

# THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

## Macroeconomic Variables and Exchange Rate Dynamics in Nigeria

**Dr. Okwuchukwu Odili**

Lecturer, Department of Banking and Finance, College of Management Sciences,  
Michael Okpara University of Agriculture, Umudike, Umuahia, Abia State, Nigeria

### **Abstract:**

*This study investigates the potency of macroeconomic variables in influencing exchange rate behaviour in Nigeria from 1980 to 2014. The study tested the impact of balance of payment, rate of inflation, current account balance, gross domestic product, total imports and exports on exchange rate in Nigeria. The relationship between the exchange rate policies and the selected macroeconomic variables were determined using correlation coefficients, coefficient of determination, ANOVA and f-statistic. It was discovered among other things that inflation rates, current account balance and balance of payment in Nigeria had weak positive association with exchange rate movement. Imports, exports and gross domestic products had strong positive association with exchange rate variations. The study also revealed that balance of payment, current account balance, total exports and gross domestic product significantly influenced exchange rate, while, exchange rate variations does not depend on the rate of inflation and total imports in Nigeria. The study recommends that there should be proper monitoring and regulation of Nigeria's foreign exchange markets. There should be more independence and autonomy in the design and implementation of macroeconomic policies by the CBN. In order to effectively pursue stable exchange rate policy, Nigeria must initially address a number of institutional, structural, and operational issues and ensure fiscal discipline.*

**Keywords:** Exchange rate, macroeconomic stability, current account balance imports and exports, ANOVA

### **1. Introduction**

In establishing a comprehensive program, policy makers often face a difficult choice of whether to adopt a fixed (“anchor”) or flexible exchange rate regime. Recent experiences suggest that the distinction between the two regimes has become blurred because of the usefulness of short-term flexibility within exchange rate margins as a monetary policy indicator and the unavoidability of medium-term adjustments to fixed exchange rates, (Fischer, 2001). Moreover, empirical cross-country studies have yield ambiguous result with respect to the impact of exchange rate regimes on macroeconomic performance, (Obstfeld, 2004).

One important lesson of the 1980s debt crisis is that unrealistic exchange rates cannot be sustained, even for short periods, without serious economic consequences. Before and during the early stages of the debt crisis, official exchange rates in many emerging market countries were fixed without regard to market levels. It was assumed that controls on foreign exchange transactions would prop up exchange rates and help to stabilize prices and inflation while adjustment programs were gradually introduced. According to Guimaraes and Cem, 2004, the controls did not work, however, over-valuation contributed to flight from domestic currency and a breakdown of tax systems as parallel currency market flourished. Many countries found themselves trapped in a vicious circle. The deterioration in tax collection and an increase in tax evasion through offshore tax havens and, thus fiscal policy resulted in greater macroeconomic disequilibrium, a shortage of foreign exchange for payment of maturing obligations (Let alone new debt) led to growing external arrears, loss of creditworthiness, a worsening of the balance of payments, and an increasing unrealistic exchange rate, (Reinhart and Rogoff, 2002). Delayed rate adjustments leading to large step devaluations began to be seen as ineffective; many observers felt that exchange rates should be adjusted more frequently, in smaller increments either within a fixed exchange rate regime or by continuous floating. One result has been a blurring of the distinction between fixed and floating rates, as has been noted by institutions such as the IMF, whose work among other things, require classification of member countries' exchange rate policies. Moreover, if exchange controls are effective, as is now generally believed, fixed exchange rate regime must be validated by monetary and fiscal policies. How much different is there between a stable floating rate and a stable fixed rate if both are supported by same domestic policies? in a nutshell, very little.

In the early 1970s, industrial countries moved to a regime of floating exchange rates, within which they were able to progressively liberalize and integrate with international financial flows while maintaining substantial national sovereignty over monetary policy decisions. According to Adrea and Inci, (2004), the resulting “nonsystem”, as it was often labeled has now endured longer than its Bretton Wood predecessor, and its stability has on the whole been enhanced by monetary innovations such as explicit and transparent inflation targeting. The industrializing countries by contrast, have found it much harder to settle into a comfortable resolution of the

Open-economy Monetary Policy trilemma. In these countries, Institutional distortions and market failures complicate credible inflation targeting, render large exchange rate movement more dangerous, made fixed exchange rates acutely crises prone, and apparently reduce the beneficial effects of financial liberalization (Obstfeld, 2004).

While events of the 1990s have underscored these difficulties, none of them is an entirely new phenomenon. What is new is that an important subset of the industrializing world has now established sufficiently extensive financial linkages with the rich countries, and achieved a sufficient degree of economic size, that its fortunes have first-order repercussion on the rest of the world (Guimaraes and Cem, 2004). In other words, the relative success of some middle-income countries in growing and opening their economies also gives them a position in which their vicissitudes raise global concerns. No longer are the structural features of emerging market countries viewed as exotic special cases; indeed, newer institutional and geographic theories of the well-springs of prosperity are sufficiently broad to encompass the poorest as well as the richest economies. It is hoped that this line of study can point the way toward fundamental reforms that will ease the difficulties of achieving and maintaining exchange rate stability in Nigeria.

### *1.1. The Problem Statement*

Among the developing countries of the world, those emerging markets that have sought some degree of integration into the global financial system are characterized by higher per capita income, higher long-run growth rates, and lower output and consumption volatility (Jorge, 2003). These characteristics are more likely to be causes than effects of financial integration. The measurable gains from financial integration, appears to have been limited by recent crisis. One factor limiting the gains from financial integration is the difficulty emerging economies face in resolving the open-economy trilemma. Given their structural and institutional features, many emerging economies cannot live comfortably either with fixed or with free floating exchange rates (Guillermo and Carmen, 2000). Most recently, the exchange rates of several emerging countries display attempts at stabilization punctuated by high volatility in periods of market stress. Throughout the past two decades, the objectives of Nigerian macroeconomic policy have been the attainment of internal and external balance. This was reaffirmed by CBN Monetary policy circular No.33, 2002, stating that one of the CBN's major objectives is the "sustenance of price and exchange rate stability". This remit is analogous to that of many emerging market countries which, on the one hand, see the benefits of stabilizing domestic prices and on the other hand, value the necessity of keeping the exchange rate fairly stable.

Despite the apparent continuity in objectives, Nigeria's macroeconomic performance since 1980 has been mixed. One often cited explanation for Nigerian experience since 1980 rests with the weakness in Nigeria's fiscal policy framework over this period. Nigeria is an oil exporter and fiscal revenue throughout the past two decades has largely coincided with oil revenue. Naturally, oil revenue is very volatile due to wild oscillations in oil's spot and future US\$ price per barrel and to unpredictable changes in OPEC assigned oil quotas, of which Nigeria has been a member since 1958 following the commercial discovery of oil in Oloibiri, in Nigeria's Rivers State, in 1956. OPEC quotas are in fact frequently adjusted in an attempt to raise or lower the cartel's equilibrium price of crude oil internationally. The absence of suitable fiscal rules and a proper finance-management framework for oil-related risks, Nigeria's variable oil and fiscal revenues in the 1980s and 1990s have led to boom-and-burst type fiscal revenues that have generated large and unpredictable movements in government deposits and current account balances. These boom-and-burst types of fiscal revenues have been punctuated by the recent drop in oil prices which led to the devaluation of the naira in recent times.

These in turn, have a recurrent source of liquidity surprises and have instilled significant volatility in Nigerian Financial system. A second possible explanation for the varied macroeconomic performance in Nigeria can be found in the recent literature of monetary regimes for open economies. A key notion arrived at in this literature is that it is not possible for a country open to international capital flow like Nigeria to have both a stable exchange rate and monetary policy directed at domestic goals like price stability, the so called "impossible trinity" (Fischer, 2001). Sooner or later, conflict between the two goals arises, jeopardizing the attainment of one or even both objectives. One particular aspect of the debate is that trying too hard to keep exchange rates stable when the economy is open and subject to short-term capital flows can be risky. International evidence confirms this notion. As stressed in Fischer (2001), for example, each of the major international capital market-related crisis (e.g. Mexico in 1994; Thailand, Indonesia, and Korea in 1997, Brazil and Russia in 1998, and Argentina and Turkey in 2000) involved some sort of fixity of the exchange rate.

The persistent occurrence of disequilibrium and imbalance in the Nigeria economy since the 1980s, have raised some fundamental questions about the efficacy of the nation's foreign exchange policies. As a result, a consensus appears to have now emerged that adjustable peg and other soft pegs (including, arguably, managed float explicitly directed at maintaining the exchange rate around a certain level, such as in the case of Nigeria), can be dangerous arrangements for open economies subject to international capital flows (Khan, 2003).

### *1.2. Research Objectives*

This study is therefore intended to determine whether the nation's exchange rate policies had achieved the general and specific objectives they were expected to address.

The specific objectives of this research therefore are:

- i. To evaluate the effect of macroeconomic variables (inflation, balance of payment, current account balance, imports, exports and gross domestic product) on exchange rate in Nigeria since 1980.
- ii. To assess the extent of achievement of the objectives of Nigeria's exchange rate policies before, and during the Dutch Auction System (DAS) and the various variants of DAS.

1.3. Research Questions

This research work provides answers to the following questions.

- i. How do the macroeconomic variables (inflation, balance of payment, current account balance, imports, exports and gross domestic product) influence exchange rate levels in Nigeria?
- ii. To what extent has the Dutch Auction System (DAS) influenced the direction of exchange rate movements?

1.4. Research Hypotheses

In order to critically examine the impact of selected macroeconomic indicators on exchange rate behaviour in Nigeria, this study is guided by the following hypotheses:

- i. H<sub>01</sub>: Macroeconomic variables (balance of payment, Current Account Balances, inflation, total imports, total exports and gross domestic product) have no significant impact on exchange rate behaviour in Nigeria.
- ii. H<sub>02</sub>: Dutch auction system and its variants have not significantly influenced the direction of exchange rate movement in Nigeria.

2. Review of Related Literature

2.1. Classification of Exchange Rate Regimes

An appropriate characterization of actual exchange rate regimes is no trivial exercise. For many years, empirical studies of exchange rates relied on an IMF classification scheme that categorized (during 1975 -98) countries regimes on the basis of their official notification. This *de jure* classification had many weaknesses; most important different between what countries claimed to be doing and what they were doing in practice. Some countries declared pegged regimes yet engineered frequent devaluations to maintain competitiveness, making their regimes less distinct from a flexible one. Others claimed to have floating regimes yet pegged or managed there exchange rates along a pre-determined path. The resulting divergence between the *de jure* and *de factor* classification reduced the transparency of exchange rate policy, making surveillance over members' policies difficult and the characterization of evolution towards greater flexibility dubious.

To address these shortcomings, IMF replaced its *de jure* system in 1999 and has since characterized countries regimes based on their *de facto* policies (IMF, 1999).

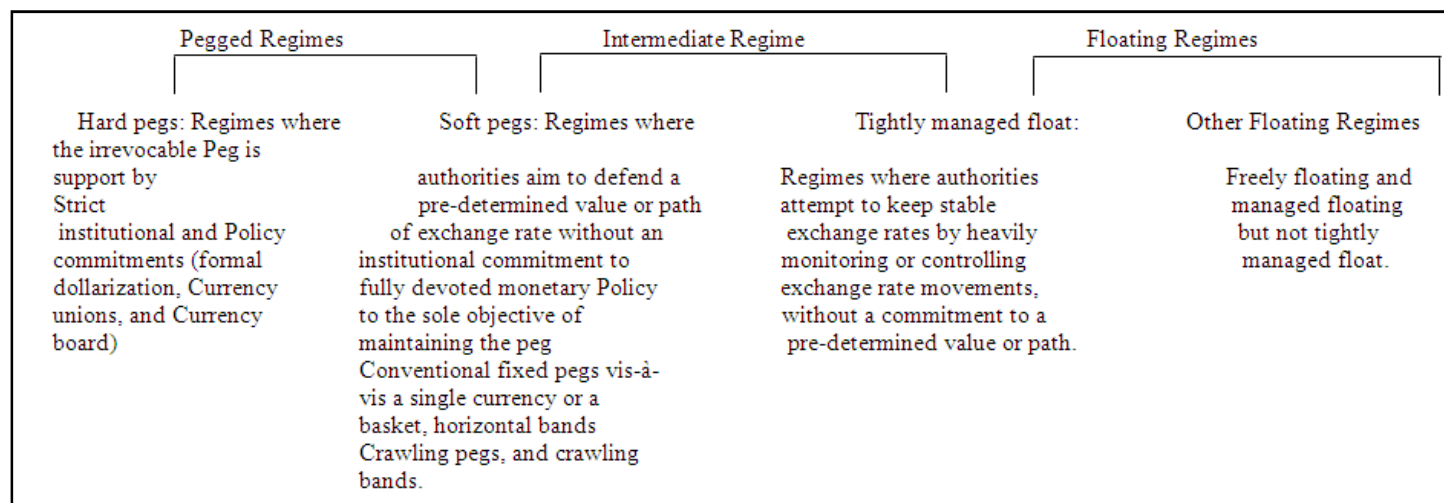


Figure 1: The Current Spectrum of Exchange Rate Regime Categories

Source: IMF, 1999

2.2. Overview of Exchange Rate Regimes in Nigeria

In Nigeria, foreign exchange management policies have traversed the extremes of fixed and flexible regimes with a view to achieve the following major objectives: Preserve the value of the domestic currency, the naira; maintain a favourable external reserves position; and ensure price stability. The immediate post independence era witnessed a regime of fixed exchange rate in Nigeria. Up till 1967, the naira was at parity with the British pound until when the latter was devalued. From 1967 to 1974, naira was fixed to the US dollar, and thereafter the naira was fixed using import weighted baskets of currencies of Nigeria's seven trading countries (US dollar, British pound, German mark, French franc, Japanese yen, Dutch guilder and Swiss franc). However, all the various exchange rate policies could not lead to the realization of the stated objectives. As a result, a flexible exchange rate policy was adopted in 1986, following the introduction of the Structural Adjustment Programme (SAP).

The major element of (SAP) was the pursuit of a realistic exchange rate. With the introduction of SAP, the Second-tier Foreign Exchange Market (SFEM) was established. SFEM was expected to produce a market determined exchange rate that would remove the over-valuation of the naira which persisted in the pre-SAP era. Since 1986, various exchange rate policies, ranging from dual exchange rate regime to unified exchange rate system in 1987 were adopted. In 1994, regulation of the forex market was re-introduced

with the exchange rate fixed to ₦22.00 per US dollar. However, because of inherent abuses and bureaucratic bottlenecks associated with regulation, the Autonomous Foreign Exchange Market (AFEM) was introduced following the promulgation of Foreign Exchange (Monitoring and Miscellaneous Provisions) Decree 17 of 1995 and the abolition of Exchange Control Act of 1962. Under AFEM, CBN was to intervene in the market at short notice.

The failure of AFEM led to the introduction of inter-bank Forex Market (IFEM), a pre-cursor to the Dutch Auction System (DAS) in October 25, 1999. IFEM was aimed at, among other things, deepening inter-bank Forex Market as well as having a stable naira exchange rate. The IFEM therefore was intended to diversify the supply of foreign exchange in the economy by encouraging the funding of the inter-bank operations from privately-earned foreign exchange rate. Developments in IFEM namely, persistent high demand for forex continued depreciation of the naira with the premium between official rate and those in parallel market widening from ₦7.0470 per US dollar in 1999 to ₦16.3808 per US dollar in 2002, and continued depletion of reserves position led to its abandonment and the re-introduction of DAS in July 22, 2002. DAS was not new in Nigeria as it was practiced in 1987 and 1990-91. It was introduced to address the failure of IFEM. Specifically, it was aimed at achieving the following objectives:

1. Determination of exchange rate of the naira,
2. Conserve external reserve position;
3. Reduce the premium between official rate and that of the parallel market and;
4. Ensure stability of the naira exchange rate.

The DAS was conceived as a two-way auction system in which both the CBN and authorized dealers would participate in foreign exchange market to buy and sell foreign exchange. The CBN is expected to determine the amount of foreign exchange it is willing to sell at the price buyers are willing to buy. The marginal rate, which by definition is the rate that clears the market, represents the “ruling” rate at the auction. In 1989, the Dutch Auction System (DAS) and autonomous market rate were merged into a single market—the Inter-bank Forex Exchange Market (IFEM); the Bureau de Change (BDC) market was also established. In 1990, the DAS was re-introduced but scrapped in 1992 for the IFEM. In 1994, the IFEM was changed to a fixed rate system; in 1999, IFEM was re-introduced; 2002, the Retail Dutch Auction System (RDAS) was implemented, replaced with the Wholesale Dutch Auction System (WDAS) in 2006, back to RDAS in 2013 and currently IFEM in 2015.

### *2.3. Theories on Exchange Rate Behaviour*

Views on how the exchange rate of national currencies, are determined, are varied. Over the years economists have attempted to explain what determine the rate at which one currency exchange for others. These views have culminated into different approaches, theories or models with which we can try to identify or isolate any functional or casual relationship between the exchange rate and some other macroeconomic variables. There have been basically, two different theories or approaches – the traditional and monetary approaches or theories.

### *2.4. The Traditional Theory*

Traditional explanations of the behaviour of exchange rates stress on trade flows as the basic determinants of exchange rates. The theory links the demand for foreign exchange to the demand for foreign goods and services. Under the model, the balance of payments, especially the current account balance, is used as a measure of forces of demand and supply of foreign exchange. For example a surplus in a country’s balance of payments indicates that the supply of foreign currency exceeded the demand for it. In the absence of any other transactions in the balance of payments, this balance will tend to put pressure on the price of foreign currencies against the domestic currency and cause their values to depreciate vis-à-vis the local one.

A variant of the traditional approach is the purchasing power parity (PPP) hypothesis. This is one of the leading hypotheses about the forces that determine exchange rate. It states that “the rate of exchange between two currencies depends on their relative purchasing power, in the countries, in which they circulate, making allowance for cost of transaction and the effects of import duties or purchase taxes”. There are two versions of PPP hypothesis – the absolute and the relative versions (Caves and Jones, 1977).

The absolute version follows directly from the “Law of one price”. This law proposes that a perfectly competitive market causes a particular good to sell everywhere at the same price. However, many market imperfections exist and these could make the absolute purchasing power parity to be unrealistic. But it might still hold in its relative version.

The relative version of PPP relates changes over time in an equilibrium exchange rate to changes in a country’s relative price levels. In other words, the relative version of the hypothesis in practice, presupposes a comparison of relative inflation rates among countries (Olukole, 1992). Olukole further explained that for a country, as a whole, the PPP involves the comparison of aggregate inflation rates or aggregate change in prices. To determine exchange rate at this aggregate level, the PPP postulates that if the inflation rate in a given country accelerates relative to other countries’, the country’s currency would tend to depreciate relative to the other countries. This means that a relatively high internal price level will tend to bring about a depreciation of the currency on the foreign exchange market, just as a fall in price internally would tend to cause it to appreciate (Ndiomu, 1993).

### *2.5. The Monetary Theory*

The monetary theory of exchange rate determination is one of the most recent. It is indeed a very popular model that has generated a lively debate in international economics. The theory is last in the well known tradition of the monetarists or the monetarist school, which regards money as the major, prime move in an economy. Thus the monetary approach, as it is sometimes called, directs attention to the money stock as a primary determinant of the level of exchange rates. Its major thrust is the assertion that exchange rate fluctuations are largely explicable in terms of variations in the relative supplies of national currencies. Within the context of this view

point, the monetary approach suggest that the money supply could be used to forecast movement of exchange rates, and that there exists an observable casual relationship between exchange rates and changes in money supply.

Levacic and Rebmann (1982), pointed out that by the monetarists model, changes in economic variables affect the exchange rate through their impact on the demand for and supply of money balance. The theory thus stresses the view that the supply of and demand for money are strong forces in determining a country's external position. An increase in the demand for a country's money will lead to surpluses in the balance of payments while an increase in the supply of money, all things being equal, will give rise to deficits.

Just like the traditional theory, there are different versions of the monetary approach or theory. The most popular is the asset view which attributes exchange rate determination to influences of monetary variables like interest rate and rates of inflation, which affect the demand for assets. Under the asset view, the exchange rate is seen as moving to equilibrate the international demand for stocks of assets, rather than the international demand for flows of goods as under the more traditional view (Frankel, 1979).

#### 2.5.1. Structure of the Nigerian Foreign Exchange Market

The peculiarity of the Nigerian foreign exchange market needs to be highlighted to X-ray the causes of failure of the exchange rate policies in Nigeria.

The country's foreign exchange earnings are more than 90 percent dependent on crude oil export receipts. The result is that the volatility of the world oil market prices has direct impact on the supply of foreign exchange. Moreover, the oil sector contributes more than 80 percent of government revenue. Thus, when the world oil price is high, the revenue shared by the three tiers of government rise correspondingly and, as has been observed since the early 1970s, elicited comparable expenditure increases, which has been difficult to bring down when oil prices collapse and revenue fall concomitantly. Indeed, such unsustainable expenditure level had been at the root of high government deficit spending. It is therefore important that reserves be built up when the price is high to cushion the effect of revenue shortfall on government spending when oil price falls in the international oil market.

Specifically, the sustained demand pressure and the consequent depreciation of the naira exchange rate under the IFEM were traced to the following causes.

Limited sources of foreign exchange supply in particular, the anticipated supplies from autonomous sources, such as oil companies, banks and non-bank financial institutions were significantly below what was required to broaden and deepen the market;

The excess liquidity in the system induced by the transfer of government accounts from the CBN to banks and the huge extra-budgetary spending in 1999 on unproductive ventures;

The heavy debt service burden; and speculative demand, driven by uncertainties created by social and political unrest, expectations of future depreciation of the naira, as well as the determination of the external sector position. It became a matter of serious concern that despite the huge amount of foreign exchange, which the CBN supplied to the foreign exchange market, the impact was not reflected in the performance of the real sector of the economy. Arising from Nigeria's high import propensity of finished consumer goods, the foreign exchange earnings from oil continued to generate output and employment growth in other countries from which Nigeria's imports originated. This development necessitated a change in policy on 22<sup>nd</sup> July 2002, when the demand pressure in the foreign exchange market intensified and the depletion in external reserve level persisted. The CBN thus, re-introduced the Dutch Auction System (DAS) to replace the IFEM.

Dutch Auction System is a public offering auction structure in which the price of the offering is set after taking in all bids and determining the highest price at which the total offering can be sold. In this type of auction, investors place a bid for the amount they are willing to buy in terms of quantity and price. In 2002, the Retail Dutch Auction System (RDAS) was implemented, The RDAS is an acronym for the Retail Dutch Auction System and as the name implies is a **direct** sale of Forex by the CBN through the banks to the end users of the forex. The RDAS is based solely on actual demand of forex by the end users of the forex. As such, the Authorised dealers will only bid for forex based on the number of actual request it has received from its end users. The re-introduction of the RDAS is an effort by the CBN to micro-manage the sale and utilisation of forex in Nigeria. RDAS was replaced with the Wholesale Dutch Auction System (WDAS) in 2006. It is a subset of the Dutch Auction System whereby the CBN receives bids from Authorised Dealers for purchase of forex. The Authorised Dealers on behalf of BDC's and other end users of forex (like corporates, importers etc) will submit bids to the CBN for purchase of forex during an auction. Once their bids are successful they then sell the dollars to the BDCs and other end users. The WDAS was introduced on February 20, 2006. It is important to note however, that under the WDAS the Bids submitted by the Authorised Dealers need not match the total request by its end users. The CBN reverted back to RDAS in 2013 and currently IFEM in 2015.

#### 2.5.2. Stylized Facts on Nigeria External Dominance and Monetary Transmission

##### 2.5.2.1. Trade Openness

Perhaps, the simplest measure of openness of a country is given by the ratio of total trade to GDP. The degree of openness of a country matters in the choice of the monetary policy regime because openness subject the economy to both commodity and financial market shocks and it introduces additional channels for policy. This may complicate the achievement of stable prices. In particular, since the optimal monetary policy response depends on the source of shock, openness requires that the monetary authority be able to discern between international commodity shocks and shocks to financial markets. Besides, in an open economy a rise in interest rates not only reduces investment via the direct output gap channel, but it also depresses net export demand via the appreciation of the exchange rate. So openness makes responding to aggregate demand shocks more difficult (Batini, et al, 2003).

According to Batini (2004), the Nigerian economy is naturally strongly exposed to external shocks, like shocks to commodity prices, exchange rates and / or relative prices of imported intermediate and final goods, which may reduce the ability of the Central Bank to control domestic variables. So pursuing price stability and free floating exchange rate in Nigeria may be complex, perhaps more so than in other emerging market economies that have recently adopted explicit targets for inflation and that are less open.

#### 2.5.2.2. Exchange Rate Pass Through

One can argue that interest in pass-through began in the 1960s and early 1970s, when open economy monetary models assumed absolute (or in some cases relative) purchasing power parity, the macroeconomic cousin of the single good law of one open price, in their frameworks to pin down the behaviour of exchange rates. The natural question arising from those models was “Does purchasing power parity and / or the law of one price holds in the data. Numerous tests on a variety of goods and across countries yielded very little evidence in support of this assumption. As a result researchers began to develop models to explain the lack of purchasing-power-parity, and many of these models had implications for the nature of pass-through.

One motivation for deviations from the law of one price is pricing-to-market, as proposed by Krugman (1987) and Dornbusch (1987). To generate incomplete pass-through in this framework, one typically thinks of an oligopolistic market where a firm can adjust its markup to an exchange rate shock. In particular, if the firm’s markup decreases as the price of the good it sells increases then pass-through is less than complete. This action might be a defensive response to perceived temporary currency misalignments (Marston, 1991), or it might result from market share considerations (Hooper and Mann, 1989; Kasa, 1992; Froot and Klemperer, 1989), of course, a firm can only dampen the impact of exchange rate movements on its prices while its markup is positive.

A related but slightly different framework is local currency pricing. Here one thinks of an exporting firm setting the price of its good, which may not be sticky, in the currency of the country to which it exports. Two papers cited frequently are Devereux and Engel (2001), and Bacchetta and Van Wincoop (2003). The novelty of their papers is that they endogenize a firm’s choice of invoicing currency and argue that countries with low relative exchange rate variability or stable monetary policies are more likely to have their currencies chosen for transaction invoicing, and hence more likely to have low import-price pass-through. A problem with the local currency pricing hypothesis is that while in the medium term a firm may choose to invoice in the currency of the destination market to shield the price paid by its clients from exchange rate movements, over the long run, in the face of a protracted appreciation of the exporter’s currency, it will have to adjust its local currency price to keep its margins from turning negative.

Another reason for less-than-complete pass-through is cross-border production. If production takes place in several stages across many countries, then the costs of producing the final good are incurred in several currencies. This can explain incomplete pass-through as long as all of these currencies do not experience a common appreciation against the export destination’s currency. Aksoy and Riyanto (2000) and Hegji (2003), build theoretical models where the increased use of cross-border production within the same firm may have lead to lower pass-through. Also, along this vein, Bodner *et al.* (2002), show pass-through can be less than one if part of the costs of production are incurred in a different currency (i.e. if cross-border production arrangements take place), if goods are highly substitutable, or if the market share of the exporting firm in the foreign market is large. Another argument for incomplete pass-through is anticipated by Mann (1986). She suggested that the increased usage of exchange rate hedges may shield a firm from exchange rate shocks allowing them to avoid passing shocks to consumers of course, hedging can allow firms to postpone passing through an exchange rate shock, but in long-run a sufficiently large and permanent exchange rate shock will have to be passed through to importers.

Gust, *et al.* (2005), proposes that the process of international globalization itself may induce a fall in pass-through. In their model, lower trade costs (interpreted broadly as increased globalization) increase exporting firm’s relative markups which in turn allow their prices to be less sensitive to exchange rates yielding lower pass-through.

Campa and Goldberg (2002 and 2004) Otani, *et al.* (2005), Sekine (2005) estimated pass-through of several import categories across many countries and conclude that a shift in the composition of the typical import basket away from goods with relatively high degrees of exchange rate sensitivity (particularly energy-related goods) explains observed declines in pass-through.

Marazzi, *et al.* (2005) estimated exchange rate pass-through to U.S. import prices of core goods using a rolling regression framework and carry out a large number of robustness tests to conclude that U.S. import-price pass-through has indeed fallen, as suggested by sector-specific pass-through tests of olivei (2002). Gagnon and Ihrig (2004), provide a model that links pass-through to monetary policy conditions; empirically they find that countries with credible and anti-inflationary monetary policies tend to experience lower consumer-price pass-through. This study is consistent with Taylor (2000), who provides a model where lower pass-through is caused by lower perceived persistence of inflation.

Calvo and Reinhart (2000), Frank, *et al.* (2005) find that exchange rate pass-through, namely, the amount of exchange rate change that translates into changes in import prices and hence consumer price inflation, is higher in emerging markets. They rationalize this in two ways: (i) in emerging market economies high inflation in the past has included widespread wage and price indexation. So changes in consumer price index (CPI) due to exchange rate changes are fully and automatically locked in future wage and price inflation; (ii) in emerging market economies, Central Banks are less credible. This leads one to believe that temporary shocks to the exchange rate will be accommodated and hence become permanent, and so these shocks indeed affect inflation permanently via sound round effects.

Batini (2004) carried out an analysis of pass-through and impact of external shocks in a subgroup of emerging market economies committed to price stability under a flexible exchange rate regime. His findings suggests that inflation in Nigeria is highly influenced by fluctuations in the international value of the naira as these translate directly-albeit with long and variable lags-onto consumer price changes. Since higher pass-through implies that external shocks translate easily onto domestic variables, Nigeria may find it harder than other emerging market economies to build credibility in the process toward price stabilization. Importantly, high pass-through

also means that Nigeria will be more inclined to attempt to regularly stabilize the exchange rate by intervening in the exchange rate market, the consequence of what Calvo and Reinhart (2000) dub “fear of floating”.

### 2.5.2.3. Commodity-Price Sensitivity

Emerging market economies do not face higher degrees of pass-through than developed economies. Usually they are also more sensitive to changes in commodity prices than their advanced industrial counterparts. This is because, typically, emerging market economies main exports are homogenous commodities traded in perfectly competitive markets. A change in their foreign-currency price can thus greatly affect their demand because this is infinitely elastic. Fluctuations in commodity prices add to the volatility of domestic output and inflation and affect the exchange rate via their impact through the current account. This makes it more difficult to forecast and so to control inflation, which in turn damages credibility as it raises doubt about the seriousness of the central bank vis-à-vis its commitment to price stability.

Oil, Nigeria’s main export, accounts for 40 percent of Nigerian GDP and 95 percent of foreign exchange earnings. This is in line with other oil exporting countries like, Algeria, where oil accounts for 30 percent of GDP and 80 percent of foreign exchange earnings (McPherson, 2002). So it is reasonable to expect that a shock to the price of oil should have a significant impact on Nigeria GDP and, therefore, on Nigerian inflation. According to Batini, (2004), Nigeria also seems less sensitive to commodity price changes than, say South Africa, another emerging market economy that opted for stable prices / free float regime, even if the latter’s share of commodity exports to total exports is much smaller than that of Nigeria. One explanation for this may be that Nigeria is more sensitive to changes in the quantity of oil exported (i.e., OPEC quota) rather than to changes in its international price. The lack of sensitivity of Nigeria’s inflation to price of its main export means that fluctuations in the price of oil may not be a severe hindrance to attempts of the central bank to stabilize the consumer price level around a certain growth rate.

### 2.6. Model Specification

The study adopted multiple regression analysis in line with the model specification of Ngerebo-a and Ibe (2013) in which exchange rate was made a function of five macroeconomic variables stated as follows:

$EXCHR = f(BOP, EXTDB, EXTRE, GDPGR, INFLR)$ . This has been slightly modified by removing some explanatory variables and including current account balances, imports and exports as exogenous variables. With respect to economic theory, the model was cast in the following function and *a priori* expectations as follows.

$$X = f(BOP, CAB, IR, TM, TX, GDP)$$

$$EXR = b_0 + a_1BOP + a_2CAB + a_3IR + a_4TM + a_5TX + a_6GDP + U_1$$

$$TM < 0; [BOP, CAB, IR, TM, TX, GDP] > 0$$

Where: BOP is balance of payment, CAB is current account balance, IR is rate of inflation, TM is total imports, TX is total exports, GDP is gross domestic products and X is exchange rate. The relationship between the exchange rate policies and the selected macroeconomic variables were determined using correlation coefficients, coefficient of determination, t-statistic, and f-statistic. We tested their significant impact using the analysis of variance statistical model (ANOVA). The sample consists of annual data from 1980 to 2014 obtained from CBN Statistical Bulletin and National Bureau of Statistics various issues.

## 4. Empirical Results

### 4.1. Tests for Stationarity

Table 1 presents the summary of unit root test for the dependent and independent variables using Augmented Dickey-Fuller (ADF) Test. The test has been conducted with constant and linear trend and assumed the same null hypothesis of no unit root in the data series. After comparing test statistic value with that of test critical value at 5 percent significance and considering p-value, the study found that all the variables have unit roots. This led to the transformation of the variables into first difference of their logarithmic value to bring stationarity in the data series. After then the modified data were used in Multivariate Regression Model.

Variables	Level		First Difference	
	Constant without Trend	Constant with Trend	Constant without trend	Constant with trend
EXR	-1.76788	-1.98113	-6.21777**	-6.30564**
BOP	-0.92509	-2.10856*	-8.51066**	-8.36132**
CAB	-0.74804	-1.13148	-3.34866**	-3.10760**
IR	-0.51001	-1.50928	-3.94717**	-3.85306**
TM	-1.45419	-2.22717*	-5.91124***	-5.80053***
TX	-0.26406	-1.17661	-4.92316**	-4.54599**
GDP	-2.47874*	-2.88193*	-6.21414**	-6.65674**

Table 1: The Results of Augmented Dickey-Fuller (ADF) Test.

Source: Researcher’s Computations, 2015

Note: \*\*\*, \*\*, \* denote statistical significant at 1%, 5% and 10%, respectively.

Lags were automatically selected based on SIC, maximum lag=8.

The result of Augmented Dickey-Fuller (ADF) unit root test presented in Table 1 shows that the variables were not stationary at levels. However, the tests showed a consistent results by rejecting the null (HO: a unit root) hypothesis of a unit root at first difference, against the one-sided alternative whenever the ADF statistic is less than the critical value at a statistically significant levels of 1%, 5%, and 10%. Hence, we accept the hypothesis that the variables possess unit root but are integrated of order one I(1).

#### 4.2. Co-Integration Tests

When a linear combination of variables that are of order I(1) produces a stationary series, then the variables may need to be cointegrated. This implies that a long-run relationship may exist among them, which connotes that they may wander from one another in the short-run but in the long-run they will move together. To establish whether long-run relationship exists among the variables or not, Cointegration test using Johansen's multivariate method was carried out and reported in Table 2 as shown below.

Hypothesized no. of (E(s))	Eigen value	Trace statistic	0.05 critical value	Prob.**
None*	0.8963	152.3767	123.24	0.0000
At most 1*	0.8871	107.5423	96.15	0.0001
At most 2*	0.7970	79.7815	67.81	0.0021
At most 3*	0.5983	56.2082	43.86	0.0043
At most 4	0.4874	24.1474	29.68	0.0820
At most 5	0.3761	9.3057	15.47	0.1939
At most 6	0.0762	0.8416	3.86	0.3576

Table 2: Johansen co- integration test results (trace)

Source: Researchers' Computations 2015

Trace test indicates 4 co-integrating eqn(s) at the 0.05 level. \* denotes rejection of the hypothesis at the 0.05 level, \*\* Mackinnon-Haug-Michelis (1999) P-values.

Hypothesized no. of (E(s))	Eigen value	Max-eigen Statistic	0.05 critical value	Prob.**
None*	0.8963	69.4161	45.28	0.0000
At most 1*	0.8871	49.1053	41.37	0.0000
At most 2*	0.7970	38.3235	32.84	0.0021
At most 3*	0.5983	29.0343	26.38	0.0354
At most 4	0.4874	19.2658	20.13	0.0896
At most 5	0.3761	7.1906	14.07	0.1486
At most 6	0.0762	0.6463	3.84	0.3675

Table 3: Johansen co-integration test result (maximum eigenvalue)

Source: Researcher's Computations 2015

Max-eigenvalue test indicates 4 co-integrating equation(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level. \*\* Mackinnon-Haug-Michelis (1999) P-values.

Using the trace likelihood ratio and maximum eigen-values, the results point out that the null hypothesis of no cointegration among the variables are rejected in favour of the alternative hypothesis up to four cointegrating equations at 5% significant level because the values exceeded the critical values. This indicates that, there are at least four integrating equations, which implies that a unique long-run relationship among the variables exists and the coefficients of estimated regression can be taken as equilibrium values.

VARIABLES	B	Se	T
Constant	2.857	2.784	1.026
BOP	4.715	1.671	2.822
CAB	-8.641	1.760	-4.910
IR	0.036	0.082	0.442
TM	-2.563	2.321	-1.104
TX	5.172	1.754	2.950
GDP	1.316	3.708	3.549
R	0.9927		
R <sup>2</sup>	0.9854		
R <sup>2</sup>	0.9802		
F-stat.	0.00001		
Fc	3.244		
Se	6.7630		

Table 4: Estimated Result of Multivariate Regression Analysis

Source: Calculated from data obtained from CBN statistical Bulletin (Several Issues).



The table above presents the overall multiple regression result. From the result the adjusted coefficient of determination ( $R^2$ ) is 0.98. This result implies that 98 percent variations in exchange rates are systematically explained by changes in the regressors or the explanatory variables. The regressors performed well in the systematic explanation of fluctuations in exchange rates, while the other 2 percent is accounted for by factors not explicitly stated in the model. This indeed shows that it is very good model.

The F-statistics 0.0001 has a critical Ft of 2.70 which is less than the Fc value of 3.24. The Null hypothesis is therefore rejected while the alternative hypothesis is accepted, meaning that the entire regression is significant and thus impressive at 5 percent confidence level. In the linear regression, the t-value of BOP, CAB, TX and GDP, were 2.822; -4.910; 2.950; and 3.449 respectively. These values lie in the critical region of  $P(t > 2.074)$  and  $P(t < -2.074)$ . Meaning that, they are significant at 5 percent level. This implies that exchange rate in Nigeria actually depend on the Balance of Payment, Current account Balance, Total exports and Gross domestic Product. Also in the regression analysis, the t-value of IR and TM were 0.442 and -1.104 respectively. These values lie in the acceptance region of  $P(t < 2.074)$  and  $P(t > -2.074)$ , meaning that, they are not significant at 5 percent level. This implies that exchange rate dynamics in Nigeria does not depend on the rate of inflation and total imports. The estimated regression equation in this model is:

$$X=2.857 + 4.751 \text{ BOP} - 8.641\text{CAB} + 0.036 \text{ IR} - 2.563\text{TM} + 5.172 \text{ TX} +1.316 \text{ GDP}$$

#### 4.3. Correlation Coefficients

The information provided in Table 5 shows that the exchange rate has negligible positive correlation with the balance of payments. With correlation coefficient of .0430, it suggests that movements in exchange rates in this case depreciation, were negligibly followed by surplus in the balance of payment. This does not agree with the theoretical views that rise in the exchange rate (depreciation of the local currency) makes foreign goods more expensive and domestic ones cheaper. This situation tends to reduce imports, increase exports and improve balance of payments (Frankel, 1999). The result also indicated a low positive association for rate of inflation and a moderate positive association for current account balances. There was a very strong positive association between the exchange rate and the total imports, total exports and the gross domestic products.

DEPENDENT VARIABLES	CALCULATED CORRELATION COEFFICIENTS
Balance of Payment	.0430
Current Account Balance	.4537
Rate of Inflation	.1057
Total Imports	.9683
Total Exports	.9620
Gross Domestic Products	.9728

Table 5: Correlation Coefficients of Exchange Rates and Selected Macroeconomic Variables  
Source: Calculated from data obtained from CBN statistical Bulletin (Several Issues).

#### 4.4. Performance of Exchange Rate Regimes

In the techniques of data analysis, we stated that the pre-policy and post-policy impact approach will be used to test for statistically significant differences between policy impacts in different time periods. We adopted five times periods in carrying out this test. These are the period of fixed exchange rate; the period of second-tier foreign Exchange market; the period of inter-bank forex market and the period of Dutch, Retail Dutch and Wholesale Dutch Auction System. We tested their significant impact using the analysis of variance statistical model (ANOVA). The results of the test are contained in Tables 4.6 to 4.11.

As the tables show, only the rate of inflation, out of the six variables proved to be statistically significant at the five percent level. This therefore means that a difference exists in the level of performance of the various exchange rate regimes. This is in line with the findings of Frank *et al.* (2005), they stated that, exchange rate pass-through, namely, the amount of exchange rate change that translates into changes in import prices and hence consumer price inflation is higher in emerging markets. They rationalize this in two ways. First, in emerging market economies high inflation in the past has included widespread wage and price indexation. So changes in consumer price index (CPI) due to exchange rate changes are fully and automatically locked in future wage and price inflation. Secondly, in emerging market economies, central banks are less credible and are not independent. The results further showed that the differences in the values of the balance of payments, current account balance, total imports, total exports and the gross domestic product were also not statistically significant at the 5 percent level. This therefore mean that the performance of these variables were the same irrespective of exchange rate regime Nigeria pursued in the period investigated.

Year	Period of Fixed Rate	Period of SFEM	Period of AFEM	Period of IFEM	Period of DAS, RDAS, WDAS	ANOVA
1	-1,398.3	8727.8	-15,325.1	-152,861.0	18,498.2	F=0.9280
2	-301.3	65,271.8	183,952.6	453,399.7	5,959.6	P-value=0.47383
3	354.9	13,615.9	251,593.1	56,531.9	-330,792.5	F <sub>crit</sub> = 3.0556
4	349.1	7,194.9	-36,961.0	-2,294.1	-27,585.1	

Table 6: Test of Significance: Balance of Payment  
Source: Researcher's computation 2015

Year	Period of Fixed Rate	Period of SFEM	Period of AFEM	Period of IFEM	Period of DAS, RDAS, WDAS	ANOVA
1	-4,879.5	59,112.0	186,084.6	31,586.1	79,810.1	F=1.1314
2	-3,137.9	93,680.5	240,180.0	46,336.2	5,196.8	P-value=0.379016
3	8,234.3	-34,414.7	268,899.3	713,023.9	40,224.9	F <sub>crit</sub> = 3.0556
4	10,738.9	-52,304.3	331,435.2	242,901.3	507,117.1	

Table 7: Test of Significance: Current Account Balance  
Source: Researcher's computation 2015

Year	Period of Fixed Rate	Period of SFEM	Period of AFEM	Period of IFEM	Period of DAS, RDAS, WDAS	ANOVA
1	7.7	40.9	72.8	38.3	7.5	F=3.8247
2	23.2	44.5	29.3	6.6	13.0	P-value=0.036792
3	39.6	57.2	8.5	6.9	12.9	F <sub>crit</sub> = 3.1556
4	5.5	57	10.0	18.9	14.0	

Table 8: Test of Significance: Rate of Inflation  
Source: Researcher's computation 2015

Year	Period of Fixed Rate	Period of SFEM	Period of AFEM	Period of IFEM	Period of DAS, RDAS, WDAS	ANOVA
1	10,770.5	30,860.2	755,127.7	21,445.7	45,717.9	F=2.6696
2	8,903.7	143,151.2	562,626.6	862,515.7	89,488.2	P-value=0.073053
3	7,176.3	165,629.40	845,716.6	962,963.9	1,580,527.2	F <sub>crit</sub> = 3.0556
4	7,062.6	162,789.0	837,418.7	1,357,695.0	1,956,110.4	

Table 9: Test of Significance: Total Imports  
Source: Researcher's computation 2015

Year	Period of Fixed Rate	Period of SFEM	Period of AFEM	Period of IFEM	Period of DAS, RDAS, WDAS	ANOVA
1	8,206.4	57,971.2	950,661.4	31,192.8	109,886.1	F=2.7196
2	7,502.5	205,611.7	1,309,543.4	1,188,969.8	121,535.4	P-value=0.069499
3	9,088.0	218,770.1	1,241,662.7	1,945,723.3	1,882,668.2	F <sub>crit</sub> = 3.0556
4	11,720.8	206,059.2	751,856.7	2,001,230.8	2,889,846.7	

Table 10: Test of Significance: Total Export  
Source: Researcher's computation 2015

Year	Period of Fixed Rate	Period of SFEM	Period of AFEM	Period of IFEM	Period of DAS, RDAS, WDAS	ANOVA
1	51,792.2	222,539.1	1,951,884.8	145,183.1	274,672.1	F=2.7779
2	56,745.2	541,783.2	2,787,283.7	3,440,204.1	320,432.9	P-value=0.065583
3	63,076.2	693,623.4	2,906,624.9	4,866,280.0	6,398,907.7	F <sub>crit</sub> = 3.0556
4	71,620.5	907,875.4	2,836,814.2	5,526,204.9	6,255,470.0	

Table 11: Test of Significance: Gross Domestic Product  
Source: Researcher's computation 2015

The monetary authorities usually intervene through its monetary policy action and operations in the money market to influence the exchange rate movement in the desired direction such that it ensures the competitiveness of the domestic economy. The study established that the various exchange rate regimes pursued by the monetary authorities were not able to turn the economy around.

## 5. Conclusion and Recommendations

This study investigates the potency of macroeconomic variables in influencing exchange rate behaviour in Nigeria from 1980 to 2014. The study tested the impact of selected macroeconomic variables on exchange rate performance in Nigeria. The techniques of data estimations used in this study are ordinary least square regression analysis (OLS) and analysis of variance (ANOVA). The major findings of the research are:

- i. The persistent non-realization of exchange rate policy objectives since 1980.
- ii. That there has been very weak relationship between the changes in exchange rates and the balance of payment, current account balance, and rate of inflation.
- iii. That there had been very strong relationship between the changes in exchange rates and the total imports, total exports, and gross domestic products.
- iv. That there was no remarkable difference in the performance of the various exchange rate regimes with respect to the macroeconomic variables chosen except that on the rate of inflation.
- v. That balance of payment, current account balance, total exports and gross domestic product significantly influenced exchange rate, while, exchange rate behaviour does not depend on the rate of inflation and total imports in Nigeria.

This study recommends that:

1. In order to effectively pursue stable exchange rate, Nigeria must initially address a number of institutional and operational issues. These include designing a workable fiscal-monetary policy mix so that the borrowing requirements of the government no longer dominate monetary policy decisions.
2. The CBN should be granted their operational autonomy so that the government can no longer interfere with monetary policy operations, while providing an adequate system of checks and balances to ensure central bank accountability, developing macroeconomic statistics that are timely and consistent, documenting the monetary transmission mechanism; and operating measures that can strengthen transmission as well as the financial system at large.
3. There should be more independence in the design and implementation of macroeconomic policies for the country. If economic policies are externally determined, they tend to have very high foreign implication in terms of culture and interests. Such foreign orientation impedes their workability.
4. The wholesale Dutch Auction System in which bids for forex purchases are to the account of authorized dealer banks that will later retail to forex end-users, based on prescribed documentation and eligibility of transactions should be strengthened. However, there is need for the Net Open Position limit of authorized dealer banks, provision must be made for comprehensive, unambiguous rules/guidelines relating to forex dealing with the CBN and forex end-users including adequate sanction for breaches.

## 6. References

- i. Aksoy, Y. and Riyanto, Y. (2000), "Exchange Rate Pass-Through in Vertically Related Markets," *Review of International Economics*, 8, No.2, 235-251.
- ii. Andrea, B. and Inci, O. (2004), "Are Pegged and Intermediate Exchange Rate Regimes More Crisis Prone?" IMF Working Paper 03/223 (Washington: International Monetary Fund), March 2004, 1023-1034.
- iii. Bacchetta, P. and Van Wincoop, E. (2003), "Why do Consumer Prices React Less Than Import Prices to Exchange Rates?," *Journal of European Economic Association*, 1, No.2-3, 662-670.
- iv. Batini, Nicoletta, (2004), "Achieving and Maintaining Price Stability in Nigeria" International Monetary Fund W/P/04/97. IMF Working Paper, [www.imf.org/fandd](http://www.imf.org/fandd) Pp. 148-160.
- v. Batini, N., Richard, H., and Stephen, P.M, (2003); "Monetary Policy Rules for an Open Economy," *Journal of Economic Dynamics and Control*. Vol. 27 (9), 2059-2094.
- vi. Bodnar, G., Dumas, B., and Marston, R., (2002), "Pass-through and Exposure", *Journal of Finance*, 57, 199-231.
- vii. Campa, J. and Goldberg L., (2002), "Exchange Rate Pass-through into Import Prices: A Macro or Micro Phenomenon?" NBER Working Paper 8934, May, 142.
- viii. Campa, J. and Goldberg L., (2004), "Exchange Rate Pass-through into Import Prices", CEPR Discussion Paper 4391, May, 33-35.
- ix. Calvo, Guillermo A., and Reinhart Carmen M., (2000), "Fear of Floating", NBER Working Paper No. 7993 (Cambridge, Massachusetts: National Bureau of Economic Research), 1341-1346.
- x. Caves, Richard E, and Ronald, W. Jones, (1977), "Exchange Rate Policies for Less Developed Countries (LDCs) in a World of Floating Rates," *Essay in International Finance*. No. 119, 99.
- xi. Central Bank of Nigeria (2002), *Annual Reports and Statements of Accounts*, 26-58.
- xii. Devereux, M. B. and Engel, L. (2001), "Endogenous Currency of Price Setting in a Dynamic Open Economy Model", NBER Working Paper 8559, October, 52.
- xiii. Dornbusch, R. (1987), "Exchange Rate and Prices," *American Economic Review*, 77, 93-106.
- xiv. Fischer, Stanley, (2001), "Exchange Rate Regimes: Is the Bipolar View Correct?" *In Finance and Development*, Vol. 38, (6), 66-82.
- xv. Frank, J. Parsley, D. and Wei, S. (2005), "Slow Pass-through around the World, A new Import for Developing Countries", NBER Working Paper 11199, (3), 80.
- xvi. Frankel, J. A. (1979), "On the Mark; A Theory of Floating Exchange Rates Based on Real Interest Differentials," *The American Economic Review*, Vol.69, Nos. 5, 167.
- xvii. Frankel, Jeffrey A., (1999), "No Single Currency Regime is Right for All Countries or at All Times," *Essays in International Finance*, No. 215, (Princeton: Princeton University Press) 242.
- xviii. Froot, S. and Klemperer, J., (1989), "Goods Prices and Exchange Rates: What Have We Learned?" *Journal of Economic Literature*, 35, 1243-72.

- xix. Gagnon, J. and Ihrigs, J., (2004), "Monetary Policy and Exchange Rate Pass-through," *International Journal of Finance and Economics*, 9, 315-338.
- xx. Guillermo A. Calvo and Carmen Reinhart, (2000), "Fear of Floating", NBER Working Paper 1973, (Cambridge, Massachusetts: National Bureau of Economic Research), 150.
- xxi. Guimaraes, R. and Cem K. (2004), "The Empirics of Foreign Exchange International in Emerging Markets: The Case of Mexico and Turkey", IMF Working Paper 04/123 (Washington: International Monetary Fund), 1234-1239.
- xxii. Gust, C., Leduc, S., and Vigfussion, R., (2005), "Trade Integration, Competition, and the Decline in Exchange Rate Pass-through", Mimeo, November, 58.
- xxiii. Hegji, C. (2003), 'A Note on Transfer Prices and Exchange Rate Pass-through', *Journal of Economics and Finance* 27, No.3, 396-403.
- xxiv. Hooper, G. and Mann, K., (1989), "Monetary Policy Rules in Practice: Some International Evidences" *European Economic Review*, 42, 103-107.
- xxv. International Monetary Fund, (1999), "Exchange Rate Arrangements and Currency Convertibility: Developments and Issues", *World Economic and Financial Surveys* (Washington: International Monetary Fund), 89.
- xxvi. Jorge, C. (2003), "Foreign Exchange Intervention in Developing and Transition Economics: Results of Surveys", IMF Working Paper 03/95, (Washington: International Monetary Fund), 41-42.
- xxvii. Kasa, R., (1992), "The Purchasing Power Parity Puzzle," *Journal of Economic Literature*, Vol. 34, No.2, 647-668.
- xxviii. Khan, M. S. (2003), "Current Issues in the Design and Conduct of Monetary Policy," IMF Working Paper 03/56, (Washington: International Monetary Fund), 56-71.
- xxix. Krugman, P., (1987), "Pricing to Market When the Exchange Rate Changes", In *Real Financial Linkages Among pen Economies*, Eds-S.W. Arndt and J. David Richardson. Cambridge, MA: MIT Press, 49-70.
- xxx. Levacic, R., and Rebmann A., (1982), *Macroeconomics*, London, Macmillan Publishers Ltd, 89-100.
- xxxi. Mann, C., (1986), "Prices, Profit Margins, and Exchange Rates," *Federal Reserve Bulletin*, 72, 366-379.
- xxxii. Marazzi, M., Sheets, N. and Vigfusson, R. (2005), "Exchange Rate Pass-through to U.S. Import Prices: Some New Evidence", *International Finance Discussion Paper No.833*, April, 78-88.
- xxxiii. Marston, F. S., (1991), "Asymmetric Information and Financial Crisis, A Historical Perspective", in *Financial Markets and Financial Crisis*, Ed. By R. Glenn Hubbard (Chicago, Illinois: University of Chicago Press), 102-106.
- xxxiv. McPherson, Charles P., (2002), "Petroleum Reserve Management in Developing Countries", IMF Working Paper 05/46, (Washington: International Monetary Fund), 431-436.
- xxxv. Ndiomu, Anthony M., (1993), *Applied Economics in Banking and Finance for Nigeria Students*, PortHarcourt; Pan Unique Publishers, 77-79.
- xxxvi. Obstfeld, M. (2004), "International Capital Mobility in the 2000s", In Peter B. Kenen, ed. *University Independence: The Macroeconomics of the Open Economy*, Princeton: Princeton University Press. 83 - 86.
- xxxvii. Olivei, G., (2002), "Exchange Rates and the Prices of Manufacturing Products Imported into the United States", *New England Economic Review*, First Quarter, 3-18.
- xxxviii. Olukole, R. A., (1992), "Exchange Rate Development in Nigeria", *CBN Bullion*, Vol. 16 No.1Jan/March, 38-45.
- xxxix. Otani, S., Shiratsuka, B., and Shirota, C., (2005), "Revisiting the Decline in the Exchange Rate Pass-through: Further Evidence from Japan's Import Prices.", IMF Discussion Paper series No. 2005-E. 6, July, 306-342.
- xl. Reinhart, Carmen and Roggot, Kenneth, (2002), "The modern History of Exchange Rate Regimes", NBER Working Paper No. 8963 (Washington: National Bureau of Economic Research, May), 114-118.
- xli. Sekine, T., (2005), "Time-Varying Exchange Rate Pass-through Experiences of Some Industrial Countries", BIS, Mimeo, 97.
- xlii. Taylor, John B., (2000), "Using Monetary Policy Rules in Emerging Market Economics", Paper Presented at Banco de Mexico's 75<sup>th</sup> Anniversary Seminar "Stabilization and Monetary Policy: The International Experience", Mexico City, November 14-15, Pp.45-51.