rate regimes. Across the following time periods, one is able to conduct an analysis of the progression and pattern of currency rate management in Nigeria. The research will focus on and discuss the first period.

Nigeria's Exchange Rate Policy Developments

The purposes of a policy on the exchange rate include selecting an appropriate exchange rate and ensuring the rate's consistency. Throughout the years, there have been several efforts made to realize these objectives by putting into practice a wide range of approaches and possibilities that are intended to make the foreign exchange market more efficient. Nigeria's exchange rate arrangements went from a fixed regime in the 1960s to a pegged regime in the 1970s to the mid-1980s, and eventually to the various floating regime variations. This transition occurred as a result of the country's acceptance of the structural adjustment program in 1986, which led to the deregulation of the financial sector (SAP). Since the introduction of the SAP, Nigeria's primary floating system has consisted of safeguarding any certain parity while simultaneously managing a system of changeable exchange rates. The versions of the flexible exchange rate mechanism that were adopted in 1995 as AFEM and in 1999 as IFEM were unsuccessful in maintaining exchange rate stability; hence, the Dutch auction was implemented.

The Defense Acquisition System (DAS) was re-launched on July 22, 2002. The DAS was developed with the intention of achieving the following three goals: lowering the premium on the parallel market; preserving the dwindling foreign and; and stabilizing the exchange rate of the naira. The Direct Auction System helped to maintain the value of the naira, which protected foreign reserves and reduced the speculative tendencies of authorized dealers. It also minimized the rising premium. Since 2003, the

market for foreign exchange has demonstrated a degree of consistency. According to Mordi (2006), the circumstances that made it easier to reintroduce DAS in 2002 included the external reserve position that might ensure sufficient market funding by the CBN; lower inflationary pressures; implement the CBN's independence; and its quick deployment of financial control tools to support the DAS and the biweekly of the CBN Journal of Applied Statistics compared to the previous fortnightly auctions, ensuring a consistent supply of foreign exchange. In order to liberalize the market, even more, the arbitrage premium that exists between the official interbank market and the private interbank market should be decreased.

In the bureau de change market sectors in order to facilitate convergence, the Central Bank of Nigeria launched the Wholesale Dutch Auction System on February 20, 2006. (WDAS). The purpose of this was to strengthen international contacts while simultaneously solidifying the retail Dutch Auction System profits exchange market in order to facilitate the creation of a naira exchange rate that is more accurate. After that point, the authorized dealers were given permission by this arrangement to engage in independent foreign exchange trading on their own behalf, for the purpose of making sales to their customers. These various regimes of the exchange rate have had various effects on the outcomes of the economy.

The Decades of 1970 through 1986

The formation of the Central Bank of Nigeria in 1959 was the first step toward successfully regulating the country's currency exchange rate. The Central Bank of Nigeria (CBN) was formed with the purpose of exercising control over the national currency in order to maintain stability. The Central Bank Ordinance of 1959 authorized the CBN to buy and sell foreign currencies within Nigeria. Additionally, it ensured that the Nigerian Pound and the British Pound maintained their previous value of one. At that time, the primary goals of the policy governing the currency rate were to achieve a stable balance of payments and to protect the value of the country's foreign reserves. In the early years after independence, it was essential to have a stable exchange rate; hence, the Nigerian Naira was first fixed at a rate of one-to-one in relation to the British Pound.

Another fixed parity with the US dollar that had been in effect since around the year 1974 was replaced in 1976 by a separate currency rate management strategy that connected the Naira to either the US dollar or the British pound sterling. This strategy connected the Naira to either of these two currencies. During this time, there was a deliberate effort made to raise the value of the Naira over time. Over the course of the time period in question, Nigeria's balance of payments regularly revealed sizeable external surpluses, which contributed to the Naira's appreciation. As the second half of 1976 progressed, the economic forecast for Nigeria shifted, which ultimately resulted in a modification to the policy governing the rate at which the naira was controlled. In 1981, there was less currency exchange control in effect, mostly as a consequence of improvements in the country's balance of payments that were brought about by favorable shifts in the global oil market. Between the years 1982 and 1985, Nigeria's system of currency rate regulation came to an end. On a consistent basis, the amount paid in foreign currency for exports was lower than the amount paid for imports. This resulted in a decrease in the country's foreign reserves and an increase in its external debt since the country was forced to rely on short-term loans from other countries in order to make up for its trade deficits.

The Exchange Rate Concept

Numerous writers and scholars, each with their own unique perspective on the meaning of the phrase "exchange rate," have each offered their own unique formulation of the guiding principles behind this concept. According to Jhingan (2003), the definition of the exchange rate is the price at which the currency of one nation is exchanged for the currency of another country. As he went on, he discussed the worth of the currency of one nation in relation to the value of the currency of another nation. Consider, for example, the current value of one dollar in terms of the other currency used in Nigeria, the naira. It is the number of Naira that must be paid in order to purchase one USD. On the global market for currency exchange, the term "exchange rate" refers to the value in terms of another currency that one nation's currency may be bought or sold for. A popular method for calculating the amount of local currency that

may be obtained in exchange for one unit of the currency of another nation is to use an exchange rate.

According to Ahuja, the exchange rate is a term that refers to the value of one country's currency in relation to the value of the currency of another country (2013). The price of the native currency in relation to other currencies is referred to as the exchange rate, and in order for a government to engage in transactions involving foreign money, the exchange rate is required. The price of one currency expressed in terms of another is referred to as the exchange rate (Udenwa & Uwaleke, 2015). The price at which one currency will be exchanged for another is referred to as the "exchange rate," and it is determined by market forces.

The value of one nation's currency expressed in terms of the currency of another nation is referred to as the exchange rate. For example, the value of one unit of currency, the Nigerian naira, might shift in relation to the value of the US dollar and a number of other currencies. There are two different methods to describe it: the real exchange rate, and the nominal exchange rate.

The real exchange rate is a real term that measures the relative price or worth of various nations' products. In contrast, the nominal exchange rate is a monetary concept that measures the relative price of two currencies, such as the Naira in relation to the dollar (N/S). While the real exchange rate is a real term that measures the relative price or worth of various nations' products, the nominal exchange rate measures the relative price of two currencies. In addition, a system of exchange rates may both be predetermined and unchangeable or variable and subject to fluctuations. A system known as a fixed exchange rate is one in which a nation's currency exchange rate is either kept stable or varies very little in relation to a predetermined fixed par value. On the other hand, the system of floating exchange rates, which is the focus of this research, does not involve any action from the central bank or the government in order to preserve stability (Black 2003). When interest rates are allowed to fluctuate freely, external shocks, in particular those that are connected to global commerce, have less of an impact on the economy, and monetary policy has a better chance of influencing aggregate the demand, leading to increased economic development (Pugel, 2007). A rise in an economic measure that often persists over time is an indicator of economic growth. The

value of the variable in question might be real or it could be notional. Real economic indicators, such as the Gross Domestic Product (GDP), may experience growth for short periods of time or at a slow rate if equivalent activities are carried out on a large scale. Rapid or persistent increase of economic activity is likely to result in favorable changes to the character of economic activity; but, variations in the exchange rate may facilitate these changes.

Economic Growth Concept

The word "economic growth" has been interpreted in a variety of ways by a large number of academics, each according to their own conception of what the phrase represents. According to Todaro and Smith (2006), economic growth is the process through which a nation's production capacity grows over time, resulting in growing levels of national output. This leads to an increase in the size of the nation's overall output. The term "economic growth" refers to a rise in overall production. It is related to a growth in the per-capita income of the nation, as well as an expansion of the labor force, consumption, capital, and commercial activity (Jhingan, 2007). As a result, the term "economic growth" refers to any continuing activity that, over the course of time, improves production capacity in order to improve the well-being of people. The steady rise in a nation's per-capita income as well as its output of measurable goods is another factor that contributes to growth.

According to Lipsey and Chrystal, economic growth is the primary factor behind sustained improvements in people's living standards (2007). They continued by explaining that in order for any economy to achieve a particular level of economic growth, it is necessary for that economy to ride four fundamental components, also known as growth wheels. The four characteristics are referred to as technical development, wealth creation, human capital, and environmental assets and assets. Increases in income or income per capita increase in productivity, goods, and capital, as well as changes in the institutional framework, are only some of the elements that contribute to economic expansion. To phrase it in a more accurate manner, in order to "sustain" economic growth, there must be an increase in the amount of revenue or output that is generated by each individual. When we talk about "sustainable increase in income

per capita," what we really mean is a constant upward trend in the amount of money earned by each individual. A temporary rise in per capita income, especially one that is experienced widely across the economy, is not sufficient to explain economic growth. (Ahuja, 2013).

When a nation's real national income, per capita income or output, continually grows over an extended period of time, followed by an increase in the nation's commerce, consumption, capital stock, and labor force, the nation is said to be experiencing economic growth.

Theoretical Literature

Theories of exchange rate

Exchange rate purchasing power parity theory (PPP).

Gustav Cassel created the purchasing power parity hypothesis in 1920 with the intention of determining the exchange rate between nations whose currencies were not convertible into one another using paper money. At the moment, the purchasing power of both currencies is equivalent, and the currency exchange rate between two nations is determined by the relative price levels of the two countries' respective currencies. In contrast to the unchanging value of the purchasing power parity, this is the variable. Purchase power parity is "the ratios of the purchasing powers of the various currencies," according to Cassel's definition of the term (Jhingan, 2003). According to this theory, the relative worth of different currencies may be determined by examining the link between the real purchasing power of each currency in its home nation and the purchasing power of other currencies. It suggests that we ought to be able to acquire the identical product bundles at the identical price in any country that we choose. It also explains the value of the exchange rate at its equilibrium point when considering the differences in inflation rates that exist between the two countries. The notion of purchasing power parity distinguishes between two types of comparisons: absolute and relative. According to the absolute version, "The rate of exchange between currencies should be identical to the ratio of the two nations' price indices," which is stated in the relative form. This particular model is not utilized since it does not take into account the

expenses associated with transportation in addition to other trade constraints such as non-traded items, capital flows, and actual purchasing power. As a direct consequence of this, economists use the relative form. The notion of purchasing power parity may be taught with the help of the following illustration: Assume that both the United States and Nigeria utilize non-convertible paper money, and that the price of a basket of goods and services in the United States is $5, while it costs $20 in Nigeria. The exchange rates for the two countries' currencies will be as follows: $5 will be equivalent to $20, and $1 will be equivalent to $4. 2019 (Antweiler) (Antweiler) In point of fact, the parity will shift due to the fluctuating cost of transporting products from one nation to another, which takes into account things like taxes and customs fees.

The purchasing power concept has two facets: (I) the Absolute Version and (ii) the Relative Version.

I.   The Absolute Version

The link between the internal buying powers of the various national currency units is said to be one that should be reflected in the exchange rate in general, according to this interpretation of the purchasing power parity hypothesis. The exchange rate is the ratio of the price of purchasing a particular set of products at home to the price of purchasing the same set of goods abroad. This ratio is sometimes expressed as a percentage. It is possible to provide an example to demonstrate this point.

Let's assume you can buy 10 units of commodity X, 12 units of commodity Y, and 15 units of commodity Z for a total price of Naira 10,405, yet the same quantity of X, Y, and Z can be purchased in the United States for $25. It appears that the amount of money that may be purchased with $25 is comparable to 10,405 Nigerian naira in each nation. Using this information, one may determine the exchange rate that exists between the naira and the dollar.

The purchasing power parity theory has certain shortcomings, despite the fact that its absolute form is undeniably one that is elegant and straightforward. To begin, this approach to determining exchange rates is inefficient since it seeks to establish the value of money in its total form (or buying power). In practice, purchasing power is

typically measured in terms of relative worth. Second, the varieties of items and the standards of those things that are available in the two nations are not the same.

These disparities constitute a substantial obstacle in the path toward globalization of product pricing. Third, in addition to differences in the quality and kind of commodities, there are also differences in demand patterns, technology, transportation costs, tariff systems, tax policies, the degree to which the government meddles in business and regulates business, as well as a variety of other factors. Because of these variances, determining the precise absolute value of the exchange rate between two or more currencies can be a difficult task.

II.   The Relative Version.

Cassel's theory of purchasing power parity aims to explain fluctuations in the equilibrium rate of exchange between two currencies in their relative form. It connects shifts in currency buying power parities to shifts in the balance rate of exchange. To put it another way, there is a significant correlation between relative price fluctuations in two countries between a reference era and the present.

The equilibrium rate of exchange in the base period, the ratio of price indices in the current and base periods in one nation, and the ratio of price indices in the current and base periods in the other country are used to determine the equilibrium rate of exchange in the current period.

The Mint Parity Theory of Exchange Rates (MPT)

In the year 1802, Wheatly put forward his idea of exchange rates called the mint parity hypothesis. "The Mint Parity theory may be applied to countries that utilize the same metallic standard (gold or silver)," claims Aahana (2019). During the time of the gold standard, the value of a certain unit of currency was determined by the quantity of gold of a certain purity that was contained inside that unit. The nation's central bank was always prepared to buy and sell gold for an indefinite amount of time at the predetermined price for as long as it was required. The cost of converting the nation's standard monetary unit to gold was included into the cost of producing gold coins at the mint. The mint par of exchange, sometimes referred to as mint parity, is calculated by

comparing the weight of the metallic components of two different currencies against one another. As a consequence of this, the mint par values of the two currencies were utilized in the process of estimating the fundamental rate of exchange between them.

Interest Rate Parity (IRP)

According to the Interest Rate Parity (IRP) theory, the difference between the interest rates of two countries will always be equal to the difference calculated using the forward and spot exchange rate methodologies. The relationship between interest, spot, and foreign exchange rates is referred to as interest rate parity. In currency markets, it is crucial. The relationship between a currency's spot rate and a pertinent forward (future) rate may be examined using the IRP hypothesis. According to this hypothesis, interest rate differences between two different currencies won't be arbitraged and will instead be reflected in the discount or premium on the foreign currency's forward exchange rate. The size of a foreign currency's forward premium or discount, according to the theory, is equal to the difference between the spot and future interest rates of the two countries.

International Fisher Effect (IFE)

According to the International Fisher Effect (IFE), a theory of economics, the variation in two currencies' exchange rates is generally equivalent to the variation in their nominal interest rates.

According to the International Fisher Effect (IFE), differences in nominal interest rates between countries may predict changes in exchange rates.

The IFE claims that countries with higher nominal interest rates also have higher rates of inflation, which causes their currencies to lose value in relation to other currencies.

In actuality, there are many different types of evidence for the IFE, and in recent years, it has been more and more common to directly predict currency exchange movements from expected inflation.

The IFE, which is used to forecast currency fluctuations, is based on the examination of interest rates linked to current and future risk-free investments, including Treasuries. This works as a combined perspective tying inflation and interest rates to a

currency's appreciation or depreciation, in contrast to other systems that just utilize inflation rates to anticipate exchange rate swings.

The hypothesis is based on the idea that real interest rates give a better indicator of the health of a given currency within a global market since they are independent of other monetary factors, such as changes in a country's monetary policy. The IFE makes the premise that nations with lower interest rates will probably also have lower levels of inflation, which might lead to rises in the linked currency's real worth relative to other nations. Countries with higher interest rates, on the other hand, will see a decline in the value of their currency.

Irving Fisher, a US economist, is honored by the name of this theory. Irving Fisher was one of America's most brilliant mathematical economists and one of the most lucid economics writers of all time. He had the intellect to incorporate mathematics into almost all of his theories and the foresight to do so only after he had clearly explained the central principles in words. And he explained everything very well. Fisher's Theory of Interest is written so clearly that graduate economics students can read—and understand—half of the book in one sitting, which is unprecedented in technical economics.

Undervaluation Exchange Rate Theory

An illustration of the Balassa–Samuelson effect using a model.

According to Rodrik (2008), the Balassa-Samuelson effect states that when countries see rapid productivity development in tradable industries, non-tradable prices rise and their currencies value, moving them from a lower to a higher income position. This is based on the idea that when countries see rapid productivity development in tradable industries, non-tradable prices rise and their currencies value. As a direct consequence of this, the currencies of nations with greater incomes are likely going to appreciate more. The central assumption of the theory states that fluctuations in exchange rates are caused by changes in the relative rates of productivity development in the traded and non-traded sectors of the economy. In a small open economy where the price of tradable goods is fixed at world prices because labor may be moved across sectors, better levels of productivity in the tradable sector lead to higher levels of

compensation in both the tradable and non-tradable sectors. On the other hand, increased non-tradable relative prices are the outcome of higher pay in the non-tradable sector without a matching increase in output. This is the case since there is no direct correlation between the two. As a consequence of this, the value of the native currency rises.

The model of fundamental equilibrium exchange rates (FEER)

In 1994, Williamson is credited with developing the model as a solution to the problems that existed inside Rodrik's real exchange rate (RER) model (Berg and Miao, 2010). The model was built to identify the level of equilibrium for the actual exchange rate, and this was accomplished by attaining balances both internally and externally (Rapetti, 2020). Important economic factors such as trade terms, the degree of trade openness, productivity, investment, government expenditure, and the stock of net foreign assets were factored into the models in order to accomplish this goal (Hinkle and Montiel 1999).

The exchange rate corresponds to behavioral equilibrium (BEER).

The BEER approach was proposed by Clark and MacDonald in 1999. They viewed this strategy as a pretty all-encompassing method for simulating equilibrium exchange rates. However, one of the most important components of most BEER implementations is the requirement that the current account equals zero in equilibrium. The BEER is akin to internal-external balance method variations like the FEER as well. The BEER technique makes it possible to calculate the equilibrium exchange rate and, consequently, the exchange rate misalignment using a theoretical (actual) exchange rate model.

In comparison to other internal-external balancing strategies, especially the FEER, the BEER technique offers a few benefits. The BEER can be rigorously statistically tested in terms of several metrics, including mean reversion speed, and has the capacity to capture all systematic and fundamental changes in exchange rates. The BEER, which is based on a single equation and either time series data or panel data, is also a fairly tractable approach for establishing an equilibrium exchange rate (Faruqee, 1989)

The Money Supply

It is anticipated that the domestic money supply would have a partial negative impact on real exchange rates. Increasing the local money supply will cause the native currency to depreciate, according to all exchange rate theories; the only distinction is the transmission mechanism. Growth in the money supply leads the native currency to decline since it has a negative connection with the exchange rate. When monetary policy is restrictive, both the normal and effective exchange rates increase. On the other hand, there is a wide range of conflicting econometric data about the impact of the money supply on exchange rates. Whether the monetary policy is expansionary or contractionary affects how the real exchange rate behaves. Growth in the money supply, which is an example of an expansionary monetary policy, drives up domestic prices and elevates the real exchange rate. A floating rate system's increase in money depreciates the exchange rate if inflation does not quickly correct. However, under a fixed exchange rate system, a rise in money will lead to a decline in the value of the currency.

The Rate of Inflation

Numerous studies have found that changes in the inflation rate are at least as important as any other factor in influencing real exchange rate volatility because divergent patterns in national inflation rates frequently result in payment imbalances. It is desirable to take into account the direct impact of inflation since the real exchange rate is calculated using the nominal exchange rate and the price level. Excess domestic credit drives up prices, which leads to a rise in the value of the dollar. So, the exchange rate between the local currency and foreign currencies affects inflation.

Fixed Exchange Rate System (1959-1986)

The phrase "fixed exchange rate regime" describes a time when monetary authorities established and controlled the country's exchange rate, leaving minimal room for market variables like supply and demand. The "CBN era" was the time frame between June 1986 and 1959, when the CBN first started operating (when the Structural Adjustment Programme, or SAP, was introduced). The Nigerian pound's exchange rate was established at parity with the British pound sterling between 1959 and 1967 by the

government using administrative or ad hoc methods. This exchange rate persisted until November 1967, when the British pound underwent a 10% devaluation. From this moment forward, the Nigerian government made the decision to institute its own exchange rate system, independent of the British pound.

As a result, the monetary authorities chose the US dollar as one of the reserve currencies to determine the exchange rate for the Nigerian pound. After then, the country's currency was linked to a basket of seven other currencies (the US dollar, the Deutsche mark, the Swiss franc, the French franc, the Dutch guilder, the Japanese yen, and the Canadian dollar). Each of the seven currencies was given a specific weight based on the quantity of commerce it had with Nigeria. The "one currency intervention system" was put into place in 1985 to reduce the incidence of arbitrage in the quoted naira exchange rate. The US dollar served as the benchmark against which the value of the Nigerian naira was quoted, and it was this rate that was used to determine the exchange rates of the currencies of Nigeria's trading partners.

Exchange Rate System with Flexibility (1986 June to date)

In 1986, Nigeria's variable exchange rate system replaced the SAP framework's policy of currency rate liberalization. Under this system, the management of foreign exchange was liberalized, and the forces of supply and demand were allowed to determine the exchange rate. In September 1986, a first- and second-tier foreign exchange rate market (SFEM) was formed as part of the dual exchange rate system. For official business or transactions involving the government, the first layer used a fixed exchange rate, while the second tier used a rate established by the market for private sector transactions. The dual exchange rate system was created to reduce unstable exchange rate swings. Due to the complexity of maintaining the systems, the first- and second-tier foreign exchange markets merged into a single foreign exchange market (FEM) in July 1987. In order to let non-oil inflows into deposit money banks and ease demand pressure, this was renamed the independent foreign exchange market (AFEM) in 1988. The CBN says that the goal of the strategy was to fix underlying problems with the economy by putting in place a flexible exchange rate regime (2009:76).

In January 1989, the AFEM was renamed the "inter-bank foreign exchange market" (IFEM) because it was shown to be riddled with speculative activity. Throughout this time, the CBN considered changes in the exchange rates of major foreign currencies as a guide to establishing the appropriate level of the naira exchange rate. The Retail Dutch Auction System (DAS), which had been abandoned in 1987, was reinstituted in December 1990, altering the IFEM. However, because of continuous exchange rate volatility and a widening gap between official and parallel market prices (which exceeded the internationally permitted limit of 5.0%), the CBN was obliged to modify the exchange rate methodology. As a result, the foreign exchange market was totally liberalized with the introduction of the naira on March 5, 1992. Demand remained high even though volatility had diminished at this point.

Although the exchange rate was briefly fixed in 1994, the policy objectives have not been met since the naira sharply depreciated on the black market. In 1995, the foreign exchange market underwent "directed deregulation," which led to a change in policy from a fixed to a flexible exchange rate structure. The primary objective of the new strategy was to prevent excessive currency depreciation while simultaneously ensuring that foreign reserves were distributed and utilized effectively. Bureaus de change (BDCs) were granted the right to buy and sell foreign currency under the new policy, which was put into effect in 1989 under the Exchange (Monitoring and Miscellaneous Provisions) Act 1995. The Act restored the Autonomous Foreign Exchange Market (AFEM), a flexible system in which privately obtained foreign currency was exchanged at the market rate while official or government transactions were handled at a set rate. Market growth and the removal of the interbank foreign exchange market were the two main components of AFEM, although the CBN continued to often participate in the market to maintain the exchange rate's stability. The AFEM was made to make the difference between the official market price and the parallel market price smaller. This was done so that all the different exchange rates could eventually be put into a single, bigger foreign exchange market.

The Nigerian Foreign Exchange Markets Structure

The Nigerian foreign exchange market has grown over time as a result of changing macroeconomic fundamentals, a need to ease pressure on demand for foreign currency, and an effort to stabilize the value of the naira. These sub-markets in Nigeria are a result of this development:

Foreign Exchange Market (Official Market) The CBN takes advantage of this chance to enter the market. The CBN uses it to furnish authorized dealers with foreign currency. The CBN is the main source of foreign exchange in this market because it is in charge of the nation's external reserves. During this window, spot transactions are carried out via auction twice a week (every Monday and Wednesday), with the value being received in T + 2 days (that is, the transaction day plus two days). Authorized banks should deposit the Naira equivalent of the foreign currency they want to buy into their CBN accounts 48 hours prior to the auction. On the day of the auction, their bids are sent to the CBN dealing room by 11 a.m. These 36,372 bids must contain the following information: the client's name, the RC number, the Form "M" number, the address, the purpose, the amount (USD), the rate of Naira/US$ (or other interest currencies), the method of payment, and the bank's name and code. Any bid rate below the cut-off for the action is regarded as unsuccessful. While approved banks under the WDAS may source foreign currency in both their own accounts and those of their clients, such banks may only do so under the RDAS in the accounts of those customers.

The Interbank Foreign Exchange Market

It is a marketplace where banks exchange currency with one another. Nigeria established the interbank foreign exchange market (IFEM) in January 1989 to address demand issues on the official foreign currency market. It was revoked in 1995 and then resurrected in October 1999. Banks can trade with one another in the interbank foreign exchange market, and the CBN periodically intervenes to keep the value of the Naira constant. Authorized banks and significant institutions engage and exchange foreign currencies in the interbank market through the forces of supply and demand. The CBN is expected to operate at its discretion to maintain the desired exchange rate, with the system being fully financed by the private sector (autonomous sources). The Nigerian

National Petroleum Corporation (NNPC), banks, and corporate treasuries are a few of the major players in this market, together with the CBN.

The deal tracker supports the interbank market, which employs two-way quotes. The CBN steps in at the interbank. At the present interbank rate, the CBN makes an intervention.

Bureaux-de-Change Market

In order to increase small end-users access to foreign exchange for a range of purposes, including business travel allowance (BTA), personal travel allowance (PTA), mortgage monthly payments, school fees, medical bills, and credit card payments, among others, BDCs were introduced in Nigeria in 1989. BDCs act as dealers in the spot market, buying and selling foreign currency for a little profit (premium). Additionally, they buy and sell foreign currency from the general public, banks, and the Central Bank of Nigeria (CBN), as well as travelers' checks (TCs). BDCs don't buy or sell coins as often as they do banknotes because coins are harder to store and cost more to ship.

One of the risks of BDCs is currency runs, in which there are more buyers than sellers of a currency or vice versa due to currency speculation. When traders think a certain currency is overvalued or undervalued, demand for or supply of that currency increases. This is known as currency speculation. If the BDCs' actions aren't under control, they can end up serving as terrorists' money laundering fronts.

Empirical Literature

Exchange Rate and Sustainable Development nexus

The classic theory of the exchange rate's endogenous character predicts that its equilibrium level will be the same as that which ensures balance of payments equilibrium (Calvo, Reinhart, and Vegh, 1995). The value of a country's currency is commonly used as a proxy for measuring a country's economic success through time. A variety of reasons contribute to the disparity between the equilibrium exchange rate and the Purchasing Power Parity (PPP) rate in less developed countries (Froot and Stein, 1991).

The Balassa-Samuelson effect, as well as the Bhagwati-Kravis-Lipsey effect, are commonly referenced. According to the Balassa-Samuelson effect, the productivity difference between industrialized and developing nations is lower in non-tradable products than in tradable goods, but salaries are the same in both sectors. According to the Bhagwati-Kravis-Lipsey impact, non-tradable items are predominantly services (Polterrovich and Popov, 2006).

According to the Baassa-Samuelson effect, the exchange rate (EXR) may rise without reducing firm profits if productivity grows faster in sectors generating tradable output (mainly products) than in sectors producing non-tradable output (mostly services) and salaries are equalized across sectors. Furthermore, the Baassa-Samuelson effect implies that the exchange rate (EXR) may increase without diminishing firm profits if real wage growth continues to lag behind the development of productivity throughout the economy. Grafe and Wyplosz investigated approaches for estimating real exchange rates (EXR) in poor countries in their study (1997).

Many individuals feel that maintaining a low exchange rate should be avoided since an increase in the money supply leads to inflation. According to Calvo, Reinhart, and Vegh, the undervaluation of currencies in Latin American nations throughout the 1980s caused inflation in both theory and practice (1995). However, it seems that the effect varies depending on the approach used to maintain a low exchange rate. as something that does not belong on this planet.

According to Calvo and Reinhart (2000), a fixed exchange rate system is preferable for developing countries since currency volatility is significantly more destructive to these countries than it is advantageous to industrialized ones. In reality, the data that relate variations in exchange rates to economic development are contradictory. Ghosh and Wolf (1997) examined the economies of 136 countries from 1960 to 1989 and found no association between changes in reported exchange rates and total economic development. According to Bailliu, Lafrance, and Perrault (2001), there is a relationship between economic progress and exchange rate flexibility. The fact that the relationship is positive rather than negative improves the chance that the outcome correctly represents progress.

FDI and Sustainable Development nexus

Everyone believes that FDI is advantageous to domestic corporate performance because it fosters growth, which raises both efficiency and output. All industrialized nations believe that productivity is one of the most important factors in determining the degree of financial success attained by local firms in their respective countries. Some individuals believe that FDI is exclusively utilized to make investments, while others believe that its role to the increase of exports is unclear. It is widely believed that the degree to which FDI trickles down into the host country is proportionate to the host country's ability to effectively assimilate the specific kind of investment and foreign technology. It is widely acknowledged that the country through which FDI is presently travelling has some weight in defining the nature of the relationship between FDI and sustainable development. It has been proposed that the political, social, and economic climate of the country receiving FDI has a significant impact on the extent of the contribution that FDI provides to the growth of that nation's economy (Zhang, 2001). Olumuyiwa (2013) used the Granger causality test in his study of the impact of foreign FDI inflows on sustainable development in a pre- and post-deregulated Nigerian economy from 1970 to 2010. The inquiry spanned the years 1970 through 2010. He concluded that there existed a causal link between economic growth (GDP) and FDI inflows before to deregulation (1970-1986), but that this correlation no longer exists after the deregulation period (1987-present). Despite this, research conducted between 1970 and 2010 demonstrates a direct relationship between economic growth (GDP) and FDI inflows. To put it another way, foreign direct investment (FDI) in a nation is largely driven by its degree of economic success, and vice versa.

The Importance of Foreign Direct Investment in Accelerating Sustainable Development in Nigeria: A Reevaluation was the title of their 2013 essay. Using the ordinary least squares (OLS) method, Matthew and Johnson concluded that domestic savings and foreign direct investment both contribute significantly to Nigeria's growing economy. Matthew and Johnson used the OLS technique to get this conclusion. In a second research on the issue conducted in Nigeria, they concluded that foreign direct investment (FDI) had a positive influence on the rate of job creation in the nation. This

study also used the Augmented Dickey-Fuller (ADF) unit root test, the Granger test, the Dickey-Fuller unit root test, and the ordinary least square regression approach.

Onuoha and Oregwu (2013) used ordinary least square regression to investigate the relationship between FDI and sustainable development in Nigeria. They found that GDP had no effect on FDI based on their data. Although there is a favorable relationship between FDI, transportation, and communication, trade openness is seldom significant. Adaramolo and Obisesan (2015) demonstrated that FDI has a positive and substantial influence on market capitalization using the ordinary least squares, the ADF unit root test, and the Johansen co-integration test. This was shown by the conclusions of their investigation into the influence of FDI in the expansion of the Nigerian capital market. Gastanga et al. (1998) investigate the influence of various policies on the amount of money brought into a country by inhabitants of other countries as a direct consequence of investments made in that country. The eclectic theory of international investment, which stresses the advantages of foreign ownership, the organized country, and globalization, serves as the framework for their approach. Wheeler and Mody (1992) and Hines (1993) conducted FDI investigations (1993). (1995) consider a number of institutional challenges. Some of these factors include host nation risk and FDI corruption. Although Tsai (1994) recognizes the need of a qualitative approach, he provides no more information or clarity on this specific topic. Asiedu (2002, 2006) examines a number of factors to determine how they impact the flow of FDI, including natural resources, market size, and the host nation's investment strategy, political upheaval, and corruption FDI. Asiedu (2006) explores the factors influencing FDI in Africa. Political instability and corruption, she says, have the reverse impact of low inflation and an effective legal system, both of which support FDI.

Interest Rate and Sustainable Development nexus

According to the lendable funds theory of interest rates, market factors like supply and demand for lendable funds interact to effect interest rates, causing them to vary impulsively. In other words, interest rates are impacted by the interaction of supply and demand for lendable funds. The inverse connection that exists between the interest rate and the demand for money that may be lent is further clarified by the theory. This

would imply that interest rates and the demand for money that may be lent do not move in the same direction at the same time. This assertion describes how a rise in interest rates may have an adverse effect on the price of raw commodities that are sold on the market. As a direct result of this, production costs can go up, which would be detrimental to economic advancement.

According to Sanusi (2002), interest rates are the costs that a borrower must pay in every economy in order to acquire a loan. This idea is supported by the fact that interest rates are the same thing. According to this interpretation, interest rates are what decide how much it will cost individuals in a given economy to borrow money. The impact of high interest rates on society includes, but is not limited to, the possibility that borrowers may be reluctant to take out loans even when they should. Because the entire cost of the credit as well as the credit itself may wind up being too expensive for the borrower to afford to return the loan by the due date of the loan, this may be the case. Since the productive activities of an economy cannot be adequately sustained by equity financing alone, the GDP of the economy would most likely be low as a direct consequence of this situation. The interest rate is a price that must be paid in order to borrow money, as stated by Sekuma (2011). This fee is referred to as the interest rate. In addition to having a negative effect on persons who work in the production sector, increased interest rates have a negative influence on those who work in the real estate market.

The increase in interest rates has an effect on the demand for mortgages, which in turn puts pressure on the price of residential real estate. On the other hand, many who advocate for high interest rates feel that higher rates improve the cycle of money by increasing the amount of idle money that is available on the market. This, in turn, makes it much simpler for businesses to get financing and expand their operations.

CHAPTER III

Introduction

This chapter will provide you with further information on the source of the data for this thesis, the definition and formula of the tests that are performed for our analysis, and, finally, this chapter will explain in depth the model specification and the equation to answer our research questions.

Data

This study relied on secondary data. Secondary data is research data that has already been collected and is available to researchers. Primary data, on the other hand, is data acquired directly from its source. Secondary data is utilized to improve the sample size of research projects as well as for the efficiency and speed that come with using an already existing resource. Secondary data aids major research efforts, in which several research groups collaborate to acquire secondary data.

This thesis uses the World Bank data portal to find secondary data about how currency rates affected Nigeria's sustainable development from 1980 to 2019.

Databases at the World Bank are vital instruments for supporting critical management decisions and supplying critical statistical information for bank operational operations. The use of globally recognized standards and norms provides a consistent, dependable source of information. Much of the data originates from member nations' statistical systems, and the quality of global statistics is determined by how effectively these national systems work. The World Bank aims to increase the capacity, efficiency, and effectiveness of developing nations' national statistics systems. Without better and more complete national statistics, it is hard to make good policies, judge how well poverty-reduction measures are working, or track progress toward global goals.

Table 3.1 description of variables

#	*Variables*	*Abbreviation*	*Measurement*	*source*
1	*GDP growth*	*GDP*	*(Annual %)*	*World Bank*
2	*Foreign direct investment*	*FDI*	*net inflows (% of GDP)*	*World Bank*
3	*Trade)*	*T*	*(% of GDP)*	*World Bank*
4	*Real effective exchange rate index*	*REER*	*(2010 = 100)*	*World Bank*

Variables

GDP growth annually- GDP annual percentage growth rate at market prices in constant local currency the aggregates are calculated using constant 2015 prices expressed in US dollars. GDP is calculated as the total of the gross value contributed by all resident producers in the economy, plus any product taxes, minus any subsidies not included in the product value. It is computed without regard for the depreciation of manufactured assets or the depletion and deterioration of natural resources. Gross domestic product (GDP) is the total value contributed by all of its producers. Before accounting for the use of fixed capital in production, value added is the value of producers' gross output minus the value of intermediary products and services consumed in production. According to the United Nations System of National Accounts, value added should be calculated using either basic prices (excluding net taxes on items) or producer prices (including net taxes on products paid by producers but excluding sales or value-added taxes). Transport costs, which are charged separately by producers, are not included in either value. Purchaser prices are used to calculate total GDP. Value addition in the industry is frequently calculated at basic pricing. when value added is calculated using producer pricing. GDP and its components' growth rates are estimated using the least-squares approach and constant pricing data in the local currency. To determine regional and income group growth rates, constant prices in US dollar series are utilized. Local currency series are converted to constant US dollars using the common reference year's exchange rate. The volume of an economy's production or the actual incomes of its citizens are used to gauge its growth. The 2008 United Nations System of National Accounts (2008 SNA) provides three reasonable metrics for estimating growth: the

amount of GDP, real GDP, and real GDP national income. GDP is the total of the value created by households, government, and industries working in the economy, evaluated at constant prices. GDP accounts for all domestic output, whether the money is received by domestic or foreign entities. The contribution of each industry to the development of the economy's production is measured by the increase in the industry's value added. In theory, value added at constant prices can be calculated by calculating the number of products and services produced in a given time period, pricing them at an agreed-upon set of base year prices, and subtracting the cost of intermediate inputs, also at constant prices. This double-deflation approach requires extensive knowledge of the pricing structure of inputs and outputs. However, in many sectors, value added is calculated by extrapolating from the base year using single volume indexes of outputs or, less typically, inputs. Value added at constant prices is often assumed to come from labor inputs, such as real pay or the number of workers, particularly in the service sectors, which include the majority of the government. Measuring the growth of services is problematic in the absence of well-defined output measurements. Furthermore, technological innovation may lead to improvements in manufacturing processes and product quality, which, if not properly accounted for, can mislead metrics of value added and consequently growth. Unmeasured technological advancement leads to an underestimation of output volume when inputs are used to estimate output, as in nonmarket services. Similarly, unmeasured quality improvements contribute to the underestimation of production and value added. As a consequence, growth and productivity improvements may be underestimated, while inflation may be overestimated. Informal economic activities provide a unique measuring challenge, particularly in underdeveloped nations where most economic activity goes unrecorded. Estimating household outputs generated for home use, sales in informal marketplaces, barter exchanges, and unlawful or purposefully unreported activities are all required for a comprehensive picture of the economy. The consistency and completeness of such estimates are determined by the competence and procedures of the statisticians producing them. Rebasing national accounts may change an economy's estimated growth rate and cause gaps in series that undermine data consistency over time. When governments rebase their national accounts, the weights assigned to individual

components are updated to better reflect current patterns of output production or usage. The new base year should reflect normal economic functioning; it should be a year free of severe shocks or distortions. For many years, several emerging nations have not rebased their national accounts. Using an ancient base year may be deceptive since implicit price and volume weights become less relevant and beneficial with time. The World Bank rescales GDP and value added by industrial origin to a common reference year to provide comparable series of constant price data for calculating aggregates. Because rescaling changes the implicit weights that are used to calculate aggregates for regions and income groups, it is no longer possible to compare aggregate growth rates from different base years in different editions.

Real effective exchange rate index (2010 = 100)- The nominal effective exchange rate (a measure of a currency's worth versus a weighted average of multiple foreign currencies) is divided by a price deflator or cost index. The real effective exchange rate is a nominal effective exchange rate index that takes into account relative changes in national price or cost indices in the home country, chosen nations, and the eurozone. A nominal effective exchange rate index is the ratio (stated in base 2010 = 100) of a currency's period-average exchange rate to a weighted geometric average of exchange rates for chosen nations and the eurozone. Weights for the majority of high-income nations are obtained from industrial countries' commerce in manufactured products. The nominal effective exchange rate index and a cost indicator of relative normalized unit labor costs in manufacturing are used to produce the data. The nominal effective exchange rate index for selected other countries is based on trade in manufactured goods and primary products with partner or competitor nations. The real effective exchange rate index for these nations is the nominal index adjusted for relative changes in consumer prices; a rise reflects an appreciation of the local currency. In a market economy, relative prices impact household, producer, and government resource allocation decisions, including the real exchange rate, real wages, real interest rates, and other prices in the economy. Relative pricing also reflects these actors' preferences. As a result, relative prices transmit critical information about the interactions of economic players inside an economy and with the rest of the world. Due to conceptual and data limitations, changes in real effective exchange rates should be looked at carefully.

Trade (% of GDP)- Trade is the total of goods and services exported and imported, expressed as a percentage of GDP.

Foreign direct investment, net inflows (% of GDP)- Foreign direct investment is defined as net inflows of investment to acquire a long-term management stake (10 percent or more of voting shares) in a company operating in an economy other than the investor's. It is the total of equity capital, earnings reinvestment, other long-term capital, and short-term capital as represented in the balance of payments. This dataset divides net inflows (new investment inflows minus disinvestment) from foreign investors in the reporting country by GDP. The figures on equity flows are based on the International Monetary Fund's balance of payments data (IMF). Foreign direct investment (FDI) figures are augmented by World Bank staff estimates based on data from UNCTAD and official national sources. The following components are included in the internationally accepted definition of FDI (from the sixth edition of the IMF's Balance of Payments Manual (2009): equity investment, including investment associated with equity that gives rise to control or influence; investment in indirectly influenced or controlled enterprises; investment in fellow enterprises; debt (except selected debt); and reverse investment. Based on control and influence, the Framework for Direct Investment Relationships gives criteria for establishing whether cross-border ownership results in a direct investment connection. FDI, as opposed to other types of overseas investment, is undertaken to create a long-term stake in or effective managerial control over a business in another country. A long-term investment in a business usually entails building warehouses, manufacturing facilities, and other permanent or long-term organizations overseas. Greenfield investment, in which the investor establishes a new venture in a foreign country by constructing new operational facilities; joint venture, in which the investor enters into a partnership agreement with a company abroad to establish a new enterprise; or merger and acquisition, in which the investor acquires an existing enterprise abroad. The IMF recommends that investments account for at least 10% of voting stock in order to be considered FDI. Many nations, in reality, impose a higher barrier. Many nations fail to declare reinvested profits, and countries' definitions of long-term loans vary. The term "BoP" stands for "balance of payments." Data on FDI do not provide a complete picture of a country's foreign investment. Balance of payments

statistics on FDI do not include domestically generated money, which is a significant source of investment finance in several developing nations. Furthermore, non-equity cross-border transactions such as intra-unit movements of goods and services are excluded from FDI statistics. Because of variances in sources, categorization of economies, and techniques used to modify and disaggregate provided data, the amount of global private financial flows reported by the World Bank typically varies from that reported by other sources. Furthermore, changes may reflect how certain installments of the transactions and some offshore issuances are classified, notably in debt financing. Data on equity flows are displayed for all countries for which data are available.

The important of exchange rate

Exchange rate economics is largely concerned with determining what factors influence the level, or at least the change, of a floating exchange rate. The exchange rate is now assumed to be an asset price determined at a level that ensures that outstanding stocks of various assets (particularly those denominated in different currencies) are willingly held, whereas previously the exchange rate was thought to be determined at a level that would equate the flow, demand, and supply of foreign exchange. It follows that a floating exchange rate is determined by what is predicted to happen in the future rather than only by what is occurring now or has occurred in the past. The exchange rate is a future asset price. Its level has consequences for the behavior of the balance of payments' current account, but the current account impacts the exchange rate only to the extent that forward-looking agents recognize that it will influence future asset stocks. (Of course, current account results are also affected by savings and investment plans. In a general equilibrium system, both income flows and exchange rates are established concurrently. These astute and foresighted agents are supposed to be aware of these eventualities.

While exchange rate economics seeks to explain how the level of a floating exchange rate is determined, it also sheds light on the difficulties that a government faces when attempting to decide the value of its currency's exchange rate. It is not true that there is a 1:1 relationship between the pressures felt by a government attempting to fix its currency's exchange rate and the difference between the market exchange rate and

the rate that would be established in a competitive market, because market pressure can be mitigated if a government succeeds in making a credible commitment to keep the rate unchanged. In contrast, a government that attempts to maintain a fixed exchange rate but is believed by the market to be unable to do so may suffer speculative pressures in addition to those produced in a floating market. Nonetheless, every government seeking to regulate its exchange rate must first comprehend the factors against which it may be forced to battle, and exchange rate economics illuminates these forces.

When calculating the level of a floating exchange rate, it is helpful to consider two steps. The steady-state level of the real (price-deflated) exchange rate is determined in the first step. During this stage, the current account has the most impact by limiting the long-run value of the real exchange rate.

There are two theories on what causes this long-run equilibrium value: that it is determined solely by the purchasing power parity (PPP) condition and that the equilibrium real exchange rate is also affected by factors such as net foreign asset stock and productivity. The exchange rate is then adjusted to its steady-state level in the second step. According to the conventional model, this is due to the representative agent's logical anticipation of what will occur between now and the long term. Standard exchange rate economics is characteristic of post-Lucas macroeconomics in that it places such a high value on the rational expectations of a representative agent based on flawless foresight.

Model Specification

A researcher must construct a model in order to understand the link between independent and dependent variables. The process of deciding which independent variables to include and exclude from a regression equation is known as "model specification." The world is multifaceted, and attempting to describe it with a limited sample size is futile. In this article, I'll explain how to choose a model. I'll go through statistical methodologies, potential problems, and practical advice for choosing your model. The variable selection procedure is often a combination of statistics, theory, and practical expertise. In statistics, model selection is a critical step. If you don't choose the right model, you've made a specification mistake, which could mean that your findings

are wrong.

When the independent variables and their functional form (i.e., curvature and interactions) incorrectly reflect the true connection existing in the data, this is referred to as a specification error. Bias may be caused by specification errors, which can overstate, understate, or completely conceal the existence of underlying connections. In summary, you cannot rely on your outcomes! So, if you want to choose the right regression model, you must first understand how to choose a model in statistics. The following equation is constructed to determine the connection between the dependent and independent variables:

$$GDPt \ = \ \beta_0 \ + \ \beta_1 REERt \ + \ \beta_2 FDIt \ + \ \beta_3 TRt \ + \ \mathcal{E}t \qquad \text{(1)}$$

Where:

GDP = Gross domestic product annually

REER = Real effective exchange rate index (2010 = 100)

FDI = Foreign direct investment, net inflows (% of GDP)

TR = Trade (% of GDP)

β0…β3 is the constant in the perimeter

t is the time interval (from 1980-2019)

Descriptive statistic

Statistics that are used to characterize the fundamental aspects of the data included in an investigation are known as "descriptive statistics." They include brief details of the sample and the measurements that were used. They are the foundation of practically any kind of quantitative analysis of data, along with an analysis of visuals that is straightforward.

Inferential statistics are often differentiated from descriptive statistics using this common distinction. Simply explaining what exists or what the data reveals is what you do when working with descriptive statistics. When working with inferential statistics, the goal is to arrive at conclusions that go beyond what can be drawn from the immediate data alone. For instance, we make use of inferential statistics to make an educated guess about what the general population would believe based on the sample data. Alternately, we may use inferential statistics to make judgments about the possibility that a

difference between groups that was seen is a reliable one or one that could have occurred by chance in this research. Therefore, we use inferential statistics to draw conclusions about more general circumstances based on our data and descriptive statistics to simply explain what's going on in our data. Inferential statistics are used to draw conclusions about more general conditions based on our data.

In order to offer quantitative information in a format that is more easily digestible, descriptive statistics are used. A research project could include a large number of measurements. Alternately, we might conduct the survey with a large sample size and use any metric. We may simplify and make more sense of vast volumes of data with the assistance of descriptive statistics.

Stationary test

Because most macroeconomic variables are trended and, for the most part, non-stationary, the unit root test is used before every estimate (Wadad, 2011; Asterious & Hall, 2009). In statistics, a unit root test examines if a time series variable is non-stationary and has a unit root. The null hypothesis is the absence of a unit root, whereas the alternative hypothesis is either stationarity, trend stationarity, or an explosive root, depending on the test.

ADF UNIT TEST

In statistics and econometrics, an augmented Dickey-Fuller test (ADF) investigates the null hypothesis that a unit root exists in a time series sample. The alternative hypothesis varies depending on the test version used, although it is often stationarity or trend-stationarity. It is an enhanced version of the Dickey-Fuller test for a larger and more complicated set of time series models. The augmented Dickey-Fuller (ADF) statistic for the test is negative. The more negative it is, the greater the rejection of the assumption that there is a unit root at a particular level of confidence. "Economic studies glossary." On March 2, 2009, the source was archived.

In statistics, the Dickey-Fuller test investigates the null hypothesis that a unit root exists in an autoregressive time series model. The alternative hypothesis varies depending on the test version used, although it is often stationarity or trend-stationarity. The test was

devised in 1979 by statisticians David Dickey and Wayne Fuller and named after them. W. A. Fuller and A. Fuller (1979). The Phillips-Perron test (named after Peter C. B. Phillips and Pierre Perron) is a unit root test in statistics. In time series analysis, it is used to test the null hypothesis that a time series is ordered. Statistics professors Peter C.B. Phillips and Pierre Perron created the Phillips-Perron (PP) unit root test in 1988. Though the PP unit root test and the ADF test are similar, the main distinction is how the tests handle serial correlation. The ADF utilizes a parametric autoregression to simulate the structure of errors, while the PP test ignores any serial correlation.

ARDL BOUND TEST

The cointegration test is the first stage in the examination of the ARDL model. To do this test, one may use the Wald test, which is intended to test the "null hypothesis" that there is no co-integration at work. The bound test is based primarily on the joint F-statistic, the asymptotic distribution of which deviates from the norm in the presence of the null hypothesis that no cointegration exists. The first step in the ARDL limits methodology is the estimate of the equations using the method of ordinary least squares (OLS). During the estimation procedure, an F-test for the joint significance of the coefficients of the lagged levels of the variables is performed to examine whether or not the variables are related in a stable fashion over time. The following equations were created as such in order to determine the link between both dependent and independent variables:

In light of this, the equation for the ARDL model is as follows, based on equation (1):

$$\Delta InGDP_t = \alpha_0 + \beta_1 InGDP_{t-1} + \beta_2 InREER_{t-1} + \beta_3 InFDI_{t-1} + \beta_4 InTR_{t-1}$$

$$+ \sum_{i=0}^{p} \Delta\alpha_2\, InREER_{t-k} + \sum_{i=0}^{p} \Delta\alpha_3\, InFDI_{t-k} + \sum_{i=0}^{p} \Delta\alpha_4 InTR_{t-k}$$

$$+ \sum_{i=0}^{p} \Delta\alpha_5 InFDI_{t-k} + \varepsilon_t$$

(2)

In order to obtain the error correction model, the second equation has been modified as shown in the following sentence.

$$\Delta \, GDP_t \; = \; \alpha_0 + \sum_{i=0}^{q} \Delta\beta_1 \, InGDP_{t-k} + \sum_{i=0}^{p} \Delta\beta_2 \, InREER_{t-k} + \sum_{i=0}^{p} \Delta\beta_3 \, InFDI_{t-k}$$

$$+ \sum_{i=0}^{p} \Delta\beta_4 InTR_{t-k} + \lambda ECM_{t-1} + \varepsilon_t$$

(3)

Significant of ARDL model

The research used a well-known methodology developed by Pesaran et al. (2001) and referred to as the autoregressive distributed lag (ARDL) methodology. If the variables being studied are stationary at I(0) or integrated in order I, then the ARDL model is considered to be the most effective econometric approach among those that are currently in use (1). In light of the goals of the research, this model is superior to others in that it can predict both the short-run and the long-run influence of independent factors on rice output.

The ARDL method is suitable for producing short-run and long-run elasticities for a small sample size at the same time. The OLS method should be used for cointegration across variables (Duasa 2007). ARDL allows you some leeway in terms of the sequence in which the variables are integrated. ARDL is appropriate for the case in which the independent variable in the model is I(0), I(1), or mutually cointegrated (Frimpong & Oteng 2006), but it fails when there is I(2) in any of the variables.

Residual diagnostic tests

The residual test, as stated below, was used in this thesis: The Breusch-Godfrey relationship is discovered in chronological order. The LM test is a test for the existence of autocorrelation in regression model mistakes. A regression analysis uses the residuals generated by the model under consideration to construct a test statistic. There is no serial link up to rank p, according to the assumption known as the null hypothesis.

Autoregressive conditional heteroskedasticity (ARDL) models are used to correctly depict time-varying financial data series, such as economic growth. When ARDL

models make the wrong assumption that the variance of the current error term is proportional to the size of the previous error terms, this can lead to volatility clustering. Normality tests are used to examine if a collection of data can be effectively characterized by a normal distribution or the chance that a random variable related to another variable is similarly normally distributed. Normality tests may also be used to see whether a random variable can be related to another variable.

Granger causality

The Granger causality test is a statistical hypothesis test that was initially introduced in 1969. Its purpose is to determine whether or not one time series might be helpful in anticipating another Its purpose is to determine whether or not one time series might be helpful in anticipating another. Granger, C. W. J. (1969) As a matter of course, regressions reflect "mere" correlations; however, Clive Granger argued that causality in economics could be tested by measuring one's ability to predict the future values of a time series using the prior values of another time series. Granger proposed this method in response to the observation that regressions typically reflect "mere" correlations. According to econometricians, the Granger test only finds "predictive causality" because the question of "true causality" is deeply philosophical and because of the post hoc ergo propter hoc fallacy, which is the assumption that one thing preceding another can be used as a proof of causation. This fallacy assumes that one thing occurring before another can be used to prove causation. Diebold, Francis X. (2007). Granger's theory of causation is more accurately referred to as "precedence," Edward E. (1985), or, as Granger himself subsequently asserted in 1977, "temporally connected." Using the word "causality" alone is a misnomer. Granger, C. W. J.; Newbold, Paul (1977). The Granger causality test looks at whether X can accurately predict Y rather than whether X is responsible for Y. James D. (1994)

Stability test

It is fairly uncommon for nonlinear models to have parameter instability. (2018, Saliminezhad et al.) As a result, in order to establish whether or not the results are correct, the consistency of the estimated model that was utilized must be investigated.

To do this, we use the CUSUM of squares test, which was established by Brown and his colleagues (1975).

The model's stability must be examined and double-checked at all times throughout the estimating process; how much weight you place on the post-estimation test is entirely up to you (Hansen, 2000).

Cusum tests are used in multiple linear regression analyses to assess the consistency of the results. For inference, sums of recursive residuals and sums of squares of recursive residuals are utilized. Recursive residuals, also known as standardized one-step-ahead prediction errors, are built up from nested sub-samples of data. Values outside the sequence's predicted range indicate that the model's structure has changed over time, which contradicts the null hypothesis that the parameters have remained constant.

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CHAPTER IV

Introduction

In this chapter, we will describe the tests that are carried out in order to answer our research questions and decide whether or not our hypotheses should be accepted. The various tests that we run for the analysis include the stationary test, which demonstrates that the variables are stationary; the ARDL bound test, which demonstrates the relationship between the dependent and independent variables; and both the short run and long run ARDL tests, which demonstrate the long run and short run relationship between each of the independent variables and the dependent variable. The stationary test demonstrates that the variables are stationary. In addition to that, a handful of the tests were categorized as diagnostic tests. The serial correlation test, the normality test, which determines whether or not the residuals are normally distributed, and the heteroskedasticity test, which determines whether or not the data set is together, are among these tests. Last but not least, the CUSUM and CUSUM of Square tests were carried out in order to determine whether or not the perimeter is stable within the data set. These tests reveal whether or not the perimeter is stable within the data set, and when carried out with the EViews program, all of these tests produced positive results.

Table 4.1 Descriptive statistic

	GDP	FDI	REER	TR
Mean	3.176302	1.457559	152.2430	32.70728
Median	4.200378	1.126314	100.5465	34.10325
Maximum	15.32916	5.790847	536.8903	53.27796
Minimum	-13.32916	-1.150856	49.74471	9.135846
Std. Dev.	5.399415	1.306122	119.1434	12.51139
Skewness	-0.890935	1.384444	1.747116	-0.391555
Kurtosis	4.762573	5.591755	5.253886	2.237643
Jarque-Bera	10.46954	23.97328	28.81611	1.990752
Probability	0.005328	0.005328	0.0000011	0.369584
Sum	127.0521	58.30238	6089.721	1308.291
Sum Sq. Dev.	1136.994	66.53224	553610.6	6104.857
Observation	40	40	40	40

Source: This Study

The average GDP growth rate is 3.17 percent, which is the second lowest in the category. With a score of 152.24, the exchange rate has the highest mean in this category.

In Nigeria, the largest figure of GDP growth is 15.32, while the exchange rate and FDI have maximum values of 536.89 and 5.79, respectively. Skewness measures how symmetrical the distribution of a variable is. When the distribution of answers for a variable skews toward the right or left tail, the distribution is said to be skewed. "Kurtosis is a measure of whether a distribution is too peaked (a very narrow distribution with the majority of answers in the center)" (Hair et al., 2017).

"When both skewness and kurtosis are zero (a circumstance that researchers are highly unlikely to ever observe), the pattern of responses is termed a normal distribution." A common rule of thumb for skewness is that if the number is larger than +1 or smaller than -1, it indicates a significantly skewed distribution. The basic rule for kurtosis is that if the number is greater than 1, the distribution is excessively peaked. Similarly, a kurtosis of less than -1 implies an overly flat distribution. "Distributions with skewness and/or kurtosis that surpass these limits are regarded as nonnormal." (Hair et al., 2017)

UNIT ROOT TEST

The augmented Dickey-Fuller test (ADF) in statistics and econometrics examines the null hypothesis that a unit root exists in a time series sample. Depending on the version of the test performed, the alternative hypothesis may be stationarity or trend-stationarity. It is an improved version of the Dickey-Fuller test for bigger and more complex time series models. For this test, the augmented Dickey-Fuller (ADF) statistic is negative. The bigger the negative value, the greater the degree of confidence in rejecting the premise that there is a unit root. Glossary of Economic Studies Two years ago, on March 2, 2009, the source was preserved.

In statistics, the Dickey-Fuller test examines the null hypothesis that an autoregressive time series model has a unit root. Depending on the version of the test performed, the alternative hypothesis may be stationarity or trend-stationarity. David

Dickey and Wayne Fuller, two statisticians, created and named the test in 1979. W. A. Fuller and A. Fuller (1979).

Table 4.2 ADF unit root test

Augmented Dickey Fuller (ADF) Unit Root Test				PP Unit root		
Variables	*Level*	*1st difference*	**Order of integration**	**Level**	**1st difference**	**Order of integration**
GDP	*0.2366*	*0.0020*	*I(1)*	*0.0185*	*0.0000*	*I(1)*
FDI	*0.0028*	*-----*	*I(0)*	*0.1281*	*0.0000*	*I(1)*
REER	*0.3199*	*0.0016*	*I(1)*	*0.0602*	*0.0000*	*I(1)*
TR	*0.0809*	*0.0000*	*I(1)*	*0.2458*	*0.0000*	*I(1)*

Source: Akaike info criterion.

The ADF unit root test is shown in Table 4.1. This test examines the stationarity of the variables.

This study includes four variables, one of which is stationary at level and three of which are stationary at the first difference. The sole variable that is stationary at first difference with a p value of 0.0020 is GDP growth. Foreign direct investment is stationary at level, while the real effective exchange rate, and trade are stationary at first difference with corresponding p-values of 0.0016, and 0.0000; hence, the PP unit root result show that all of the variable are stationary at first difference,the null hypothesis can be rejected, and it can be concluded that the variables have a unit root issue at first difference.

ARDL BOUND TEST

The cointegration test is the first step in analyzing the ARDL model. To do this test, one may utilize the Wald test, which is designed to test the "null hypothesis" that co-integration is not present. The bound test is principally based on the joint F-statistic, whose asymptotic distribution deviates from the mean under the null hypothesis that there is no cointegration. Estimating the equations using the approach of ordinary least squares is the first stage in the ARDL limits methodology (OLS). An F-test for the joint significance of the coefficients of the lagged levels of the variables is done throughout the estimate method to determine whether or not the variables are connected in a stable manner over time.

Table 4.3 ARDL bound test

Model	Lag.	F-Statistic	Decision
GDP, REER, TR, FDI	*(4,1,1,1)*	*8.143296****	*Co-Integration Exist*
Bond Critical			
Value			
		I (0)	*I (1)*
Sign.	*10%*	*2.37*	*3.2*
	5%	*2.79*	*3.67*
	2.5%	*3.15*	*4.08*
	1%	*3.65*	*4.66*

`Source: This study

The findings of the ARDL bound test and the critical value bond are shown in Table 4.2.
The findings found evidence of co-integration between variables for which GDP was
used as the dependent variable. Because the F-statistic (8,143) is greater than the lower
and upper bounds, the ARDL model indicated a long-run bound connection between the
dependent and independent variables.

ARDL LONG TEST

Table 4.4 ARDL short and long run test

Short run		
Variable	**Coef.**	**P value**
D(FDI(-3)	1.348	0.0062
D(REER(-1)	-0.022	0.0185
REER	0.020	0.0461
TR	-0.111	0.0829
ECM	-0.494	0.0000

ARDL Long run		
Variables	Coef.	P value
FDI	1.348	0.0285
REER	0.031	0.0336
TR	0.243	0.0067
C	-8.871	0.0549

The long and short-run ARDL tests are shown in Table 4.3. Both tests indicate that the variables have a connection in the short and long runs. The effect of the exchange rate on the Nigerian economy is statistically significant at the 5% level and has a positive relationship with growth in Nigeria during the period under investigation. This means that a one percent increase in the exchange rate will increase economic growth in Nigeria by 0.033% in the long run and by 0.046% in the short run.

This finding is consistent with Zoramawa, Ezekiel, and Kiru's (2020) examination of the influence of the exchange rate as a significant factor of Nigeria's economic development between 1980 and 2019. The 2016 Statistical Bulletin of the Central Bank of Nigeria (CBN) was used for secondary data. The study used the following econometric techniques: unit root test, Johansen cointegration test, and error correction model (ECM). The study demonstrated that trade had a positive and statistically significant influence on economic growth at the 5% significance level. However, later analysis demonstrated that economic openness had a detrimental effect on economic growth. On the basis of these results, it was suggested that the government's monetary authority, such as the Central Bank of Nigeria (CBN), revamp the present monetary policies in order to maintain a stable exchange rate. Since economic openness hinders economic development, it is recommended that the government continue its existing efforts to diversify the economy and dismiss the concept that economic openness produces economic growth in the nation.

Foreign direct investment is also substantial at 5% and has a favorable impact on Nigeria's economic development. This result conforms to Adeolu B. Ayanwale's (2007) investigation of the empirical relationship between non-extractive FDI and economic growth in Nigeria, in addition to the reasons for FDI in the Nigerian economy. The

Federal Office of Statistics, the Central Bank of Nigeria, and the International Monetary Fund contributed secondary data. 1970–2002 was the time span studied. Using ordinary least squares and the 2SLS approach, an upgraded growth model was estimated in order to assess the relationship between FDI, its components, and economic development. Results indicate that market size, infrastructure development, and a stable macroeconomic policy are determinants of foreign direct investment in Nigeria. However, commercial openness and human resource availability do not attract FDI. FDI in Nigeria has a positive effect on economic growth. The different components of foreign direct investment (FDI) have a positive effect on economic development, even though FDI as a whole may not have a major impact on economic growth. Foreign direct investment in the communication industry provides multiple times the potential for economic development as FDI in the oil sector. Foreign direct investment in the manufacturing sector has a negative effect on the economy, which reflects the nation's poor business environment. Low levels of available human capital need a higher emphasis on training to enhance its capacity to contribute to economic growth.

RESIDUAL DIAGNOSTIC

Table 4.5 residual diagnostic

Tests	Statistic	P value	Remarks
Breusch Godfrey LM test (Serial correlation)	0.529806	0.3049	
Normality	0.088606	0.95664	
Heteroscedasticity	0.304681	0.9649	

Source: This study

The hypothesis predicts a normal distribution and the absence of serial correlation and conditional heteroskedasticity, as shown in the table 4.4 placed above. The results of this discovery are consistent with what the theory predicted. They don't even come close to a normal distribution; in fact, they don't even come close. Despite the fact that the alternative hypotheses indicate something different, the null hypothesis demonstrates that the model does not really include serial correlation. The probability that this would occur is 0.3049, which is much bigger than the threshold of 0.05% and a factor of 2

higher. In this scenario, it is determined that the null hypothesis should be regarded as true, and the possibility that the model may show serial correlation is rejected. The model does not display heteroskedasticity at the 5% significance level as a result of the null hypothesis. Given that the significance threshold is 5, this is the case. After being put through its paces, this model does not continue to stagnate at the 5% threshold. If the likelihood value of 0.9649 is greater than the threshold of 0.05 percent, then this suggests that the situation is direr than first thought. Since we cannot reject the null hypothesis at a significance level of 5%, we must conclude that the model does not demonstrate heteroskedasticity at this level. This is the only logical outcome for us. If we accept the null hypothesis, the data set should reflect a normal distribution between 5 and 10 percent, somewhere inside that range. The usual frequency distribution for residues is 5% of the total. The Jarque-Bera probability cannot be considered significant since the probability of 0.95664% exceeds the significance level of 0.05 percent. This indicates that the likelihood is not statistically significant. If the null hypothesis about cointegration is correct, then residuals will have a normal distribution at the 5% significance level.

Granger causality

Null Hypothesis	Obs.	F-Statistic	Prob.
FDI does not Granger Cause GDP.	38	0.40481	0.6704
GDP does not Granger Cause FDI		1.58975	0.2192
REER does not Granger Causes GDP	38	0.00237	0.9976
GDP does not Granger cause REER		10.7838	0.0002
TR does not Granger Cause GDP	38	2.90538	0.0688
GDP does not Granger Cause TR		0.11135	0.1245
REER does not Granger Cause FDI	38	2.14491	0.1331
FDI does not Granger Cause REER		0.11135	0.8950
TR does not Granger Cause FDI	38	0.80469	0.4558
FDI does not Granger Cause TR		1.99093	0.1526
TR does not Granger Cause REER	38	0.89411	0.4186
REER does not Granger Cause TR		2.63751	0.0866

Source: This study

The term "causality" on its own is a misnomer. C. W. J. Granger and Paul Newbold (1977) The Granger causality test examines whether X can correctly predict Y rather than whether X is responsible for Y. Mr. James D. (1994)

The outcome clearly demonstrates that unidirectional causation exists between the variables.

Only GDP and REER show unidirectional causation among the four variables. GDP growth causes the real effective exchange rate, but the real effective exchange rate does not drive GDP growth in Nigeria.

Stability tests

Figure 4.1 CUSUM TEST
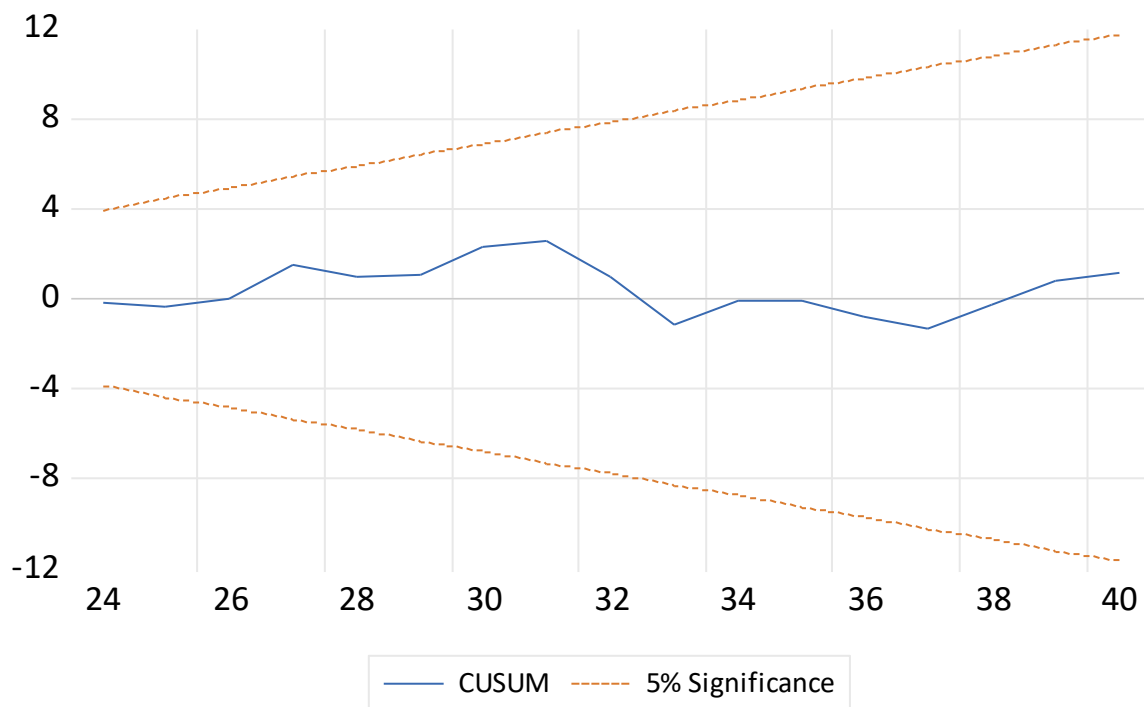
Figure 4.2 CUSUM of square
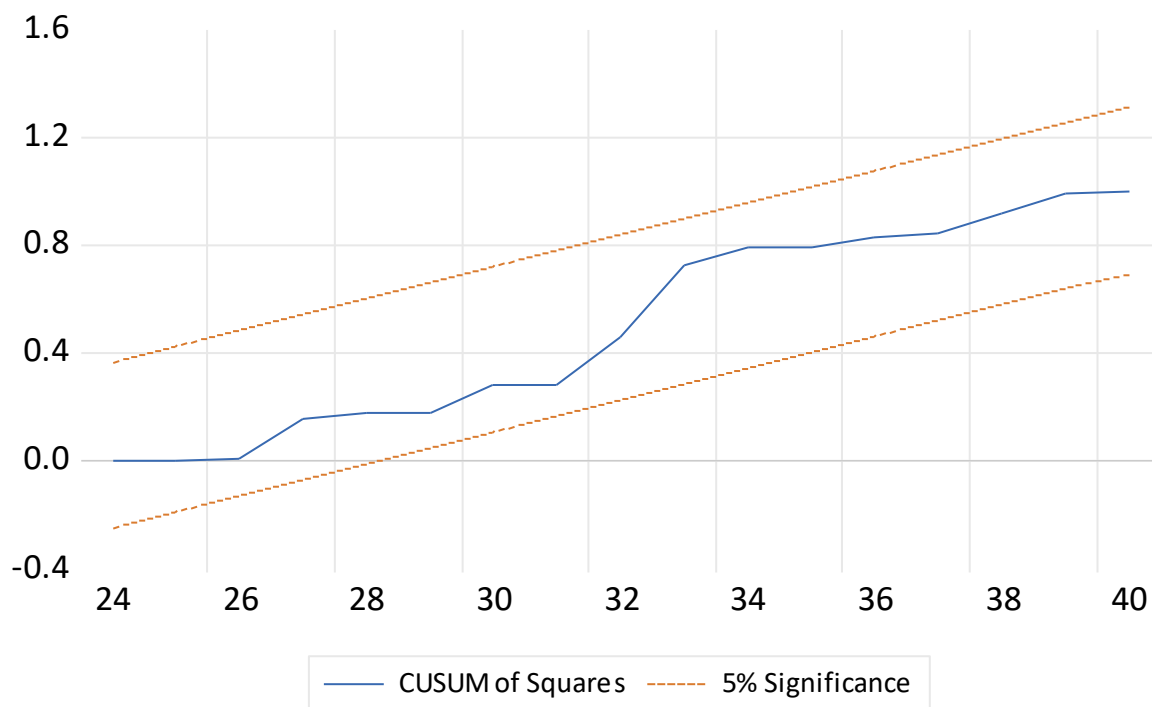
There is no evidence to support the alternative hypothesis, which argues that parameters are constant. The test shows that the blue line can't cross the red line. We'll accept the null hypothesis and reject the alternative since residual variances are stable. This complicates everything. The residual variance is steady, not unstable. CUSUM and CUSUMQ were used to assess the long-term stability of the ARDL model's long-term coefficients with the exchange rate and economic growth variables. Both are cumulative amounts. According to the null hypothesis, no error correction model coefficients deviate by more than 5%. Bahmani et al. If any lines are crossed, the null hypothesis of consistent coefficients may be rejected at 5% significance. CUSUM and CUSUMQ plots must stay inside the above borders. This will keep the exchange rate stable. The both tests show stability in the perimeter.

CHAPTER V

Summery, Conclusion and Recommedations

Summery

The goal of this thesis is to look at how Nigeria's current exchange rate has affected the country's capacity to achieve sustainable development from 1980 to 2019. Jhingan defines "exchange rate" as the rate at which one country's currency is exchanged for another country's currency. As he went on, he started to discuss the value of one country's currency in relation to the value of another country's currency. Consider the value of one dollar in comparison to the naira, the other currency in use in Nigeria. It is the number of Nigerian naira that must be exchanged for one US dollar. The phrase "exchange rate" refers to the value in terms of another currency for which one nation's currency may be purchased or sold on the global currency exchange market. An exchange rate is a common way of calculating how much of one nation's currency can be purchased in exchange for one unit of currency from another nation. The worldwide financial community, as well as states still in the process of economic growth, continue to place a high value on discussions about alternate exchange rate regimes and interest rate structures. This is because a growing number of economies recognize that accepting trade liberalization is a vital prerequisite for economic success. According to Investopedia, exchange rates are an important component of the vast majority of free market economies worldwide. As a result, exchange rates have a significant impact on the quantity of commerce that happens inside a country. The capacity of a country to stay competitive is strongly reliant on its exchange rates. As a consequence, the exchange rate is one of the economic indicators that is closely monitored, thoroughly examined, and politically influenced. When a country's currency is overvalued, the cost of its exports rises on international markets while the cost of its imports falls inside the country. A depreciated currency has the opposite impact. As a result, increased exchange rates may result in an unbalanced trade balance for the country.

For a long time, exchange rate volatility has been a difficult problem to address, both theoretically and practically. One of the outstanding issues is the examination of the factors that influence the equilibrium exchange rate. The collapse of the Bretton Woods

agreement in the 1970s allowed the prices of various countries' currencies to fluctuate. As a result, economists and those in positions of power continue to focus their efforts on empirical studies of exchange rates. It has become a crucial task for policymakers all over the globe to identify the elements that may be changed to reduce the volatility of their own currencies' values. Since the 1970s, a large amount of time and effort has been devoted to performing an intensive empirical study on how to forecast changes in real currency values, which is an important policy issue. Significant advances in econometrics and the increasing availability of high-quality data have spurred a flood of empirical research on the exchange rate. As a result, the number of empirical investigations has increased.

The Nigerian economy cannot run without crucial imports of raw resources, technical developments, and a variety of other essential items from other nations. The importation of these raw commodities strains the country's foreign exchange, causing the demand for foreign money to exceed the demand for the country's currency. Because of the demand mismatch, the currency exchange rate is volatile. The recent volatility in Nigeria's currency exchange rate has had a significant influence on the country's economy, leading to unstable macroeconomics and lower-than-average economic growth in comparison to other nations.

Secondary data was used in this investigation. Secondary data is research information that has already been gathered and is accessible to researchers. Primary data, on the other hand, is information obtained directly from the source. Secondary data is used to increase the sample size of research initiatives while also increasing efficiency and speed by using an already existing resource. Secondary data is useful in large research projects when numerous research groups cooperate to obtain secondary data.

In this thesis, I use the World Bank data portal to find secondary information about how currency rates affected Nigeria's sustainable development from 1980 to 2019.

Databases at the World Bank are key tools for supporting crucial management decisions and providing critical statistical data for bank operations. The use of internationally accepted standards and norms provides a consistent and reliable source of information. Much of the data comes from member countries' statistical systems, and the effectiveness of these national systems determines the quality of global statistics. The

World Bank's goal is to improve the capacity, efficiency, and effectiveness of developing countries' national statistical systems. It is difficult to create sound policies, determine how well poverty-reduction initiatives are functioning, or monitor progress toward global targets without better and more thorough national information. The unit root test is employed before every estimate since most macroeconomic variables are trending and, for the most part, non-stationary. A unit root test in statistics determines if a time series variable is non-stationary and has a unit root. The null hypothesis is the lack of a unit root, while the alternative hypothesis, depending on the test, is either stationarity, trend stationarity, or an explosive root. An augmented Dickey-Fuller test (ADF) in statistics and econometrics tests the null hypothesis that a unit root exists in a time series sample. The alternative hypothesis differs depending on the test version, but it is often stationarity or trend-stationarity. It is a more complex variant of the Dickey-Fuller test for a broader collection of time series models. The test's augmented Dickey-Fuller (ADF) statistic is negative. "Economic studies dictionary." The more negative it is, the stronger the rejection of the premise that there is a unit root at a certain degree of confidence. The source was preserved on March 2, 2009.

The Dickey-Fuller test in statistics analyzes the null hypothesis that a unit root exists in an autoregressive time series model. The alternative hypothesis differs depending on the test version, but it is often stationarity or trend-stationarity. The test was named after statisticians David Dickey and Wayne Fuller, who created it in 1979. A. Fuller and W. A. Fuller The cointegration test is the first step in analyzing the ARDL model. This test may be performed using the Wald test, which is designed to test the "null hypothesis" that there is no co-integration at work. The bound test is principally based on the joint F-statistic, whose asymptotic distribution deviates from the norm in the presence of the null hypothesis that there is no cointegration. The estimation of the equations using the technique of ordinary least squares is the first stage in the ARDL limits approach. An F-test for the joint significance of the coefficients of the lagged levels of the variables is done throughout the estimate method to determine whether or not the variables are connected in a stable way over time. In this thesis, the residual test was utilized, as indicated below: In chronological order, the Breusch-Godfrey link is revealed. The LM test checks for the presence of autocorrelation in regression model

errors. A regression analysis constructs a test statistic using the residuals provided by the model under investigation. According to the assumption known as the null hypothesis, there is no serial connection up to rank p.

To accurately portray time-varying financial data series, such as economic development, autoregressive conditional heteroskedasticity (ARDL) models are utilized. Volatility clustering may occur when ARDL models use the incorrect assumption that the variance of the current error term is proportionate to the magnitude of the prior error term.

Normality tests are used to determine if a set of data can be successfully described by a normal distribution or the likelihood that a random variable connected to another variable is also normally distributed. Normality tests may also be used to determine if one variable is connected to another. It is unusual for nonlinear models to exhibit parameter instability. Saliminezhad et al. (2018) As a consequence, the consistency of the estimated model that was used must be reviewed in order to determine whether or not the findings are valid. To do this, we use Brown and his colleagues' CUSUM of squares test.

Throughout the estimating process, the model's stability must be inspected and double-checked; how much weight you put on the post-estimation test is completely up to you.

Cusum tests are used to examine the consistency of the findings in repeated linear regression studies. Sums of recursive residuals and sums of squares of recursive residuals are used for inference. Recursive residuals, also known as standardized one-step-ahead prediction errors, are constructed from nested data subsamples. The null hypothesis says that the parameters have stayed the same, but values outside of the expected range of the sequence show that the model's structure has changed over time.

Table 4.1 displays the results of the ADF unit root test. This test looks at the variables' stationarity.

This research covers four variables, one of which is stationary at the level, and the other three are stationary at the first difference. GDP growth is the only variable that is stationary at level b, with a p value of 0.0028. Foreign direct investment, the real effective exchange rate, and trade are all stationary at first difference, with p-values of

0.0000, 0.0016, and 0.0000, respectively; hence, the null hypothesis can be rejected, and the variables have a unit root problem at first difference. Table 4.2 displays the results of the ARDL bound test and the critical value bond. The results revealed evidence of cointegration between variables, with GDP serving as the dependent variable. Because the F-statistic (8,143) was greater than the lower and upper bounds, the ARDL model suggested a long-run bound relationship between the dependent and independent variables. Table 4.3 displays the results of the long- and short-run ARDL testing. Both experiments show that the variables are related in both the short and long runs. The impact of the exchange rate on the Nigerian economy is statistically significant at the 5% level and has a positive relationship with growth in Nigeria over the investigation period. This suggests that a 1% rise in the exchange rate boosts Nigeria's economic development by 0.033% in the long run and 0.046% in the short term.

This conclusion is consistent with Zoramawa, Ezekiel, and Kiru's (2020) investigation of the exchange rate's role as a crucial determinant in Nigeria's economic progress between 1980 and 2019. Secondary data was derived from the Central Bank of Nigeria's (CBN) 2016 Statistical Bulletin. The following econometric approaches were utilized in the study: unit root test, Johansen cointegration test, and error correction model. At the 5% level of significance, the research found that trade had a positive and statistically significant impact on economic growth. However, further research revealed that economic openness was harmful to economic development. Based on these findings, it was proposed that the government's monetary authority, such as the Central Bank of Nigeria (CBN), revise current monetary policies in order to maintain a stable exchange rate. Because economic openness impedes economic development, it is advised that the government maintain its current efforts to diversify the economy and reject the notion that economic openness leads to national economic progress.

Foreign direct investment is also significant, amounting to 5%, and has a positive influence on Nigeria's economic growth. This finding is consistent with Adeolu B. Ayanwale's (2007) study on the empirical link between non-extractive FDI and economic development in Nigeria, as well as the reasons for FDI in the Nigerian economy. Secondary data was provided by the Federal Office of Statistics, the Central Bank of Nigeria, and the International Monetary Fund. The time period investigated was

1970–2002. An improved growth model was calculated using ordinary least squares and the 2SLS technique in order to analyze the link between FDI, its components, and economic development. According to the findings, market size, infrastructural development, and a stable macroeconomic policy are all factors that influence foreign direct investment in Nigeria. However, commercial openness and the availability of human resources do not attract FDI. FDI has a favorable impact on economic development in Nigeria. Foreign direct investment (FDI) has a favorable influence on economic development, even though FDI as a whole may not have a significant impact on economic growth. Foreign direct investment in the communication industry has 10 times the economic growth potential of FDI in the oil sector. Foreign direct investment in the manufacturing sector has a negative economic impact, reflecting the country's weak business climate. To improve its potential to contribute to economic development, low levels of accessible human capital need a greater focus on training. As demonstrated in Table 4.4 above, the hypothesis predicts a normal distribution and the lack of serial correlation and conditional heteroskedasticity. This discovery's findings are consistent with what the theory expected. They are not even near a normal distribution; in fact, they are not even close. Despite the fact that the alternative hypotheses suggest otherwise, the null hypothesis shows that the model does not feature serial correlation. The likelihood of this happening is 0.3049, which is substantially greater than the 0.05% barrier and a factor of two higher. In this case, the null hypothesis is judged to be true, and the chance that the model may exhibit serial correlation is rejected. As a consequence of the null hypothesis, the model does not exhibit heteroskedasticity at the 5% significance level. This is the situation since the significance threshold is set at 5. After being put through its paces, this model does not remain stuck at the 5% mark. If the probability value of 0.9649 is larger than the 0.05 percent threshold, it indicates that the situation is more grave than previously imagined. We must infer that the model does not exhibit heteroskedasticity at this level since we cannot reject the null hypothesis at a significance level of 5%. For us, this is the only logical consequence. If we accept the null hypothesis, the data set should have a normal distribution with a standard deviation of 5 to 10%. The typical residue frequency distribution is 5% of the total. Because the likelihood of 0.95664% exceeds the significance criterion of 0.05 percent, the Jarque-

Bera probability cannot be declared significant. This means that the probability is not statistically significant. At the 5% significance level, residuals will exhibit a normal distribution if the null hypothesis concerning cointegration is valid. The alternative hypothesis that parameters are constants is not supported by the data. The results of the test reveal that the blue line cannot cross the red line. Because residual variances are stable, we will accept the null hypothesis and reject the alternative. This further complicates matters. The residual variance is stable and not volatile. The long-term stability of the ARDL model's long-term coefficients with the exchange rate and economic growth variables was assessed using CUSUM and CUSUMQ. Both are total sums. The null hypothesis states that no error correction model coefficients vary by more than 5%. Bahmani and colleagues at 5% significance, the null hypothesis of consistent coefficients may be rejected if any lines are crossed. CUSUM and CUSUMQ plots must remain inside the above boundaries. This will keep the currency constant. Both tests demonstrate perimeter stability.

Conclusion

The purpose of this thesis is to investigate how Nigeria's current exchange rate has influenced the country's ability to achieve sustainable development from 1980 to 2019. The phrase "exchange rate" refers to the value in terms of another currency for which one nation's currency may be purchased or sold on the global currency exchange market. An exchange rate is a common way of calculating how much of one nation's currency can be purchased in exchange for one unit of currency from another nation. The exchange rate regime and interest rates remain hot concerns in international finance as well as in emerging countries. This is because a growing number of economies acknowledge that trade liberalization is a vital prerequisite for economic success (Obansa, Okoroafor, Aluko, and Millicent, 2013). According to Investopedia (2009), exchange rates are critical to the majority of free market economies throughout the globe. As a result, exchange rates have a significant impact on the quantity of commerce that happens inside a country. The capacity of a country to stay competitive is strongly reliant on its exchange rates. As a consequence, the exchange rate is one of the economic indicators that is closely monitored, thoroughly examined, and politically influenced.

When a country's currency is overvalued, the cost of its exports rises on international markets while the cost of its imports falls inside the country. A depreciated currency has the opposite impact. As a result, increased exchange rates may result in an unbalanced trade balance for the country.

For a long time, exchange rate volatility has been a difficult problem to address, both theoretically and practically. One of the outstanding issues is the examination of the factors that influence the equilibrium exchange rate. The collapse of the Bretton Woods agreement in the 1970s allowed the prices of various countries' currencies to fluctuate. As a result, economists and those in positions of power continue to focus their efforts on empirical studies of exchange rates. It has become a crucial task for policymakers all over the globe to identify the elements that may be changed to reduce the volatility of their own currencies' values. Since the 1970s, a large amount of time and effort has been devoted to performing an intensive empirical study on how to forecast changes in real currency values, which is an important policy issue. Significant advances in econometrics and the increasing availability of high-quality data have spurred a flood of empirical research on the exchange rate. As a result, the number of empirical investigations has increased (Ajao and Igbekoyi, 2013). The exchange rate is one of the most significant macroeconomic concepts that has an influence on an economy. It is the rate at which one currency is converted into another, and it has an impact on a country's ability to compete worldwide. In an open economy where there is a higher demand for foreign currency than supply, the exchange rate and the influence that volatility has on economic activity may have serious consequences (Adewuyi & Akpokodje, 2013; Alagidede & Ibrahim, 2017; Schnabl, 2007). The economy of Nigeria is controlled by a single ethnic group. Given that the sale of crude oil on international markets accounts for more than 78 percent of Nigeria's overall income, changes in the price of oil in different regions of the globe are likely to have a significant influence on the country's economy. The World Bank data portal is used in this thesis to gather secondary data on how currency rates influenced Nigeria's sustainable development from 1980 to 2019.

Databases at the World Bank are key tools for supporting crucial management decisions and providing critical statistical data for bank operations. The use of internationally accepted standards and norms provides a consistent and reliable source of information.

Much of the data comes from member countries' statistical systems, and the effectiveness of these national systems determines the quality of global statistics. The World Bank's goal is to improve the capacity, efficiency, and effectiveness of developing countries' national statistical systems. It is difficult to create sound policies, determine how well poverty-reduction initiatives are functioning, or monitor progress toward global targets without better and more thorough national information. The study of exchange rates is primarily concerned with identifying what variables impact the level, or at least the movement, of a floating exchange rate. Previously, the exchange rate was supposed to be established at a level that equated the flow, demand, and supply of foreign currency. As a result, a floating exchange rate is influenced by what is expected to happen in the future rather than just what is happening now or what has happened in the past. The exchange rate is the price of a future asset. Its level has implications for the behavior of the current account in the balance of payments, but the current account influences the exchange rate only to the degree that forward-looking agents perceive that it will affect future asset stocks. (Of course, savings and investment strategies have an impact on current account performance.) Both revenue flows and exchange rates are set simultaneously in a general equilibrium system. These perceptive and foresighted agents are expected to be aware of such possibilities. Table 4.2 displays the results of the ARDL bound test and the critical value bond. The results revealed evidence of cointegration between variables, with GDP serving as the dependent variable. Because the F-statistic (8,143) was greater than the lower and upper bounds, the ARDL model suggested a long-run bound relationship between the dependent and independent variables. Table 4.3 displays the results of the long- and short-run ARDL testing. Both experiments show that the variables are related in both the short and long runs. The impact of the exchange rate on the Nigerian economy is statistically significant at the 5% level and has a positive relationship with growth in Nigeria over the investigation period.This suggests that a 1% rise in the exchange rate boosts Nigeria's economic development by 0.033% in the long run and 0.046% in the short term.

This conclusion is consistent with Zoramawa, Ezekiel, and Kiru's (2020) investigation of the exchange rate's role as a crucial determinant in Nigeria's economic

progress between 1980 and 2019. Secondary data was derived from the Central Bank of Nigeria's (CBN) 2016 Statistical Bulletin. The following econometric approaches were utilized in the study: unit root test, Johansen cointegration test, and error correction model (ECM). At the 5% level of significance, the research found that trade had a positive and statistically significant impact on economic growth. However, further research revealed that economic openness was harmful to economic development. Based on these findings, it was proposed that the government's monetary authority, such as the Central Bank of Nigeria (CBN), revise current monetary policies in order to maintain a stable exchange rate. Because economic openness impedes economic development, it is advised that the government maintain its current efforts to diversify the economy and reject the notion that economic openness leads to national economic progress.

Foreign direct investment is also significant, amounting to 5%, and has a positive influence on Nigeria's economic growth. This finding is consistent with Adeolu B. Ayanwale's (2007) study on the empirical link between non-extractive FDI and economic development in Nigeria, as well as the reasons for FDI in the Nigerian economy. Secondary data was provided by the Federal Office of Statistics, the Central Bank of Nigeria, and the International Monetary Fund. The time period investigated was 1970–2002. An improved growth model was calculated using ordinary least squares and the 2SLS technique in order to analyze the link between FDI, its components, and economic development. According to the findings, market size, infrastructural development, and a stable macroeconomic policy are all factors that influence foreign direct investment in Nigeria. However, commercial openness and the availability of human resources do not attract FDI. FDI has a favorable impact on economic development in Nigeria. Foreign direct investment (FDI) has a favorable influence on economic development, even though FDI as a whole may not have a significant impact on economic growth. Foreign direct investment in the communication industry has 10 times the economic growth potential of FDI in the oil sector. Foreign direct investment in the manufacturing sector has a negative economic impact, reflecting the country's weak business climate. To improve its potential to contribute to economic development, low levels of accessible human capital need a greater focus on training. While exchange rate economics aims to explain how the level of a floating exchange rate is established, it

also sheds light on the issues that a government encounters when seeking to determine the value of the exchange rate of its currency. It is not true that there is a 1:1 relationship between the pressures felt by a government attempting to fix the exchange rate of its currency and the difference between the market exchange rate and the rate that would be established in a competitive market, because market pressure can be mitigated if a government succeeds in making a credible commitment to keep the rate unchanged. A government that strives to maintain a fixed exchange rate but is seen by the market to be unable to do so may face speculative pressures in addition to those caused by a floating market. Nonetheless, every government wishing to control its currency must first understand the forces against which it may be compelled to fight, and exchange rate economics exposes these forces.

It is useful to consider two phases when estimating the level of a floating exchange rate. In the first phase, the steady-state level of the real (price-deflated) exchange rate is calculated. The current account has the biggest influence at this stage because it limits the long-run value of the real exchange rate.

Recommendations

As a result of the research, the recommendation that Nigeria's economy be diversified was made. This would make it possible for non-oil and service industries to become important contributors to the country's total foreign currency earnings. Because of the high degree of volatility linked with oil profits, this has become important. The significance of crude oil will steadily lose its importance over the course of the next few decades as a result of the proliferation of other energy sources such as solar, wind, and nuclear power. Therefore, economic planners and policymakers in Nigeria should devise policies that will shift the emphasis away from the oil industry and make productive the non-oil and service sectors of the economy.

Recommendations such as necessitating the need for substantial economic growth in order to spur employment growth and making provisions for a stable currency with an exchange rate that is adequate for boosting economic growth and employment growth are included in the list of recommendations that can assist policy formulation in the process of ensuring a job-enabling environment in a developing country. In addition,

labor regulations need to be revised so that they are more accommodating of job creation; the mismatch in skills needs to be corrected by means of appropriate skills training; the development and promotion of small businesses and entrepreneurial endeavors need to be encouraged; and labor-intensive programs should be supported by both the private and public sectors. Last but not least, export promotion programs have to be put into action. When asked about the primary factors that determine growth, economists typically center their attention on a number of factors, including but not limited to education and training, savings and investment, and the institutional capacity to absorb and produce organizational and technological knowledge. It is most helpful to think of the actual exchange rate as a condition that facilitates things: maintaining it at levels that are competitive and avoiding excessive volatility facilitates efforts that are made to capitalize on the fundamentals.

Nigeria. This has the potential to affect the pace at which incomes are increasing, but only in the context of a more comprehensive economic change that also includes an alternative monetary strategy.

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Appendix

	GDP	FDI	REER	TR
Mean	3.176302	1.457559	152.2430	32.70728
Median	4.200378	1.126314	100.5465	34.10325
Maximum	15.32916	5.790847	536.8903	53.27796
Minimum	-13.12788	-1.150856	49.74471	9.135846
Std. Dev.	5.399415	1.306122	119.1434	12.51139
Skewness	-0.890935	1.384447	1.747116	-0.391555
Kurtosis	4.762573	5.591755	5.253886	2.237643
Jarque-Bera	10.46954	23.97328	28.81611	1.990752
Probability	0.005328	0.000006	0.000001	0.369584
Sum	127.0521	58.30238	6089.721	1308.291
Sum Sq. Dev.	1136.994	66.53224	553610.6	6104.857
Observations	40	40	40	40

UNIT ROOT TEST

Null Hypothesis: FDI has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.084987	0.0028
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

Null Hypothesis: GDP has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 6 (Automatic - based on AIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.717285	0.2366
Test critical values:	1% level	-4.262735	
	5% level	-3.552973	
	10% level	-3.209642	

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

Null Hypothesis: D(GDP) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-11.63398	0.0000
Test critical values:	1% level	-3.615588	
	5% level	-2.941145	
	10% level	-2.609066	

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

Null Hypothesis: REER has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.920244	0.3199
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.
Null Hypothesis: D(REER) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.298398	0.0016
Test critical values:	1% level	-3.615588	
	5% level	-2.941145	
	10% level	-2.609066	

Null Hypothesis: TR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.713053	0.0809
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

Null Hypothesis: D(TR) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.937866	0.0000
Test critical values:	1% level	-3.615588	
	5% level	-2.941145	
	10% level	-2.609066	

PP Unit Root Test

GDP

Null Hypothesis: GDP has a unit root
Exogenous: None
Lag length: 7 (Spectral OLS AR based on t-statistic, lagpval=0.5, maxlag=7)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.379787	0.0185
Test critical values:	1% level	-2.625606	
	5% level	-1.949609	
	10% level	-1.611593	

FDI

Null Hypothesis: FDI has a unit root
Exogenous: None
Lag length: 4 (Spectral OLS AR based on t-statistic, lagpval=0.5, maxlag=9)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.479684	0.1281
Test critical values:	1% level	-2.625606	
	5% level	-1.949609	
	10% level	-1.611593	

Null Hypothesis: D(FDI) has a unit root
Exogenous: None
Lag length: 9 (Spectral OLS AR based on t-statistic, lagpval=0.5, maxlag=9)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-31.54589	0.0000
Test critical values:	1% level	-2.627238	
	5% level	-1.949856	
	10% level	-1.611469	

REER

Null Hypothesis: REER has a unit root
Exogenous: None
Lag length: 9 (Spectral OLS AR based on t-statistic, lagpval=0.5, maxlag=9)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.863122	0.0602
Test critical values:	1% level	-2.625606	
	5% level	-1.949609	
	10% level	-1.611593	

Null Hypothesis: D(REER) has a unit root
Exogenous: None
Lag length: 9 (Spectral OLS AR based on t-statistic, lagpval=0.5, maxlag=9)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-11.68405	0.0000
Test critical values:	1% level	-2.627238	
	5% level	-1.949856	
	10% level	-1.611469	

NT

Null Hypothesis: NT has a unit root
Exogenous: None
Lag length: 9 (Spectral OLS AR based on t-statistic, lagpval=0.5, maxlag=9)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.087989	0.2458
Test critical values:	1% level	-2.625606	
	5% level	-1.949609	
	10% level	-1.611593	

Null Hypothesis: D(NT) has a unit root
Exogenous: None
Lag length: 8 (Spectral OLS AR based on t-statistic, lagpval=0.5, maxlag=9)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.859282	0.0000
Test critical values:	1% level	-2.627238	
	5% level	-1.949856	
	10% level	-1.611469	

ARDL BOUND TEST

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	8.143296	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

ARDL LONG RUN

ARDL Long Run Form and Bounds Test
Dependent Variable: D(GDP)
Selected Model: ARDL(4, 4, 4, 3)
Case 2: Restricted Constant and No Trend
Date: 11/15/22   Time: 14:55
Sample: 1 40
Included observations: 36

Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8.871684	4.303063	-2.061714	0.0549
GDP(-1)*	-0.494719	0.267367	-1.850334	0.0817
FDI(-1)	-0.826768	0.925817	-0.893014	0.3843
REER(-1)	0.031042	0.013426	2.312015	0.0336
TR(-1)	0.243740	0.078936	3.087804	0.0067
D(GDP(-1))	-0.225551	0.265632	-0.849108	0.4076
D(GDP(-2))	-0.086718	0.233978	-0.370624	0.7155
D(GDP(-3))	0.202692	0.160281	1.264605	0.2231
D(FDI)	-0.487149	0.502155	-0.970116	0.3456
D(FDI(-1))	0.665935	0.855961	0.777997	0.4473
D(FDI(-2))	0.438230	0.687296	0.637615	0.5322
D(FDI(-3))	1.348524	0.563610	2.392654	0.0285
D(REER)	0.020982	0.012181	1.722478	0.1031
D(REER(-1))	-0.022518	0.011407	-1.974029	0.0649
D(REER(-2))	-0.005763	0.010444	-0.551834	0.5882
D(REER(-3))	-0.032898	0.010410	-3.160309	0.0057
D(TR)	-0.004617	0.077358	-0.059682	0.9531
D(TR(-1))	-0.031521	0.078740	-0.400318	0.6939
D(TR(-2))	-0.111633	0.073061	-1.527936	0.1449

ARDL SHORT RUN

| | | ECM Regression | | |
| | | Case 2: Restricted Constant and No Trend | | |

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-0.225551	0.124647	-1.809516	0.0881
D(GDP(-2))	-0.086718	0.141068	-0.614727	0.5469
D(GDP(-3))	0.202692	0.125890	1.610073	0.1258
D(FDI)	-0.487149	0.438091	-1.111980	0.2816
D(FDI(-1))	0.665935	0.461279	1.443673	0.1670
D(FDI(-2))	0.438230	0.431759	1.014988	0.3243
D(FDI(-3))	1.348524	0.432221	3.119990	0.0062
D(REER)	0.020982	0.009753	2.151407	0.0461
D(REER(-1))	-0.022518	0.008647	-2.604208	0.0185
D(REER(-2))	-0.005763	0.008533	-0.675424	0.5085
D(REER(-3))	-0.032898	0.008722	-3.771677	0.0015
D(TR)	-0.004617	0.060948	-0.075750	0.9405
D(TR(-1))	-0.031521	0.063341	-0.497641	0.6251
D(TR(-2))	-0.111633	0.060591	-1.842416	0.0829
CointEq(-1)*	-0.494719	0.069757	-7.092026	0.0000

RESIDUAL TEST

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.529806	Prob. F(2,15)	0.5993
Obs*R-squared	2.375277	Prob. Chi-Square(2)	0.3049

Series: Residuals	
Sample 5 40	
Observations 36	
Mean	-7.03e-16
Median	-0.072326
Maximum	3.862037
Minimum	-4.815976
Std. Dev.	1.901293
Skewness	-0.029537
Kurtosis	2.764244
Jarque-Bera	0.088606
Probability	0.956664
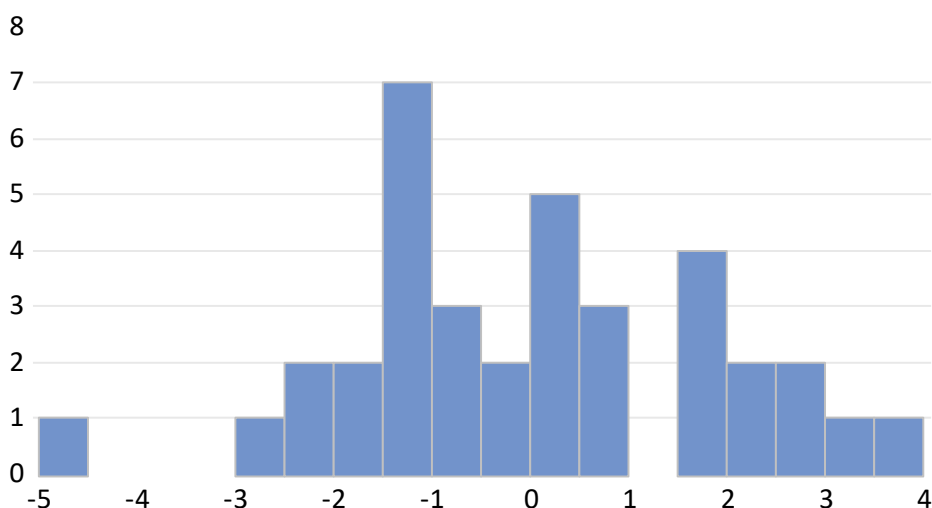
Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	0.304681	Prob. F(18,17)	0.9918
Obs*R-squared	8.780946	Prob. Chi-Square(18)	0.9646
Scaled explained SS	1.727280	Prob. Chi-Square(18)	1.0000

Pairwise Granger Causality Tests
Date: 12/14/22   Time: 12:52
Sample: 1 40
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause GDP	38	0.40481	0.6704
GDP does not Granger Cause FDI		1.58975	0.2192
REER does not Granger Cause GDP	38	0.00237	0.9976
GDP does not Granger Cause REER		10.7838	0.0002
TR does not Granger Cause GDP	38	2.90538	0.0688
GDP does not Granger Cause TR		2.22063	0.1245
REER does not Granger Cause FDI	38	2.14491	0.1331
FDI does not Granger Cause REER		0.11135	0.8950
TR does not Granger Cause FDI	38	0.80469	0.4558
FDI does not Granger Cause TR		1.99093	0.1526
TR does not Granger Cause REER	38	0.89411	0.4186
REER does not Granger Cause TR		2.63751	0.0866

STABILITY TEST