



The effect of Exchange Rate Volatility and Currency Substitution on Nigeria Economy.

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Abstract

This work examines the effect of Exchange Rate Volatility and Currency Substitution on Nigeria Economy. I found out that there exist a positive and significant relationship between exchange rate and inflation rate in Nigeria. This means that increase in inflation rate will bring about a rise in exchange rate which may result to the substitution of local currency, that is, if there a unit change in inflation rate, exchange rate will increase by 42.6%. This result is line with the findings of Doguwa (2014) that persistent rise in exchange rate spread would raise economic agents' suspicion for possible devaluation of the local currency and therefore, may increase his desire for currency substitution. The implication of this is that the monetary authority will ensure that the spread between the official exchange rate and the parallel market rate is contained at any point in time.

1.1 Background to the Study

The exchange rate of an economy has a crucial role to play as it directly affect all the macroeconomic variables such as; domestic price indicator, profitability of traded goods and services, allocation of resources and investment decisions, which explains why the monetary authorities and private sectors seek stability in these variables (Ajakaiye, 2010). As a matter of fact, exchange rate fluctuations are now the bedrock for all economic activities globally, portraying exchange rate management as a major determinant of many countries economic policies (Todaro, 2009). Exchange rate is an essential macroeconomic variable for formulating economic policies in general and of economic reform programmes in particular in which these policies help accelerate the achievement of set macroeconomic goals. In Nigeria, these objectives include achieving and upholding price stability, balance of payment equilibrium, full employment, even distribution of income, economic growth and development.

More concretely, the issue of exchange rate and the achievement of a realistic exchange rate for the naira have continued to generate a great challenge to macroeconomic policy formulators, owing to its unarguable significance in bringing about economic growth. This therefore explains in part why it is necessary for any growth-conscious country to manage its foreign exchange. Exchange rate, is the rate at which a currency purchases another (Jhingan, 2003), it is a reflection of the strength of a currency when measured against another country's currency. According to Oloyede (2011), it is the price of one currency in terms of another, which is an important decision making variable in every nation, thus making it a crucial issue for any country desirous of economic growth .

However, in the last few years, a number of emerging market economies including Nigeria have moved from fixed to flexible exchange rates. This has in most cases led to instability in the exchange

rates thereby creating an atmosphere of uncertainty exacerbated by speculative bubbles, which help to aggravate the problem of inflation in the economy. Under conditions of high inflation, the ability of national currencies to function adequately as a store of value, a unit of account, and a means of exchange are greatly hindered (Mizen and Pentecost, 2010). In these circumstances, the domestic currency tends first to be displaced as a store of value by a stable and convertible currency (usually in the form of interest-bearing foreign currency deposits). Long period of high inflation induce the public also to conduct transactions in foreign currency (Currency Substitution).

Currency substitution refers to the use of a foreign currency to facilitate economic transactions (and to preserve wealth) in an economy. It could be partial or full currency substitution. Partial currency substitution (also referred to as unofficial or *de facto* currency substitution) is the use of a foreign currency alongside or in parallel to the domestic currency for economic transactions in a country. The foreign currency constitutes parts of the domestic medium of payment (Handa, 2000) but the foreign currency is not considered a legal tender in the country. Full currency substitution (also known as official or *de jure* currency substitution) refers to absolute substitution of a foreign currency for the local currency for economic transactions in a country. The foreign currency becomes the sole legal tender of the country, thus undermining the independence of the monetary authority. Several factors engender the use of foreign currency in an economy and most of these factors are also affected by currency substitution. The factors include inflation, the exchange rate of the domestic currency, growth rate of the economy, etc. Inflation enhances the desirability of a foreign currency of higher value as it reduces the purchasing power or value of the local currency. This leads to increase in demand for the currency as a way of hedging against the risk of loss of value of the domestic currency if inflation is expected to persist, thus fuelling currency substitution in the economy.

Exchange rate which is an indication of the strength or value of currency, also determines the rate of currency substitution in an economy. Decrease in exchange rate value of the domestic currency (i.e. depreciation) reduces the attractiveness of the local currency vis-à-vis a foreign currency (of higher value), while currency appreciation in theory reduces the attractiveness of the foreign currency if the appreciation is expected to be sustained. High rate of currency substitution in an economy is much likely to further depreciate the local currency. The rate of growth of an economy also affects the chances of currency substitution in the economy. Currency substitution is more prevalent in countries with underdeveloped or developing economies, and whose currency is highly depreciated. The degree of currency substitution in highly developed economies with strong currencies and impressive growth rate is quite low.

With respect to Nigerian economy, it is clear that the Nigerian government have validated partial dollarization by allowing residents to open bank accounts denominated in dollars (domiciliary account). In addition, foreign contract and domestic debts were valued and quoted in dollars while monetary compensation to athletics and footballers were made in dollar denominations. In fact, many big supermarkets in big cities, in Nigeria, quote the prices of their products in dollars and many estate agents and valuers only accept dollars as rents for houses in some reserved areas of Lagos, Abuja, Port Harcourt and other industrialized cities in Nigeria. All these developments point to the existence of

currency substitution in Nigeria. Against this backdrop, this study tends to examine the effect of exchange rate volatility and currency substitution on Nigerian economy.

1.2 Statement of the Problem

The existence of currency substitution in Nigeria has a number of implications for the stability of Naira, overall financial system development and monetary policy outcomes in particular. For concreteness it could be argued that currency substitution would serve to frustrate the authorities' efforts to measure the demand for national currencies and hence make money supply targets impossible to pursue (Imrohoroglu, 2011). Also, currency substitution will undermine the independence of the exchange rate policy and complicate monetary policy in a world where capital controls do not exist or are easily circumvented. Rather than allowing a nation to determine its own monetary policy under a floating exchange rate, currency substitution would create interdependence between nation states (Pentecost, 2016).

Certainly, the existence of currency substitution in Nigerian economy may precipitate financial crisis. This is because it may lead to short-term foreign currency liabilities that are high relative to foreign exchange reserves of the banking system. In such conditions, an increase in foreign currency deposits held in domestic banks may increase the vulnerability of the banking system through the "balance sheet effect" (Agenor, 2010). The foregoing discussion suggests that currency substitution may have dire consequences for macroeconomic management in Nigeria and as such identifying its determinants is not only academically important but has policy relevance. This is because global/regional integration or common markets in developing countries would be unable to strengthen and thrive in an environment characterized by exchange rate instability.

Without any doubt, the demand for money is one of the critical variables that affect the level of aggregate economic activity in the economy. With the persistent inflation and depreciation of the naira occasioned by exchange rate instability and monetary policy inconsistency, currency substitution has been a dominant, yet silent, feature of the Nigerian economy with far reaching macroeconomic implications (Effiom and Samuel, 2010). The fundamental problem is that domestic agents perceive loss of purchasing power from holding the home currency as a result of inflation risk, exchange rate risk or political instability. The use of foreign currency has become so prevalent that a large proportion of domestic trade and contracts are transacted in foreign currencies. People move freely around with dollars, rents are fixed and paid in dollars in the high-brow areas of Lagos, Abuja, Port Harcourt and other cities. While some educational institutions charge tuition fees in dollars just as contracts are also being awarded to foreign contractors and companies in dollars. However, the increasing use of foreign currency appears to mirror the attempts of economic agents to hedge against inflation and/or exchange rate depreciation during periods of large macroeconomic imbalances.

According to the Central Bank of Nigeria (CBN), the use of the US dollar as means of payment or legal tender in the local market is seriously affecting the value of naira as most Nigerians are fast losing confidence in the local currency as a store of value (Sanusi, 2013). It should however be noted that Nigeria is a mono cultural economy. The country depends heavily on crude oil of which the transactions are carried out in foreign currency, mainly in US dollars. Nigeria is a member of Organization of

Petroleum Exporting Countries (OPEC); as such any decision taken on the international arena concerning crude oil prices could affect the country and potentially its monetary stability. The relevance of the currency substitution problem in Nigeria does not appear to be related to the choice of fixed versus floating exchange rate regime, but more to the potential problems of short-run monetary instability that currency substitution can create (Doguwa, 2014).

If the demand for domestic currency is strongly influenced by foreign factors (for instance, foreign interest rate, crude oil prices etc.), a substantial degree of instability may be imported from abroad, even if the monetary authorities follow consistent monetary and exchange rate policies. In November 2014, for instance, the CBN devalued the national currency (naira) by fixing the exchange rate at N168 to a dollar due to the falling price of crude oil in the international market. Falana (2015) noted that the CBN governor, Mr. Godwin Emefiele explained the basis of the devaluation, stating that “falling oil prices have consistently reduced the accretion to external reserves, thus constraining the ability of the bank to continually defend the naira and sustain the stability of the naira exchange rate”. Furthermore, the unrestricted and over-bearing demand for foreign currency by Nigerian politicians and business class is exerting a lot of pressure on the naira which is having an adverse effect on the strength of the naira and its purchasing power. The pressure on the dollar has been increasing especially due to unprecedented demand from politicians during election periods in the country, particularly the March and April, 2015 Presidential and gubernatorial elections due to the convenience it offers for moving large sums of money to facilitate transactions during the electioneering campaigns (Falana, 2015).

One implication of these events is the potential increase in the currency substitution index (CSI) or the dollarization ratio (DR) in Nigeria. Based on the data obtained from CBN Statistical Bulletin, the trend of currency substitution in Nigeria started at a slower pace and is moving gradually at an increasing rate. In 1986, for instance, CSI was 2.85%, but increased to 4.5% and 5.29% in 1990 and 1994, respectively. It fell to 2.98% in 1995 and peaked up in 1996 to 3.3% and has continued to fall to 1.57 in 1999. The low dollarization experienced in 1999 can be attributed to the period of general election which brought about the transition of military rule to democratic rule in the country. In 2002, it rose to 9.6% and this may be explained by the reintroduction of the Dutch Auction System (DAS). The ratio continued to increase as follows: 10.04% in 2004, 19.69% in 2013 and 24.49% in 2014 (Abdullah, 2015).

In view of the above problems, it is important to know the extent of currency substitution in Nigeria, factors determining it and how it can affect the growth of the economy. This study will improve our understanding on the behaviour of money demand functions in an emerging market economy where more than one currency co-circulates. Aside from this, the study will be an eye opener in showing the relationship between currency substitutions, exchange rate and inflation rate since inflation is a key macroeconomic variable that determines the growth rate of an economy.

1.3 Research Questions

The following research questions are raised for this study:

1. What is the trend and extent of currency substitution in Nigeria?
2. What are the factors determining the existence of currency substitution in Nigeria?
3. How can high rate of currency substitution depreciate the local currency?

4. How can the use of foreign currency result into high rate inflation?
5. To what extent do political cycles (election period) contribute to currency substitution in Nigeria?

1.4 Objectives of the Study

The broad objective of this study is to examine the effect of exchange rate volatility and currency substitution on Nigeria economy. Specifically, the study seeks to examine:

1. the relationship that exist between exchange rate volatility, currency substitution and the rate of inflation in Nigeria.
2. the effect of exchange rate fluctuation on Nigeria Gross Domestic Product.
3. the impact of currency substitution on the growth rate of Nigeria economy.

1.5 Justification for the Study

Research attempts into causes and effects of currency substitution and exchange rate fluctuation have been diverse and highly controversial especially in the developed, emerging market and transitional economies of the Latin America and Asia (for example, Rogers, 2006; Sahay and Vegh, 2007; Savastano, 2005, Reinhart, Rogoff and Savastano, 2003, Yeyati, 2006, e.t.c.). The volume of studies reflects the fact that currency substitution is a subject with global effects, which merits the attention of academics and policy-makers alike (Corrado, 2008). However in the African context, prominent attention has not been given to the study of currency substitution. For example, direct studies on currency substitution in Nigeria have been rare. Oresotu and Mordi (2002) tested the existence of currency substitution by including exchange rate as one of the explanatory variables in the aggregate money demand functions. Their result points to the existence of currency substitution in Nigeria.

Specific studies addressed to the issue of currency substitution were Olomola (2004) and Akinlo (2003). The main feature of these studies is that they were dedicated to the determination of the existence or otherwise of currency substitution in Nigeria at the expense of the effects it may have for public policy in general and monetary policy in particular. These however force this study to advance the work of previous literature by incorporating the effect of exchange rate fluctuation and currency substitution on growth and development on Nigerian economy. With respect to methodological approaches, most of the studies concentrate on money demand in Nigeria generally, and currency substitution in particular, relied on single equation modeling approach that arbitrarily assumes one variable to be dependent on others.

The contention here is that causality between currency substitution and hypothesized determinations may be bidirectional (Yinusa, 2007) and as such, single equation modeling approach may be inappropriate. In fact, Sims (1980) argues that with simultaneity among variables, the process of classifying variables as endogenous or exogenous is arbitrary. Therefore, this study relies on a more robust dynamic modeling methodology based on Vector Auto regression (VAR) where all the variables are treated as endogenous. This approach is most appropriate for this study since it facilitates the

computation of impulse-response functions, which assists in assessing the response of currency substitution and exchange rate volatility to monetary policy within a dynamic framework. Also, the variance decomposition allows one to determine the relative importance of the identified variables in explaining currency substitution and exchange rate volatility as it affect economic growth in Nigeria.

1.6 Scope of the Study

This study focus on the effect of exchange rate and currency substitution on Nigerian economy using an annual data for the period between 1981 to 2014. The choice of this period coincides with the adoption of flexible exchange rate system and also captures the major exchange rate volatility in Nigeria as well as the results obtained from the currency substitution index, which must be taken with caution because the index represents the lower bound of currency substitution in Nigeria. As sizable amounts of foreign currency are held in form of cash and cross border deposits, which cannot be captured in this study for lack of data.

2.0 LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Meaning of Currency Substitution

There is no consensus in economic literature on the definitions of currency substitution. The term dollarization is often used interchangeably with currency substitution. Even though widely used as synonyms, different authors use the terms in different ways. Dollarization is not a mere reference to the United States Dollar (USD), but rather, it is a generic term used to characterize the use of any foreign currency that effectively serves as replacement for a national currency (Kessy, 2011). Calvo and Vegh (2012) defined dollarization as the use of foreign currency to fulfill the store of value and unit of account functions of money in an economy. Currency substitution may be viewed as the substitution between currencies as a medium of exchange and means of payment. The substitute currency is typically the currency of a major trading partner or an important industrial power with a reputation of sound monetary policy. The foreign currency may serve as a means of transaction, unit of account and store of value to the domestic economy. Adam (2013) defines dollarization as the extensive use of foreign currency in a country, either in place of the local currency or alongside it.

Therefore, the concept of dollarization/currency substitution used in this study refers to the use of foreign currency either in place of the domestic currency or simultaneously to fulfill the three functions of money: as a medium of exchange, unit of account and store of value in an economy. Although, the concept of dollarization was coined with reference to the USD, the conversion to any stable foreign currency such as the European euro, Japanese yen, German Deutch mark, may be referred to as dollarization. Meyer (2010) distinguishes three types of dollarization/currency substitution and they are:

(i) Official Dollarization or Full Currency Substitution

This is a situation whereby a country adopts a foreign currency as its sole legal tender, and negates to issue the domestic currency or it abandons its domestic currency for a foreign currency. Official

dollarization is also referred to as *de jure* (by law) currency substitution. It implies a complete replacement of the domestic currency by a foreign currency. Whereby, the chosen foreign currency becomes a legal tender. The dollarized country adopts the central bank's monetary policy of the dollarizing country.

(ii) Semi-Official or Officially Bi-Monetary Systems

This is a scenario where both domestic and foreign currencies are freely used in the domestic economy. Both the foreign currency and domestic currency are legal tender and therefore used simultaneously. The country retains a domestic central bank or other monetary authority and has the right to conduct their own monetary policy. Semi officially dollarized countries are those that are identified as having foreign currency as additional legal tender. This means that foreign currency circulates widely but plays a secondary role relative to the domestic currency (Balino, Bennett and Borensztein 2010). Countries that opt for semi-official dollarization are either small countries that rely on large neighboring economies for a significant share of their income and trade.

(iii) Unofficial Dollarization or Partial Currency Substitution

This is the most popular type of dollarization. It is a scenario in which residents of a country choose to hold a significant share of their financial assets denominated in foreign currency, but the foreign currency is not a legal tender. Foreign currency is widely used in private transactions, but the local currency remains the only legal tender. Foreign currencies are held perhaps due to the relative weakness of the local currency. The practice might be widely accepted in that country, but is not classified as legal tender by the country's government. Unofficial dollarization is also referred to as *de facto* currency substitution (which means in practice but not necessarily ordained by law).

The country retains a domestic central bank or other monetary authority and has the right to conduct its own monetary policy. Unofficial dollarization can include holding any of the following; foreign bonds and other non-monetary assets generally held abroad, foreign currency deposits abroad, foreign currency deposits in the domestic banking system or foreign notes (paper money) in wallets and mattresses, which is foreign currency in the hands of public. Ize (2010) identified three types of unofficial dollarization within the context of the functions of money and they are; (i) transaction dollarization (also known as currency substitution) which is the use of foreign currency for transaction purposes or as a means of payment, (ii) Financial dollarization (also referred to as asset substitution) which consist of residents holdings of financial assets or liabilities in foreign currency; and (iii) real dollarization; which is the setting of local or domestic prices and /or wages in foreign currency.

Dollarization often reflects a history of macroeconomic instability. The decision to dollarize is made, in part, because a country is undergoing macroeconomic turbulence such as high inflation and devaluation of its currency. Economic agents tend to lose confidence in the domestic currency and would prefer their money holdings to be denominated in foreign currency whose value is relatively more stable. By deciding to use foreign tender, they are protecting against possible devaluation of the local exchange rate (domestic currency). The literature suggest that the main driver of currency substitution in

many countries is the attempt by residents to protect the value of their wealth and income from being eroded by inflation and exchange rate depreciation (Levy-Yeyati 2011 and Yinusa 2012). Macroeconomic instability especially high episodes of inflation have left some countries with no option but to dollarize their economy. Examples are Ecuador, Panama and Zimbabwe which due to the hyperinflation experienced in the country made them to embrace full dollarization.

2.1.2 Approaches to Exchange Rate

Exchange rate is the price of one currency in terms of other currencies. Exchange rate is any other price which is determined by the force of demand and supply in a perfectly competitive market and in a world where free international exchange is the rule (Elumelu, 2012). Exchange rate plays vital role in the management of an economy. It helps in ensuring international exchange of goods and services as well as achieving and maintaining international competitiveness and hence a viable balance of payment position. The exchange rate, which is a price of the domestic currency in terms of other currency, is usually determined in principle by the interplay of supply and demand in a free market environment.

In practice, no currency is allowed to float freely by the monetary authorities, so nation's monetary authorities regulate currency between the fixed and floating exchange rate systems and other regimes, such as dual managed. In Nigeria, according to Obadan (2012), past exchange rate policies have been designed with a bias towards demand management, as the supply side has always been limited by the monoculture base of the economy, where foreign exchange inflow is dominated by oil export proceeds. Olisadebe (2010) expressed that the naira exchange rate given its macro-economic impact, especially Nigeria is perhaps one of the most widely discussed topic today.

One of the worrisome development in the naira exchange rate in recent years, especially since the introduction of the Structural Adjustment Programme(SAP) in 1986, is that it has continued to depreciate as a result of which some people have called for fixing of the exchange rate even at a par with the united states dollar. On the equilibrium of exchange rate, the author remarked that such rate ensure the simultaneous attachment of internal and external balance. Ogo (2011), cites that the exchange rate should be in principle and be left to the market forces of demand and supply. They further emphasized that in practice, no government would really hands off completely the determination of the exchange rate at some levels, which is often different forces of the competitive market rate. This policy, which is often different from domestic political pressure, led to persistent excess demand for relatively cheap import. It is argued that heavy debt burden being born by the African country has a depressive impact on the economy, stifling growth, purchasing and productive capacity, social problems created, having tremendous increase in the sector of debt services payment coupled with the reduction in foreign earnings.

According to Obadan (2012), a depreciation (or devaluation) of the domestic currency may stimulate economic activity through the initial increase in the price of foreign goods relative to home goods. By increasing the international competitiveness of domestic industries, exchange rate depreciation diverts spending from foreign goods to domestic goods. The success of currency depreciation in promoting trade balance largely depends on switching demand in proper direction and amount, as well

as on the capacity of the home economy to meet additional demand by supply of more goods. Ayida (2011) disclosed that despite the huge amount of foreign exchange, which the banks inject into the market, the impact has not been felt in the real sectors of the economy. Random surveys have revealed that an appreciable proportion of total foreign exchange demand is for the procurement of finished goods and payment.

2.1.3 Approaches to Exchange Rate Fluctuations

Exchange rate fluctuations are caused by changes in the demand and supply of the currency in the FOREX market. When demand exceeds supply, the exchange rate will appreciate and rise in value. If however the supply exceeds demand, the exchange rate falls in value and depreciates. In the long-run, changes in the demand and supply of a currency depend on changes in the value of imports and exports as well as long-term capital flows such as foreign direct investments (FDI). The determinants of these changes over time on different economies include: rates of inflation, interest rates, economic growth, labor productivity and measures of international competitiveness. There are situations in which flexible exchange rates may be described as too volatile. That is, exchange rates can be fully consistent with fundamental economic variables, such as relative prices, and macroeconomic policies, while still responding excessively to shocks to those variables before adjusting gradually to new long-term equilibrium levels. Such exchange rate 'overshooting' may occur because international capital markets adjust almost instantaneously to shocks, while goods and services markets adjust slowly (Dornbush, 2010).

According to Solnik (2012) most currency crises have the following pattern. First, the country runs a growing current account deficit. Thus, the currency is regarded as overvalued by PPP standards. In instances where foreigners were investing in a —booming economy and lending to local firms at attractive interest rates this capital account surplus is covered up by the current account deficit. However, once prospects for economic growth weaken and uncertainty builds, these foreign investors begin to exit the market. As investors exit, the current account deficit is revealed, and governments are forced to raise interest rates to attract capital. These high interest rates slow the economy and hurt economic prospects furthering the need for capital control measures. At this instance the IMF often steps in to provide additional reserves; and since markets begin to become highly speculative the country is forced to devalue its currency or let the exchange rate float. This process can create a vicious cycle where currency depreciation leads to increased inflation which leads to further depreciation of the currency.

2.1.4 Types of Exchange Rate

Spot Exchange Rates

The spot exchange rate is the rate existing in the market at any given moment. It can be considered as the rate of exchange for immediate delivery of the currency. The spot rate will change all the time according to the changes in supply and demand in the market.

Forward Exchange Rates

The forward exchange rate is a rate for a given time in the future. A price is agreed now for an exchange at some time in the future (often 3 months or so). Whatever happens to the spot rate between now and then, the contracts will be met at the rate that was agreed. Companies may use the forward market to protect themselves against the foreign exchange risk. They know they can buy at a guaranteed rate for the future, and so can plan ahead. This process is called 'hedging' against risk. The existence of the forward market also creates the potential for speculation. Depending on the reason for buying or selling the currency the dealer could end up better off or worse off.

Purchasing Power Parity

The purchasing power parity exchange rate is the exchange rate between two currencies, which would enable exactly the same basket of goods to be purchased. In other words, the rate at which purchasing power will be the same in both countries. The PPP rate is often used when trying to work out consistent measures between countries like GDP or standard of living. It will generally be different to the actual equilibrium exchange rate, though it will be a factor influencing it.

Effective Exchange Rate

The effective exchange rate is also called the 'sterling index' or perhaps the 'sterling trade-weighted index'. It is an exchange rate calculated from a basket of currencies, and can perhaps best be thought of as an average exchange rate. Each of the currencies included is weighted according to its importance to us.

Free or pegged

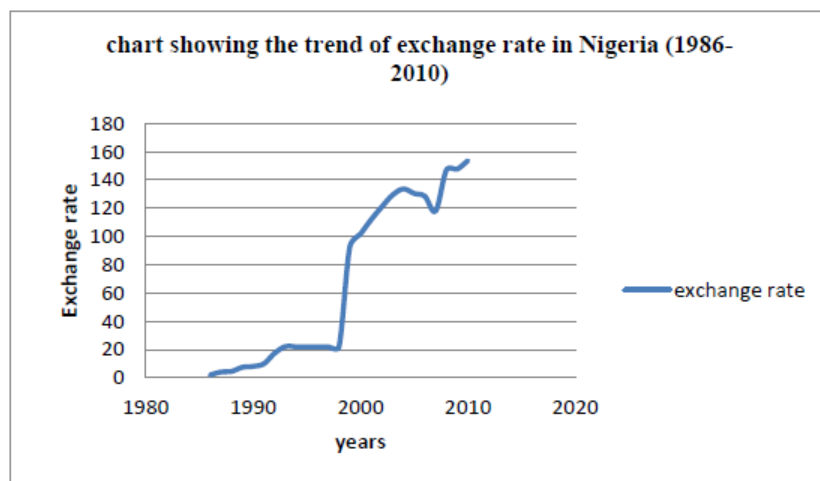
If a currency is free-floating, its exchange rate is allowed to vary against that of other currencies and is determined by the market forces of supply and demand. Exchange rates for such currencies are likely to change almost constantly as quoted on, financial markets mainly by banks, around the world. A movable or adjustable peg system is a system of fixed exchange rates, but with a provision for the devaluation of a currency. For example, between 1993 and 1998, the Nigeria Naira (NGN) was pegged to the United States Dollars at N22 to \$1. Nigeria was not the only country to do this, from the end of world war two until 1966, Western European countries all maintained fixed exchange rates with the US dollar based on the Bretton Woods system.

2.1.5 Snapshot of Exchange Rate Regime in Nigeria

The Nigerian government adopted the Nigerian pound since 1959 until 1973 where it was changed to Naira. In 1971 the Nigerian authorities chose not to devalue its Nigerian pound during the devaluation process of the American dollar and this resulted in the appreciation of the Nigerian pound dollar exchange rate \$2.80-\$3.80 to the naira pound. In 1973 the naira replaced the Nigerian pound and then Nigeria devalued at the same rate with the US which caused the exchange rate to be \$1.52. The year 1986 was a transformational year in the exchange rate policy of Nigeria it was characterized by the introduction of the structural adjustment program (1986) that was put in place to address the structural imbalance in the economy in order to attain a structural transformation in the economy, Omojimité (2010). By 1994, the federal government fixed the exchange rate at \$22 to a US dollar which implies a

shift from the flexible regime of 1986. The foreign exchange market was liberalized in 1995 and it saw the introduction of autonomous foreign exchange market (AFEM) for sale of foreign exchange dedicated to this market by government as well as purchase of foreign exchange by the Central Bank of Nigeria (CBN) from the oil companies, Alao (2010). An Inter-Bank foreign Exchange Market (IFEM) was introduced on October 25, 1999. The operation of the IFEM, however, experienced similar problems and setbacks as the AFEM. The CBN thus, re-introduced the Dutch Auction System (DAS) to replace the IFEM Sanusi (2004).

Figure 1: Exchange Rate trend in Nigeria



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The graph above (figure 1) shows the exchange rate trend in Nigeria from 1986 to 2010. The graph indicated an upward movement in exchange rates from 1986 to 1993 after which the exchange rates became stable up to 1998. In 1998, there was a sharp rise in exchange rate from approximately 22 Naira per Dollar to 92 Naira per Dollar and continued to rise steadily up to 2004 and started decreasing from 2005. This downward trend continued for three years where in 2007 the exchange rate of Naira was 118 per one Dollar. From 2008 to 2010 exchange rates rose from 147 to 154 Naira (approximately) respectively per one Dollar and more recently it risen to 199 Naira per dollar in 2015 with a projected rate of 160 Naira in 2020. Thus, generally, exchange rates in Nigeria show an upward trend throughout the post SAP period with the exception of 2005, 2006 and 2007 when the country experienced decrease in exchange rates

2.1.6 Exchange Rate Volatility and Growth of an Economy

The role exchange rate plays in an economy cannot be undercut, this is because it directly affect all the macroeconomic variables such as: domestic price indicator, profitability of traded goods and services, allocation of re-sources and investment decisions, which in turn accounts for the reason why the

monetary authorities and private sectors seeks to ensure the stability in these variables as opined by (Ajakaiye, 2001). As a matter of fact, exchange rate fluctuations are now the bedrock for all economic activities globally, depicting adequate management of this variable as a major determinant of many countries economic policies as buttressed by (Todaro, 2010). Exchange rate is also an essential macroeconomic variable for formulating economic policies in general. This is owing to the extent to which these policies help accelerate the realization of set macroeconomic goals. For instance, in Nigeria, these objectives among others include achieving and upholding price stability, balance of payment equilibrium, full employment, even distribution of income, economic growth and development at large.

Notably, excessive fluctuation in exchange rate creates uncertainty and risks for economic agents with destabilizing effects on the macro-economy. No wonder, the private sector operators are concerned about the exchange rate fluctuations because of its impacts on their portfolios and may result in capital gains or losses according to (Mordi, 2009). In line with the above, the study of Douglas (2011) noted that movements in the exchange rate are known to have ripple effect on other economic variables such as interest rate, inflation rate, unemployment rate, terms of trade, and so on. This claim was corroborated by Mordi (2009) where he pinpointed that exchange rate movements equally exerts effects on inflation, prices incentives, fiscal viability, exports competitiveness, efficiency in resource allocation, international confidence and balance of payments equilibrium. All of these factors underscore the importance of exchange rate to the economic wellbeing of every country that deals in the international trade of goods and services. In general, when a currency depreciates it will result in higher import prices if the country is an international price taker, while lower import prices result from appreciation. The potentially higher cost of imported inputs associated with exchange rate depreciation increases marginal costs and leads to higher price of domestically produced goods (Kandil, 2014). Further, import-competing firms might increase prices in response to foreign competitor price increases to improve profit margins. The extent of such price adjustment depends on a variety of factors such as market structure, the relative number of domestic and foreign firms in the market, the nature of government exchange rate policy and product substitutability (Sekkat and Mansour, 2009; Fouquin *et al.*, 2010).

In Nigerian context, most Nigerian manufacturing companies depend on imported inputs in the form of equipment, plant and machinery and other materials and given the fact that bulk of the country's foreign earnings is from oil earnings which accounts for over 87.6 per cent of the foreign exchange earnings in 2010 (Central Bank of Nigeria, 2010) thus revealing the extent of the vulnerability of these companies to swings in the exchange rate which is greatly affected by fluctuations in the oil price in the international market. Mohammad (2010) notes that the risks associated with volatile exchange rates are major impediments for countries such as Nigeria that attempt to develop through export expansion strategy and financial liberalization. Besides, Chong and Tan (2008) hint that the impact of exchange rate volatility on economic fundamentals is substantially great if an economy does not provide possible tools in hedging currency risk in its market place which unfortunately, is the case in Nigeria.

Furthermore, Chong and Tan (2008) argue that exchange rate volatility has a catalytic effect to various parties as well as countries.

One of the most dramatic events in Nigeria over the past two decades was the devaluation of the Nigerian Naira with the adoption of a Structural Adjustment Programme (SAP) in 1986. A cardinal objective of the SAP was the restructuring of the production base of the economy with a positive bias for the production of agricultural exports. The foreign exchange reforms that facilitated a cumulative depreciation of the effective exchange rate were expected to increase the domestic prices of agricultural exports and therefore boost domestic production. Significantly, this depreciation resulted in changes in the structure and volume of Nigeria's exports and imports. However, the volatility, frequency and instability of the exchange rate movements since the beginning of the floating exchange rate raise a concern about the impact of such movements on Nigerian manufacturing companies. Nigerian manufacturing sector has remained underdeveloped and is not showing significant growth despite the implementation of Structural Adjustment Programme (SAP). According to Delude (1999) apart from objectives not realized, exchange rate policy and management under Structural Adjustment Programme (SAP) have left some issues unresolved and/or created some distortions in the economy, one of which is deindustrialization.

A close look at the relative contribution of manufacturing production to Gross Domestic Product (GDP) before and after SAP shows that SAP, indeed, triggered a shrinking of the manufacturing sector in Nigeria. In 1980, manufacturing accounted for 8.4% of Gross Domestic Product (GDP). This relative share rose to 9.9% in 1983, and was still 8.7% in 1986 (Central Bank of Nigeria, 2010b). But, with the adoption of SAP, the manufacturing sector's relative share in GDP began to fall and reached a low of 5.29% in 1989 and fell further to 5% of the GDP in 1997 (CBN, 2010b). However, since enthronement of democracy in 1999, the contribution of the sector to GDP increased slightly to 9.6% in 2007 but fell to 7.6% in 2010 (CBN, 2010a). Apart from structural rigidity, poor quality of labour force, high interest rate, corruption etc (Delude, 1999) that is responsible for the poor performance of the sector, exchange rate volatility is also a major factor that affects its performance.

2.1.7 Exchange Rate, International Trade and Economic Performance

Any relationship between volatility and international trade could be driven by reverse causality, in which trade flows helps in stabilizing real exchange fluctuations thus reducing exchange rate volatility (Broda and Romalis, 2010). An increase in exchange rate volatility may be associated with either an increase or decrease in the volume of international trade depending on the source of the change in fluctuation. Also, increase of exchange rate volatility dampens international trade i.e. it reduces international trade. Also the effect of exchange rate misalignments on trade policy can be used in determining the relationship between exchange rate and international trade. The extent of the exchange rate may indirectly affect governments decisions regarding other policies especially those affecting international trade. Trade policies may be used to compensate for some of the effects of an overvalued

currency and countries may also be using trade policy as a substitute for exchange rate overvaluation, so as to deal with persistent disequilibria in the trade balance.

However, There is wide-spread opinion that increase in volatility has a negative impact on the volume of trade. In theory, the link between exchange-rate fluctuations and the volume of trade is drawn by the risk that firms face due to exchange-rate movements. The risk has an impact on decisions of the firms that are engaged in trade if the firms are assumed to be risk averse. The risk averseness means that the utility functions of the firms are concave in profits. Due to the risk, returns and expenses cannot be predicted with certainty if the trade contract is factorized in a foreign currency and the payments are not completely covered by financial instruments. Then, the risk induces firms to incur costs to avoid this uncertainty. Though, the expected profit decreases, they are able to reach a higher utility level by covering trade flaws (Bailey, et al. 1987). Exchange rate volatility can affect trade directly, through uncertainty and adjustments costs, and indirectly through its effect on the structure of output, investments as well as on government policies. Some characteristics of the indirect impacts are being considered as important background variables that have defined the relation and its firmness. The expected effect is paired with demand/supply elasticity to relative prices; an inelastic export demand/supply to relative prices makes uncertain the theoretical presence of nominal/real exchange rate effect on trade flows (Kroner 2012).

2.1.8 Institutional and Policy Developments on Currency Substitution in Nigeria

The Naira is the legal tender in Nigeria and use of any foreign currency instead of or along the naira is termed currency substitution or dollarization. Dollarization is a monetary policy that replaces the domestic currency in circulation with a foreign currency (especially US dollars). The institution responsible for issues regarding currency substitution is the Central Bank of Nigeria (CBN). The central Bank of Nigeria (CBN) is the apex regulatory authority of the financial system in the country. The Central Bank of Nigeria was established by the CBN Act of 1958 and commenced operations on July 1st, 1959. The core mandate of the Central Bank of Nigeria is to ensure monetary and price stability, issue legal tender currency in Nigeria, maintain external reserves to safeguard the international value of the legal tender currency, promote a sound financial system and act as a banker of last resort as well as provide economic and financial advice to the federal government (CBN, 2011).

Prior to the establishment of CBN, there existed a body known as the West African Currency Board (WACB). This board was established by the then British colonial government and was intended to serve as a central bank for the Anglophone West African countries. Thus, the board was charged with the primary responsibility of issuing the West African pound, which served as the legal tender currency in Ghana, Sierra-Leone, Gambia and Nigeria. On 1st July 1959, the CBN issued the Nigerian currency notes and coins and the West African Currency board notes and coins were withdrawn. The report submitted by the Decimal Currency Committee (DCC) in 1964 brought about the decimal currency, of which the major currency unit was called the naira which was equivalent to ten shillings, while the minor unit called kobo in 1973. As a result of the growth of incomes in the country and also the preference for cash transactions and the need for convenience, the N20 banknote was issued in 1977.

From 1979 to 2014, new currency notes and coins were issued and there have been several transformations with regards to issuing of local currency in Nigeria. The present paper banknotes in Nigeria are N100, N200, N500 and N1000 while the lower denomination notes (N5, N10, N20 and N50) are in polymer form. The incidence of the use of dollar in Nigeria may be traced to the adoption of the Structural Adjustment Programme (SAP) when the CBN official encouraged the opening of domiciliary account, allowing hotels to charge and accept dollars from foreigners. That was when Nigeria was in dire need of foreign exchange to meet accumulated foreign trade bills. This was followed by the high inflation rates which decreased the demand for naira and raised the demand for alternative assets, including foreign currency and assets. There are no restrictions on holding of foreign currency by residents or non-residents in Nigeria at the time. There are also no capital controls and Nigerians were free to maintain foreign currency accounts both at home and abroad, and businesses and individuals often hold naira and US dollar accounts in domestic banks.

In recent times the CBN had raised alarm over the use of dollar as a means of payment or legal tender in the local market in Nigeria as seriously affecting the value of naira as most Nigerians are fast losing confidence in the local currency as a store of value. Dollarization of the Nigerian economy was of serious concern to the CBN, the president and the Economic Management Team (Gabriel, 2012). Some of the proposed policies to help curb dollarization include; the Currency Restructuring Exercise tagged “**Project Cure**”. The project cure was designed to reduce cost of printing small currency notes and also to minimize dollarization of the Nigerian economy. The currency restructuring exercise ushered in the idea of introducing the N5000 note in order to check mate the practice of the movement of huge funds around the country in dollars and also to provide Nigerians with heavy cash transactions with higher denominations. However, this exercise did not survive following heavy criticisms it suffered. Some of the criticisms was that; i) it will promote expected inflation within the economy on one hand and positioning the Nigerian currency as worthless and without real economic value, thus promoting movement in the supply and demand for dollars by making economic agents believe that the dollar is stronger, ii) it was also viewed as a of promoting corruption and money laundering within and among the political class/political elite. There was the issue of observed deficiencies in the operation of Bureau De Change (BDCs) in Nigeria which had led to gross inefficiencies and sharp practices in the foreign exchange market. The CBN thought of considering stopping the cash sales of dollars to Bureau De Change, where members of the Nigerian public usually make their purchases of dollars in cash to make transactions within the country. The CBN proposed transactions between the apex bank and BDCs on the one hand and between BDCs and their customers on the other through an online platform. Furthermore, those who need to make payments outside the country would have the recipients paid directly from the bank accounts of the BDCs or take the option of buying travelers’ cheques.

In order to check and reduce the growing incidence of dollarization, rent-seeking, depletion of external reserves and financing of unauthorized transactions, the CBN provided a new set of modified guidelines for the BDC operators. They are (i)increase in the capital base of BDC operators from

N10million to N35million in a bid to maintain exchange rate stability and preserve the value of the domestic currency, (ii) mandatory cautionary deposit for BDC to N35million which shall be put in a non-interest yielding account in the CBN upon the grant of approval-in-principle, (iii) the application fees remain N100,000 while the issuing fees which was N500,000 was increased to N1million, (iv) the annual renewal fee for the foreign exchange dealers have been increased to N250,000 from N10,000 and; (v) the weekly allocation of foreign exchange to BDCs was reduced from \$50,000 to \$15,000. These new regulations have been criticized of being capable of sending many operators out of business as it had provided some Nigerians with job opportunities.

After the expiration of the deadline, some of the operators will not be able to do business. This will be as a result of not able to meet up with the capital requirement. The Association of Bureau De Change operators of Nigeria said the new capital requirement was too high and the deadline too short. However, these proposed policies/measures taken by the CBN to reduce or stop dollarization has not been effectively achieved. Most of the goods in the country are imported due to weak domestic productive capacity and these transactions are carried out in foreign currencies. Therefore, if the country's economic performance is driven by a strong industrial base, the naira will be strong compared to the dollar or other foreign currencies and economic agents will prefer to hold the domestic currency. However, anecdotal evidence suggests that economic agents feel safer to hold the US dollar as a store of value than the naira.

Another policy aimed at stabilizing the foreign exchange market and stimulating local production of goods and services, is that in May 2015 the CBN has barred importers of certain goods and services from accessing foreign exchange in the Nigerian market. The CBN directed all authorized FOREX dealers, BDCs and the general public against funding the importation of the classified items at the interbank market from the proceeds of exports and BDC sources. It went further to direct the BDCs not to fund import transactions in any form whatsoever, either by cash or wire transfer. However, the BDCs are only authorized to deal in foreign currency cash, and to sell not more than \$5,000 to an individual customer, and strictly for business travel/personal travel allowance, monthly mortgage payment, school fees abroad, credit card payment, utility bills and life insurance premium payments. Furthermore, another policy was the directive from the CBN urging banks to stop receiving foreign currency deposits. The CBN issued a circular to all deposit money banks warning them to desist from the collection of foreign currencies for payment of domestic transactions on behalf of their customers and the use of their customers domiciliary accounts for making payments for visible and invisible transactions (fees, charges, licences, etc) originating and consummated in Nigeria.

Nonetheless, the CBN explained that foreigners, visitors and tourists are encouraged to use their cards for payments or exchange their foreign currency for local currency at any of the authorized dealers' outpost including hotels. The banks have complied with the directives- and have stopped receiving foreign cash deposits but have stressed that customers can access their domiciliary accounts to withdraw but not to deposit. However, this practice may have implication to the economy as it may warrant

transferring such funds to overseas banks which is a huge disadvantage to the economic activities of the country.

2.2 Theoretical Review

Most of the empirical models used to determine the dollarization process are based on money demand models and portfolio balance models. The main theoretical underpinning of these models is that the demand for foreign currency depends largely on the interest rate differentials and the exchange rate risk. However, given the fact that the dollarization process in most countries cannot be completely explained by the money demand and portfolio balance models, these models have been extended to include other macroeconomic and institutional variables (Adam, 2013).

2.2.1 Money Demand Approach Theory

The macroeconomic foundation for the money demand function stems from two important functions of money, namely, medium of exchange and store of value. The implication of this is that economic agents are faced with the options of holding money partly cash and/or in form of assets. In this regard, changes in money demand are commonly explained in terms of the scale variable and the opportunity cost of holding it. Whereas the scale variable captures income or wealth on money demand, the opportunity cost variable refers to the substitution effect arising from the relative attractiveness of economic agents to investments assets (this impact is usually captured by the interest rate on assets which are close substitutes to money). From the foregoing argument, real money balances are usually expressed as a function of income and interest rate as follows

$$m/p = f(y, r)$$

Where m , p , y and r denotes money demand, price level, income and real interest rate respectively. In addition to the above money demand function, other variables are added relevant to a peculiar research. The currency substitution hypothesis states that the domestic demand for domestic money depends on the expected rate of depreciation, as well as the domestic rate of interest and level of income (Poloz, 2010). This is evident from the dollarization literature that, when the exchange rate is expected to depreciate, the expected return from holding foreign money increases, and the demand for domestic currency falls as individuals substitute foreign money for domestic currency (Yinusa and Akinlo, 2011, Bahmani-Oskooee and Techaratanachai, 2001, Doguwa, 2014). On the other hand, dollarization is also attributed to high inflation, which implies that countries where hyperinflation is prevalent tend to hold more of foreign currency which has a relatively stable value (Quispe-Agnoli and Whisler, 2006, Bailey, 2005).

The classical economists approach to the demand for money is inherent in the quantity of money. They emphasized the transactions demand for money in terms of the velocity of circulation of money. This is because money acts as a medium of exchange and facilitates the exchange of goods and services. They view the demand for money as a constant proportion of the level of transactions, which in turn, bears a constant relationship to the level of national income. Further, the demand for money is linked to

the volume of trade going on in an economy at any time. Thus, its underlying assumption is that people hold money to buy goods, there is full employment level of income, and it also assumed that money is transferable.

The Keynesian argued that money is not held for transaction purposes only but rather they formulated three motives for holding money (transactions, precautionary and speculative motive). The transaction motive for holding cash balances arises from the medium of exchange function of money in making payment for goods and services. Keynes relates the need of cash for current transactions of personal and business exchange. He postulated that the transactions demand for money is a direct proportional and positive function of the level of income. The precautionary motive relates to the desire to provide for contingencies requiring sudden expenditures and for unforeseen opportunities of advantageous purchases. Individuals, firms and government keep cash in reserve to meet unexpected needs. Individuals hold some cash to provide for illness, accidents, unemployment and other unforeseen contingencies. Similarly, firms keep cash in reserve to tide over unfavorable conditions or to gain from unexpected deals. The precautionary demand for money depends upon the level of income and business activity, opportunities for unexpected profitable deals, availability of cash, the cost of holding liquid assets in banks reserve, etc. Poloz (1986) modeled the currency substitution hypothesis by extending the theory of the precautionary demand for cash balances to a two-currency economy.

A three-asset model was presented in which transaction costs are explicit and an agent is faced with uncertain cash requirements in two different currencies. The agent chooses to hold a quantity of both types of cash, the relative quantities being influenced at the margin by movements in the rate of return on bonds and the expected rate of depreciation of the domestic currency. The speculative motive implies that economic agents hold money in order to secure profit. They tend to hold money for speculative purposes and as a liquid store of value that can be invested at an appropriate time in interest bearing bonds or securities. Bond prices are inversely related to the rate of interest. Keynes argued that, it is expectations about changes in bond prices or in the current market rate of interest that determine the speculative demand for money. Thus, the speculative demand for money is a decreasing function of the rate of interest. The higher the rate of interest, the lower the speculative demand for money and the lower the rate of interest the higher the speculative demand for money. The speculative demand for money is a function of income and interest rate. However, modern Keynesians (primarily attributed to the works of W. Baumol and J. Tobin) concluded that interest rate is not only a function of the speculative motive, but the transaction and precautionary motive as well. Baumol concentrated on transaction aspect of holding cash balances and explains the transaction demand for money from the perspective of inventory control or management. As firms keep inventory of goods and materials to facilitate transactions or exchange in the context of changes in demand for them, Baumol assert that individuals also hold inventory of money because it facilitates transactions of goods and services. Moreover, by holding money with them implies they have forgone interest which they could have earned if they had kept their wealth in savings or fixed deposits or invested in bonds. This interest income forgone is the cost of holding money for transactions purposes. Poloz (1984) extended the model

of Baumol transactions demand for money to an economy where transactions are conducted in two currencies. He included a third asset (foreign money) which is treated as a medium of exchange, a quantity of which is essential if the agent is to carry out planned expenditure.

Poloz noted that the degree of currency substitution might depend on several factors which could vary overtime, namely the sign and size of the expected rate of depreciation, the proportion of agents who adopt corner as opposed to interior solutions and the fraction of domestic economic activity which is carried out using foreign currency. Tobin opined that rational behavior on the part of the problem of what proportion of his portfolio of financial assets should be kept in form of money and interest bearing bonds. He asserts that individual behavior shows risk aversion. Thus, individuals tend to diversify their portfolio by holding a balanced combination of safe and risky assets. Individuals tend to prefer less risk to more risk at a given rate of return. As such, they tend to invest more on less risky assets. The monetarist approach to the demand for money proposed by Milton Friedman in his reformulation of the quantity theory of money assert that, the quantity theory is in the first instance a theory of the demand for money. It is not a theory of output or of money income, or of the price level.

The demand for money on the part of ultimate wealth holders is formally identical with that of the demand for a consumption service. He regards the amount of real cash balances (m/p) as a commodity which is demanded because it yields services to the person who holds it. Thus money is an asset or capital good. He argued that the demand for money depend on asset prices or relative returns and wealth or income. The demand for money function is symbolically stated as: $m/p = f(y, w, R_m, R_b, R_e, gp, u)$ where m is the total stock of money demanded, p is the price level, y is the real income, w is the fraction of wealth in non-human form, R_m is the expected nominal rate of return on money, R_b is the expected rate of return on bonds, including expected changes in their prices, R_e is the expected nominal rate of return on equities, including expected changes in their prices, $gp = (1/p)(dp/dt)$ is the expected rate of change of prices of goods and hence the expected nominal rate of return on physical assets, and u stands for variables other than income that may affect the utility attached to the services of money. The demand function for money leads to the conclusion that a rise in expected yields on different assets (R_b , R_e and gp) reduces the amount of money demanded by a wealth holder, and that an increase in wealth raises the demand for money.

2.2.2 Coddington's Portfolio Balance Theory Approach

The portfolio balance approach proposed by Cuddington (1983) emphasizes the allocation of wealth between different types of money and other assets simultaneously. In accordance with financial equilibrium in the presence of currency substitution, holdings of both domestic and foreign money are allowed. Individuals may also hold domestic and foreign bonds under the assumption of perfect capital mobility. The portfolio share of each asset is determined by the expected return on all assets and real income. As a result, Cuddington's model facilitated the empirical estimation of domestic money demand with the inclusion of both currency and asset substitution. Cuddington's further state that liquidity services model where economic agents determine currency substitution based on transaction costs and nominal interest rates, while unofficial dollarization was influenced by real return differentials, assets

risk characteristics and economic agent's attitude to risks. The model assumes perfect financial markets, where economic agents can borrow and lend on both the domestic and international markets without constraints. The model allows for the possibility of portfolio balance motives for currency substitutability.

The portfolio approach proposed by Cuddington's (1983) emphasizes the allocation of wealth between different types of currency and other assets simultaneously. In line with financial equilibrium in the presence of currency substitution, holdings of both domestic and foreign currency are taken into account. Domestic investors are allowed to hold their wealth in the form of four different assets: domestic money, domestic currency denominated non-monetary assets (which are referred to, for convenience, as domestic bonds), foreign bonds and foreign money. The portfolio share of each asset is determined by the expected return on all assets and real income. Thus, domestic residents' assets demands are:

$$\begin{array}{ll} Md = M(i, i^* + x, Y), & M1 < 0, M2 < 0, M3 < 0, M4 > 0 \dots\dots\dots 1 \\ Bd = B(i, i^* + x, Y), & B1 > 0, B2 < 0, B3 < 0, B4 < 0 \dots\dots\dots 2 \\ Fd = F(i, i^* + x, Y), & F1 < 0, F2 > 0, F3 < 0, F4 < 0 \dots\dots\dots 3 \\ Nd = N(i, i^* + x, Y), & N1 < 0, N2 < 0, N3 > 0, N4 > 0 \dots\dots\dots 4 \end{array}$$

Where M_d is the demand for domestic money, B_d is the demand for domestic bonds, F_d is the demand for foreign bonds, N_d is the demand for foreign money, i is the domestic interest rate on bonds, i^* is the interest rate on foreign bonds, x is the expected rate of depreciation of domestic currency, and Y is real income. Hence, $i^* + x$ is the expected return, including expected exchange rate changes, on foreign bonds held by domestic investors. The terms i , $i^* + x$, and x , therefore represent the expected nominal returns on domestic bonds, foreign bonds and foreign money, respectively from the domestic investors point of view. The nominal return on domestic (and foreign) currency is exogenously set at zero, as is conventional in such models. All asset demand functions depend on domestic income (Y). The domestic demand for both domestic and foreign currencies rise with an increase in domestic income.

According to the portfolio balance framework where domestic agents allocate their wealth among domestic money, domestic bonds and foreign bonds, the domestic money demand function should depend on the net return on foreign assets, $i^* + x$ in addition to the usual domestic interest rate and income variables. The level of total (domestic plus foreign) money balances is chosen based on the return(s) on nonmonetary assets (i , $i^* + x$ or both) and domestic income or some other scale variable. Also, the optimum currency composition is chosen solely on the basis of the expected rate of depreciation x . Thus, the net effect of an increase in the expected rate of depreciation is to increase the demand for both foreign money and foreign bonds. In the presence of currency substitution we expect to find a significantly negative coefficient. In the Cuddington's model, in order to distinguish the effect of the changes in the net return on foreign bonds from changes in the return on foreign money, $i^* + x$ and x are entered separately into the money demand regression equation. Consequently, it becomes possible to test whether expected depreciation affects money demand indirectly through $i^* + x$ (capital mobility or directly through x (dollarization) or both.

2.2.3 Purchasing Power Parity (PPP) Theory

The purchasing power theorem as posited by Kuttner & Posen (2006) assumes that the normal equilibrium rate of exchange existing between two inconvertible currencies is determined by the ratios of their purchasing powers; hence the rate of exchange tends to be established at the point of equality between the purchasing powers of the two currencies. In essence, when one country's inflation rate rises relative to that of another country, decrease exports and increases imports depress the country's currency. The theory attempts to quantify inflation-exchange rate relationship by insisting that changes in exchange rate are caused by the inflation rate differentials (Kara & Nelson, 2002). In absolute terms, PPP theory states that the exchange rate between the currencies of two countries equals the ratio between the prices of goods in these countries (Ndungu, (1997), implying that exchange rate must change to adjust to the change in the prices of goods in the two countries. However, the expected inflation differential equals the current spot rate and the expected spot rate differential (Kamin, 1997). The PPP in its simplest form asserts that in the long run, changes in exchange rate among countries will tend to reflect changes in relative price level. Kamin & Klau, (2003) are of the view that if exchange rates are floating, the observed movement can be explained entirely in terms of changes in relative purchasing power while if it is fixed, equilibrium can be determined by comparing satisfactory methods for:

- Explaining the observed movements in exchange rates for countries whose rates were floating
- Determining equilibrium parity rates for whose countries whose surviving rates were out of line with post war market conditions.
- Assessing the appropriateness of an exchange rate.

Despite criticisms of PPP theory, the theoretical foundation and explanation may sound reasonable and acceptable but its practical application in real situation may be an illusion, especially in the long run (Grigorian, 2004). The pitfalls notwithstanding, PPP theory is generally a sine-quo-non in the exchange rate determination literature, and continues to remain relevant in the determination of exchange rate among countries of the world (Nucu, 2011).

2.3 Empirical Review

There are several studies carried out on currency substitution either as single country specific or cross country studies. Different methods of analysis have yielded different results, sometimes sharply different, sometimes modestly. However, Selcuk (2003) studied currency substitution and emerging market economies using data for Czech Republic & Israel 1993-2000, Hungary: 1991-2000, Jordan 1994:1-2000, Poland 1997-2001, the Slovak Republic 1993-2001 & Turkey 1987-1999. He indicates that foreign currencies are strong substitutes for domestic currency in producing liquidity services in emerging economies.

Prock, Soydemir and Abugri (2003) investigate the extent of currency substitution in Argentina, Brazil and Mexico from October 1986 to June 2001. They found significant presence of currency

substitution in Argentina and Brazil. However, they attributed the lack of significant result for currency substitution in Mexico to its credible exchange rate and monetary policy as well as its relative financial stability. Similarly, Sharma, Kandil and Chaisrisawatsuk (2005) investigate the importance of the US dollar to six Asian economies as a substitute or complement to domestic monetary assets using quarterly data from 1977 to 1996. They argued that currency substitution is more affected by fluctuations in the exchange rate compared to interest rate fluctuations. Findings reveal that there is an increasing degree of currency substitution over time in every country except for Malaysia, where capital account controls are enforced. Furthermore, there was a higher degree of currency substitution in Japan, Korea and Singapore than in Indonesia, Malaysia and Thailand.

Bacha, Holland and Goncalves (2008) investigate the impact of systemic risks and financial dollarization on real interest rates in emerging economies. The data set spans 1996-2004 for 66 emerging and high income market economies and 33 dollarized emerging market economies. Bacha, Holland and Goncalves (2008) found that higher systemic risks induce both higher real interest rates and increase dollarization. Findings revealed that financial dollarization has a significant negative impact on real interest rate, but the economic magnitude of the impact is small for all sampled countries. Heimonen (2008) evaluate the substitution of a substitute currency that is Euros for dollars in the Estonian economy for the period April 1997 to November 2000. Findings revealed evidence of substitution between the dollar and euro related balances. The substitution between the dollar and euro is asymmetric in the short run while it was symmetric in the long run. Thus, it was also found that the elasticity of substitution rose whenever there was an increase in the relative interest rate of the dollar.

More so, Kabote, Vengesayi, Mamimine and Matarusu (2014) analyze the effects of dollarization on human resources in the hospitality industry in Zimbabwe for the period September 2012. They found that dollarization had positive impact on the performance of the hospitality industry in Zimbabwe. Findings showed that dollarization has brought happiness among hospitality employees, has brought about positive social change among hospitality staff and organizations and has caused great economic positive change which has led to improved performance of the hospitality industry. Alper and Karasulu (2007) assess the extent of currency substitution and its effects on exchange rate instability in Tanzania using monthly data for the period January 1987 to march 1996. They found evidence in conformity with the assertion that the higher the level of dollarization, the higher is the volatility of the exchange rate.

Elkhafif (2002) examine the dynamics of the currency substitution phenomenon in two Africa's emerging economies (Egypt and South Africa) using monthly data from 1991 to 2001. Result shows that currency substitution does exist, but its elasticity with respect to the exchange rate variable is larger in South Africa than in Egypt. The study finds a high degree of currency substitution for the Egyptian economy (51%) while the phenomenon was found to be insignificant in South Africa (less than 1% in 1991 and about 6% as at 2001).

Yinusa and Akinlo (2008) studied exchange rate volatility and currency substitution in Nigeria for the period spanning the first quarter of 1986 to the second quarter of 2005. They indicated the presence of currency substitution in the domestic banking system. A major factor that led to this was exchange rate volatility especially real parallel market exchange rate volatility. Findings show that currency substitution was low during the period and as such classified Nigeria as a moderately dollarized economy. Effiom and Samuel (2010) examine the vulnerability or immunity of the Nigerian economy to currency substitution using annual time series data from 1970-2008. Findings revealed persistent inflation and depreciation of the naira occasioned by exchange rate instability and monetary policy inconsistency, currency substitution has been a dominant feature of the Nigerian economy. Kalyoncu, Isik and Jelilov (2015) investigate whether currency depreciation in Nigeria has resulted in currency substitution away from the Nigerian Naira using annual time series data from 1980-2013. They found depreciation of the naira has resulted in a decline in holding of domestic currency, indicating the presence of currency substitution in Nigeria.

Doguwa (2014) examine the presence and existence of currency substitution, exchange rate volatility and their impact on economic growth in Nigeria using quarterly data from December 1994 to June 2014. Findings revealed that the behavior of the foreign currency/naira demand deposit ratio in Nigeria has been influenced by devaluation expectations and exchange rate risk as well as some of the policies been pursued since the advent of the democratic governance notably some of the political uncertainties during the Obasanjo and Yaradua-Jonathan presidency. Another study by Bawa, Omotosho and Doguwa (2015) examine the persistence of currency substitution in Nigeria using monthly time series data from 1990-2013. Findings revealed both the long run and short run models of currency substitution indicated that a ratchet effect has been detected in Nigeria, indicating that currency substitution in the country is quite persistent. Aigheyisi (2015) investigate the interrelationships among currency substitution, inflation and economic growth in Nigeria using annual data from 1994 to 2013. Findings revealed inflation and the growth of real Gross Domestic Product have no significant effects on currency substitution. But exchange rate and investment significantly affect currency substitution. Furthermore, some literature found inflation as a driving factor of dollarization.

2.4 Methodological Review

There are several studies that have been carried out by several researchers using different methodology on the relationship between currency substitution, exchange rate, and economic growth both in developed and developing economies. Selcuk (2003) used Generalized Method of Moments (GMM) to provide empirical evidence for currency substitution in emerging market economies using data for Czech Republic & Israel 1993-2000, Hungary:1991-2000, Jordan 1994:1-2000, Poland 1997-2001, the Slovak Republic 1993-2001 & Turkey 1987-1999. The study employed the use of secondary data from each of the country. The major variables used in the study are total money supply, GDP, as well as exchange rate. However currency substitution was measured by the total number of money in circulation (money supply), GDP was used to proxy economic growth while the exchange rate is used as a proxy for changes in emerging market

Prock, Soydemir and Abugri (2003) relied on co-integration and Vector Error correction (VEC) model to investigate the extent of currency substitution in Argentina, Brazil and Mexico from October 1986 to June 2001. The study employed the use of primary data using their monetary and institutional agencies as a study area. They found significant presence of currency substitution in Argentina and Brazil. However, they attributed the lack of significant result for currency substitution in Mexico to its credible exchange rate and monetary policy as well as its relative financial stability.

Similarly, Sharma, Kandil and Chaisrisawatsuk (2005) relied on the Morishima elasticity of substitution to investigate the importance of the US dollar to six Asian economies as a substitute or complement to domestic monetary assets using quarterly data from 1977 to 1996. Based on the method used findings reveal that there is an increasing degree of currency substitution over time in every country except for Malaysia, where capital account controls are enforced. Furthermore, there was a higher degree of currency substitution in Japan, Korea and Singapore than in Indonesia, Malaysia and Thailand.

Bacha, Holland and Goncalves (2008) investigate the impact of systemic risks and financial dollarization on real interest rates in emerging economies. The study employed the use of instrumental variable and panel data (random effect) method. Findings revealed that financial dollarization has a significant negative impact on real interest rate, but the economic magnitude of the impact is small for all sampled countries. Heimonen (2008) evaluate the substitution of a substitute currency that is Euros for dollars in the Estonian economy for the period April 1997 to November 2000. The study analyzed the secondary data employed using the error correction model (ECM) and Johansen co- integration method. Findings revealed evidence of substitution between the dollar and euro related balances.

Using the qualitative approach, Kabote, Vengesayi, Mamimine and Matarusu (2014) analyze the effects of dollarization on human resources in the hospitality industry in Zimbabwe for the period September 2012. The study research is descriptive in nature. The study is also explanatory and highly empirical as it embraces both quantitative methods of analyses and qualitative. Alper and Karasulu (2007) assess the extent of currency substitution and its effects on exchange rate instability in Tanzania using monthly data for the period January 1987 to March 1996. The study adopts the use of Exponential Generalized Autoregressive Conditional Heteroscedasticity (E-GARCH) model as a method of data analysis.

Yinusa and Akinlo (2008) studied exchange rate volatility and currency substitution in Nigeria for the period spanning the first quarter of 1986 to the second quarter of 2005. The study adopts the use of error correction model (ECM) as a method of data analysis. Based on the model adopted result show that currency substitution was low during the period and as such classified Nigeria as a moderately dollarized economy.

Doguwu (2014) used Vector Auto Regression approach to examine the presence and existence of currency substitution, exchange rate volatility and their impact on economic growth using quarterly data from December 1994 to June 2014. In addition, Bawa, Omotosho and Doguwu (2015) applied the bounds testing approach to co-integration and included a ratchet variable in the estimated ARDL to examine the persistence of currency substitution in Nigeria using monthly time series data from 1990-2013. Findings revealed both the long run and short run models of currency substitution indicated that a ratchet effect has been detected in Nigeria, indicating that currency substitution in the country is quite persistent.

2.5 Literature Appraisal

The chapter has attempted to review the effect of exchange rate on current account balance in Nigeria. However based on the nature of topic under review. The study derives the theoretical framework from the framework use by Cuddington's (1983) which as was modified by Aigheyis (2015). The framework serves as eye opener to the means of estimating the potential monetary instability problems of currency substitution and the properties of alternative definitions of monetary aggregates. However it was discovered from the framework that if foreign currency deposits are effectively regarded by the public as money, they should be included as part of the money stock for policy making purposes. In fact the FCD are included as part of quasi money in Nigeria. Alternatively, if the currency substitution problem is important, domestic money demand estimations that fail to account for the foreign currency component should be unstable. More so, the method used for the study was derive from the method used by Doguwu (2014). The justification for this is that the subject matter (economic growth) was observed in an analytical manner as well as examining the long run and short run impact of currency substitutions. More so, the short run and long run relationships between economic growth and other variables are identified by ECM model and Johansen Co-integration test respectively.

(a) Theoretical Framework:

This study framework relies on the portfolio balance model proposed by Cuddington (1983) which emphasizes on the allocation of wealth between different types of currency and other assets simultaneously. In line with financial equilibrium in the presence of currency substitution, holdings of both domestic and foreign currency are taken into account. Domestic investors are allowed to hold their wealth in the form of four different assets: domestic money, domestic currency denominated non-monetary assets (which are referred to, for convenience, as domestic bonds), foreign bonds and foreign money. All asset demand functions depend on domestic income (Y). The domestic demand for both domestic and foreign currencies rise with an increase in domestic income. However to establish the relationship between exchange rate volatility, currency substitution and economic growth, this study thus adopts the framework used by Aigheyis (2015). The study also estimated two additional specifications which alternates the inclusion of such variables as foreign interest rate, expected exchange rate depreciation, and crude oil price in the second model while dummy variables to capture election

years was included in the third model. A fourth specification simultaneously includes both oil price and the dummy variable. Thus, the models are specified as:

Model 1: Basic money demand model including exchange rate

$$Md/P = f(i, y, e) \dots \dots \dots (1)$$

Model 2: set out to achieve the second objective which includes foreign variables in addition to the basic model

$$Md/p = f(i, i^*, x, y, op) \dots \dots \dots (2)$$

Model 3: is to achieve the third objective

$$Md/p = f(i, i^*, x, y, D) \dots \dots \dots (3)$$

Model 4: the general model which incorporates all the variables in the models as above

$$Md/p = f(i, i^*, x, y, op, D) \dots \dots \dots (4)$$

Where Md is desired stock of nominal cash balance, p is general price level (Md/p) is also written as RM2 which is referred to as real broad money demand, e is the average official exchange rate of the naira with US dollar. i is the domestic policy interest rate, i^* denotes foreign rate of interest plus expected exchange rate depreciation, x is the expected rate of depreciation of domestic currency, y is real income, op is oil price and D is a vector of dummy variables used to capture election period. These dummies include 1983, 1993, 1999, 2003, 2007 and 2011. The stochastic form is:

Model 1

$$Md/p = \alpha_0 + \alpha_1 it + \alpha_2 yt + \alpha_3 et + ut \dots \dots \dots (5)$$

Model 2

$$Md/p = \alpha_0 + \alpha_1 it + \alpha_2 it^* + \alpha_3 xt + \alpha_4 yt + \alpha_5 opt + ut \dots \dots \dots (6)$$

Model 3

$$Md/p = \alpha_0 + \alpha_1 it + \alpha_2 it^* + \alpha_3 xt + \alpha_4 yt + \alpha_5 Dt + ut \dots \dots \dots (7)$$

Model 4

$$Md/p = \alpha_0 + \alpha_1 it + \alpha_2 it^* + \alpha_3 xt + \alpha_4 yt + \alpha_5 opt + \alpha_6 Dt + ut \dots \dots \dots (8)$$

Where real money balances, real income and crude oil prices are expressed in logarithm, ut is the error term and the α s are the estimate parameters. All other variables are as earlier defined. In order to ascertain the determinants of currency substitution and how it invariably affects the demand for domestic currency. The currency substitution index equation is specified as:

Model 5

$$\frac{FCD}{M2-CC} = f(i, i^*, x, y, op, inf, D) \dots \dots \dots (9)$$

Model 6

$$\frac{FCD}{DD+TCD} = \frac{f(i, i^*, x, y, op, inf, D)}{DD+TCD} \dots\dots\dots (10)$$

The stochastic form is:

$$\frac{FCD}{M2-CC} = \frac{\beta_0 + \beta_1 i_t + \beta_2 i_t^* + \beta_3 x_t + \beta_4 y_t + \beta_5 op_t + \beta_6 inf_t + \beta_7 D_t + u_t}{M2-CC} \dots\dots\dots (11)$$

$$\frac{FCD}{DD+TCD} = \frac{\beta_0 + \beta_1 i_t + \beta_2 i_t^* + \beta_3 x_t + \beta_4 y_t + \beta_5 op_t + \beta_6 inf_t + \beta_7 D_t + u_t}{DD+TCD} \dots\dots\dots (12)$$

Where all variables except interest rate and inflation rate are expressed in logarithm. Inf is inflation rate, FCD is foreign currency deposits in the domestic banking system, M2 is broad money supply, CC is currency in circulation, DD is demand deposits, TSD is time and savings deposits, all other variables are as earlier defined. FCD/M2-CC is also written as CSI1 and FCD/DD+TCD is also written as CSI2. However, in estimating the effect of currency substitution and exchange rate on economic growth, this study excludes foreign currency deposit in the domestic banking system, demand deposit from the model, though we have taken a cursory look into it. To incorporate the framework which involves economic growth the study adopts Doguwa (2014) model with some modifications. Thus adopts the model used by Doguwa (2014) is stated as follow:

$$GDP = F(EXR, MS) \dots\dots\dots (13)$$

Where GDP= Gross domestic product (as a proxy of growth rate)

EXR= Exchange rate (as a proxy of exchange rate fluctuation)

MS = Money supply (as a proxy of currency substitution)

In order to achieve the objective of the study, the present study adapts and modifies the above model by including inflation rate which is a key macroeconomics variable and a determinant of economic growth and as well respond to changes in exchanges rate movement and currency substitution. Thus the above model is modified as follows:

$$GDP = F(EXR, INF, MS) \dots\dots\dots (14)$$

Where GDP= Gross domestic product (as a proxy of growth rate)

EXR= Exchange rate (as a proxy of exchange rate fluctuation)

INF = Inflation rate

MS = Money supply (as a proxy of currency substitution)

(b) Method

Under the methodological review various types of research designs adopted by various authors, the various variables, tools to measure them and econometric techniques used by authors for statistical inferences of their studies were examined. For the methods to be adopted by the study, the works by Doguwa (2014) examine the presence and existence of currency substitution, exchange rate volatility and their impact on economic growth. The justification for this is that the subject matter (economic

growth) was observed in an analytical manner as well as examining the long run and short run impact of currency substitutions. More so, the short run and long run relationships between economic growth and other variables are identified by ECM model and Johansen Co-integration test respectively.

The current study adopts both ECM and Johansen Co-integration as method of data analysis. Also, in order to obtain veritable result VAR model will be used with the aid of E-views software econometric package for data analyses. The Vector Auto-regression model dominates the literature since it provides calculation of total government revenue and expenditure from one variable on the others through the Variance Decomposition Analysis. This study will however distinguish between long and short run effects of the variables in the model adopted.

The major variables of interest in the works of Doguwa (2014) during his analysis on the presence and existence of currency substitution, exchange rate volatility and their impact on economic growth were economic growth (proxy by GDP), exchange rate was used to proxy exchange rate volatility while money supply was used as proxy for currency substitution. All these variables were analyzed with the dependent variable being economic growth. For the sake of this current study, part of the above listed variables will be adopted while examining the effect of currency substitution and exchange rate fluctuation on Nigeria economy

(c) The A priori Expectation

After regression analysis was carried out on the works of Doguwa (2014) examine the presence and existence of currency substitution, exchange rate volatility and their impact on economic growth in Nigeria, findings revealed that the behavior of the foreign currency/naira demand deposit ratio in Nigeria has been influenced by devaluation expectations and exchange rate risk as well as some of the policies been pursued since the advent of the democratic governance notably some of the political uncertainties during the Obasanjo and Yaradua-Jonathan presidency. The current study aims to carry out regression analysis on the variables to be adopted and the findings of Doguwa (2014) are expected to be replicated in this present study. However, conclusions on the findings can't be made until the analysis is carried out. The econometric and mathematical form of the expected relationship between the dependent variable and the explanatory variable is given below:

$$GDP = F(EXR, INF, MS)$$

$$\frac{\Delta GDP}{\Delta EXR} > 0 \text{ there is a positive relationship between GDP and EXR}$$

$$\frac{\Delta GDP}{\Delta INF} > 0 \text{ there is a positive relationship between GDP and INF}$$

$$\frac{\Delta GDP}{\Delta MS} > 0 \text{ there is a positive relationship between GDP and MS}$$

$$B_0 < 0, B_1 > 0, B_2 > 0, B_3 > 0$$

3.0 RESEARCH METHODOLOGY

This chapter presents research methodology of the study. The research methodology is subdivided into research design, sources and methods of data collection, research hypotheses, model specifications, estimation techniques, a-priori expectations, criteria for decision making and data presentation.

3.1 Research Design

This research is descriptive in nature. The study is also explanatory and highly empirical as it embraces both quantitative methods of analyses and qualitative inquiry thereby providing an elaborate study on the effect of exchange rate volatility and currency substitution on Nigerian economy. The study proxy Nigerian economy with gross domestic product which is regarded as the dependent variable. While the study use exchange rate (Naira/Dollar) as a measure of exchange rate volatility, and money supply (M2) as a measure of currency substitution. Money supply is used as a proxy for currency substitution because currency substitution in an economy may be partial, semi or full substitution. Going by this, Nigeria is currently operating a partial currency substitution and data on the total value of foreign currency in circulation in real terms cannot be really estimated by the monetary authority since most of these foreign currencies are not really provided by the CBN. So therefore using money supply by will the best data to be used for this study. Aside this, most empirical literature adopt use of money supply as a measure of currency substitution, example such as Doguwa (2014), Adamu, (2016).

3.2. Sources and Method of Data Collection

Data used in this study are secondary in nature, source from the National Bureau of Statistics of Nigeria (NBSN), Central Bank of Nigeria (CBN) statistical bulletin (Various Issues). Other sources are textbook, journals, and seminar papers.

3.3. Re-Statement of Hypothesis

Hypothesis one

H₀ There is no relationship between exchange rate volatility, currency substitution and the rate of inflation in Nigeria.

H₁: There is relationship between exchange rate volatility, currency substitution and the rate of inflation in Nigeria.

Hypothesis Two

H₀: Exchange rate fluctuation does not have significant effect on Nigeria Gross Domestic Product.

H₁: Exchange rate fluctuation has significant effect on Nigeria Gross Domestic Product.

Hypothesis Three

H₀: Currency substitution does not have significant impact of on the growth rate of Nigeria economy.

H₁: Currency substitution has significant impact of on the growth rate of Nigeria economy.

3.4. Model Specification

This study relies on a Cuddington's portfolio balance model which emphasizes on the allocation of wealth between different types of currency and other assets simultaneously. In line with financial equilibrium in the presence of currency substitution, holdings of both domestic and foreign currency are

taken into account. Domestic investors are allowed to hold their wealth in the form of four different assets: domestic money, domestic currency denominated non-monetary assets (which are referred to, for convenience, as domestic bonds), foreign bonds and foreign money. All asset demand functions depend on domestic income (Y). The domestic demand for both domestic and foreign currencies rise with an increase in domestic income. However to establish the relationship between exchange rate volatility, currency substitution and economic growth, this study thus adopts the model used by Doguwa (2014). Thus, the model is stated as follow:

$$\mathbf{GDP} = \mathbf{F}(\mathbf{EXR}, \mathbf{MS}) \dots \dots \dots \mathbf{(I)}$$

Where **GDP**= Gross domestic product (as a proxy of growth rate)

EXR= Exchange rate (as a proxy of exchange rate fluctuation)

MS = Money supply (as a proxy of currency substitution)

In order to achieve the objective of the study, the present study adapts and modifies the above model by including inflation rate which is a key macroeconomics variable and a determinant of economic growth and as well respond to changes in exchanges rate movement and currency substitution. Thus the above model is modified as follows:

$$\mathbf{GDP} = \mathbf{F}(\mathbf{EXR}, \mathbf{INF}, \mathbf{MS}) \dots \dots \dots \mathbf{(II)}$$

Where **GDP**= Gross domestic product (as a proxy of growth rate)

EXR= Exchange rate (as a proxy of exchange rate fluctuation)

INF = Inflation rate

MS = Money supply (as a proxy of currency substitution)

The above model is however transform into a logarithm form to cover for the rate involved

$$\log \mathbf{GDP} = \mathbf{F}(\log \mathbf{EXR}, \log \mathbf{INF}, \log \mathbf{MS})$$

3.5. A Priori Expectation

This explains the signs and direction of the explanatory variables to confirm if it is in conformity with economic theory. Economically currency substitution and exchange rate volatility is expected to affect economic growth positively or negatively depending on the direction of fluctuation. Therefore, direct or indirect relationship is expected from exchange rate volatility, currency substitution and economic

growth. Thus, the econometric and mathematical form of the expected relationship between the dependent variable and the explanatory variable is given below:

$$\text{GDP} = F(\text{EXR}, \text{INF}, \text{MS})$$

$\frac{\Delta \text{GDP}}{\Delta \text{EXR}} > 0$ there is a positive relationship between GDP and EXR

$\frac{\Delta \text{GDP}}{\Delta \text{INF}} > 0$ there is a positive relationship between GDP and INF

$\frac{\Delta \text{GDP}}{\Delta \text{MS}} > 0$ there is a positive relationship between GDP and MS

$$B_0 \neq 0, b_1 > 0, b_2 > 0, b_3 > 0$$

3.6 Estimation Techniques

VAR Model is used with the aid of E-views software econometric package for data analyses. The Vector Auto regression (VAR) provides calculation of shocks from one variable on the others through the Variance Decomposition. This approach is most appropriate for this study based on the fact that VAR model has proven to be useful for describing the dynamic behavior of economic and financial time series and for forecasting. It often provides superior forecasts to those from univariate time series models and elaborate theory-based simultaneous equations models. Forecasts from VAR models are quite flexible because they can be made conditional on the potential future paths of specified variables in the model.

In addition to data description and forecasting, the VAR model is also used for structural inference and policy analysis. In structural analysis, certain assumptions about the causal structure of the data under investigation are imposed, and the resulting causal impacts of unexpected shocks or innovations to specified variables on the variables in the model are summarized. These causal impacts are usually summarized with impulse response functions and forecast error variance decompositions. Thus, the effect of currency substitution and exchange rate volatility on economic growth is therefore analyzed through the analysis of non-stationary multivariate time series using VAR models that incorporate co-integration relationship.

3.7. Data Estimation Criteria

Obtaining the numerical estimates of the parameter or coefficient of the model constitutes model estimation. It is based on the knowledge of the various econometric models, their assumption and economic applications. The vector autoregressive model method was used to estimate the parameter of the model by imputing the data into the relevant statistical package. Estimation is facilitated with the use of econometric view (e-view). The study adopts multiple regression models in obtaining the parameter

estimates, which will aid the determination of the relationship existing between explained variable and explanatory variables. Other relevant statistical test will also be carried out to determine the validity or otherwise of the hypothesis. In evaluating the model, the criteria employed are given below;

3.7.1 Statistical Criteria

This criterion determines the statistical significance of the individual parameter of the model.

T-test: T-test is used to verify the truth or falsity of a null hypothesis, the decision rule under this approach is based on the computed value of t- statistics from the data. Using a significant level of 0.05 the analysis and interpretation of T-calculated and T-tabulated will be based on the decision rule describe below:

When T-calculated is $> T$ -tabulated, accept H_1 reject H_0 when T-calculated is $< T$ -tabulated accept H_0

F-Test:

F-Test is used due to the existence of than explanatory variable. The F-test measures the overall statistical significance of the impact of the explanatory variable included in the model i.e. it will be used to test the simultaneous effect of explanatory variables on the explained variable.

If $F > F_{\alpha(k-1, n-k)} > df$ reject H_0

If $F < F_{\alpha(k-1, n-k)} < df$ reject H_1

The coefficient of determination (R^2):

The coefficient of determination, R^2 will be used. The goodness of fit of the regression to a data set is measured by the co-efficient of determination. R^2 measures the variation in the explained variable that is explained by variations in the explanatory variables. A high R^2 denotes a strong relationship between dependent variable and the explanatory variables, whereas a low R^2 denotes a weak relationship between dependent variable and the explanatory variables. It is however important to note that the R^2 is a summary measure that tells how the sample regression line fits the data.

F-statistic

This is used to test the joint significance of the explanatory variable on dependent variable. If the calculated f-value is greater than the theoretical tabulated f-value, it implies that the explanatory value is a joint significant factor explaining changes in the dependent variable.

3.7.2 Econometrics Analysis

Test for Unit Root

Unit root test is carried out to determine if the variables are stationary or otherwise; and if stationary, to determine their order of integration (i.e. number of times they are to be differenced to achieve stationarity). In standard econometric analysis using a time series data, it is expedient to conduct a stationary test; this is due to the fact that most time series data are non-stationary. The unit root tests was conducted using the Augmented Dickey Fuller test (ADF) and the Phillips Perron (PP) test; these two were conducted for the time series employed in the study. The Augmented Dickey Fuller (ADF) result and the Phillips Perron (PP) test show that all the variables are all integrated series of order I (1).

3.7.3 Co-integration test

Johansen system co-integration test is employed to determine the existence of co-integration between the predict and the predictors, on the basis of which the relationships can be estimated regardless of non-stationarity(Holly and Turner, 2010), once the unit roots test (above) shows that at least one of the variables is non-stationary. The test is necessary to establish the existence of any long-run relationships between the variables of interest even if any of them is non-stationary. Existence of Co-integration between the variables in a case where any of the variables is not stationary allows for estimation of long term relationship between the variables.

3.7.4 Granger Causality test

The Granger causality test is a statistical hypothesis test for determining whether one time series is useful in forecasting another. Ordinarily, regressions reflect "mere" correlations, but granger causality could be used to predict the future values of a time series using prior values of another time series. A time series X is said to Granger-cause Y if it can be shown, usually through a series of t-tests and F-tests on lagged values of X (and with lagged values of Y also included), that those X values provide statistically significant information about future values of Y.

3.7.5 The Vector Error Correction Model

This is based on vector autogressive framework; where an error correction term is incorporated into the model. The reason for the error correction term is the same as with the standard error correction model, it measures any movements away from the long run equilibrium and measures the speed of adjustment of the short run dynamics to the long run equilibrium time path. The coefficient is expected to be negatively signed, statistical significant and lie between zero and one.

4.0 DATA PRESENTATION AND ANALYSIS

This chapter presents data analysis result and interpretation of empirical findings on the study. As shown in the previous chapter, time series data on Real Gross Domestic Product, RGDP (dependent variable), and explanatory variables i.e. inflation rate, exchange rate, and money supply was adopted for the study. The data were analyzed with Econometric views (E-views) using various econometric techniques to ensure that econometrical justice is done to the research.

4.1 Presentation of Results

Correlation

	GDP	EXR	INF	MS
GDP	1.000000	0.979630	0.878815	0.864803
EXR	0.979630	1.000000	0.825288	0.823350
INF	0.878815	0.825288	1.000000	0.760471
MS	0.864803	0.823350	0.760471	1.000000

Source: Econometric Views 7

From the result above, there is 87.8% mutual correlation exist between gross domestic product and inflation rate, 86.4% mutual correlations between gross domestic product and money supply also 97.9% mutual correlations between exchange rate and inflation while 86.4% mutual correlations exist between exchange rate and money supply. This means there is a strong correlation between all the independent variables and the dependent.

4.2 Augmented Dickey Fuller Test

Variable	Levels	Critical Values		First differences	Critical Values		Order of Integration	Remark
logGDP	-0.3454	1%	-3.6463	-4.1632*	1%	-3.6537	I(1)	Stationary at 1 st difference
		5%	-2.9511		5%	-2.9571		
		10%	-2.6430		10%	-2.6174		
logEXR	-0.5073	1%	-3.6394	-5.8232*	1%	-3.6537	I(1)	Stationary at 1 st difference
		5%	-2.9511		5%	-2.9571		
		10%	-2.6143		10%	-2.6174		
logINF	-0.7833	1%	-3.6537	-6.3385*	1%	-3.6537	I(1)	Stationary at 1 st difference
		5%	-2.9571		5%	-2.9571		
		10%	-2.6174		10%	-2.6174		
		5%	-2.9762		5%	-2.9571		
		10%	-2.62742		10%	-2.6174		
logMS	-0.3462	1%	-3.6394	-5.8232*	1%	-3.6537	I(1)	Stationary at 1 st difference
		5%	-2.9511		5%	-2.9571		
		10%	-2.6143		10%	-2.6174		
		5%	-2.9571		5%	-2.9571		
		10%	-2.6174		10%	-2.6174		

Source: Econometric Views 7

The table above present the results of Augmented Dickey Fuller (ADF) test both in levels and first differences. In the case of the levels of the series, the null-hypothesis of the non-stationarity cannot be

rejected for all the series. Therefore, the levels of all the series are non-stationary which implies that these series have unit root. This result therefore shows that gross domestic product, inflation rate and money supply are non-stationary at levels but co-integrated and they all move together in their first differences. Therefore, we reject the null hypothesis and accept the alternative hypothesis because there is no unit root at first difference. Since the variables are stationary, it is paramount that we check if all the variables are co-integrated.

4.3 Johansen Co-Integration Test

Table below shows the result of Johansen co-integration test of two likelihood ratio test statistics: that is the trace statistic and the Maximum Eigen-value which is commonly used to determine the number of co-integration vectors in a study. Therefore, the estimation and the interpretation are shown below.

Unrestricted Integration Rank Test (Trace Statistics)

Hypothesized No. of CE(s)	Eigen value	Trace Statistics	0.05 Critical Value	Prob **
None *	0.551452	37.88462	29.79707	0.0047
At most 1	0.288355	11.42723	15.49471	0.1865
At most 2	0.006085	0.201408	3.841466	0.6536
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigen value	Trace Statistics	0.05 Critical Value	Prob **
None	0.551452	26.45739	21.13162	0.0081
At most 1	0.288355	11.22582	14.26460	0.1433
At most 2	0.006085	0.201408	3.841466	0.6536

Trace test indicates no cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: *Econometric Views 7*

According to the rule guiding Johansen Co-integration Test, we make decision by the result of Trace Statistics and the Max-eigen test, but when the result of this two test differs, we make use of the result from Trace Statistics. Recall that all the variables are $I(1)$, as evident from the unit root tests. In order to capture the extent of co-integration among the variables, the multivariate co-integration methodology is conducted. The trace test result that there is one (1) long-run equilibrium relationship of the variables (i.e. $r = 1$) respectively. The co-integration test result as evident in table above indicates that the dependent variable GDP is co-integrated with EXR, MS and INF; as such the test statistics strongly reject the null hypothesis.

From the result above, there is a negative and insignificant relationship between gross domestic product and inflation rate in Nigeria. This means that increase in inflation rate will bring about decrease in gross domestic product. If there is a unit change in inflation, the gross domestic product will decrease by 41.6%. Thus increase in the inflation rate will increase the price of goods and services, thereby invariably affecting the value of gross domestic product negatively. This therefore reduces the value of gross domestic product in the country. There is a positive and significant relationship between gross domestic product and money supply in Nigeria. This means that increase in money supply will bring about rise in the gross domestic product. If there is a unit change in money supply, gross domestic product will increase by 97.3%. More so, there is a positive and significant relationship between exchange rate and inflation rate in Nigeria. This means that increase in inflation rate will bring about a rise in exchange rate. If there a unit change in inflation rate, exchange rate will increase by 47.6%.

4.4 Error Correction Model

Vector Error Correction Estimates

Sample (adjusted): 1995 2014

Included observations: 20 after adjustments

Standard errors in () & t-statistics in []

Cointegrating Eq:	CointEq1
LGDP(-1)	1.000000

LEXR(-1) -0.024629
(0.00071)
[-34.5009]

LINF(-1) 0.019101
(0.00150)
[12.7233]

LMS(-1) -0.006375
(0.00097)
[-6.58622]

C -2.759047

Error Correction:	D(LGDP)	D(LEXR)	D(LINF)	D(MS)
CointEq1	0.344097 (0.63248) [0.54405]	27.03738 (8.68466) [3.11324]	-13.68628 (11.1601) [-1.22636]	65.04475 (97.1385) [0.66961]
D(LGDP(-1))	0.810325 (1.17187) [0.69148]	-32.30859 (16.0911) [-2.00785]	5.895688 (20.6777) [0.28512]	175.7973 (179.980) [0.97676]
DL(GDP(-2))	-0.045695 (1.18898) [-0.03843]	6.954764 (16.3262) [0.42599]	17.02504 (20.9798) [0.81150]	20.66671 (182.609) [0.11317]
D(LEXR(-1))	-0.011496 (0.01356) [-0.84758]	0.406446 (0.18624) [2.18236]	0.098583 (0.23933) [0.41192]	-1.312944 (2.08312) [-0.63028]
D(LEXR(-2))	-0.001489 (0.01443) [-0.10318]	-0.238681 (0.19811) [-1.20479]	-0.264166 (0.25458) [-1.03766]	0.410180 (2.21587) [0.18511]
D(INF(-1))	0.015831 (0.01538) [1.02903]	-0.505864 (0.21124) [-2.39472]	-0.386191 (0.27145) [-1.42268]	2.230931 (2.36274) [0.94421]
D(LINF(-2))	0.007278 (0.01710) [0.42564]	0.080219 (0.23480) [0.34164]	0.399799 (0.30173) [1.32503]	-0.131699 (2.62627) [-0.05015]
D(LMS(-1))	0.004224 (0.00733) [0.57624]	0.118074 (0.10065) [1.17306]	-0.026955 (0.12935) [-0.20840]	-1.502126 (1.12583) [-1.33424]
D(MS(-2))	-0.028177 (0.03374) [-0.83513]	0.933716 (0.46329) [2.01539]	-0.220987 (0.59535) [-0.37119]	1.079454 (5.18197) [0.20831]
C	0.007715 (0.01103)	0.113349 (0.15148)	0.089001 (0.19466)	-0.140373 (1.69433)

	[0.69931]	[0.74827]	[0.45722]	[-0.08285]
R-squared	0.864703	0.801707	0.391037	0.373010
Adj. R-squared	0.742937	0.623243	-0.157029	-0.191281
Sum sq. resids	0.000617	0.116251	0.191968	14.54364
S.E. equation	0.007852	0.107820	0.138553	1.205970
F-statistic	7.101301	4.492262	0.713486	0.661025
Log likelihood	75.49200	23.09860	18.08282	-25.19299
Akaike AIC	-6.549200	-1.309860	-0.808282	3.519299
Schwarz SC	-6.051334	-0.811994	-0.310416	4.017165
Mean dependent	0.008302	0.170544	0.098688	0.421000
S.D. dependent	0.015487	0.175658	0.128808	1.104917
Determinant resid covariance (dof adj.)		9.68E-11		
Determinant resid covariance		6.05E-12		
Log likelihood		144.7979		
Akaike information criterion		-10.07979		
Schwarz criterion		-7.889179		

The results of Error Correction Model (ECM) has negative sign (-0.8116) and the significance of the Error Correction term (ECM) indicated that there exist long run relationship between the variables and its takes few years to attain equilibrium. The ECM indicates a feedback of approximately 65.16% of the previous year's disequilibrium from long run elasticity of the explanatory variables. That is, the coefficient of the error correction term measures the speed at which the level of Gross Domestic Product adjusts to changes in the explanatory variables in an effort to achieve long run static equilibrium. It can be said therefore that the speed of adjustment is high. Therefore, the error correction term for gross domestic product has the right sign and does falls within the acceptance region of $-1 < \text{error correction} < 0$. Therefore, from the explanation above, the economy needs 81.16% mechanical adjustment for it to be at equilibrium.

4.5 Granger Causality Tests

Pairwise Granger Causality Tests

Sample: 1981 2014

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
logINF does not Granger Cause LogEXR	33	3.10938	0.0603
LogEX does not Granger Cause LOG INF		8.71940	0.0011
Log MS does not Granger Cause logEXR	33	0.18356	0.8333
EXR does not Granger Cause Log MS		0.34352	0.7122
LogMS does not Granger Cause LogINF	33	4.97500	0.0142
LogINF does not Granger Cause Log MS		0.02454	0.9758

LogINF does not Granger Cause log GDP	33	1.81686	0.1812
Log GDP does not Granger Cause Log INF		5.64309	0.0087
LogMS does not Granger Cause Log GDP	33	3.49383	0.0442
Log GDP does not Granger Cause Log MS		0.21812	0.8054
LogMS does not Granger Cause Log INF	33	4.97500	0.0142
LogINF does not Granger Cause Log MS		0.02454	0.9758

Source: Econometric Views 7

The Granger causality test was conducted using a lag length of 2. From the result, it shows that the null hypothesis that INF does not Granger cause EXR was accepted, whereas the null hypothesis that EXR does not Granger Cause INF was rejected. This means that within the period of this study, a unidirectional causality runs from INF and EXR. More also, the null hypothesis that MS does not Granger cause EXR was accepted and the null hypothesis that EXR does not Granger Cause MS was also accepted. This means that within the period of this study, no causality runs from MS and EXR. The Granger causality test was conducted using a lag length of 2. From the result, it shows that the null hypothesis that INF does not Granger cause GDP was accepted, whereas the null hypothesis that GDP does not Granger Cause INF was rejected. This means that within the period of this study, a unidirectional causality runs from INF and EXR. More also, the null hypothesis that MS does not Granger cause GDP was accepted and the null hypothesis that GDP does not Granger Cause MS was also accepted. This means that within the period of this study, no causality runs from MS and GDP.

4.6 Forecast Error Variance Decomposition

The series of analysis in the VAR methodology is the Forecast Error Variance Decomposition (FEVD). Here, we determine the percentage of variances in each endogenous variable that is determined by the other variables. This can help provide the amount of influence the endogenous factors exert on each other. The Forecast Error Variance Decomposition results are reported below;

Variance decomposition of MS

Period	S.E.	MS	INF	EXR	GDP
1	14.32765	100.0000	0.000000	0.000000	0.000000
2	19.48422	97.64225	0.225220	0.292042	1.840487
3	24.00896	86.94522	1.296140	4.745813	7.012830
4	27.82375	79.56354	1.322432	3.742534	15.37149
5	33.62281	67.91420	2.010909	11.86287	18.21202
6	37.49823	65.35915	1.913033	17.03418	15.69364

Variance decomposition of INF

Period	S.E.	MS	INF	EXR	GDP
1	10.77394	13.60246	86.39754	0.000000	0.000000
2	11.86998	12.72210	86.55349	0.724016	0.000402
3	15.15472	10.38254	55.36347	34.16568	0.088312
4	17.61648	7.829349	41.28822	47.49058	3.391855
5	22.92588	6.190585	41.47507	39.68925	12.64510
6	30.79116	4.830819	36.29257	50.49154	8.385073

Variance decomposition of EXR

Period	S.E.	MS	INF	EXR	GDP
1	0.571212	0.428405	0.065505	99.50609	0.000000
2	0.654602	2.315163	0.399437	82.69003	14.59537
3	1.238247	4.599710	20.48135	61.87923	13.03971
4	1.446364	4.678031	20.43578	65.30985	9.576340
5	2.032260	2.401029	17.97089	70.58293	5.045155
6	2.790272	1.466677	15.78038	77.64063	5.112315

Variance decomposition of GDP

Period	S.E.	MS	INF	EXR	GDP
1	3.208189	5.773592	0.043838	77.58146	16.60111
2	3.817146	19.22388	6.150421	61.74170	12.88400
3	5.920887	15.61331	23.05069	47.45907	13.87693
4	6.322277	15.32543	25.27660	46.26263	13.13533
5	8.509175	8.466894	19.23845	64.63598	7.658674
6	10.19686	7.388231	15.20887	69.19094	8.211950

Cholesky ordering: MS INF EXR GDP

The variance decomposition shows that the response of gross domestic product to a one standard deviation shock to positive inflation rate changes was significantly different from zero. This result confirms the expected behavior of economic agents in Nigeria, in the sense that even when inflation rise they would continue to demand for goods and services at the current price and this thus it has significant impact on gross domestic product in Nigeria. Exchange rate response to a change in inflation is positive and lasts until the end period. The increasing response of exchange rate for the first quarters after initial shock is significantly different from zero. The positive response of exchange rate to positive shocks in

inflation as a built-in stabilizer, mitigating the inflationary effects of increased money supply after a positive change in gross domestic product. The long-run decreasing trend, albeit not statistically significant, of money supply may be due to increased recurrent and capital expenditure.

The result of the variance decomposition further shows that shocks to inflation rate as presented in above accounted for about 49 per cent of change in money supply in the 1st quarter declining in effects to about 34 per cent in the 5th quarter, and further to about 33 per cent in the 6th quarter. Gross domestic product shocks contributed about 5 per cent of the change in money supply in the 4th quarter rising marginally to about 6 per cent in the 6th quarter. The contribution of exchange rate shocks to the change in gross domestic product is not very significant. The result shows a less than 1 per cent contribution over a six period. Exchange rate contributed an average of 5 per cent to gross domestic product over the 4th quarter to the 5th quarter.

The implication of the above analysis is that change in inflation rate have significant effect on the quantity of money supply. This means that high level of inflation is an indication that there is too much money chasing few goods. This however make monetary authorities to reduce the money in circulation through the reduction in capital project and investment, having an attendant effect on aggregate demand which will eventually reduce the level of the gross domestic product. More so, the contribution of exchange rate to gross domestic product was not very significant in the 1st quarter. It was also evident in the 1st quarter that the contribution of exchange rate on gross domestic products shocks shows a less than 1 per cent contribution, but shows an average of 5 percent the from the 5th quarter to the 6th quarter. This implies that change in exchange rate either positive or negative have effect on the gross domestic product majorly in a country where the exchange rate is not fixed.

4.7 Discussion of Findings

The Augmented Dickey Fuller Test showed that the levels of all the series are non-stationary which implies that these series have unit root. This result therefore shows that gross domestic product, exchange rate, money supply and inflation rate are stationary and they all move together in their first differences. The co-integration test result as evident in the analysis indicated that the dependent variable gross domestic product is co-integrated with money supply and inflation rate; as such the test statistics strongly reject the null hypothesis. From the above analysis; it was revealed that there exist a negative and insignificant relationship between gross domestic product and inflation rate in Nigeria. This means that increase in inflation rate will bring about decrease in gross domestic product. This is in relation with the research conducted by Udoh (2010) who lends support to the economy explanation of the effect of inflation rate on gross domestic product, he was of the opinion that a rise in inflation rate will increase

the price of goods, this will further results to decrease in aggregate demand thereby having a negative effect on the value of the gross domestic product.

Also there is a positive and significant relationship between exchange rate and inflation rate in Nigeria. This means that increase in inflation rate will bring about a rise in exchange rate which may result to the substitution of local currency. As shown from the result above, If there a unit change in inflation rate, exchange rate will increase by 42.6%. This result is line with the findings of Doguwa (2014) that persistent rise in exchange rate spread would raise economic agents' suspicion for possible devaluation of the local currency and therefore, may increase his desire for currency substitution. The implication of this is that the monetary authority will ensure that the spread between the official exchange rate and the parallel market rate is contained at any point in time.

Generally, it was realeved from the study that the monetary and real effects of currency substitution on economic activity will depend on the degree to which domestic currency is being displaced by foreign currency. Ortiz (2010) observes that "If the substitution process goes to the extreme of eliminating or substantially reducing the circulation of domestic coin and currency, the monetary habitat of the country will be changed". This implies giving up to the country issuing the substitute currency, the seniorage of money creation and eroding the base of the inflation tax. Even in less drastic situations, it has been pointed out in the currency substitution literature that substantial monetary instability might arise as a result of diversified currency holdings by domestic residents. The relevance of this substitution problem for monetary policy can only be evaluated empirically. The policy options suggested by the results is that if the government desires to reduce the rate of currency substitution in the economy, she should consider channeling efforts at enhancing the value of the local currency, and putting measures in place to expand the level of investment (domestic and foreign) therein, such as creating a conducive ambience for businesses to thrive, design and implementation of appropriate macroeconomic policies, infrastructural development, reduction in cost of doing businesses, etc.

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Exchange rate is an indication of the strength or value of currency; it determines the rate of currency substitution in an economy. Decrease in exchange rate value of the domestic currency (i.e. depreciation) reduces the attractiveness of the local currency vis-à-vis a foreign currency (of higher value), while currency appreciation in theory reduces the attractiveness of the foreign currency if the appreciation is

expected to be sustained. The existence of currency substitution in Nigerian economy have precipitate financial crisis. This is because it may lead to short-term foreign currency liabilities that are high relative to foreign exchange reserves of the banking system. In such conditions, an increase in foreign currency deposits held in domestic banks may increase the vulnerability of the banking system through the “balance sheet effect”. This study was conducted to ascertain the existence and effect of currency substitution and exchange rate volatility on Nigerian economy.

The study objectives were divided into broad and specific objectives. The broad objective examine the effect of exchange volatility and currency substitution on Nigerian economy while the specific objectives seeks to examime the relationship that exist between exchange rate volatility, currency substitution and the rate of inflation in Nigeria; the effect of exchange rate fluctuation on Nigeria Gross Domestic Product; and the impact of currency substitution on the growth rate of Nigeria economy. The research questions that were raised among other questions includes; the trend and extent of currency substitution in Nigeria; the factors determining the existence of currency substitution in Nigeria; the effect of exchange rate and currency substitution on money supply in Nigeria. The study justification was based on the gaps of past studies that were filled by this study and it's covered the period between 1981 and 2014. It was specifically justified on methodological and emperical ground. It gained strength after reviewing relevant literature, relevant empirical and methodological framework. Conceptual clarifications of the concept of currency substitution, fiscal policy and its measures i.e tax, public spending and public debt were explained. The resource course hypothesis and saver-spender theories were used for the study.

The study used experimental research design. The rationale behind the usage of the research design is because is a blueprint of the procedure that enables the researcher to test his hypothesis by reaching valid conclusions about relationships between independent and dependent variables. Thus, for the purpose of achieving the study objectives, The study proxy Nigerian economy with gross domestic product which is regarded as the dependent variable. While the study used exchange rate (Naira/Dollar) as a measure of exchange rate volatility, and money supply (M2) as a measure of currency substitution. Money supply is used as a proxy for currency substitution because currency substitution in an economy may be partial, semi or full substitution. The data for this study were obtained through secondary method of data collection . The study used the co-integration and Error Correction Model to estimate the long run relationship between exchange rate, currency substitution and economic growth. The choice of Error Correction is informed by the fact that it is useful in estimating short-term and long-term effects of one time series on another. The test for stationarity between the variables used for the study was done through the Augmented Dickey-Fuller test (ADF). The study found the existence of a long run equilibrium relationship among the variables employed. Furthermore, The Augmented Dickey Fuller Test showed that the levels of all the series are non-stationary which implies that the series have unit root. This result of the study also shows that gross domestic product, exchange rate, money supply and inflation rate are stationary and they all move together in their first differences.

The co-integration test result as evident in the analysis indicated that the dependent variable, gross domestic product is co-integrated with money supply and inflation rate; as such the test statistics strongly reject the null hypothesis. It was further revealed that there exist a negative and insignificant relationship between gross domestic product and inflation rate in Nigeria. This means that increase in inflation rate will bring about decrease in gross domestic product. Also there is a positive and significant relationship between exchange rate and inflation rate in Nigeria. This means that increase in inflation rate will bring about a rise in exchange rate which may result to the substitution of local currency. As shown from the result above, If there a unit change in inflation rate, exchange rate will increase by 42.6%. The implication of this is that the monetary authority will ensure that the spread between the official exchange rate and the parallel market rate is contained at any point in time.

5.2 Conclusion

Generally, the monetary and real effects of currency substitution on economic activity depends on the degree to which domestic currency is being displaced by foreign currency. Ortiz (2010) observes that If the substitution process goes to the extreme of eliminating or substantially reducing the circulation of domestic coin and currency, the monetary habitat of the country will be changed. This implies giving up to the country issuing the substitute currency, the seigniorage of money creation and eroding the base of the inflation tax. Even in less drastic situations, it has been pointed out in the currency substitution literature that substantial monetary instability might arise as a result of diversified currency holdings by domestic residents.

More importantly, evidence has shown that the relevance of currency substitution problem for Nigeria is not so much related to the choice of fixed versus floating exchange rates, but to the potential problems of short-run monetary instability that currency substitution can create. If the demand for domestic currency is strongly influenced by foreign variables, a substantial degree of instability may be imported from abroad, even if the monetary authorities follow consistent monetary and exchange rate policies. It is therefore important that policy makers in Nigeria have a realistic notion about the extent of currency substitution in the country and its potential impact on policy decision and the wider economy as a whole. More so, if the government desires to reduce the rate of currency substitution in the economy, she should consider channeling efforts at enhancing the value of the local currency, and putting measures in place to expand the level of investment (domestic and foreign) therein, such as creating a conducive ambience for businesses to thrive, design and implementation of appropriate macroeconomic policies, infrastructural development, reduction in cost of doing businesses, etc.

5.3 Policy Recommendation

The findings of this study prompted the following policy recommendations that may be considered given the current level of currency substitution and how it invariably affects the demand for domestic currency and growth of the economy.

Specifically, the finding provides important implications for monetary policy formulation and implementation. The monetary authorities in collaboration with the government should formulate policies that would promote the development of the domestic financial system, so also should measures be taken that will bring back the confidence of economic agents in the domestic currency by monetary authorities. If this is achieved, it will serve as an incentive to encourage domestic agents to store their assets and also find alternatives to holding money in the domestic economy. To this end, these measures may even bring back their confidence in the domestic currency.

There should be diversification of the economy in terms of natural resources tapped. The concentration on crude oil as a major export commodity and source of foreign earnings should be minimized and other non-oil sector should be developed to also serve as export commodities. If this is considered, it may reduce the possibility of depreciation of the domestic currency which leads to and encourage currency substitution. In essence, there should be export diversification.

The monetary authorities should take into consideration the influence of foreign monetary developments on the domestic environment as they design/formulate their monetary and exchange rate policies. This is in fact important as foreign factors (such as foreign interest rate) may influence the portfolio decisions of domestic economic agents especially if it is of utmost advantage. This is because economic agents would prefer to store their assets in currencies they have confidence and are relatively stable in value. In addition, the monetary authorities (CBN) should with the support of the government adopt tight monetary policies especially during periods leading to general election. This way the pressure on the foreign exchange market will be minimized. This implies that as economic agents lose confidence in the local currency or they anticipate depreciation in the currency, they prefer their holdings to be in foreign currency in order to preserve their value. Also, the financial system should be deepened with better liquidity in order to enhance its ability to withstand any sudden disturbances that may affect the financial system especially periods of oil shocks and elections.

Finally, there is need for strong and sustained monetary policy intervention towards encouraging deposit holders and other economic agents to switch their currency portfolio back to Naira. There is also the need to engender exchange rate stability and foreign exchange (FOREX) market efficiency in the country. The current efforts by the CBN towards engendering discipline and orderliness in the FOREX market should be sustained so as to reduce the arbitrage premium and ensure exchange rate stability.

5.4 Suggestion For Further Studies

Having considered in details, the relationship between exchange rate, currency substitution and economic growth, future research should put effort in increasing the trend of analysis to determine the effect of exchange rate, currency substitution and its implications on Nigerian economic planning. The scope of further research may also be extended to investigating the following:

- i. Currency substitution and the demand for money in Nigeria
- ii. Currency substitution, inflation and economic growth in Nigeria:

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