

**IMPACT OF FOREIGN EXCHANGE RATE ON NIGERIA'S
IMPORTS (1970-2011)**

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DECLARATION

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DEDICATION

This dissertation is dedicated to God Almighty, my parents Dr and Mrs. Peter Egedegbe, my lovely Husband Mr. Kelechi Dike and my dear son master Haniel Chidiebube, Dike.

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ABSTRACT

The study examined the impact of foreign exchange rate on Nigeria's imports. The study covered the period of 1970-2011. The main objective is to examine the volatility of exchange rate on Nigeria's imports. The ARCH and GARCH model was used to check the volatility of exchange rate. Also, Johansen co-integration technique with its implied Error Correction Model (ECM) was applied. The variables used were import (M) as the dependent variable, whereas Real Effective Exchange Rate (RER), Nominal Effective Exchange Rate (NEER), Gross Domestic Product (Y) Exchange Rate Volatility (V) were the independent variables. From the analysis, the result shows that exchange rate volatility has a negative and significant relationship with the level of imports, exchange rate volatility exerts detrimental pressure on the level of imports. Real Effective Exchange Rate (REER) has a statistically significant effect on imports while Nominal Effective Exchange Rate (NEER) has a positive and linear relationship with the level of imports, this indicates that a declining REER simply implies an appreciation of the NEER. This leads to an increase in the price of imports and ultimately a fall in the local demand for imported goods. It is therefore recommended that foreign exchange rate should be depreciated, this will reduce the level of imports in Nigeria.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

There is scarcely any country that lives in absolute autarky in this globalised world. The economies of all countries of the world are linked directly or indirectly through asset and goods in the markets. This linkage is made possible through trade and foreign exchange. The importance of international trade in the development process has been of keen interest to development economists. In recent years as a result of globalization, the interdependence among countries at world level has increased. Every country wants to achieve rapid pace of economic development through getting the maximum benefits from the international trade and the use of the modern methods in the production process. With the implementation of the World Trade Organization (WTO) rules and substantial reduction in trade restrictions, most of the developing countries imports are increasing rapidly. Nigeria's economy is not an exception as it depends on the pattern of world's economy. Hossain (2002), agreed that exchange rate helps to connect the price systems of two different countries by making it possible for international trade and also affects the volume of imports and exports, as well as the country's balance of payment

The fundamental objectives of exchange rate policy in Nigeria are to preserve the value of the domestic currency, maintain a favorable external reserve position and ensure external balance without compromising the need for internal balance and the overall goal of macro-economic stability. In an attempt to achieve optimal level of foreign exchange efficiency, several policy guidelines and requirements were introduced to manage the nation foreign exchange market. Remarkable among the prominent policies emerged in 1986 upward when Nigeria shifted to market oriented economy with a view to promote productive sector and enhance the facilitation of foreign direct investment (FDI) influx into the country. Benson & Victor (2012) & Aliyu (2011) noted that despite various efforts of by the Nigerian Government to maintain a stable exchange rate, the naira has depreciated throughout the 70's till date.

Exchange rate management in Nigeria has undergone significant reforms over the past four decades. In the 1960s, Nigeria operated a fixed exchange rate regime. The currency was fixed at par with the British pound and it lasted till 1967 when the British pound was devalued. Owing to the civil war in 1967, the monetary authority did not consider it expedient to devalue the Nigerian pound alongside the British pound when the British authorities devalued the pound. Following the international financial crises of the early 1970s which led to the

devaluation of the United State of America dollar, Nigeria abandoned the dollar peg and once again kept faith with the British pound until 1973, when the Nigerian currency was once again pegged to the United State of America dollar. With this development, the severe drawback in pegging the Nigerian currency to a single currency became obvious. A clear case was that the naira had to undergo a de –facto devaluation in sympathy with the dollar when economic fundamental dictated otherwise (e g. external reserve rose rapidly by over 100% from N10m in 1973 to N3.4 Billion in 1975) CBN 2011. It was against this backdrop that the need to independently manage the exchange rate of the naira was firmly established. Aliyu (2011), asserted that the appreciation of exchange rate results in increased imports and reduced exports while depreciation would expand exports and discourage imports. Consequently, in 1978, the monetary authorities pegged the naira to a basket of 12 currencies of her major trading partners (CBN 2012). However, the sharp fall in international oil price and the decline in foreign exchange receipts were such that the economy could not meet its international financial commitments, persistent increase in imports coupled with declining external reserve position severely compromised credit worthiness of the country abroad. To mitigate these developments, the stabilization act of 1982 was implemented which led to accelerated depreciation of the naira.

The over valuation of the exchange rate still persisted as the rate continued to be fixed administratively. The failure of the Stabilization Act to address the economic problems (unpaid trade bills and accumulation payment of arrears consequent on the sharp fall in oil price) led to the adoption of the Structural Adjustment Programme (SAP) in 1986. The aim amongst others was the realization of a viable and realistic exchange rate, through a flexible arrangement. Exchange rate before 1973 was in consonance with the international monetary fund (IMF). The Nigerian currency had its exchange rate largely subjected to the administrative management. The exchange rate was largely passive as it was dictated by the fortunes or otherwise of the British pound sterling and U.S dollar. In recent times foreign exchange rate has fluctuated so much that it has affected the volume of imports and Nigeria has imported more at the expense of its monothetic (oil based) export.

Obadan (2006), argued that some of the factors that led to the depreciation of the Nigerian exchange rate include weak production base, import-dependent production structure, fragile export base and weak non-oil export earnings, expansionary monetary and fiscal policies, inadequate foreign capital inflow, excess demand for foreign exchange relative to supply, fluctuations in crude oil earnings, unguided trade liberalization policy, speculative activities and sharp practices (round-tripping) of authorized dealers, over-reliance on imperfect foreign exchange market,

heavy debt burden, weak balance of payments position, and capital flight. The policies the country has been operating has not made any change because of the volatility of exchange rate and because Nigeria is an import dependent country.

Prior to the adoption of Structural Adjustment Programme (SAP), Nigeria's import demand was on upward trend, Nigeria currency enjoyed appreciable value against U.S dollar factor that create opportunity for rapid economic` growth and stability. After political independence in 1960 and throughout 1960's imports were mainly of finished goods produced and imported from European industries in exchange for our raw materials exported. However with the import substitution industrialization policy that was generally adopted by most developing countries, Nigeria's import structure changed significantly in favour of intermediate imports and capital goods. The imports of Nigeria showed that as at 1970 total imports rose from N756.4 million and slightly dropped in 1972 and picked up again from 1973 to 8.2billion naira in 1978 as a result of oil boom which further strengthened the structure and volume of Nigeria's import. It slightly decreased to 7.4 billion naira in 1979 as a result of new regime of civilian rule (Alhaji Shehu Shagari became president) in Nigeria CBN 2011. Import slightly increased in 1980 and 1981 that is 9.1 and 12.8 billion naira respectively, this is because imports were liberalized in 1980. This of course contributed to balance of payment difficulties in 1981.

There was sharp reduction in total imports between 1982 and 1986 that is from 10.8 billion naira to 5.98 billion naira. This is because there was a downturn in the economy in 1982; as a result of this efforts were made to restrict imports in order to stem the dangerous trend in the balance of payments problem.

In real sense, the basic instruments of control that were used in moderating the growth in imports were trade tariffs which were increased for products that were considered less essential, import licenses, import levy and total prohibition of certain imports. The efforts were however known to be minimal. In addendum, low capacity utilization of industries especially in 1984 and 1985 as a result of inadequate foreign exchange to procure essential inputs was a clear evidence of the dependence of the Nigeria's economy on imports.

With the introduction of SAP in 1986, imports were reduced considerably. SAP was put in place with the aim of restructuring the economy to be less dependent on imports among others. Thus, the foreign exchange problem and the burgeoning external debt led to the adoption of the Economic stabilization (Temporary provisions) Act in April 1982. Under the act, several commodities were banned from importation and some other goods were placed under specific import licenses that were previously under the open general license system. This was influenced by the decision to control imports. In 1983, the civilian administration was

over-thrown by the military on the 31st of December. The main motives of this regime (General Buhari's regime) were to protect local industries and encourage greater use of local inputs. Import tariffs were rationalized, and schedule II of the custom Tariff (consolidation) Act of 1973, which permitted the importation of federal commodities duty free, was abrogated, with the result that only 20 items could now be imported duty free. Between 1987 and 1995, there was massive increase in the total imports from 19.8 billion to 75.5 billion naira except slight reduction in 1996 and 1998, that is, 56.3 and 83.7 billion naira CBN, 2012. In 1986 when Federal government adopted structural Adjustment Programme (SAP), the country moved from peg regime to a flexible exchange rate regime where exchange rate is left completely to be determined by market forces but rather the prevailing system is the managed float whereby monetary authorities intervene periodically to in the foreign exchange market in order to attain some strategic objectives (Mordi, 2006). The adoption of SAP in 1986 heralds rapid movements of exchange rate in Nigeria. These movements are expected to pass-through to prices of imports if the doctrine of purchasing power parity (PPP) holds. Nigeria, through the 1970's and the mid 1980's had an exchange rate of US\$1=N0.64 on the average. This began to rise decline in 1986 to US\$1=N2.02 at the adoption of SAP and had continued speedily and steadily. In fact, while it was an average of 21.89 naira to one dollar

between 1995 and 1999, after appreciating slightly from US\$1=22.33 in 1994. It worsened by 2000(US\$1=85.98), by 2009 it was US\$1=145.171 and by 2011 it was US\$1=N150.04 (CBN, 2012).

An open economy that relies hugely on imports is under the threat of domestic price instability when exposed to fluctuations in exchange rate. This could further hinder growth in such an economy. In recent years, exchange rate has fluctuated considerably. The official and annual parallel exchange rate depreciated annually at an average of 34% and 43%, respectively, between 1986 and 2011 (CBN 2012). The effects of such fluctuations are evident. Inflation experienced during the same period has gone through episodes of creeping to moderate and from high to galloping, though, domestic price increases have decreased in recent times. Embedded in SAP is the policy of import liberalization. This takes several forms that include tariff reduction, an act which could also contribute to the fall in price level.

Exchange rate policies in developing countries are often sensitive and controversial, mainly because of the kind of structural transformation required, such as reducing imports or expanding non-oil exports, invariably imply a depreciation of the nominal exchange rate. Such domestic adjustments, due to their short-run impact on prices and demand, are perceived as damaging to the economy. Ironically, the distortions inherent in an overvalued exchange rate regime are hardly a subject of

debate in developing economies that are dependent on imports for production and consumption. In Nigeria, the exchange rate policy has undergone substantial transformation from the immediate post-independence period when the country maintained a fixed parity with the British pound, through the oil boom of the 1970s, to the floating of the currency in 1986, following the near collapse of the economy between 1982 and 1985. In each of these epochs, the economic and political considerations underpinning the exchange rate policy had repercussions for the structural evolution of the economy, inflation, the balance of payments and real income. The inconsistency in policies and lack of continuity in exchange rate policies aggregated the unstable nature of the naira note (Gbosi, 2005). Regardless of the introduction of SAP and other government efforts to curb importation of goods and services, the increasing structure of Nigeria imports has remained unaltered and the prices are increasing as a result of the volatility of foreign exchange rate.

1.2 Statement of the Problem

Nigeria has undergone several exchange rate management, before SAP Nigeria used US dollar in parity exchange (1967-1972), by 1973 they reverted to fixed parity with British pounds, by 1974 they had parity to both pounds and US dollar, this was to minimize the effect of the

devaluation on the individual currency. During SAP the Second-Tier Foreign Exchange Market (SFEM) was introduced, after SAP Inter-Bank Foreign Exchange Market (IFEM) was introduced in 1988. In 2002 Dutch Action System (DAS) was re-introduced and in 2006 till date Wholesale Dutch Action System (WDAS) was introduced, all was reflecting a high degree of deregulation.

The expectation was that naira deregulation will generate a realistic exchange rate that would accelerate the economic growth through the attraction of foreign capital, investment and discouragement of capital flight. The flexible exchange rate regime which was during the SAP period produced a significant volatility and uncertainty in the exchange rate of naira which account for fluctuations in import bills. Nigeria's import bills dropped to 5.5trillion naira in 2011 as against 35.4 U.S dollar representing a 43% decline it has also aroused a great concern as the volatility of exchange rate which stems from shock in the financial markets, level of output yield conflicting results about its impact on trade (Arize, 1998).

According to Ekanem (2002) overvalued exchange rate can frustrate development efforts of import dependent economies to a large extent because critical imports needed for infrastructure and other development projects become more expensive. Mallic & Marques (2005) assert that changes in exchange rate can lead to a rise in import prices and thus spur

inflation. Jhinghan (2002) states that only commodities that use large quantities of scarce factors should be imported because their prices are high.

Nigeria protects her industries by making new policies, but the introduction of these policies has made the country to suffer unstable exchange rate and thus a high degree of uncertainty in the Nigerian business environment (1986). Domestic investors face high risk since there is uncertainty in foreign exchange rate and as such domestic investors do not know when to import relevant machineries, equipments and raw materials for industrial consumption. Nigeria is highly dependent on imports for both consumption and production. Virtually all the major industrial materials are sourced from abroad while the country depends wholly on foreign supply for intermediate and capital goods. High level of importation to meet domestic needs puts severe pressure on the foreign exchange market and may result in the depletion of external reserve.

The effectiveness of any country's international trade policy is dependent on exchange rate and its volatility and the magnitude of income and price elasticity of its exports and imports. The volatility of exchange rate is one that cannot be avoided because it devalues currencies which increases prices of imports and pushes up domestic inflation and leads to balance of payment crises. It is on these that the researcher seeks to study,

address and provide evidence on the impact of foreign exchange rate on Nigerian imports.

1.3 Objectives of the Study

The main objective of this research is to examine the volatility of foreign exchange rate on Nigeria's imports over the period 1970-2011.

The specific objectives are to;

- i. Examine the severity or degree of exchange rate volatility in Nigeria's imports.
- ii. Investigate empirically the relationship between imports and some variables (including real effective exchange rate, Nominal effective exchange rate, real gross Domestic Product and exchange rate volatility.)

1.4 Research Hypotheses

From the research objectives stated above, the core hypothesis to be investigated empirically are;

- i. H_{01} : There is no significant relationship between the degrees of exchange rate volatility and Nigeria's imports.
- ii. H_{02} : There is no significant relationship between imports and real effective exchange rate
- iii. H_{03} : There is no significant relationship between nominal effective exchange rate and imports in Nigeria

iv. Ho₄: There is no significant relationship between real gross domestic product and imports in Nigeria.

1.5 Significance of the study

The significance of the study originates from the fact that foreign exchange rate forms an integral part in international trade, it affects a nations trading relationship with other nations. For meaningful policies to be formulated for better performance of the economy, foreign exchange rate must be in forefront. This enables policy makers formulate better policies that will checkmate import in the economy and the level of trade with other economies.

Exchange rate determines the level of imports and exports. It is impacted by international trade in a free market system that helps to maintain a balance of trade and balance of capital. If a domestic currency increases with respect to a foreign currency, imported goods will be cheaper in the domestic market and local companies that would find that their foreign competitors goods becomes more attractive to customers. If the country has a strong currency then its goods become more expensive in the international market which results in lost competitiveness. Nigeria because of the devaluation of her currency has made her import expensive and her export cheap.

The study is also important as it provides empirical results and implications for policy makers and researchers' use. This will aid in maintaining macroeconomic stability and performance in the economy.

Conclusively, it will strengthen the terms of trade between countries and also control the volume of imports in Nigeria.

1.6 Scope of the Study

The scope of the study covers Nigeria's imports and foreign exchange rate from 1970-2011. This period was chosen because it shows the era of oil boom and financial crisis in Nigeria and also the number of years can be easily analysed. The general overview of the foreign exchange rate in Nigeria's imports over these years will be discussed using time series data.

1.7 Limitation of the Study

A major drawback for this research is that there were insufficient relevant journals, books etc for literature review. Some journals were not easily accessible online and purchase of it proved impossible. Also, it was limited to just imports in Nigeria and getting information on imports from CBN was difficult. Another limitation was the cost involved in getting materials from the internet and transportation cost in going to places like CBN to get materials.

1.8 Operational Definition of Terms

- i. **Foreign Exchange Rate:** This is the conversion rate of one currency to another. This rate depends on the local demand for foreign currencies and their local supply, country's trade balance, strength of its economy and other such factors.
- ii. **Import:** This is a good brought into a jurisdiction, especially across a national border, from an external source. It is also the transaction of goods and services to a resident of jurisdiction from a non-resident.
- iii. **Real Effective Exchange Rate (REER):** This is used for determining an individual country's currency value relative to other major currencies in the index as adjusted for the effects of inflation.
- iv. **Nominal Effective Exchange Rate (NEER):** This is the domestic currency vis-à-vis other currencies weighted by share in either the country's international trade or payments.
- v. **Real Gross Domestic Product (RGDP):** This is a macro economic measure of the value of economic output adjusted for price changes (ie inflation or deflation). This adjustment transforms the money-value measure, nominal GDP, into an index for quantity of total output. It is also referred to as an inflation adjusted measure that reflects the value of all goods and services produced in a given year,

expressed in base-year prices, often referred to as constant-price, inflation corrected GDP or constant dollar GDP

- vi. **Exchange Rate Volatility:** This refers to the tendency for foreign currencies to appreciate or depreciate in value, thus affecting the profitability of foreign exchange trades. The volatility is the measurement of the amount that these rates change and the frequency of those changes.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL

FRAMEWORK

2.0 Introduction

This chapter is based on past but similar studies, with particular reference to choice of estimation technique; this estimation technique will help form the basis for selecting the control variables for the model.

The chapter focused on the literature review, theoretical framework, theories of foreign exchange rate, empirical literature and appraisal of reviewed Literature.

2.1 Literature Review

The issue of exchange rate has been prevalent in the literature, real exchange rate is said to be a very important relative price in the economy. This is because changes in the real exchange rate influences foreign trade flows, the balance of payments, the level and structure of production and consumption and therefore employment, the allocation of resources in the economy and domestic prices (Khan & Ross, 1977). According to Mireilles (2007) argues that overvaluation of exchange rate constitute a major setback in the recovery process of Nigeria. Huizingu(1997) reports that developing countries frequently maintain an overvalued nominal exchange rate resulting in real exchange rate misalignment.

To finance import demand at the overvalued exchange rate, countries have raise the level of income taxation or they have to resort to monetary finance. According to Moser (1995), the relationship between exchange rate and import prices evolves from the model of price determination which incorporates both demand and supply factors. Since the breakdown of Bretton Wood system of fixed exchange rate, both real and nominal exchange rates have fluctuated widely. This volatility has often been cited by the proponents of managed or fixed exchange rate as detrimental.

Generally, two theoretical schools of thoughts exist that attempts to explain the effect of exchange rate volatility on international trade. They are the traditional school and the risk portfolio school.

The traditional school pioneered by Clark (1973) holds that volatility increases risk of trade and therefore depresses trade flows. Early study of this issue focused on firm's behavior and presumed that increased exchange rate volatility would increase the uncertainty of profits on contracts denominated in a foreign currency and this would therefore reduce international trade to levels lower than would otherwise exist without exchange rate volatility (Farrel, DeRosa & McCrown 1983).

The risk portfolio school of thought on the other hand postulates that higher risk present greater opportunities for profit and should increase trade. The portfolio thesis also focuses on the effect of exchange rate

volatility on expected profit. If profits are a convex function of the exchange rate, then increased exchange rate variability will lead to increase expected profits, Giovannini (1988). This could account for a positive relationship between exchange rate variability.

The model by Clark (1973) is one of the earliest theories that examine the connection between exchange rate volatility and trade flows. It considers a competitive firm with no market power producing only one commodity, which is sold entirely to one foreign market and does not import any intermediate inputs. The firm is paid in foreign currency and converts the proceeds of its exports at the current exchange rate which varies in an unpredictable fashion, as there are assumed to be no hedging possibilities, such as through the forward sales of the foreign currency export sales. Moreover because of costs in adjusting the scale of production, the firm makes its production decision in advance of the realization of the exchange rate and therefore cannot alter its output in response to favourable and unfavourable shifts in the profitability of its exports arising from movements in the exchange rate. In this situation, the variability in the firm's profits arises solely from the exchange rate and where the managers of the firm are adversely affected by risk, greater volatility in the exchange rate with no change in its average level leads a reduction in output and hence in exports, in order to reduce the exposure of risk.

This basic model was elaborated by Hooper and Kohlhagen (1978), who also reached the same conclusion of a clear negative relationship between exchange rate volatility and the level of trade. The strong conclusion of negative effect of exchange rate volatility on trade flows by earliest studies was based on a number of simplifying assumptions.

- a. It is assumed that there are no hedging possibilities either through the forward exchange market or through offsetting transactions.
- b. Firms cannot alter factor inputs in order to adjust optimally to take account of movement of exchange rates. When this assumption is relaxed and firms can adjust one or more factors of production in response to movements in exchange rates, increased volatility can in fact create profit opportunities.

The Heckscher-Ohlin theory, postulates that the immediate cause of international trade is the difference in relative policy, caused by the differences in relative demand and supply of factors (factor prices) as a result of differences in factor endowment between countries. Therefore, commodities that use large quantities of scarce factors should be imported because their prices are high while those using abundant factors should be exported because their prices are low (Jhinghan, 2002).

2.1.1 Theories of Foreign Exchange Rate

There are three theories that determine foreign exchange rate; they include the mint parity theory, the purchasing power parity theory and the balance of payments theory.

2.1.1.1 The Mint Parity Theory

This theory is associated with the working of the international gold standard. According to Anyanwu (1995), a country is said to be on gold standard when;

- (i) Officially, a legal gold value has been given to its monetary unit.
- (ii) Mint currency is freely convertible into gold, that is, its monetary authorities stand ready to buy and sell gold at a fixed price.
- (iii) There is free export and import of goods including export and import settling international payments.
- (iv) The total money supply in the country is determined by the quantum of gold available in the country for monetary purposes

The Mint Parity theory is based on the following assumptions;

- a. The price of gold is fixed by a country in terms of its currency.
- b. It buys and sells gold in any amount at that price.
- c. Its supply of money consists of gold or paper currency which is backed by gold
- d. Its price level varies directly with money supply

- e. There is movement of gold between countries
- f. Capital is mobile between countries
- g. The adjustment mechanism is automatic.

Under this system, the currency in use was pegged to gold or was convertible into gold at a fixed rate. The value of the currency unit defined in terms of certain weights of gold, that is, so many grains sold to naira, dollar, pound, Euro etc. the Central Bank of the country was always ready to buy and at the specified price. The rate at which the standard money of the country was convertible into gold was called the mint price of gold.

Illustratively, if the official British price of gold was £4 per ounce and US price of gold \$24 per ounce, these were the mint prices of gold in the respective countries. The exchange rate between the dollar and the pound would be fixed at $\$24/\text{£}4=6$. This rate was called the mint parity or mint par of exchange because it was based on the mint price of gold. Thus under gold standard, the normal or basic rate of exchange was equal to the ratio of their mint per values ($R=\$/\text{£}$).

The Mint Parity Rate (MPR) described above may not be the same as the actual exchange rate because the latter are allowed within gold points which could depart only slightly from the MPR according to the commission charged by the government and transport cost. This system existed between 1870 to August 1914 and again few years between

Britain's return to the gold standard in 1925 and its departure during the great depression in 1931.

2.1.1.2 The Purchasing Power Parity Theory

The Purchasing Power Parity (PPP) theory was developed by Gustav Cassel in 1920 to determine the exchange rate between countries on inconvertible paper currencies. The theory states that the equilibrium exchange rate between two inconvertible paper currencies is determined by the equality of the relative changes in relative prices in the two countries. In other words, the rate of exchange rate between countries is determined by relative price levels. As observed by Anyanwu (1993), the purchasing power parity theory is an attempt to explain and perhaps more importantly measure statistically the equilibrium rate of exchange and its variations by means of the price levels and their variations in different countries.

The theory is based on the idea that a certain amount of money should purchase the same representative bundle of commodities in different countries, that is, a certain amount of money should have the same purchasing power in different countries (hence the term purchasing power parity). In essence, the PPP is a theory of the determination of the nominal exchange rate and its movements in long run equilibrium when the trade balance is zero with the underlying real determinants presumed to be constant.

There are two versions of the theory: the absolute version and the relative or comparative version. The absolute purchasing power parity theory postulates that the equilibrium exchange rate between two countries is equal to the ratio of the price levels in the two nations. Specifically

$$R = \frac{P}{P^*}$$

Where R is the exchange rate or spot rate and P and P* are respectively the general price level in the home nation and in the foreign nation. For example, if the price of one bushel of wheat is \$1 in the united states and € 1 in the European monetary union, then the exchange rate between the dollar and the pound should be $R = \$1/€1 = 1$.

The more refined relative purchasing power parity theory postulates that the change in the exchange rate over a period of time should be proportional to the relative change in the price levels in the two nations over the same period. Specifically, if we let the subscript 'o' to refer to the base period and 'I', to a subsequent period, the relevant PPP theory postulates that;

$$R_1 = \frac{P_1/P_0}{P_1^*/P_0^*} = R_0$$

Where R_1 and R_0 are respectively the exchange rates in period 1 and in the base period. For example, if the price level does not change in the foreign nation from the base period to period 1 (that is, P^*_1 / P^*_2), while the general price level in the home nation increases by 50 percent, the relative PPP theory postulates that the exchange rate should be 20 percent higher as compared with the base period.

The first version-the absolute purchasing power parity theory of the PPP theory can be very misleading. There are several reasons for this; first, it appears to give the exchange rate that equilibrates trade in goods and services while completely disregarding the capital account. Thus, a nation experiencing capital outflows would have a deficit in its balance of payments, while a nation receiving capital inflows would have a surplus if the exchange rate were the one that equilibrated international trade in goods and services. Secondly, this version of the PPP theory will not even give the exchange rate that equilibrates trade in goods and services because of the existence of many non-traded goods and services.

2.1.1.3 The Balance of Payment (BOP) Theory

This theory provides a market analysis of the determination of exchange rate in terms of the credit and debit items in the current account of the BOP. The credit items together generally represent the effective supply of foreign exchange while the debit items represent the effective demand. This theory under free exchange rates, the exchange rate of the

currency depends on its balance of payments. A favourable balance of payments raises the exchange rate, while an unfavourable balance of payment reduces the exchange rate. This theory implies that the exchange rate is determined by the demand and supply of foreign exchange.

Discrepancy between the two magnitudes represents BOP disequilibrium. If the later is greater than the former, then we have excess demand for foreign exchange which translates into BOP deficit and vice versa. This theory suggests that the exchange rate as the domestic currency price of foreign currency can like any other price be determined by the impersonal market for foreign exchange. Hence, by implication, it proposes freely fluctuating exchange rate.

The BOP theory has attracted a lot of criticisms. The fact that the BOP is independent of the exchange rate negates the role of price level, and is based on the unrealistic assumption of the free trade and perfect competition and the truism that there is an equilibrium exchange rate where BOP balances. Despite these criticisms, the BOP theory is the most satisfactory explanation of the determination of exchange rate under the frame work of the general equilibrium analysis in terms of demand and supply. It studies the actual forces which lay behind the demand and supply of foreign exchange rate, such as the current account capital account of the balance of payments. An important implication of the theory is that adjustments in the balance of payments can be made through

devaluation and revaluation of some currency in case of deficit and surplus in balance of payments respectively. That is why it is regarded superior to the mint par and PPP theories of exchange rate.

2.1.2 Foreign Exchange Rate Policy

There are different foreign exchange rate policy, we shall discuss them one after the other.

2.1.2.1 Fixed Exchange Rate

Under fixed or pegged exchange rate all exchange transactions take place at an exchange rate that is determined by the monetary authority (Jhinghan 1997). It may fix the exchange rate by legislation or intervention in currency markets. It may buy or sell currencies according to the needs of the country or may take policy decision to appreciate or depreciate the national currency. The monetary authority Central Bank holds foreign currency reserves in order to intervene in the foreign exchange market, when the demand supply of foreign exchange say (pounds) are not equal. The fixed exchange rate system evolved from the gold standard, which governed the financing of international trade until the great depression of the 1930's.

2.1.2.2 Flexible Exchange Rate

Flexible, floating or fluctuating exchange rates are determined by market forces of demand and supply. The workings of this system were fully in line with classical theory. Some economists argued that the system

is characterized by automatic adjustment mechanism, which allow the balance of payment to always adjust to equilibrium whenever imbalances occur, granting that demand for exports and imports are not inelastic. If there is an excess supply of a currency in foreign exchange markets will fall leading to a depreciation of the exchange rate and vice versa.

2.1.2.3 Hybrid or Intermediate Exchange Rate Systems

Under this system, the monetary authority (Central Bank) intervenes in the foreign exchange market to smooth out short-run fluctuations in exchange rates. This is done by supplying or absorbing a country's foreign exchange reserves. This system is a policy of managed floating and is also called the policy of leaning against the wind. This policy has a number of variants, it includes the following;

2.1.2.3.1 Adjustable Peg System

It is a system in which exchange rates are pegged or fixed for a period of time. However, if a deficit or surplus of BOP becomes substantial, the exchange rate is devalued or revalued under it; a country tries to maintain a fixed exchange rate until all its foreign exchange reserves are exhausted. Thus under this system, exchange rate flexibility is maintained along with exchange rate stability.

2.1.2.3.2 Crawling Peg System

It is a system in which the monetary authority adjusts the exchange rate gradually. It adjusts the peg frequently at a regular time interval by small amounts instead of making large devaluations or revaluations when the equilibrium exchange rate changes. This is also known as Trotting Peg or Crawling Parity System. This system is better than adjustable peg system because the country resorts to small doses of inflation instead of large devaluations as under the later system.

2.1.2.3.3 Clean Float System

Under this system, the exchange rate is determined by the free market forces of demand and supply of foreign exchange. The exchange rate moves up and down without any intervention by the monetary authority.

2.1.2.3.4 Dirty Float System

Under this system, the exchange rate is basically determined by the free market forces of demand and supply of foreign exchange but the monetary authority intervenes from time to time to control excessive fluctuations in exchange rate. The monetary authority allows an orderly exchange rate adjustment when there are major changes in demand and supply of foreign exchange, but at the same, it prevents violent fluctuations that may occur under free floating of exchange rate. The monetary authority intervenes through the sale and purchase of foreign

exchange in the market. Other variants of the policy that managed floating include; filthy float system, joint float system, exchange rate band and snake in the tunnel.

2.1.2.4 Multiple Exchange Rate System

This is a system under which a country adopts different rates of exchange for import and export of different commodities. A country may adopt controlled rate of exchange with some countries and free exchange rate with others. The objective of multiple exchange rates is to obtain maximum foreign exchange by maximizing exports and minimizing imports to correct the balance of payments deficit.

2.1.3 Evolution of the Foreign Exchange Markets in Nigeria

The evolution of the foreign exchange market in Nigeria could be traced to the establishment of the Central Bank of Nigeria (CBN) in 1958 and subsequent enactment of the Exchange Control Act of 1962. Prior to this period, foreign exchange earned by the private sector used to be held in balances abroad by commercial banks, which acted as agents for local exporters. Similarly, during the period agricultural exports contributed the bulk of foreign exchange receipts. The fact that the Nigerian pound was tied to the British pound sterling at par, with easy convertibility, delayed the development of an active foreign exchange market. With introduction of Naira as an official currency of Nigeria, the exchange process commenced. However, the increased exports of crude oil, in the early

1970s, following the sharp rise in its prices enhanced official foreign exchange receipts. The foreign exchange market experienced a boom during this period and the management of foreign exchange resources became necessary to ensure that shortages did not arise. However, it was until 1982 that comprehensive exchange controls were applied as a result of foreign exchange crisis that set in that year. The increasing demand for foreign exchange at a time when the supply was shrinking encouraged the development of a flourishing parallel market for foreign exchange.

Before 1986, importers and exporters of non-oil commodities in Nigeria were required to get appropriate licenses from the federal ministry of Commerce before they could participate in the foreign exchange market. Generally, import procedures followed the international standard of opening of letters of credit (L/Cs) and subsequent confirmation by correspondent banks abroad. The use of form 'M' was introduced in 1979 when the comprehensive import supervision scheme (CISS) was put in place to guard against sharp import practices. The authorization of foreign exchange disbursement was a shared responsibility between the federal ministry of finance and the CBN. The federal ministry of finance had responsibility for public sector applications, while the CBN allocated foreign exchange in respect of private sector applications.

The exchange control system was unable to evolve an appropriate mechanism for foreign exchange allocation in consonance with the goal of

internal balance. This led to the introduction of the second-tier foreign exchange market (SFEM) in September, 1986. Under SFEM, the determination of the Naira exchange rate and allocation of foreign exchange were based on market forces. To enlarge the scope of the foreign exchange market, bureau de change was introduced in 1989 for dealing in privately sourced foreign exchange. Additionally, the federal ministry of finance had its allocative powers transferred to the CBN. As a result of volatility in rates, further reforms were introduced in the foreign exchange market in 1994. These included the formal pegging of the Naira exchange rate, the centralization of foreign exchange in the CBN, the restriction of bureau de change to buy foreign exchange as agents of the CBN, the reaffirmation of the illegality of the parallel market and the discontinuation of open accounts and bills for collection as means of payments sectors. The foreign exchange market was liberalized in 1995 with the introduction of an autonomous foreign exchange market (AFEM) for the sale of foreign exchange to end-users by the CBN through selected authorized dealers at market determined exchange rate. In addition, bureau de change was once more accorded the status of authorized buyers and sellers of foreign exchange. The foreign exchange market was further liberalized in October 1999 with the introduction of an inter-bank foreign exchange market.

2.1.4 Developments in Exchange Rate Policy in Nigeria

The objectives of an exchange rate policy include determining an appropriate exchange rate and ensuring its stability. Over the years, efforts have been made to achieve these objectives through the applications of various techniques and options to attain efficiency in the foreign exchange market. Exchange rate arrangements in Nigeria have transited from a fixed regime in the 1960s to a pegged regime between the 1970s and the mid-1980s and finally, to the various variants of the floating regime from 1986 with the deregulation and adoption of the structural adjustment programme (SAP). A managed floating exchange rate regime, without any strong commitment to defending any particular parity, has been the most predominant of the floating system in Nigeria since the SAP. Following the failures of the variants of the flexible exchange rate mechanism (the AFEM introduced in 1995 and the IFEM in 1999) to ensure exchange rate stability, the Dutch Auction System (DAS) was re-introduced on July 22, 2002. The DAS was to serve the triple purposes of reducing the parallel market premium, conserve the dwindling external reserves and achieve a realistic exchange rate for the naira. The DAS helped to stabilize the naira exchange rate, reduce the widening premium, conserve external reserves, and minimize speculative tendencies of authorized dealers. The foreign exchange market has been relatively stabilized since 2003. As indicated by Mordi (2006), The conditions that facilitated the re-introduction of

DAS in 2002 included, the external reserve position which could guarantee adequate funding of the market by the CBN; reduce inflationary pressures; instrument autonomy of the CBN and its prompt deployment of monetary control instruments in support of the DAS as well as the bi-weekly auctions as against the previous fortnightly auctions, thus assuring a steady supply of foreign exchange. In order to further liberalize the market, narrow the arbitrage premium between the official interbank and bureau de change segments of the markets and achieve convergence, the CBN introduces the Wholesale Dutch Auction System (WDAS) on February 20, 2006. This was meant to consolidate the gains of the retail Dutch Auction System as well as deepen the foreign exchange market in order to evolve a realistic exchange rate of the naira. Under this arrangement, the authorized dealers were permitted to deal in foreign exchange on their own accounts for onward sale to their customers and this system has been till date.

2.1.5 Exchange Rate Policy in Nigeria before Structural Adjustment Programme (SAP) Prior To 1986

According to Akpakpan (1994), Obadan (1996) & Itsede (2003), before SAP Nigeria adopted fixed exchange rate policy throughout the twenty-six years between independence and 1986. From 1960 to 1973, the exchange rate between the Nigeria pound and British pound sterling for instance was fixed at 1:1 ratio.

In 1973, Nigeria currency was changed to naira, the exchange rate was fixed at N1:00 to £0.50 (that is N2:00=£1.00) thereafter, the naira continued to appreciate to an extent that by 1984, it was almost N1.00 to£1.00. The appreciation of naira made foreign goods and services cheaper and Nigerian goods and services expensive for foreigners. The result was phenomenal rise in imports and a drastic fall in non-oil exports. They noted that before SAP, the naira was not traded on exchange markets and its exchange rate was administered or managed by authorities. The value of naira was independently fixed in terms of the United State dollar and the British pound sterling, on the basis of relative strengths of two convertible currencies. They also pointed that from February 1978 to the adoption of SAP in 1986, the naira exchange rate was based on import-weighted basket for currencies supplemented by such factors like reserve level, cross-rate considerations, relative of inflation and discretionary judgement on the perceived relative strengths of various currencies of trading partners. The actual determination of the naira exchange rate appeared to have been largely influenced by the level of foreign inflow and reserves.

Obadan (1996) is of the view that before 1973, Nigeria's exchange rate was in consonance with the IMF par value system. The Nigerian currency not being a traded currency had its exchange rate policy largely subjected to administrative management. The exchange rate policy was

largely passive as it was tagged to the value of pound sterling or the dollar. He pointed that the main objective of the policy before SAP are; to maintain equilibrium in the balance of payments, restore the value of external reserves and ensure a stable naira exchange rate. The measures adopted to realize these policy objectives included:

- i. Maintain a one to one with the British pound sterling and US dollar and
- ii. Fixing the naira exchange rate independent of the dollar and sterling, depending on their relative strengths from 1974 to 1978.

Gbosi (1999) stated that in the period of before 1986 economic objectives played a major role in determining the exchange rate although ad hoc measures were used in the actual determination. Thus, throughout the 1970s, the nominal exchange rate appreciated every year excepting 1976 and 1977. But then it encouraged reliance of imports, which eventually led to the depletion of external reserves. This policy was changed in 1981, following the collapse of oil prices in the international market and consequent fiscal crisis, to the gradual depreciation of the naira against the dollar or the pound sterling whichever was weaker. It would seem that up to the time of SAP, Nigeria's exchange rate policy encouraged the overvaluation of naira as reflected in real exchange rate appreciation, particularly in the 1970s. In this direction, the real exchange

rate appreciated by an average of 7.5 percent while the real effective exchange rate (total trade weighted) appreciated by an average of 7.3 percent.(Obadan,1993).

The real appreciation of exchange rate encouraged imports, discouraged non-oil exports and helped to sustain manufacturing sectors over dependence on imports inputs. Thus, the overriding objective of exchange rate management was apparently not medium and long-term balance of payments objectives as exchange rate policy was not geared towards the attainment of a long-run equilibrium rate that would equilibrate the balance of payments in the medium- long term and yet facilitate the achievement of certain structural adjustment objectives, example; export diversification and less import dependence. And so, the exchange rate policy produced real exchange rate appreciation, which severely eroded international competitiveness and failed to achieve export diversification. It ended with a major policy change in September 1986, the deregulation of foreign exchange market which brought about the devaluation of the naira.

2.1.6 Exchange Rate Policy in Nigeria during SAP (1986-1994)

Olisadebe (1991) pointed out that the period of SAP witnessed a critical period in policy articulation in the Nigerian economy, a period when deregulation of policies were pursued in a package of programme called SAP. According to him, in June 1986, president Babangida spelt

out the objectives of the policy in order to give the citizens a clear picture of what the government intended to do. These objectives were stated as follows:

- i. The achievement of balance of payment on imports and oil exports.
- ii. Reduction of dependence on imports and exports.
- iii. Diversification of export base of the nation.
- iv. Reduction or elimination of incidence of capital flight.
- v. Elimination of payment arrears.
- vi. Correction of the overvaluation of the naira exchange through the achievement of a realistic rate and
- vii. Reduction or elimination of the parallel market premium, thereby improving resource allocation and enlarging the scope of legitimate foreign exchange transactions.

Falae (1996), Obadan (1996) & Gbosi (1994) viewed that a major foreign exchange rate policy adopted in 1986 was the introduction of second-tier foreign exchange market (SFEM) for buying and selling foreign exchange at market determined rates. Thereafter, the SFEM was established and commenced operations on September 1986, essentially as an expenditure-switching device to tackle the continuing problems of balance of payments deficit, decline in non-oil exports mounting external debts. The operation of the market is such that two exchange rate were in

vogue. First is the official first –tier rate which was gradually adjusted downward by the Central Bank of Nigeria (CBN).it applied to a few officially international transactions namely the servicing of external debt and payments of international organizations.

The second-tier rate of free market is determined by market forces in the process of auctioning foreign exchange to authorized dealers. This applied to all private sector transactions and the rest of official transactions. However, with the introduction of SFEM and the emergence of first-tier and second-tier market in 1987, the nation’s currency experienced a tremendous and massive devaluation unprecedented in the history of Nigeria. The objectives of exchange rate policy under SAP were to reflect the needs of medium and long-term balance of payments equilibrium.

In this direction SFEM was predicated on the attainment of realistic exchange rate of the naira depreciation, by the market forces of demand and supply of foreign exchange. In 1987, the Dutch Action System (DAS) was introduced and it used the marginal rate as the market exchange rate. Under this system, the central Bank floated the naira, discounted the system of predetermined quotas for banks and allowed allocations to be based on rates, which emerged in the market. Furthermore, the CBN became more active participant buying and selling as occasion demanded. As a result of the new policy, the exchange rate shot up significantly from

N10.226:\$1.00 in February 1992 to N17.667:\$1.00. In March 1992, representing 41.8 percent devaluation. Obadan (1998), also commented that since the introduction of Market-Based Exchange Rate System in 1986, the naira exchange has exhibited the features of continuous instability, reflecting depreciation in both the official and parallel markets for foreign exchange. Between September 1986 and October 1993, the official exchange rate moved from N1.55:\$1:00 to N21.99:\$1.00 in October 1993. The continued depreciation of the naira has been due to many factors, among which are the phenomenon of excess demand for foreign exchange in relation to supply; poor performance of direct foreign investment inflow, expansionary monetary and fiscal policies, instability of the foreign exchange earnings from crude oil, upon which the country depends heavily, speculative activities and sharp practices of authorized dealers in the foreign exchange market and the problem of fragile export base and inbuilt high import dependence of the economy. More importantly, until recently, too much reliance had been placed on a very imperfect system to determine a crucial price as the exchange rate in Nigeria.

Dejo (1987), opined that the introduction of the SFEM and the consequent depreciation of the naira is borne out of the belief that the country's current balance of payments and debt problems were due to government support for an overvalued naira over the years and the years

and the non-liberalization of the foreign exchange earnings, disbursement and utilization process.

He argued that the impact exchange rate is largely on the domestic economy in view of the fact that most made in Nigeria goods have foreign input contents. Thus, any substantial change in the exchange rate is bound to seriously affect domestic prices of such goods and economic activities generally. Gbosi (2003), highlighted that in March 1992, government completely deregulated transactions in the foreign exchange market. It removed what remained of administrative controls for example, the use of quotas and adjusted the official exchange rate to almost match the parallel market rate (black market). The government thus saw the parallel market rate as fair indicator of the correct exchange rate for the naira; a more realistic change. After the adjustment in 1992, the government was attempting a clean (free) float. But it was not so, the monetary authorities still allowed themselves room to intervene in the market to influence the exchange rate naira directly. But the flexible exchange rate regime was not able to establish a realistic and sustainable exchange rate for naira. For example, at the end of 1993, about N80.00 was exchanged for US \$1.00 in the official market. In parallel market, the rate was about N100.00 to a dollar. In order to correct and reverse the situation, the Nigerian government abandoned some of its liberalization policies in 1994.

According to Ojo (2000), a number of policy instruments were adopted at the inception of SAP and inception of SAP and in the process of programme implementation in order to attain its objectives. It can be concluded that Nigeria's exchange rate policy under SAP was more pragmatic and farsighted, aimed, as it were at effecting a structural transformation of the economy as well as ensuring a viable BOP position in the medium to long term (Anyanwu 1999).

2.1.7 Exchange Rate Policy in Nigeria after SAP

In 1995 budget speech, the head of state, General Sani Abacha, announced that there was a change in policy regarding the nation's exchange rate regime. The official exchange rate of the naira was also fixed at N22.00 to a US dollar. However, the following measures were to be applied with effect from January 1995.

- a. The 1982 Exchange control Act is abolished with immediate effect.
- b. There shall be an Inter-Bank Foreign Exchange Market (IFEM) and there shall be no regular bidding on allocation of foreign exchange at CBN at least for that time. Rather, the CBN shall hold the official foreign exchange to meet priority-government obligations, strengthen the external reserves and intervene in and influence the IFEM in order to ensure reasonable stability in the market CBN (2005).

As earlier mentioned, the major objective of exchange rate policy under SAP was to establish a realistic and sustainable exchange rate for the naira. Many economists saw SAP as the long awaited "Messiah" that leads Nigeria to a breakthrough in the quest for the determination of a realistic exchange rate of the naira. Naira depreciated sharply in the parallel market, widening the parallel market premium, while stability in the exchange rate and foreign exchange rate market proved elusive, the balance of payments remained under intense pressure, non-oil receipts declined, demand for foreign exchange assumed an upward pressure and became unsustainable in the face of relatively low supply of foreign exchange, inflationary pressure increased and domestic output performed poorly.

This informed the policy reversal in 1995 from regulation to liberalized framework of "GUIDED DEREGULATION" of the foreign exchange market. Under the new policy, the centralization of all foreign exchange receipts in the CBN was jettisoned. Bureaux de change were once more allowed to buy and sell foreign exchange as the 1994 policy which restricted them to buying agents of the CBN was discontinued. The major element of the deregulation was the Autonomous Foreign Exchange Market (AFEM) for disbursing foreign exchange to end-users through selected banks. A subsidized and pegged official exchange rate of \$1.00;

N22.00 was changed for public sector transactions of non-commercialized agencies; including debt services payments and National Priority Projects. The goals of exchange rate policies in 1995: are the deliberate build-up of external reserve to improve the credit worthiness of the Nigeria economy and its competitiveness and the strengthening of the naira to gradually move the currency towards convertibility. The CBN's foreign exchange holdings were deployed to build-up reserves, finance priority, public sector transactions including debt services payments and to ensure reasonable stability in exchange rates.

The AFEM was expected to reduce the parallel market premium and eventually ensure the convergence of the various exchange rates in a single and enlarged foreign exchange market. The thrust of exchange rate policy was maintained in 1996, the Dual exchange rate system was retained while the Central Bank's discretionary intervention in the AFEM was regulated through the directive that the Bank should intervene monthly in the AFEM in 1997. The Dual Exchange Rate System was retained in 1997 but its operation was modified in 1998. Although some stability was attained in the AFEM at the end of 1997, the naira was overvalued by the rate N88.00: \$1.00. The sharp practices by market operators in the form of inflated demand and round tripping have not helped the situation. Drawing from the foregoing discussion it is observed that the inconsistencies in the exchange rate policies in Nigeria are

reflected in exchange rate instability. In 2002 DAS which was first introduced in 1987 was re-introduced, it was introduced against the background of widening the gap between the parallel and official exchange rates and high demand for foreign exchange rate, by 2006 the WDAS was introduced and it is till date. Since the introduction of Whole Sale Dutch Auction System (WDAS) on February 20, 2006, the liberalized Foreign Exchange Market witnessed unprecedented stability most of which include the following:

- Unification of exchange rates between the Official and Inter-bank Markets and resolution of the multiple currency problems.
- Facilitation of greater market determination of exchange rates for the Naira vis-à-vis other currencies

Achievements recorded since the introduction of WDAS included:

- Parallel market appreciation first time in 20 years.
- Convergence of official and inter-bank rates, thus unifying the two.
- Revision of the Foreign Exchange Manual
- Sale of Foreign Exchange to Bureaux-de-Change operators in an effort to increase access of foreign exchange to small end-users,

bridge the supply gap and develop the local Bureaux-de-Change (BDCs) .

According to Soludo (2006), the various exchange rate policies adopted during and after SAP did not achieve its intended objectives as exchange rate still exhibit fluctuating and depreciating trend over the years. Following the failure of previous macroeconomic policies to turn around the economy before and since the inception of SAP, in 1994, regulation of the foreign exchange market was reintroduced with a fixed rate at N22.00:\$1.00

2.1.8 Exchange rate movements in Nigeria during the period (1970- 2011)

The change from administrative fiat towards the reliance on market forces for the determination of the exchange rate resulted in the depreciation of the naira against the major trading currencies. Available data indicated that the exchange rate between the Nigeria pound and British pound sterling from 1960 to 1973 was fixed at 1:1 ratio. In 1973, Nigeria currency was changed to naira, the exchange rate was fixed at N1:00 to £0.50 (that is N2:00=£1.00). Thereafter the naira continued to appreciate to an extent that by 1984, it was almost N1:00 to £1:00. The appreciation of naira made foreign goods and services cheaper and Nigerian goods expensive for foreigners. In 1986 which was the introduction of SAP, the official exchange rate was N2.00:\$1.00, this

depreciated rapidly between 1987 and 1991 respectively which are N4.00:\$1.00 and N9.9:\$1.00. Following the devaluation of the naira in 1992, the exchange rate which was N17.3:\$1.0 for that year further depreciated to N22.1 in 1993.

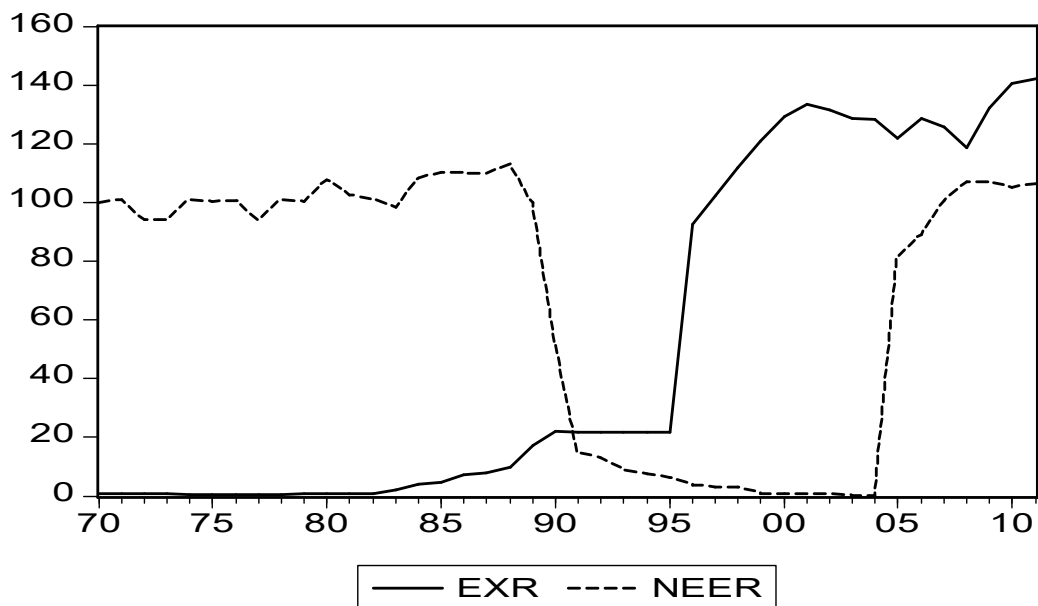
The re-regulation policy of 1994 appreciated the rate for the first time since 1986 to N21.9:\$1.0. However, with the adoption of AFEM naira sharply resumes its downward movement culminating in N82.3:\$1.0. There was relative stability thereafter as the naira exchanged at N81.5:\$1.0, N82:\$1.0, N84.4:\$1.0 for 1996, 1997 and 1998 respectively. From N92.7:\$1.0 in 1999, the naira further depreciated to N121.0:\$1.0 in 2002 and N138.0:\$1.0 in 2005. During the same period, the parallel market rate also depreciated to N106:\$1.0 in 1989 and converged with the bureau de change rate at N96:\$1.0 in 1990. Since then the two rates not only moved in the same direction but remained very close. The rates actually converged again at N85:\$1.0 and N111.1:\$1.0 in 1997 and 2000 respectively. The parallel market and bureau de change rates depreciated by 18.3 and 13.1 percent respectively in 2001 and 2002 respectively.

Thereafter the exchange rate appreciated to N132.1, N128.65, N125.83 and N118.57 in 2005, 2006, 2007 and 2008 respectively. Some have attributed the recent depreciation to the decline in the nation's foreign exchange reserves, but others argue that the activities of

speculators and banks are responsible for the recent decline in the value of naira. Also, the recent global economic meltdown forced banks to engage in “round-tripping”, a situation in which banks buy foreign exchange from the Central Bank of Nigeria (CBN) and sell to parallel market operators at prices other than the official prices. These practices have resulted in fluctuation and misalignment in the real exchange rate.

Figure 2.1:

The Evolution of Nominal Exchange Rate of the Naira



Source: author’s computation using E-views 4.1 from Central Bank statistical Bulletin, 2013 data.

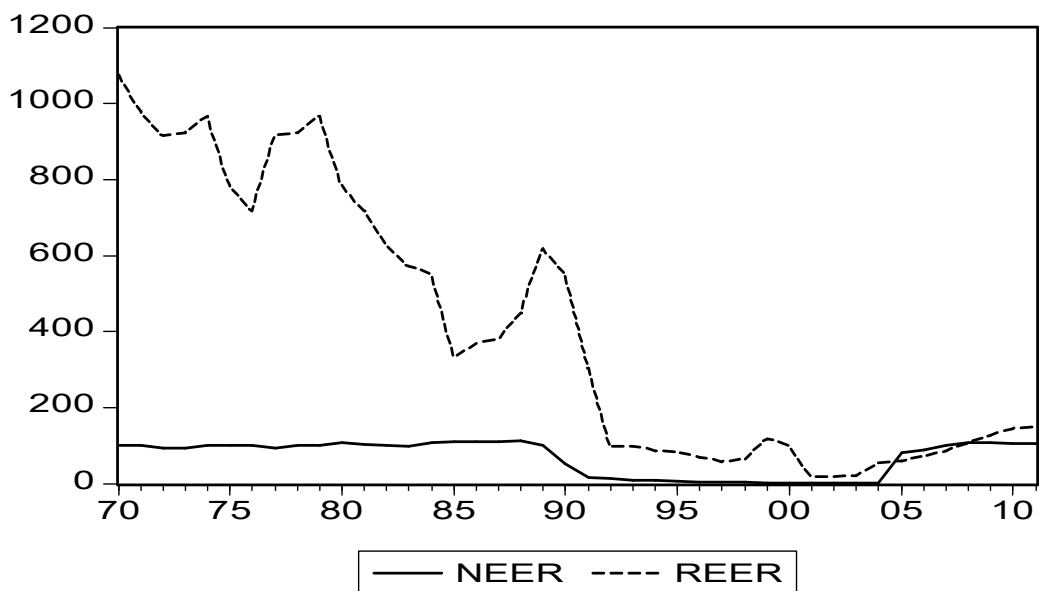
Note: An upward movement in both the Nominal Exchange Rate (NEXR) and Nominal Effective Exchange Rate (NEER) represents a depreciation

of the naira and downward movement represents an appreciation. NEER and REER are not determined for each foreign currency separately, rather each is a single number usually expressed as an index that expresses what is happening to the domestic currency against a whole basket of currencies.

Figure 2.1 displays the annual US dollar/ naira exchange rate and the nominal effective exchange rate of the naira. The evolution of the naira as described in this short history is clearly evident from the graph.

Figure 2.2:

The Real and Nominal Effective Exchange Rates of the naira



Source: author's computation using E-views 4.1 from Central Bank statistical Bulletin, 2013 data

Note: An upward movement in both the REER and the NEER mean a depreciation of the naira and downward movement represents appreciation.

As shown in Figure 2.2, movements in the nominal effective exchange rate (NEER) on the aggregate are reflected in the evolution of the real effective exchange rate (REER), but with different magnitude. The NEER appears to be more stable than the REER. Between 1970 and 1985, the NEER of the naira was fairly stable, although there were wide fluctuations in the REER. Between 1985 to 1987, the volatility of the NEER with a slight fall (appreciation) resulted in an even larger volatility of the REER between 1984 and 1987. As stated in the last section, this period was characterized by the movement from a regulated system to the SAP market system in Nigeria. From 1987, a year after the introduction of SAP and the merging of both the first and second tier markets into the Foreign Exchange Market (FEM), both the NEER and REER have tended to move closely together. They were far apart prior to this period. This behaviour suggests that nominal exchange rate policy has an influence on the real exchange rate. Burda and Wyplosz (1997) showed that when nominal and real exchange rates move closely together, it is an indication that prices are sticky and that monetary forces play an important role in the short run determination of the real exchange rate. They further showed

that this situation also means that nominal exchange rate variations are not being explained by the Purchasing Power Parity (PPP) theory. Thus, movements in the Nigerian REER and NEER could be evidence that prices have become sticky or that monetary policy has gained greater influence on the behaviour of the exchange rate.

2.1.9 Imports movement in Nigeria from 1970-2011

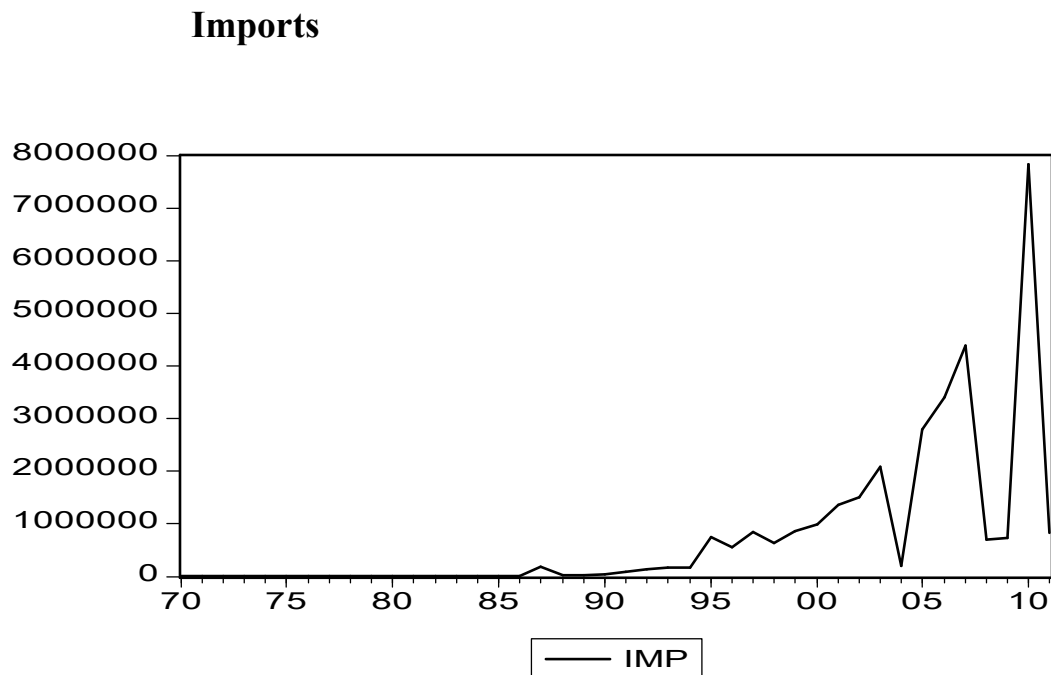
Imports level in Nigeria was low in the early 1970's. For example, in between 1970 and 1974 the import in Nigeria averaged N989.15m. This low level of imports is highly attributed to the success recorded in agricultural productivity in the early 1970's. In 1980, imports were liberalized and the total value of imports rose from N9, 095.6million in 1980 to N12, 839.6million and N10, 770, 5million in 1981 and 1982 respectively. This contributed to the balance of payments difficulties during 1981-1983. The foreign exchange problem and the increased external debt led to the adoption of Economic Stabilization Act (Temporary Provisions) in April 1982. Under the act, several commodities were banned from importation into the country and some goods were placed under open general license system. This resulted to decline in total value of imports in 1983 to 1986 with the values N8, 903.7million and N5, 983.6million respectively.

However, the introduction of the Structural Adjustment Programme (SAP) in 1986 increased the level of import marginally between 1986 and 1990 to N70.66b. The increase in the import level even during the IMF imposed on SAP is an indication that SAP did not significantly reduce the level of imports. The problem was even compounded in the early 2000 at the inception of democratic rule in 1999. For example the import level between 2000 to 2004 averaged N101.36b. Nigeria Imports averaged 2.72 USD Billion reaching an all time high of 7.52 USD Billion in August of 2011 and a record low of 0.47 USD Billion in December of 2002. Nigeria imports mainly: industrial supplies (32% of total), transport equipment and parts (23%), capital goods (24%), food and beverage (11%) and consumer goods. Main import partners are: China (17% of total), Albania (11.3%), United States (7.5%), France and Belgium.

A number of factors have been important in determining the magnitude and structure of imports. They include increased income and foreign exchange levels of the oil boom era, dependence of the economy on foreign technology and industrial inputs, domestic economic agricultural and industrial development, the needs of the various national development plans and programmes, and trade and commercial policies. The latter took the form of tariffs and direct control measures such as

import regulations, quotas, bans and import licensing, foreign exchange control and advanced deposits on imports. Some of these instruments were abolished with the introduction of the structural adjustment programme.

Figure 2.3:



Source: author's computation using E-views 4.1 from Central Bank statistical Bulletin, 2013 data

The figure shows that prior to 1994, eight years after the introduction of the Structural Adjustment Programme, the level of import was low. However from the second half of the 1990, the level of aggregate import increased. However, the huge fluctuation in the import level is an indication of fluctuation in international oil price. This is symptomatic of the fact that the bulk of Nigeria import is financed by oil revenue.

2.2 Theoretical Frame work

There are a lot of theories of foreign exchange rate which are beneficial to this study but this study focuses on the purchasing power parity (PPP) which was developed by Gustav Cassel in 1920 to determine the exchange rate between countries on inconvertible currencies. This theory states that exchange rates between currencies are in equilibrium when their purchasing power is the same in each of the two countries. This means that the exchange rate between two countries should equal the ratio of the two countries price level of a fixed basket of goods and services. When a country is experiencing inflation, that country's exchange rate must be depreciated in order to return to PPP. This is a situation the Nigerian economy is going through.

The idea of this theory is that a certain amount of money should purchase the same representative bundle of commodities in different countries. As observed by Anyanwu (1993), the PPP theory is an attempt to explain and perhaps more importantly measure the statistically the equilibrium rate of exchange variations by means of the price levels and their variations in different countries.

The basis for PPP is the law of one price. There are three caveats to the law of one price;

- a. Transportation costs, barrier to trade and other transaction costs can be significant.

- b. There must be competitive markets for the goods and services in both countries.
- c. It applies to tradable goods; immobile goods such as houses and many services that are local and of course not traded between countries.

In essence, the PPP is a theory of the determination of the nominal exchange rate and its movement in the long run equilibrium when the trade balance is zero with the underlying real determinants constant presumed to be constant.

2.3 Empirical Review

There are only a few studies which investigated the impact of foreign exchange rate volatility on imports in Nigeria as most studies focused on exports. One of such studies is the one conducted by Arize and Shwiff (2007), the study investigated does exchange rate volatility affect import flows in G-7 Countries? Evidence from co integration models. The study covered a period of 1973-1995 using co integration analyses based on Johansen's approach and robust single equation methods of stock and Watson. A set of variables which include logarithm of desired real imports, logarithm of Gross domestic products in constant prices and logarithm of relative prices were used to help determine how exchange rate volatility affects G-7 countries. The result indicated that exchange

rate volatility has a significant negative effect on the volume of imports of most G-7 countries, whereas for Canada, it is positive and significant.

Mwega (1993) investigates the short run dynamic import function in Kenya using an error correction model; it covered the period of 1984-1991. The result shows that import demand exhibits low elasticity with respect to relative price and income. Mwega (1993) stressed further that stabilization and exchange rate policies would not bring about rapid amelioration of the external disequilibrium, and foreign reserves appear to be the main determinant of imports while the chow test reveals the stability of function.

Ahmadu, Mehdi & Negin(2012) studied exchange rate uncertainty and import: Evidence from Iran 1970-2007 using Auto Regressive Conditional Heteroskedasticity (ARCH). The variables volume of imports of Iran (IMP), real exchange rate (REXCH), consumer's price index (CPI), nominal exchange rate (E) and exchange rate uncertainty (UNCERT). The ARCH model was used to calculate real exchange rate and uncertainty variable along with other variables such as GDP were put into import regression model by performing co integration test among existing variables in import model. Based on the results, it was specified that the real exchange rate uncertainty during the concerned period had

negative impact on imports and GDP experienced positive impacts on the imports of the country.

Akpokodje & Omojimite (2009) studied the effect of exchange rate volatility on the Imports of ECOWAS countries from 1986-2006 during which the countries operated a flexible exchange rate system. An import model was estimated with exchange rate volatility as one of the independent variables, others included imports, real exchange rate and domestic income. The exchange rate volatility series were generated utilizing GARCH model. Exchange rate volatility was found to negatively affect the imports of the panel of all ECOWAS countries. However, the effect on the sub groups was mixed. While exchange rate volatility negatively affects the imports of the group of non-CFA countries, its effect on the group of CFA countries was positive.

Huseyin (2006) studied 'an aggregate import demand function for Turkey: a co integration analysis from 1994-2003. The variables employed were real imports (M), import price index (PM), consumer price index (PD) and real gross national product (Y). The results indicated that a unique equilibrium relationship exists among the real quantity of imports, relative prices and real GNP.

Egwaikhide (1999) is another study on the determinants of imports in Nigeria: A Dynamic Specification. The study examines the determinants of aggregate imports and components in Nigeria covering a period of 1959 to 1989. His analysis was based on quantitative estimates using co integration analysis and Error correction Method (ECM) to explore several economic phenomena on a time series data during the reviewed period. Also he used Engel-Granger two step methods to determine co-integration relationship between the dependent and independent variables.

Oladipo (2007) examined exchange rate pass through for Nigeria imports using a Johansen co integration technique to a sectoral data between 1970 and 2004. He used the mark-up approach which sets export prices as a mark up on production costs. He found incomplete pass through at varying degree across sectors. He found that pass-through was much larger in the long run than in the short run.

Babatunde & Akinwade (2010) studied exchange rate volatility in Nigeria: consistency, persistency and severity analyses from 1986-2008. The ARCH and GARCH models were used to examine the degree or severity of volatility based on the first difference, standard deviation and coefficient of deviation estimated volatility series for the normal and real exchange rate naira vis-à-vis the U.S dollar. The result indicated the

presence of over shooting volatility shocks, this however proves the ineffectiveness of monetary policy in stabilizing exchange rate and therefore calls for the need of more tightened measures especially in controlling high demand for currency.

Shehu (2007) studied the impact of foreign exchange volatility on imports: A case of Nigerian foreign exchange market (1987-2008). This study used time series data obtained from CBN Statistical bulletin to examine the impact of foreign exchange volatility on the changes of SITC imports value in Nigeria under the three foreign exchange market regime.

The model used was

$$V_S = a + bER_S + \mu \quad . \quad . \quad . \quad (1)$$

$$V_A = a + bER_A + \mu \quad . \quad . \quad . \quad (2)$$

$$V_1 = a + bER_1 + \mu \quad . \quad . \quad . \quad (3)$$

Where:

V_S = imports value under second tier foreign exchange market (SFEM)

ER_S = exchange rate under second tier foreign exchange market (SFEM)

V_A = imports value under autonomous foreign exchange market (AFEM)

ER_A = exchange rate under autonomous foreign exchange market (AFEM)

V_1 = imports value under inter-bank foreign exchange market (IFEM)

ER_1 = exchange rate under inter-bank foreign exchange market (IFEM)

a and b = predictors (estimators)

μ = stochastic error term

The parametric test showed that no significant relationship exists between exchange rate shocks of naira and US dollar on the changes of imports value under autonomous foreign exchange market, but positive and highly negative significant relationship were found to exist between exchange rate volatility and changes in SITC imports value under SFEM and IFEM respectively. It was therefore recommended that the foreign exchange rate should be allowed to fluctuate but such must equally be controlled to exist within a defined range of rate.

Mutiu (2007) studied exchange rate and disaggregated import prices in Nigeria from 1980-2006 taking trade policy into consideration. It employed the ADF test, co integration technique and error correction mechanism (ECM) on the variables which were import prices, export prices, tariff rate and official exchange rate. It observed that exchange rate exhibits positive and more than complete pass through in import prices of consumer and capital product groups, while the results on intermediate products are mix. It also showed that depreciation of exchange rate

overwhelms the impact of tariff reduction on prices of some product. Policy focus should be placed on products with more –than-complete-pass-through. This will insulate the domestic economy from the effect of depreciation and also make the impact of tariff reduction discernible.

Fatukasi & Bernard (2008), studied the determinants of imports in Nigeria from 1970 to 2008 and they applied of Error Correction Model, the variables employed were real gross domestic product (RGDP), external reserves (EXTR), real exchange rate (REXCH) and index of openness (OPNS) as determinant factors. The ECM model was employed for analysis and the result revealed that ECM(-1) suggests that the aggregate demand adjusts to correct long run disequilibrium between itself and its function. In the short run, real gross domestic product is the major determinant of import demand in Nigeria.

Oyovwi (2010) studied exchange rate volatility and imports in Nigeria from 1970-2009 using the Augmented Dickey Fuller (ADF) test followed by co integration test and parsimonious ECM model was also used. The variables used were real import value (M_t), real terms of trade (P_t), real gross domestic product (Y_t) and real volatility of exchange rate (V_t). The result indicated that real exchange rate volatility has no significant effect on Nigeria's imports. This is an indication that domestic

consumption is skewed towards imported goods which indicate further that Nigerian export has a high import content. Also, the study found out that devaluation as a policy instrument to reduce trade imbalance has not discouraged mass importation. It was thus recommended that more stringent measures like outright ban and quantitative restrictions be adopted to reduce pressure on the external sector.

Ben et al (2010) studied determinants of exchange rate in Nigeria from 1997-2007 using co integration technique and error correction mechanism. The econometric model had its basis on the Balassa-Samuelson hypothesis which states that increases in productivity differentials lead to exchange rate appreciation. Thus the econometric model expresses the exchange rate (EXC) as a function of productivity differentials (PROD). Other variables include government consumption expenditure (GOCO), openness of the economy (OP), investment (INVT), interest rate differentials (INTD), inflation rate (INFL) and foreign exchange reserves (RES). The result indicated that improvement in productivity, investment-GDP and high inflation leads to exchange rate appreciation. On the other hand, higher degree of openness, increase in foreign exchange reserves and interest rate differentials results in exchange rate depreciation. Overall, the findings confirm the Balassa-Samuelson hypothesis which states that high productivity differentials

lead to exchange rate appreciation. Thus we propose policies that would encourage and facilitate improvement in productivity in all sectors of the economy, raise investment and foreign exchange reserves, reduce inflation, stabilize and further liberalize interest rate and increase the openness of the economy.

2.4 Appraisal of the Reviewed Literature

In this section we have carefully reviewed theories of foreign exchange rate as well as empirical works of others. Haven explored the empirical works of other scholars in areas of this study, we discovered that most of the work reviewed ignored the impact of foreign exchange on Nigeria's imports, therefore we included a major competitiveness of Nigeria represented by the real effective exchange rate and nominal effective exchange rate. Also, we looked at the trend of imports and foreign exchange rate, this helped us to discover the volume of imports in Nigeria and how it is being affected by the foreign exchange market. It is this gap that we seek to bridge in this study. Below is a table showing the summary of the empirical literature already cited.

Table 2.1:

Summary of Empirical Literature

Name of Author	Duration	Methodology	Variables	Conclusion
1. Arize and Schwiff (1998)	1973-1995	Co integration Analyses	Real imports, gross domestic product and relative prices	Exchange rate volatility has a significant negative effect on the volume of imports of G-7 countries whereas for Canada it is positive and significant.
2. Ahmad et al (2012)	1979-2007	ARCH and GARCH model with co integration and ECM	Import, real exchange rate, gross domestic product and exchange rate uncertainty	Real exchange rate uncertainty during the period concerned had negative impacts on imports.

3. Babtunde and Akinwade (2010)	1986-2008	ARCH and GARCH models	Nominal exchange rate and real exchange rate	The result indicated the presence of over shooting volatility shocks.
4. Mwega(1993)	1984-1991	ECM	Import demand, relative price, income and foreign reserves.	The result shows that import demand exhibits low elasticity with respect to relative price and income.
5. Fatukasi and Bernard (2008)	1970-2008	ECM	External reserve, real gross domestic product, real exchange rate and ratio of openness	The result revealed that the ECM(-1) is significant. This shows that a long run relationship exists among the quantity of import demanded its determinants over sample period.

6. Omojimate and Akpokodje (2009)	1986-2006	GARCH model	Import, domestic income, real exchange rate and exchange rate volatility	Exchange rate has a statistically significant negative effect on real imports of ECOWAS as a sub region.
7. Oyovwi (2012)	1970-2009	ARCH, GARCH and ADF test	Real imports, real terms of trade, real gross domestic product and volatility of real exchange rate.	Real exchange rate volatility has no significant effect on imports.
8. Egwaikhide (1999)	1959-1989	ECM and Cointegration technique	Aggregate income, relative price, foreign exchange reserves/ receipt and exchange rate variations.	The result shows that aggregate income, relative prices, foreign exchange reserves/ receipt and exchange rate variations are all determinant of imports.

9. Mutiu (2007)	1986-2006	ADF test, Granger causality test and ECM	Domestic price level, prices of tradable goods and prices of non-tradable goods.	Exchange rate exhibits positive and more-than-complete-pass-through to import prices of consumer and capital product groups while the products of intermediate remains the same
10. Shehu (2007)	1987-2008	Multiple regression analysis	Imports under SFEM, AFEM and IFEM and Exchange rate under SFEM, AFEM and IFEM	Moderately positive and highly negative significant relationship were found to exist between exchange rate and changes in SITC imports under SFEM and IFEM respectively.

11. Huseyin (2006)	1994-2003	Co integration and ECM	Real imports, import price index, consumer price index and real gross national product.	There exists a unique long run or equilibrium relationship among real quantities of imports, relative import price and real gross national product.
12. Oladipo (2007)	1970-2004	Johansen cointegration technique and mark up approach	Export prices and production cost	The result reveals incomplete pass throughout varying degrees across sector.
13. Ben et al (2010)	1970-2007	Co integration and ECM	Exchange rate, productivity differentials, government consumption expenditure, openness	The result indicates that improvement in productivity, investment-GDP, and high inflation leads to exchange rate appreciation. On the

			of the economy, investment, interest rate, inflation rate and foreign exchange reserves.	other hand, high degree of openness, increase in foreign exchange reserves and interest rate differentials results in exchange rate depreciation.
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CHAPTER THREE

RESEARCH METHOD

3.0 Introduction

This chapter introduces the quantitative aspects of the study. It discusses the various empirical methods employed in the course of carrying out the research. It investigates the impact of foreign exchange rate on Nigerians imports using econometric techniques of co integration with its implied error correction mechanism which was adopted and applied on time series data, covering the period of 1970-2011

3.1 Sources of Data

The sources of data for this study were mainly from secondary sources. The data were principally from the Central Bank of Nigeria statistical bulletins, National Bureau of Statistics, Abstracts of the Federal Office of statistics, Annual reports on major economic indicators. Other sources of data include economic journals, research paper works, textbooks and the internet.

Volatility series were generated from the nominal and real exchange rates of naira to US dollar measured using ARCH and GARCH model.

3.2 Estimation Technique

Johansen co-integration technique with its implied error correction mechanism (ECM) was used in this work because it has practical economic implications, also ARCH and GARCH was used to check exchange rate volatility. Many time series are non – stationary, that is they move together over time, this implies that the two series are bound by some relationship in the long run. Brooks (2002) further showed that a co integrating relationship may also be seen as a long term or equilibrium phenomenon, since it is possible that co integrating variables may deviate from the relationship in the short run, but their association would return in the long run. This concept is particularly important in this study where we seek to identify the impact of import volatility in Nigeria.

3.3 Model Specification

This study adopted the works of Dickson (2012), titled ‘Exchange rate Volatility and Imports in Nigeria’ and Akpokodje and Omojimate (2009) titled ‘The Effect of Exchange Rate Volatility on the Imports of ECOWAS Countries’. Dickson (2012) employed real import, terms of trade, Gross domestic product (GDP) and volatility of real exchange rate. Akpokodje and Omojimate (2009) on the other hand used imports, real exchange rate, domestic income, exchange rate volatility and error term.

The model of this study aligns with that of Akpokodje and Omojimito (2009) because it uses real exchange rate and exchange rate volatility. The study adopted the GARCH model theory which makes import dependent on Real Effective Exchange Rate, Nominal Effective Exchange Rate and Real Gross Domestic Product. The model to be estimated in this study is thus stated below;

$$M_t = f(\text{REER}_t, \text{NEER}_t, Y_t, V_t, \phi) \quad (1)$$

Where:

M=Import volume

REER= Real effective exchange rate

NEER= Nominal effective exchange rate

Y= gross domestic product

V= Exchange rate volatility

ϕ =Error term

In the area of international trade the two most commonly encountered functional forms for import demand relationships are either linear or log-linear formulations. The logarithm formulation is preferable in modeling import demand for two reasons. First, it gives direct estimation of import elasticity and secondly it allows imports to react

proportionately to rise and fall in the explanatory variables. The above import demand function in natural logarithm can be expressed as:

$$\ln M_t = B_0 + B_1 \ln REER + B_2 \ln NEER + B_3 \ln Y_t + B_4 \ln V_t + \phi. \quad (2)$$

$$B_1 < 0 \quad B_2 > 0 \quad B_3 > 0 \quad B_4 < 0$$

Where B_0, B_1, B_2, B_3, B_4 are coefficients of elasticity. On apriori expectation:

$B_1 < 0$, there is a negative relationship between import and real effective exchange rate. This implies that an increase in real exchange rate will reduce the volume of import.

$B_2 > 0$, there is a positive relationship between import and nominal effective exchange rate. This implies that an increase in nominal exchange rate will lead to an increase in the volume of imports.

$B_3 > 0$, there is a positive relationship between import and gross domestic product. This implies that an increase in domestic income will lead to an increase in the volume of imports.

$B_4 < 0$, there is a negative relationship between imports and exchange rate volatility

Exchange rate volatility is measured using GARCH model which provides a way formalizing the fact that large changes in the exchange

rates tend to be followed by large changes and then small changes. This allows for the prediction of the range of future movements of exchange rate. This approach is generally regarded as a better measure of exchange rate volatility. According to Yinsua (2004), the GARCH specification is often interpreted in financial context, where an agent or asset holder predicts this period's variance by forming a weighted average of a long term (constant), information about volatility observed in the previous period (ARCH term) and the forecasted from the last period (GARCH term). If the exchange rate changes were unexpectedly large in either the upward or downward direction, the agent will increase the variance for the next period.

The GARCH model is also consistent with the volatility clustering often seen in financial returns data, where large changes in returns are likely to be followed by further larger changes.

CHAPTER FOUR

PRESENTATION OF DATA, ANALYSIS OF DATA AND DISCUSSION OF FINDINGS

4.0 Introduction

This chapter aims at estimating the model specified in the previous chapter. The policy Implications of the results also constitute the major part of this chapter.

4.1 Presentation and Analysis of Results

Table 4.1 Data Presentation

OBS	EXR	IMP	NEER	REER
1970	0.7143	756.6	99.9	1075.78
1971	0.6955	1078.9	100.9	979.13
1972	0.6579	900.1	94.3	915.9
1973	0.6579	1224.8	94.3	922.89
1974	0.6299	1737.3	100.8	966.76
1975	0.6159	1835.5	100.4	784.97
1976	0.58	2016.2	100.6	717.9

1977	0.5464	1093.7	94.3	915.9
1978	0.61	8211.7	100.8	922.89
1979	0.6729	7472.5	100.4	966.76
1980	0.7241	9095.6	107.8	784.97
1981	0.7649	12839.6	102.6	717.9
1982	0.8938	10770.5	101	629.12
1983	2.0206	8903.7	98.2	572.04
1984	4.0179	7178.3	108.3	548.81
1985	4.5387	7062.6	110.4	332.54
1986	7.3916	5983.6	109.9	369.15
1987	8.0378	178617	109.8	378.3
1988	9.9095	21445.7	113.2	447.88
1989	17.2984	30860.2	100	619.32
1990	22.0511	45717.9	51.9	555.41
1991	21.8861	89499.2	14.7	303.26
1992	21.8861	143151.2	13	96.66

1993	21.8861	165629.4	8.9	97.14
1994	21.8861	162788.8	7.7	86.51
1995	21.8861	755127.7	6.3	79.86
1996	92.6934	562626.6	3.7	69.28
1997	102.1052	845716.6	3	57.47
1998	111.9433	637418.7	3	62.97
1999	120.9702	862515.7	0.7	116.69
2000	129.3565	985022.1	0.8	98.93
2001	133.5004	1358180.3	0.8	19.07
2002	131.6619	1512685.3	0.8	19.22
2003	128.64	2080235.3	0.2	19.88
2004	128.27	198745.3	0.2	53.76
2005	121.9	2800856.3	81.2	58.25
2006	128.65	3412176.6	88.9	70.58
2007	125.83	4381930	100.6	85.13
2008	118.57	692449.2	107.1	106.68

2009	132.14	739838.8	106.6	126.69
2010	140.42	7837473.1	105	143.78
2011	142.18	821093.5	106.4	148.33

Source: CBN Statistical Bulletins 2013

UNIT ROOT TEST

The augmented Dickey Fuller (ADF) unit root test was used in the study to test whether the variables are stationary and their order of co integration. The ADF unit root test is preferable to the Dickey Fuller (DF) because it corrects for possible serial correlation in the variable. The result of the ADF unit root test is shown in table 4.2.

Table 4.2 summary of ADF unit root test result

Variable	Level data	First difference	1%CV	5% CV	10%CV	Order of integration
MT	1.36	2.97**	-3.16	-2.94	-2.61	I(1)
YT	2.25	-5.60*	-3.61	-2.94	-2.61	I(1)
VT	-5.12*	-7.63	-3.61	-2.94	-2.61	I(0)
REER	-2.17	-4.48*	-3.61	-2.94	-2.61	I(1)
NEER	-1.49	-3.40**	-3.16	-2.94	-2.61	I(1)

Source: author's computation

NB: * indicates statistical significance at the 1% level and ** indicates significance at the 5% statistical significance level.

The ADF result in table 4.2 indicates that like most macroeconomic indicators, the variables except exchange rate volatility only became stationary after the first difference was taken. Volatility was stationary at the level because it is computed with percentage and ratios. Since both I(1) and I(0) variables can co integrate (Hendry, 1995) all the variables were therefore carried forward to test for cointegration.

COINTEGRATION

Unit root test results have shown that the variables are not stationary at all levels. It is therefore essential that to establish whether they have a long term equilibrium relationship or not. Thus, we used the Johansen co integration test.

The result of the Johansen co integration test is shown in table 4.3

Tables 4.3: Summary of Johansen Co integration Test

Hypothesized No. of CE (s)	Eigenvalue	Trace Statistic	5 percent Critical Value	1 percent Critical
None**	0.649047	86.37738	68.52	76.07
At most 1	0.529196	45.65137	47.21	54.26
At most 2	0.224698	16.27213	29.68	35.65
At most 3	0.132787	6.345601	15.41	20.04
At most 4	0.020056	0.790129	3.76	6.65

Hypothesized No. of CE (s)	Eigenvalue	Max-Eigen Statistic	5 percent Critical Value	1 percent Critical
None**	0.649047	40.72601	33.46	38.77
At most 1	0.529196	29.37924	27.07	32.24
At most 2	0.224698	9.925627	20.97	25.52
At most 3	0.132787	5.556372	14.07	18.63
At most 4	0.020056	0.790129	3.76	6.65

Source: author's computation E-Views 4.1

Both the trace statistic and the max-eigen statistic indicate one co integrating equation. This is an indication that there is a long run equilibrium relationship among the variables. The existence of at least one cointegrating equation permits us to estimate the over parameterize and parsimonious ECM model.

Over parameterize and Parsimonious ECM Result

The over parameterized ECM result include two lags each of the independent variables. The summary of the over the parameterized ECM result is shown in table 4.4.

Table 4.4: Summary of Over parameterize ECM Result: modeling DLMT

Included Observation: 39 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLNEER	0.454316	0.167069	2.719327	0.0105
DLNEER(-1)	0.015061	0.059162	0.254572	0.8010
DLNEER(-2)	-0.003578	0.060208	-0.059423	0.9531
DLNEER	-0.152406	0.174216	-0.874809	0.3894
DLNEER(-1)	0.080436	0.159813	0.503313	0.6188
DLNEER(-2)	0.080611	0.026962	-2.989855	0.0063
DLYT	0.096010	0.085059	1.128734	0.2689
DLYT (-1)	0.187952	0.048026	3.913570	0.0007
DLYT(-2)	0.159452	0.091420	1.744165	0.0925
VT	-0.377975	0.169494	-2.230017	0.0404
ECM(-1)	-0.331315	0.145534	-2.276540	0.0310
C	0.119642	0.084304	1.419176	0.1673

Source: author's computation E-Views 4.1

R²= 0.63, AIC= 1.07, Sc=1.58, DW= 2.16

The result of the parsimonious ECM which was gotten by deleting insignificant variables from the over parameterized ECM is shown in table 4.5

Table 4.5:**Summary of parsimonious ECM result: modeling DLMT**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLNEER	0.483866	0.105695	4.577960	0.0001
DLREER(-2)	-0.103853	0.030688	-3.384101	0.0019
DLYT(-1)	0.396659	0.141286	2.807485	0.0109
VT	-0.032162	0.014410	-2.233269	0.0371
ECM(-1)	-0.322087	0.108432	-2.970398	0.0056
C	0.214167	0.069214	3.094286	0.0040

Source: author's computation E-Views 4.1

R²= 0.69. AIC= -0.93, SC=-1.19 DW=2.04

The Parsimonious ECM indicates that the nominal effective exchange rate has a positive and linear relationship with the level of imports, while the real effective exchange rate has a negative and linear relationship with aggregate imports. The result indicates further that exchange rate volatility has negative but significant relationship with the level of import. The level of economic growth also has a positive and significant relationship with the level of imports in Nigeria. The statistical significance of the negatively signed ECM provides an indication of a satisfactory speed of adjustment.

ARCH/GARCH RESULTS

The results of the autoregressive conditional heteroskedasticity (ARCH) and the Generalized Autoregressive conditional Heteroskedasticity (GARCH) are shown in table 4.6.

Table 4.6:

ARCH/GARCH Result

Variables	Coefficient	Std. Error	z-Statistic	Prob.
DLNEER	0.043516	0.501867	0.086707	0.9309
C	10.02245	0.244496	40.99229	0.0000
Variance Equation				
C	0.166795	0.548958	0.303840	0.7612
ARCH(1)	1.101963	0.777079	1.418084	0.1562
GARCH(1)	-0.107013	0.492383	-0.217337	0.8279

Source: author's computation E-Views 4.1

Since the sum of value GARCH (1) and ARCH (1) approximately equals unity, it indicates that exchange rate volatility is a major influence on the level of import in Nigeria.

Diagnostic Checks

The result of the diagnostic checks is shown in table 4.7 and figure 4.1 to figure 4.2 below

Table 4.7:

Diagnostic Test Result

White\heteroskedasticity	
F statistic 0.62	probability 0.84

Breusch Godfrey serial	
Correlation LM test	

F statistic 0.54	probability 0.59
------------------	------------------

Jarque-bera normality test	
Jarque-bera 3.50	probability 0.17

Source: author's computation E-Views 4.1

The result of the white heteroskedasticity test with an F value of 0.62 and probability of 0.84 indicate that the residuals are homoskedastic. The Breusch-Godfrey serial correlation LM test with values of 0.62 and probability of 0.59 indicate the validation of the null hypothesis that the residuals are not serially correlated. The Jarque-Bera normality test which tests whether the null hypothesis and the residuals are normally distributed with a value of 3.50 and probability 0.17 validated the null hypothesis that the residuals are normally distributed and cannot be rejected. That is, since Jarque-Bera is between 0 and 3, the normality assumption is accepted.

The results of both the CUSUM and the CUSUMQ stability test indicate that the residuals are stable since both the CUSUM line and CUSUM Q lines fall within the two 5 percent lines.

CUSUM AND CUSUM Q STABILITY TEST

The cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMQ) tests are shown in figures 4.1 and 4

Figure 4.1:

CUSUM Stability Test

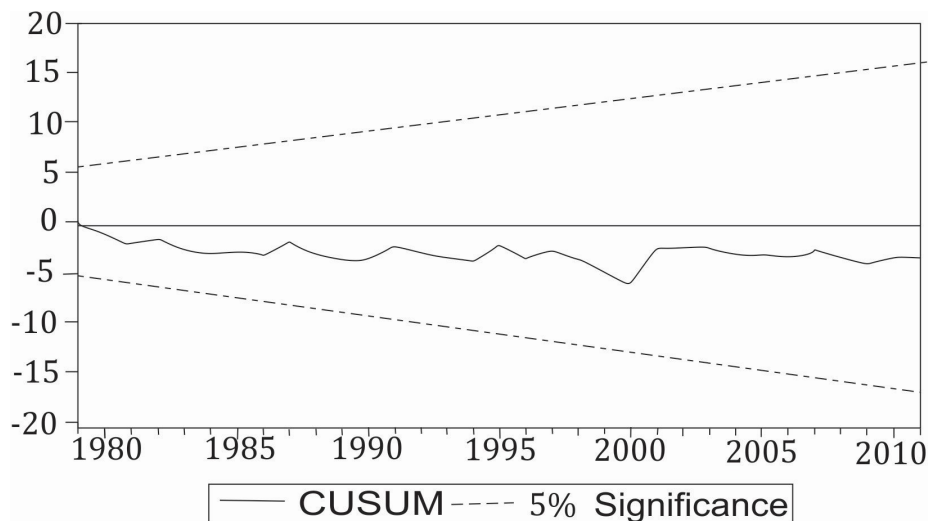
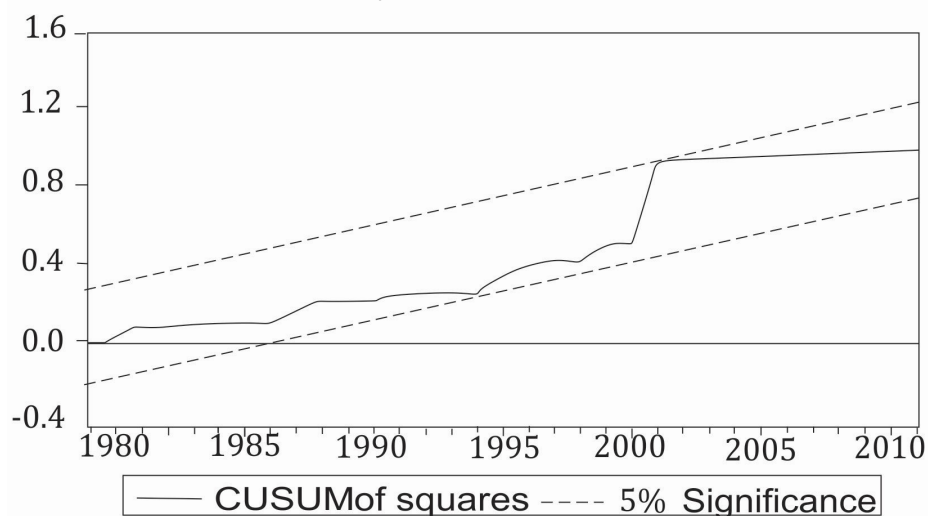


Figure 4.2:
CUSUMQ Stability Test



Source: author's computation using E-views 4.1 from Central Bank statistical Bulletin, 2013 data

Variance Decomposition

The result of the cholesky variance decomposition is show in table 4.8

Table 4.8 Cholesky Variance Decomposition

Variance Decomposition of LMT:					
Period	S.E	LMT	LNEER	LREER	LYT
1	0.379112	100.0000	0.000000	0.000000	0.000000
2	0.518686	94.42109	1.498210	0.037878	4.040559
3	0.661354	94.73414	1.239072	0.044394	3.877217
4	0.785973	94.35118	1.277366	0.388252	3.906006
5	0.883292	94.61517	1.141722	0.570387	3.608954
6	0.979096	94.91422	1.037552	0.528865	3.461232
7	1.067182	94.83678	1.046062	0.490905	3.574516
8	1.149382	94.83892	1.047988	0.490020	3.577329
9	1.225311	94.81540	1.039069	0.527848	3.577397
10	1.295175	94.87954	1.011790	0.542160	3.530339

Variance Decomposition of LNEER:					
Period	S.E	LMT	LNEER	LREER	LYT
1	0.729739	19.09358	80.90642	0.000000	0.000000
2	1.167767	14.25713	82.23373	0.073623	3.106003
3	1.675376	8.844591	68.02625	2.427657	5.983096
4	2.139101	10.35357	68.02997	5.497077	3.771477
5	2.568020	11.00903	69.07444	7.284504	2.771477
6	2.941930	12.04217	69.95778	6.252343	2.094414
7	3.218385	11.85997	70.86864	5.745890	1.791130
8	3.489546	12.27606	70.31600	5.745890	1.557754
9	3.765845	12.51426	70.21545	5.982723	1.342696
10	4.025172	12.74574	70.35768	5.979073	1.180605

Variance Decomposition of LREER:					
Period	S.E	LMT	LNEER	LREER	LYT
1	0.369590	1.834981	9.506938	88.65808	0.000000
2	0.668979	9.754883	24.54537	61.18054	3.855827
3	0.849666	8.500663	34.39913	50.86800	5.241016
4	0.984832	9.767489	37.51258	45.92769	5.510047
5	1.101374	10.04287	39.14506	43.93415	5.260366
6	1.218584	10.54106	39.74229	42.76639	4.946384
7	1.336752	10.82616	40.28677	41.64998	5.117414
8	1.444926	11.10892	40.82655	40.68861	5.265373
9	1.540415	11.38536	41.40526	39.72901	5.290358
10	1.626983	11.53361	41.80796	39.12528	5.250659

Variance Decomposition of LYT:					
Period	S.E	LMT	LNEER	LREER	LYT
1	0.770525	12.92564	5.308026	17.20650	64.55984
2	0.829524	15.20777	10.04106	16.10251	58.46899
3	0.962262	25.32700	12.47094	14.32070	45.89292
4	1.045451	22.96950	18.59932	12.71685	44.10263
5	1.171860	27.46096	19.76551	12.34179	39.14219
6	1.252092	29.05038	19.29418	10.85607	38.35622
7	1.319027	29.69656	21.13727	9.790229	38.35622
8	1.392142	30.53057	22.61192	8.880234	37.02233
9	1.457005	31.04434	23.64940	8.295011	36.13641
10	1.523530	31.78730	24.12891	7.859115	35.51093

Variance Decomposition of VT:					
Period	S.E	LMT	LNEER	LREER	LYT
1	0.887786	6.162258	6.254915	0.016930	0.485062
2	1.054694	7.126275	6.744927	0.352720	24.01429
3	1.100287	6.708475	11.12547	0.652508	24.71129
4	1.237423	5.933035	13.99439	8.401146	20.42436
5	1.339097	5.740154	20.43122	10.41318	17.65033
6	1.413260	5.547219	25.09916	9.478933	16.77659
7	1.469051	5.212273	26.37507	9.419196	18.01854
8	1.530124	4.837092	28.25210	10.38976	17.59640
9	1.599332	4.437415	30.28610	11.31478	16.86954
10	1.659984	4.119594	32.56994	11.49835	16.18609

cholesky Ordering LMT LNEER LREER LYT VT

Source: author's computation E-Views 4.1

Import explained about 100 percent of the change to itself at the first period, but this declined to 95 percent in the last period, this implies that a 1% increase in exchange rate led to a 5% reduction in the level of imports. The nominal effective exchange rate and level of economic growth as well as real effective exchange rate only explained a fraction of the shocks to imports. Changes in the level of imports explained about 19 percent of the nominal effective exchange rate in the first period which decreased to about 13 percent in the last period. The changes in import level explained about 2 percent of shocks to real effective exchange rate. This increased to about 11 percent in the last period. Changes in the level of imports explained about 13 percent of the level of economic growth. This however increased to 32 percent in the last period, indicating that the level of economic growth plays a vital role in increasing the import level in Nigeria. Changes to imports explained about 6 percent of the shocks in exchange rate volatility in the first period and this decreased to about 4 percent in the last period.

4.2 Policy implications

The result has important implications on foreign exchange rate and imports in Nigeria. The result indicated that exchange rate volatility has detrimental impact on the level of imports in Nigeria. The result also indicated that the real effective exchange rate (REER) had played an important role in generating the desired level of imports in Nigeria. This indicates that REER has a significant and

negative relationship on imports. That is a decline in REER simply implies an appreciation in NEER and therefore an increase in the price of imports and ultimately a fall in the local demand for imported goods. Also, the result indicated that exchange rate volatility has a negative but significant relationship with the level of import; this implies that exchange rate changes were unexpectedly large and therefore affected the volume of imports. The result also showed that there was a positive relationship between import and gross domestic product, that is, there was an increase in domestic income which led to an increase in the volume of imports. This indicates that economic growth has beneficial impact on the level of imports in Nigeria.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of the Findings

The following are some of the findings of the study.

- i. The ARCH and GARCH result sums up to unity which indicates that exchange rate volatility is a major influence on the level of imports in Nigeria
- ii. Exchange rate volatility in the parsimonious ECM result has a negative and significant relationship with the level of imports. This is an indication that exchange rate volatility has influence on the level of imports in Nigeria.
- iii. This also indicates that exchange rate volatility exerts detrimental pressure in the level of imports.
- iv. The real effective exchange rate has a significant and negative impact on the level of import in Nigeria.
- v. An appreciation of the real effective exchange rate by 1 percent reduced the level of imports by 10 percent.

- vi. The level of economic growth has significant and positive impact on the level of imports.
- vii. An increase in the level of economic growth by 7 percent increase the level of imports in Nigeria by 40percent.
- viii. The co integration test result indicates a long run equilibrium relationship among the nominal effective exchange rate, real effective exchange rate, exchange rate volatility, the level of economic growth and the import level.
- ix. The statistical significance of the ECM which is negatively signed indicates a satisfactory speed of adjustment. It shows that about 32 percent of the errors are corrected each period.

5.2 Conclusion

The management of the foreign exchange rate has been given significant priority in recent times. This is because the economic success stories of the emerging and developed countries can be connected in one way or the other to the strength of their foreign exchanges. Some countries in Africa such as Botswana and South Africa have good records of foreign exchange management. This has significantly reduced their import level, thus reducing their reliance on their outside world for supplies. This import reduction has boosted the local industry in those countries. This is partly responsible for the economic success story of China.

In Nigeria, however, the management of foreign exchange has not been impressive. This is due to factors which includes corruption and flawed management of the Nigerian stock exchange. The performance of the money market and capital market over the year has not been impressive. This has been partly responsible for the high level of imports in Nigeria. The decayed level of basic infrastructure in Nigeria has been partly responsible for this. The results however indicated that the volatility of exchange rate has a detrimental impact on the level of imports. This indicated that import into Nigeria is prone to external shocks.

5.3 Policy Recommendations

The following recommendations are therefore made from our results.

- i. The monetary authorities should develop policies that could immune the country from foreign exchange rate volatility. This will serve as automatic stabilizer which will protect the importation of goods and services.
- ii. The exchange rate should be depreciated. This will increase the level of exports and hence reduce the level of imports.
- iii. The Level of economic growth should be further increased through diversification. Diversification will increase domestic production and hence

reduce the imports level since some of the previously imported goods and services could be produced locally.

5.4 Contribution to Knowledge

This research has added to knowledge in the following ways;

- i. It has developed a model that has examined the impact of foreign exchange rate on the Nigerian imports by simultaneously including the nominal effective exchange rate (NEER) and the relative effective exchange rate (REER). Previous studies only included REER or NEER, this has enabled us to know the actual impact of foreign exchange rate on the Nigerian imports. Thus reflecting the international competitiveness of the Nigerian economy.
- ii. The study has shown that exchange rate volatility has detrimental impact on the level of economic growth in Nigeria.

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APPENDICES

A TABLE SHOWING THE MOVEMENT OF EXCHANGE RATE AND IMPORTS IN NIGERIA FROM 1970-2011

OBS	EXR	IMP	NEER	REER
1970	0.7143	756.6	99.9	1075.78
1971	0.6955	1078.9	100.9	979.13
1972	0.6579	900.1	94.3	915.9
1973	0.6579	1224.8	94.3	922.89
1974	0.6299	1737.3	100.8	966.76
1975	0.6159	1835.5	100.4	784.97
1976	0.58	2016.2	100.6	717.9
1977	0.5464	1093.7	94.3	915.9
1978	0.61	8211.7	100.8	922.89
1979	0.6729	7472.5	100.4	966.76
1980	0.7241	9095.6	107.8	784.97

1981	0.7649	12839.6	102.6	717.9
1982	0.8938	10770.5	101	629.12
1983	2.0206	8903.7	98.2	572.04
1984	4.0179	7178.3	108.3	548.81
1985	4.5387	7062.6	110.4	332.54
1986	7.3916	5983.6	109.9	369.15
1987	8.0378	178617	109.8	378.3
1988	9.9095	21445.7	113.2	447.88
1989	17.2984	30860.2	100	619.32
1990	22.0511	45717.9	51.9	555.41
1991	21.8861	89499.2	14.7	303.26
1992	21.8861	143151.2	13	96.66
1993	21.8861	165629.4	8.9	97.14
1994	21.8861	162788.8	7.7	86.51
1995	21.8861	755127.7	6.3	79.86

1996	92.6934	562626.6	3.7	69.28
1997	102.1052	845716.6	3	57.47
1998	111.9433	637418.7	3	62.97
1999	120.9702	862515.7	0.7	116.69
2000	129.3565	985022.1	0.8	98.93
2001	133.5004	1358180.3	0.8	19.07
2002	131.6619	1512685.3	0.8	19.22
2003	128.64	2080235.3	0.2	19.88
2004	128.27	198745.3	0.2	53.76
2005	121.9	2800856.3	81.2	58.25
2006	128.65	3412176.6	88.9	70.58
2007	125.83	4381930	100.6	85.13
2008	118.57	692449.2	107.1	106.68
2009	132.14	739838.8	106.6	126.69
2010	140.42	7837473.1	105	143.78

2011	142.18	821093.5	106.4	148.33
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Source: CBN Statistical Bulletins 2013

