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EXCHANGE RATE VARIATION AND MACROECONOMIC PERFORMANCE IN NIGERIA, 1988 – 2010

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ABSTRACT- The study examines the impact of exchange rate variation on some selected macroeconomics variables; Gross Domestic Product (GDP), Balance of Payment (BOP) and Inflation Rate (INF) in Nigeria from 1988 to 2010. Three (3) models were developed with GDP, BOP and INF as dependent variables and exchange rate as explanatory variable. The study employed the ordinary least square technique as the major analytical tool. The result of study revealed that exchange rate variation impacted insignificantly on gross domestic product (GDP), balance of payments (BOP) and inflation (INF) in Nigeria within the period under review. Specifically, the R^2 in the GDP, BOP and INF models were 0.42, 0.45 and 0.04 respectively. Based on the findings, the researcher concludes that diversification of productive base and employing realistic exchange rate will promote exports and discourage imports. The study, recommended that monetary authorities should establish mechanism that guarantees a stable exchange rate system.
Key words: Exchange Rate Variation, Inflation, GDP, Nominal Exchange Rate, Dutch Auction System.

1. BACKGROUND TO THE STUDY

Foreign exchange rate plays an important role in the world economy today, because it is a rate which determines import and export in a mixed economy such as Nigeria. According to Ebi, (2000), Government policies play major intervening roles in the economy in the process of achieving macroeconomic aims and objectives. Most Developing Countries (MDC), such as Nigeria are confronted with macro-economic obstacles which create some threats in her economic development. Because macro-economic policy is concerned with how the agencies responsible for the conduct of economic policy manipulates a set of macro-economic variables in order to achieve some desired objective of policy.

In Nigeria, as in other countries, it is the responsibility of the central government to initiate policy that will help to achieve the major macro-economic objectives. These objectives are employment, price stability, favourable balance of payment, stable exchange rate. Policies determine the macro-economic performance of the above variables.
According to Gbosi (1993), the exchange rate as a price, unlike any other price has the widest implication for other variables in the economy following the deregulation of Nigeria economy in 1986 market-based framework for the determination of exchange rate.

Since the deregulation of the foreign exchange market in 1986 there had sharp depreciation of the naira against major foreign currencies especially the U.S dollar. For example, in 1985, a year before the adoption of SAP less than N1.50 was exchanged for one U.S dollar.
As Gbosi (1995) observed, SAP was seen by many economists as the *"Moses*" that will lead Nigeria to the "*promised land"* as far as a realistic exchange rate for the naira is concerned.

Available data showed that between 1988 and 2008, the naira has appreciated by more than 3,000 percent. In 2000, the naira exchange rate against the U.S. dollar was N110 to 1 U.S. dollar. After a few months it rose from N110 to N112 in 2001. But at the end of 2002, about N130 was exchanged for 1 U.S. dollar in the official market and N140 in the parallel market. At the end of December 2003, about N135 was exchanged for 1 U.S. dollar.

During the period, 2004 - 2007, the naira appreciated slightly against the dollar. It was about N116 in the official market and N120 in the parallel market.

But by the end of 2010, the naira has depreciated sharply against the dollar. It rose to N150 in the official market and almost N170 in the parallel market. These is no doubt, the fast depreciation of the naira in 2008 and 2009 might have been caused by the current global economic meltdown and falling oil price in the international market.

It was envisaged that the realization of macroeconomic stability would lead to the elimination of distortion in the external sector and thus enhance economic growth and development which would stimulate non-oil export and increase foreign exchange availability. The attainment of a realistic exchange rate was also expected to eliminate the parallel market premium, reduce capital flight as well as enhance the inflow of foreign investment.

In pursuance of these objectives, a Second-Tier Foreign Exchange Market (SFEM) was introduced in September, 1986, with the adoption of Structural Adjustment Programme (SAP); with the aim of diversely restructuring the productive base of Nigerian economy.

Precisely, since its adoption, the outcome of exchange rate variation has remained largely unstable and thereby exerting undue pressure on the external sector of the Nigeria economy.

Consequently, other sectorial policies equally failed woefully as targets of other macroeconomic aggregates like interest rate, money supply, unemployment, inflation rate, amongst others remained largely unrealized.

Hence there is need for effective management of a country's foreign exchange resource as to reduce the adverse consequence often associated with exchange rate instability in an economy. Also apart from ensuring an adequate driving price in the foreign exchange market, appropriate foreign exchange management will help to generate adequate supply in relation to its demand. Thus there is the need to properly evaluate the role of exchange rate management of an economy, since the exchange rate in most developing economy is characterized by high level of volatility.

Therefore, this study seeks to examine the impact of exchange rate variation on macroeconomic performance in Nigeria between 1988 and 2010.

2. Theoretical Literature Review

This section state the theoretical review of this study where relevant theories explaining the subject matter are expressed. They are various schools of thought that argue the relevance of foreign exchange underpinnings.

3. The Balance of Payment (BOP) Standard Theory

Proponent of theory contend that since foreign exchange which is a mean of setting International Transaction, is earned and disbursed in the course of undertaking international transaction, there is a close link between resident of one country and the rest of the world. As a result, in the standard theories of balance of payment, elasticity or liquidity, the income-absorption and the monetary approaches where used as theoretical basis for explaining foreign exchange management in Nigeria during the period under review.

In the liquidity approach, Balance of payment analysis tries to examine the impact of devaluation in trade balance. According to the proponents of the approach, with adequate downward adjustment of exchange rates, countries with balance of payment problem will be able to export more and import less.

This will enable those countries to save more foreign exchange. This approach however, is based on certain economic assumptions. These assumptions include mass unemployment, perfectly supplies, an initial balanced growth and the elastic of income and foreign exchange demand for imports exceeding unity.

However, when devaluation fails as the case in developing countries, the argument is that instead of devaluation complementary monetary and fiscal policies could be adopted to achieve the same result. The approach therefore, emphasized on expenditure switching policies while the liquidity approach tries to analyze the impact of devaluation on trade balance, this approach relates the trade balance to total absorption. The income absorption approach recognizes the fact that under certain circumstance, direct control measure would be needed to reduce foreign exchange disbursement. To this effect, it recommends the financing of temporary deficits when reserves are large and exchange control as well as domestic restrictions and devaluation policies when deficits are persistent and foreign outflows as excessive Obaseki (2001). He further, stated that the approach therefore prescribed both expenditure switching and changing polices.

However, the monetary approach, tries to analyze the role of money in shaping other aggregates that may influence the movement of exchange rate and international reserves. Furthermore, the approach disagrees with the assumption that monetary effect of surpluses or the balances of payment are usually sterilized by the monetary authorizes.

Rather, these approaches argued that the inflow and outflow of foreign exchange associated with surpluses or deficit, in the balance of payment are not immediately realized. The approach equally argues that, when the exchange is fixed, the monetary authorizes can control the international reserves component of the monetary base through appropriate polices.

According to Obasiki (1986) during the period of under a flexible change regime, the money supply is an exogenous variable. Therefore, it can be control by the monetary authorizes. This has important implication for monetary analysis. It means that when exchange rate is fixed, foreign reserve have to be sufficient to protect such rate. On the other hand, when exchange rates are allowed to float, the need for reserve will be reduced. To this end of theoretical review proponents of the monetary approach prescribe the adoption of appropriate domestic monetary and fiscal policies in conjunction with exchange rate variable to achieve foreign exchange management objective Obasaki, (1986).

According to Ebi (2000), the strongest in exchange rate of the currency to some other currencies does not portend an economic El Dorado. Japan and China are two examples of countries with strong and buoyant economies but with relatively weak currencies. China for instance, has a foreign reserve in excess of $ I trillion but a deliberate attempt at curtailing import and promoting exports have kept the exchange rate as compared to the United states Dollars and the British Pound sterling very low.

According to Sunday, (2009): Japan on the other hand relies solely on the export of its technology with a zero level of mineral resource. Consequently, despite the fact that Japan is the second largest economy in the world, its Yen remains low in exchange value. The fact of low currency exchange in these two great economics also ensures that industries are located there because labour will also be cheaper compared to other climes in Europe and America.

It will therefore, be economically suicidal for those two great economies to allow their currencies rise in exchange against other major currencies of the world. In the case of Nigeria as an emerging economy, it has not been quite easy to determine the thrust or direction of the economy. Since independence, there has been a struggle between powerful influences on whether the economy should be agrarian based, raw materials based, industrial based or even service based. Policy thrust has depended mainly on the character and personality of the government in power.
According to Ebi (2009): exchange rate volatility can thus be attributed to several causative factors including, but not limited to the reasons mentioned in the introductory part which are over dependence of Nigeria on crude oil for over 70% of its earning and more than 95% of export receipts. The result of this was that each time there is a boom; CBN is able to defend the integrity of its currency with accumulated foreign earnings until this is depleted and the currency is allowed to find its natural level in the market.
Second reason, the unbridled taste of Nigerians for foreign goods, thus always putting pressure on the naira and the determination of fiscal authorities to force Nigeria to curb their taste for imports through the instrumentality of CBN's foreign exchange policy. These traders resort to smuggling. Why would an importer prefer to purchase the United States Dollar or even the pound sterling at N152 or N270 when the same could be got for N147 and N232 at the official rate sufficient supply?

For instance during the period between 1993 and 1998, Nigeria was regarded as a pariah nation by the international community and as a result few nations were willing to do business with the country.

During the period there was relative stability in the exchange rate as compared to the period between 1985 and 1993 on the other hand. They suddenly went back into the comity of nations as a respected member and the freedom brought by democratization in 1994 sent Nigerians on a free international spending spree. There is also a trend whereby the United State Dollar, for instance, is used as a store of value in the wake of gold's diminished status. This has affected the value of the naira negatively because of the perception that it is not a stable currency.

Many Nigerians and even foreigners rush to exchange their naira for the dollar thus mounting unfavorable pressure on the local currency.

4. Historical Perspective of Exchange Rate

It was perceived that the gold standard system enhanced stability of exchange rate among all the countries which adhered to it and at the same time maintained the internal value of the currency. Based on this perception Great Britain in 1986 (because she was the first country to fix the exchange value of gold) announced in terms of the pound sterling and this made sterling the major means of settling international debts. Naturally, other countries followed the British
example and therefore the value of one currency in terms of another came to be determined by its gold content. This became the era of gold standard.

The gold standard system had several problems, which led to its failure and was subsequently abandoned between 1931 and 1934. Some of the problems were tied to country's money supply to the supply of gold available to it and by so doing tied world trade to the change event of gold discovery. Countries had little control over their money policies, and so could not use monetary policies to adjust the economy as desired. After the abandonment of the gold standard, there was disorder in international trade and it almost broke down completely because the world was not ready at that time of another monetary system to replace it.

In July 1944 a representative of 44 nations met in Breton Woods, New Hampshire, USA; to create a new international monetary order. Foremost in the minds of those officials was the collapse of the Gold Standards System in the 1930s.
Economic nationalism – competitive exchange rate, devaluation, formation of competing monetary blocs and the absence of international cooperation in those years had contributed greatly to economic breakdown, domestic political instability and international war.

The goal of those present at Breton Woods was to establish an international economic system, which would prevent another economic and political collapse and another military conflict. It was the general consensus by those present that the previous monetary system, which had relied primarily on market forces, had proved inadequate.

Henceforth the government acting together would have to assume the responsibility of managing the international monetary system.

As early as 1936 in the Anglo French tripartite agreement, the major states began to cooperate to stabilize their currencies. During the Second World War monetary cooperation was expanded through various agreements and through a vast amount of monetary planning for peace. At Breton Woods officials were prepared to establish a publicly managed international monetary order.

The rule of Breton Woods set forth in the articles of agreement provided for a system of fixed exchange rate. Public officials fresh from what they perceived as a disastrous experience with floating exchange rate in the 1930s, concluded that a fixed exchange rate was the most stable and the most conducive to trade.

According to Gbosi (1993), all the countries agreed to establish the parity of their currencies in terms of gold and to maintain exchange rate within one percent, plus or minus of parity. From 1945 to 1947 the United States actively pressed for implementation that the new structure would effectively be managed by the international monetary system. By 1947, however, the United States recognized that the Breton woods system was on the verge of collapse. Clearly, it had destroyed the European Economic system, which had been based largely on international trade.

The above economic crises signaled the collapse of the Breton Woods System in (1971) which was finally abandoned in 1973.

The discussion of the implication of real exchange rate volatility gained momentum following the breakdown of the Breton wood exchange rate system, which ushered in a new era of floating exchange rate in the industrialized countries.

However, following the switch in policy, there has been growing concern that the nominal and real exchange rates have exhibited marked volatility, creating uncertainty and macroeconomic policy formulation, investment decision and international trade flow. Although this volatility has largely been high in developed economies, developing countries have also experienced significant exchange rate volatility.

For a long time, researchers have modeled the effect of exchange rate volatility on real economic activity, in particular on international transactions (see recent works by Darrat and Hakim 2000).

However, the empirical evidence has been rather ambiguous both within developed and developing countries and across countries (Cote, 1994). Consequently, the debate on the impact of exchange rate volatility appears far from being resolved.

It cannot be refuted that the real exchange rate is an important macroeconomic relative price for a small open developing economy such as Nigeria.

5. The Anatomy of Foreign Exchange Rate

According to Akpakan (2000), Foreign exchange is the currency of another country obtained through international economic transactions. It is a receipt from various items, goods and services exported to foreign country by the exporting countries. It is the monetary asset used for the settlement of current international transaction and for financial imbalance in the country's external payment position vis-à-vis other countries. He further defined foreign exchange as a component of a country's official external reserve, which represent the total stock of external assets, which are available to the monetary authorities of a country for the settlement of international economic transaction.

According to Soludo C. (2006), foreign exchange is a claim on a country by another and held in the form of currency of that country, and that foreign exchange system enables one currency to be exchanged for (or be converted into) another, and thereby facilitating trades between countries. foreign exchange can also be defined as a means of effecting payment for international transactions and which can be acquired by a country through the export of goods and service, direct investment inflow, draw down on external loans, aids and grants which can be expanded to settle international obligation.

6. Exchange Rate Management in Nigeria

Exchange rate management has to do with the acquisition and development of foreign exchange resources in order to reduce the destabilizing effect of short term capital flows in the economy.
In any economy, it is the responsibility of the apex bank to monitor the use of secured foreign exchange resources to ensure that foreign exchange disbursements and utilization are in line with economic priorities and within the annual foreign exchange budget in order to ensure a favorable balance of payment position (BOP) as well as the stability of the domestic currency.

The organs responsible for exchange rate management in Nigeria are the presidency, the Federal Ministry of Finance (FMF) and the Central Bank of Nigeria (CBN). Foreign exchange management in Nigeria has passed through different phases and regimes of which the trade and exchange control period (fixed exchange rate) and the liberalized (deregulated) era are discernible.

Several instruments ranging from outright fixing to complete liberalization through guided deregulation using autonomous, inter-bank Dual and Dutch Auction exchange rate has been employed. These regimes were characterized by several problems' few of which are sharp malpractice and evasive control.

A critical review of the various regimes under the pre-SAP and after-SAP periods as highlighted below gives an adequate and indebt evaluation in the various regimes in Nigeria.

7. Structure of the Nigerian Foreign Exchange Market

According to CBN 'briefs (2006)', the Nigeria Foreign Exchange market is made up of the three major segments, the official, autonomous (made up of the inter banks and bureau de change) and the parallel market. The various segment of the market evolved overtime and emerged due to development in the economy that warranted their debate.

The official and the autonomous foreign exchange markets are the largest predominant segment of the market. It has remained one throughout the period of trade and exchange controls when the 1962 Exchange Control Act held sway. The official exchange market over the years metamorphosed.

Since the institutional regime of exchange and trade liberalizations in 1986, the market witnessed tremendous changes. From the Second-tier Foreign exchange market (SFEM) in September 1986, the united official market in 1987 when exchange rate for public sector transaction was aligned with the commercial exchange rate, up to 1995 when the Autonomous Foreign exchange to end-users by the CBN was established, the official market has evolved from a single to a dual exchange rate system. During this period the market operated two exchange rate systems – a fixed exchange rate for priority public sector transaction and a market-based exchange rate for private sector and other non-priority public sector transaction through the autonomous foreign exchange market segment.

The inter-bank market free funds or privately soured foreign exchange was not apparent when foreign exchange was centralized in the CBN through the 1962 Exchange Control Act.

However, the market became vibrant with the introduction of the second-tier foreign exchange market and permission granted to the banks by the CBN to effect foreign exchange dealing among them.
The sharp practices that emanated from the system, in the form of round tripping of fund leading to persistent instability in the exchange rate, informed the mergers of the officials foreign exchange market and the inter-bank market in 1989 into an enlarged inter-bank Foreign exchange Market (IFEM). The inter-bank market and the bureau de change were established with the abolition of the inter-bank market in 1989 to accord access to some users of foreign exchange and enlarge the officially recognized foreign exchange market.

Exchange rate in the bureau de change are market determined with introduction of the AFEM in 1995, the banks are once more allowed to engage in inter-bank dealing with privately sourced foreign exchange.

The parallel or black market for foreign exchange has been in existence from the exchange control era. The disparity in exchange rates was even greater in some of the period before Nigeria economic re-branding or reforms.

In the Foreign exchange Management Framework, whether in developed or developing economies, speculation, arbitrage, hedging and portfolio switching are important elements in gaining the health and development of the Foreign exchange Market and by extension, the financial system.

In analyzing foreign exchange market in Nigeria, Ajie (2000) indicate that the change from administratively determined foreign exchange policy (management) to market based exchange rate determination was the objective of achieving a stable and realistic exchange rate for the naira. Sadly, despite the several efforts, continued demand pressure and dwindling foreign exchange earnings exerted significant pressure on the foreign exchange market, which resulted to a continued depreciation of the naira. Thus, a realistic exchange rate has not emerged under any of the regime of exchange rate management in Nigeria due largely to some structural and macroeconomic rigidity inherent in the economy. The appraisal revealed that while supply sourced are highly lopsided, the misalignment of the exchange rate has created a battalion of foreign exchangers.

Users do frivolously and fraudulently procure foreign exchange from official sources for round-tripping into the parallel market while political agencies have not permitted the emergence of a truly market exchange rate. This was compounded with the over import dependence nature of our economy which incapacitated policy success. Consequently using the Purchasing Power Parity (PPP) as a guide between 1986 and 2002, the observed nominal value of the naira and the computed PPP varied significantly. Their variation range between 19.25 percent in 1986 to 21.1percent in 1992 converging in 1995 before widening afterwards. With respect to stability, the naira could be said to have achieved relative stability under the control system but it depreciated continuously in all the windows under deregulation using the IMF per value system.

Furthermore, it was observed that the demand pressure in the foreign exchange market has been sustained largely by the side arbitrage premium between the official exchange rate and the parallel market.

To this end, the parallel market and bureau de change rates maintained a premium of less than 1 percent over time and approximate the PPP rate. This scenario is blamed on the speculative activities and unethical behaviour of authorized dealers and the expansionary posture of fiscal policy.

Moreover, the source of financing the foreign exchange market is highly skewed to official source at the CBN, as the economic agent who earned foreign exchange did not sell it as the official rate due to misalignment in the price, but these economic agents who earned foreign exchange sell it at the parallel market. Thus the premium between the parallel and official exchange rate encourage arbitrage.

The DAS has substantially reduced the premium and the volatility in the exchange rate. Rent-seeking incentive inherent in the exchange market remained the cause of fueling embarrassing demand pressure the official window of the market.

Also the monetization of the oil proceeds by the three tiers of government often increases money supply and frustrates not only the goals of monetary target, but also the achievement of the goals of foreign exchange management in Nigeria economy.

8. The Naira Crisis

The problem with the naira currency dates back to the period of this work. Interestingly, the naira was one of the strongest currencies in the world market prior to 1980, but sadly, ten years after then naira depreciated more than 5000 percent. It made progress from the early 1980s and thereafter, major economic trouble began to build up.

According to Gbosi (1995) prominent among the problems where mounting debt burden and BOP deficits blamed on external imbalance, occasioned by persistent international economic recessions, declining world commodity prices, and declining capital inflows. Apart from external shocks, internal economic distortions also adversely affected economic environment which adversely affected the pursuits of macroeconomic policies and created disincentive towards domestic production in the presence of importation which is higher than mass consumption.

This distortion assumed crisis proportion by 1985 due largely to excessive government control and regulation of the financial system, the foreign exchange and other commodity markets. Thus, in 1986 SAP was introduced to deal with the imbalance in the economy to pave way for a stable growth and development.

The key objective of SAP was to diversify and restructure the productive base of the Nigeria economy as well as to establish a realistic exchange rate for the naira currency. One of the major instruments of SAP was the devaluation of the naira so as to make Nigeria export relatively cheaper and the import expensive to promote external sector stability. Thus, this has led to a persistent depreciation of the naira and breeding more crises for the currency.

These unprecedented crises were blamed on the excessive devaluation of the already over-devalued naira, slump in oil revenue, proliferation of banks and other financial institutions, distress in the banking industries as well as
the influx of foreign currency into the parallel market.
Also, conflict in macroeconomic policy mix, administrative bottleneck caused by banks in obtaining foreign currency, excessive deficit financing and political instability were also identified among factors that plummeted the naira into crisis (Gbosi, 1995).

9. RESEARCH METHODOLOGY

For the purpose of this study the survey research design was adopted because of the interest in observing what is happening to the variables without making any attempt to manipulate or control them. Therefore, the research design for this work involves the following step.

1) The gathering of data from the Central Bank of Nigeria (CBN) statistical Bulletin in relation to exchange rate and the dependent variable to Nigeria Marco economic performance.
2) The analysis of data collected.

Area of the Study

The area of this research study comprise Nigerian economy from 1988 – 2010 on how the exchange rate variation have impacted on macro-economic performance three (3) set of data which showed the exchange rate variation on:

- Gross Domestic Product
- Balance of Payment and
- Inflation Rate

Model Specification

The model specified a functional relationship between exchange rate variation, RGDP, BOP and Inflation from 1988 – 2010. The estimation will involve the use of multiple regression analysis (OLS) method. The models are thus specified below:

Model 1

Gross Domestic Product and exchange rate

RGDP = $f\ (ER)).....1a$

Rewriting (1a) explicitly

RGDP = $\alpha_0 + \alpha_1 ER + U, \ldots\ldots 1b$

Model 2
Balance of payment and exchange rate
BOP = $f(ER)) \ldots\ldots\ldots \quad 2a$

Rewriting (2a) explicitly
BOP = $\alpha_0 + \alpha_1 ER + U_2 \ldots\ldots 2b$

Model 3
Inflation and Exchange Rate
Infl = $f(ER)) \ldots\ldots\ldots \quad 3a$
Rewriting (3a) explicitly
Infl= $\alpha_0 + \alpha_1 ER + U_3 \ldots\ldots 3b$
Where ER =Exchange Rate
RGDP = Real Gross Domestic Product
BOP = Balance of Payment
Inf = Inflation Rate

$\alpha_1 \ \alpha_0 \ \alpha_0 = Intercept \ autonomous \ level$
$\alpha_1 \ \alpha_1 \ \alpha_1 = Coefficien\, t$
$\mu_1 \ \mu_1 \ \mu_1 = Stochlastic \ term / error$

$\alpha_1 > 0$
$\alpha_1 > 0$
$\alpha_1 < 0$

10. Discussion of Variables in the Model
The variable in the model are structured into dependent and independent variable, and the analytical design is cast into three respective models as accordingly stated in the null (H0) hypothesis.

Model 1
This considers the effect of Exchange Rate on Gross Domestic Product and thus states that GDP is a function of Exchange rate.

The Dependent Variable:
The dependent variable in this model is Gross Domestic product which is the proxy for economic growth economic growth and refers to the steady progress of increasing productive capacity of an economy. In the model, it is represented by Real Gross Domestic Product (RGDP) the real gross domestic product is the sum total of all productive activities within the geographical area of an economy deflated by inflation differentials. Also, it is referred to as the levels of GDP in price were to remain unchanged from year to year.

Hence, RGDP is the nominal gross domestic product deflated by the consumer's price index.

$$\frac{GDP}{CPI} = RGDP$$

Where GDP = Nominal Gross Domestic Product
CPI = Consumers Price index
RGDP =Real Gross Domestic Product.

Here, the rate of Real Gross Domestic Product (RGDP) shall be the regressand. RGDP in the model shall proxy economic growth such that the result therefore shall be used to ascertain the extent to which exchange rate variation impacts on the level of economic growth and development of the Nigeria economy.

The Independent Variable: The independent variable in the model is exchange rate Exchange Rate (EXR).

The exchange rate is the price of domestic currency expressed in term of a unit of a foreign currency. Hence the Exchange rate for the Naira that is the amount of Naira that is exchange for one unit of a foreign currency (Dollar).

In the model exchange rate is the major explanatory variables. Economy theory postulates a positive relationship between economic growth and exchange rate. According to Keynesian National Income Identity, Gross National Product RGDP is a function of Consumption plus investment plus government expenditure and plus net export.

Y = C + I + G + X – M

Where

Y = GNP,
C = Consumption,
I = Investment,
X = Export and
M = Import.

The Identity (X – M) is net export and the higher it value, the higher the value of Y. It also postulated that an increase in exchange rate of a domestic currency (deprecations) will attract foreign demand for the domestic good and services which be cheaper in the international market.

This will increase the X component of the Identity and thereby increase GNP which is equal to RGDP in the model our a priori expectation is state such that:

$$\frac{\partial\, RGDP}{\partial\, EXR} \rangle\ 0$$

This means that an increase in exchange rate (depreciation) will increase export and thereby stimulate economic growth.

Model II

In accordance with economic theory, the relationship between the regressors and the Independent in the Model is BOP $\int (EXR)$.

In the model, the dependent variable is balance of payment (BOP). The Balance of payment is a statement which systematically summarizes for a specific time period all the economic transaction of a domestic economy with the rest of the world. It is a comprehensive measure of the overall external position of that economy. Here, a favorable BOP is regarded positive.

The Independent variable in the model is exchange rate.

As define above, the exchange rate is the prices of a domestic currency expressed in term of exchange rate are positively related.

Theoretically, the a priori expectation is state such that:

$$\frac{\partial\, BOP}{\partial\, EXR} \rangle\ 0$$

This means that there is a positive relationship between exchange rate and balance of payments. Accordingly, an increase in the exchange rate (depreciation) is expected to encourage foreign demand for our goods and services in the international market. This will increase export in the face of a decreasing importation as foreign goods and services will be more expenses to use, resulting in a surplus on the current account section of the Bop. Hence there will be a favorable BOP.

Model III

In the model, the functional relationship between dependent and independent variable;

$$Inf = \int (EXR))$$

The dependent variable (regressand) in the model is inflation. Inflation measures the behavior of price in the macro-economy and it is a process of steady rise in price result in the diminishing purchase power of a given nominal sum of money.

Theory of inflation can be divided into cost-push theory and demand pull theory. The demand pull theory involves the issue of the influence of monetary variable on the price level via the quantity theory of money. This theory is the bedrock of the specification in the model. Thus in the model the rate of inflation is regressed on exchange rate as the explanatory variable. Beside inflation measures the actual behavior of price in an economy. Thus, this inflation models regressed on exchange rate been the explanatory variable as to explain the variation in the rate of inflation in the Nigeria in the economy.

The independent variable in the model is exchange rate.

In the model is the explanatory variable as to explain the economic growths model exchange rate is the price of foreign exchange. Theoretically also, inflation and exchange rate indicate a negative relationship. Hence our a priori expectation is state such that

$$\frac{\partial\, Inf}{\partial\, EXR} \langle\ 0$$

The negative relationship between exchange rate and inflation means that an increase in exchange rate (depreciation) will lead to a reduction in imported inflation and thus a reduction in inflation rate in the domestic economy.

Method of Data Analysis

The study is to evaluate the implication of exchange rate variation on the dependent variable (selected macro-economic variables in Nigeria). Specifically data collected for this study were analysis with the aid of the statistical package for social science now known as Statistical Package and Service Solution (SPSS).

Specifically, simple regression, the ordinary last square (OLS) method was adopted to determine the effect of the independent variable (Exchange Rate) on the dependent variable. The null hypotheses will be tested using he student t-test (test of significance), the coefficient of determination (R^2) will be used to determine the goodness of fit of the model while the f-test will be used to ascertain the model activity.

11. RESULTS AND DISCUSSIONS Data Presentation

This chapter presents the data on the variables of the study and discusses the results of the data analysis with prominence on the objectives and stated hypotheses.

Table 4.1 (Appendix 1):

The statistical data on Exchange Rate, Exchange Rate Variation, Gross Domestic Product, Balance of Payment, and Inflation Rate, from 1988 to 2010 in table 4.1 above shows that the Exchange Rate had an average value of 72.8 naira to a dollar with a standard deviation of 56.8 within the period of the study. The highest level of Exchange Rate within the period was 150.65 naira to 1 dollar and was recorded in 2010. The least however was 4.54 naira to a dollar which was recorded in 1988 a closer look at the exchange rate shows that it had a steady increase from 4.54 in 1988 to in 22.05 1993, decreased to 21.89 in 1994 and was stable till 1999. Within 1994 to 1999, exchange rate variation was zero. The table also showed that exchange rate variation was negative from 2004 to 2008.

Table 4.1 revealed that the total Gross Domestic Product is 349.24 trillion Naira at an average of 15.2 trillion, and a standard deviation of 50.1 trillion within the 23 years period. The highest level of Gross Domestic Product within the period was 242.9 billion and was recorded in 2008

The information in table 4.1 also showed that the total Balance of Payment within the period of the study was 351.6 billion Naira at an average of 15.2 billion, and a standard deviation of 268.9 billion within the 23 years period. The most favourable Balance of Payment within the period of the study was 1.1 trillion in 2004 while the most unfavourable Balance of Payment was -326.7 billion in 1999.

Variables	Coef.	t-cal	t-tab $_{(0.05, 22)}$	sig. t	r	r^2	F-cal	F-tab $_{(0.05, 1, 21)}$	sig f	DW
Constant	19265236	1.706	2.07	0.103	0.204	0.042	0.914	4.32	0.350	1.870
X_r	-642408	-0.956		0.350						

Table 4.1 also showed that Inflation Rate had an average value of 22.9 with a standard deviation of 19.4 within the period of the study. The highest level of Inflation Rate within the period was 72.8 and was recorded in 1995. The least however was 5.4 and was recorded in 2007.

Hypotheses Testing

Decision Rule:

If significant value/probability value < 0.05 level of significance, reject the null hypothesis.

If significant value/probability value > 0.05 level of significance, accept the null hypothesis.

Alternatively,
If t-calculated > t-critical, reject the null hypothesis
If t-calculated < t-critical, accept the null hypothesis.

Table 4.2 Effect of Exchange Rate Variation on Gross Domestic Product

Table 4.2: Summary of Regression Analysis showing the effects of Exchange Rate Variation on Gross Domestic Product

Dependent Variable: Gross Domestic Product. *Source: SPSS 17.0 Output (Detail in Appendix)*

GDP = 19265236- 642408 X_1
T values =(1.706) (-0.956) Sig= (0.103) (0.350)

The information in Table 4.2 above shows that the Pearson's correlation coefficient is 0.204. This correlation coefficient is very low indicating that a very weak correlation exists between the Gross Domestic Product and Exchange Rate Variation within the period of the study.

The Coefficient of Determination (R^2) = 0.042. This implies that a 4.2% variation in level of Gross Domestic Product was influenced by Exchange Rate variations. The remaining 95.8% is explained by other variables not included in the model. The model therefore shows a very poor goodness of fit (<50% explanation of the dependent variable)

The F-calculated of 0.914 had a corresponding significant f-value of 0.334 > 0.05 level of significance; the researcher therefore concludes a poor model utility. Conventionally F-cal = 0.914 < F-tab $_{(0.05, 1, 21)}$ = 4.32. This also confirms a poor model utility.

The Durbin-Watson statistic tests the null hypothesis that the residuals from an ordinary least-squares regression are not autocorrelated. Since most regression problems involving time series data exhibit positive autocorrelation, the hypotheses usually considered in the Durbin-Watson test are

H_0: ρ=0

H_1: ρ >0

The Durbin-Watson statistic ranges in value from 0 to 4.

A value near 2 indicates non-autocorrelation;

A value toward 0 indicates positive autocorrelation;

A value toward 4 indicates negative autocorrelation.

Since Durbin and Watson established upper and lower bounds for the critical values and the Upper and lower critical values, d_U and d_L have been tabulated for different values of k which is the number of explanatory variables and n which is the sample size.

If $d < d_L$ Reject $H_0 : \rho = 0$

If $d > d_U$ Do not reject $H_0 : \rho =$

If $d_L < d <$ Test is inconclusive.

Typically, tabulated bounds are used to test the hypothesis of zero autocorrelation against the alternative of *positive* first-order autocorrelation, since positive autocorrelation is seen much more frequently in practice than negative autocorrelation.

The Durbin-Watson Statistics as shown in the summary result in table 4.2 indicates a calculated value of 1.870

Appendix 4 shows that Durbin-Watson Statistics " 0.5, 23;

DL = 1.07

DU = 1.66

Since the estimated D =1.870 > DL = 1.07 > DU = 1.66. The researcher therefore conclude no autocorrelation

Test of Hypothesis 1:

Ho_1 "Exchange Rates do not significantly affect Gross Domestic Product"

Table 4.2 on summary of regression result revealed that Exchange rate had a t-calculated value of -0.956 while the t-critical $_{(0.05, 22)}$ is 2.07.

Since t-calculated = 0.956 < t-critical $_{(0.05, 22)}$ = 2.07. The researcher accepts the null hypothesis and concludes that Exchange Rates do not significantly affect Gross Domestic Product.

More so, the significant/probability value of = 0.334 > 0.05 level of significance therefore the decision that Exchange Rates do not significantly impact on Gross Domestic Product within the period of the study is upheld.

The negative sign of the coefficient of t-calculated = /-0.956/ is an indication that increase in Exchange Rate had a negative impact on Gross Domestic Product.

The relationship is not only insignificant, It also negates the postulate that an increase in exchange rate of a domestic currency (deprecations) will attract foreign demand for the domestic good and services and the expectation that an increase in exchange rate (depreciation) will increase export and thereby stimulate economic growth.

Table 4.2: Effect of Exchange Rate Variation on Balance of Payment

Summary of Regression Analysis showing the effects of Exchange Rate Variation on Balance of Payment.

Variables	Coef.	t-cal	t-tab (0.05, 22)	sig. t	R	r^2	F-cal	F-tab (0.05, 1, 21)	sig f	DW
Constant	37936.06	0.626	2.07	0.538	0.211	0.045	0.978	4.32	0.334	1.918
X_r	-365.446	-0.989		0.334						

Dependent variable: Balance of Payment.

Source: SPSS 17.0 Output (Detail in Appendix 2

BOP= 37963.06–365.446 X_2

T values = (0.538) (-0.989)

Sig= (0.538) (0.334)

The information in Table 4.3 above shows that the Pearson's correlation coefficient is 0.211. This correlation coefficient is very low indicating that a very weak correlation exists between the Exchange Rate Variation and Balance of Payment within the period of the study.

The Coefficient of Determination (R^2) = 0.045. This implies that a 4.5% variation in level of Balance of Payment was influenced by

Exchange Rate variations. The remaining 95.5% is explained by other variables not included in the model. The model therefore shows a very poor goodness of fit.

The F-calculated of 0.978 had a corresponding significant F-value of 0.334 > 0.05 level of significance; the researcher therefore concludes a poor model utility. Conventionally F-cal = 0.878 < F-tab $_{(0.05,\ 1,\ 21)}$ = 4.32. This also a confirmation of a poor model utility.

The Durbin-Watson statistic which tests the hypothesis that the residuals from an ordinary least-squares regression are not autocorrelated as shown in the summary result in table 4.2 indicates a calculated value of D =1.918.

Appendix 2 shows that Durbin-Watson Statistics "0.5, 23;

DL = 1.07

DU = 1.66

Since the estimated D =1.918 > DL = 1.07 > DU = 1.66. The researcher therefore conclude no autocorrelation

Test of Hypothesis 2:

Ho_2 "Exchange Rates do not significantly affect Balance of Payment"

The summary of regression result in Table 4.3 revealed that Exchange rate had a t-calculated value of -0.989 while the t-critical $_{(0.05,\ 22)}$ is 2.07.

Since t-calculated = 0.9891 < t-critical $_{(0.05,\ 22)}$ = 2.07. The researcher accepts the null hypothesis and concludes that Exchange Rates do not significantly affect Balance of Payment.

More so, the significant/probability value of = 0.334 > 0.05 level of significance therefore the decision that Exchange Rates do not significantly impact on Balance of Payment within the period of the study is upheld.

The negative sign of the coefficient of t-calculated = /-0.989/ is an indication that increase in Exchange Rate had a negative impact on Balance of Payment.

The above analysis has shown that the effect of Exchange Rate Variation on Balance of Payment is not only insignificant, it also negates the expectation of a positive relationship between exchange rate and balance of payments. It was expected that an increase in the exchange rate (depreciation) will encourage foreign demand for our domestic goods and services in the international market.

Effect of Exchange Rate Variation on Inflation Rate

Table 4.3: Summary of regression analysis showing the effects of Exchange Rate Variation on Inflation Rate

Variables	Coef.	t-cal	t-tab $_{(0.05,\ 22)}$	sig. t	R	r^2	F-cal	F-tab $_{(0.05,\ 1,\ 21)}$	sig f	DW
Constant	24.45	5.594	2.07	0.000	0.202	0.041	0.891	4.32	0.356	1.871
X_r	-0.245	-0.94		0.356						

Dependent Variable; Inflation Rate

Source: SPSS 17.0 Output (Detail in Appendix 3)

Inf = 24.455–245 X_3

T values = (5.594)(-0.944)

Sig = (0.000)(0.356)

The information for linear relationship of the dependent and independent variables is presented above is got from the summary results in table 4.4.

Table 4.4 above shows that the Pearson's correlation coefficient is 0.202. This coefficient is very low indicating that a very weak correlation exists between the Exchange Rate Variation and Inflation Rate within the period of the study.

The Coefficient of Determination (R^2) = 0.04. This shows that a 4.1% variation in level of Inflation Rate was influenced by Exchange Rate variations. The remaining 95.9% is explained by other variables not included in the model. The model therefore shows a very poor goodness of fit.

The F-calculated of 0.891 had a corresponding significant F-value of 0.356 (0.356 > 0.05 level of significance); the researcher therefore concludes a poor model utility. Conventionally F-cal = 0.891 < F-tab $_{(0.05,\ 1,\ 21)}$ = 4.32. This is also a confirmation of a poor model utility.

The Durbin-Watson statistic which tests the hypothesis that the residuals from an ordinary least-squares regression are not autocorrelated as shown in the summary result in table 4.2 indicates a calculated value of D =1.871.

Appendix 2 shows that Durbin-Watson Statistics "0.5,23 =

DL = 1.07
DU = 1.66

Since the estimated D =1.871 > DL = 1.07 > DU = 1.66. The researcher therefore conclude no autocorrelation

Test of Hypothesis 3:
Ho_3 "Exchange Rates do not significantly affect Inflation Rate"

The summary of regression result in Table 4.3 revealed that Exchange rate had a t-calculated value of -0.944 while the t-critical $_{(0.05, 22)}$ is 2.07.

Since t-calculated = 0.9891 < t-critical $_{(0.05, 22)}$ = 2.07. The researcher accepts the null hypothesis and concludes that Exchange Rates do not significantly affect Inflation Rate.

More so, the significant/probability value of = 0.356 > 0.05 level of significance therefore the decision that Exchange Rates do not significantly impact on Inflation Rate within the period of the study is upheld. The negative sign of the coefficient of t-calculated = /-0.944/ is an indication that increase in Exchange Rate had a negative impact on Inflation Rate. Though the effect is not significant, the sign is correct, confirming the theoretical understanding that inflation and exchange rate had a negative relationship. Implying that an increase in exchange rate (depreciation) will lead to a reduction in imported inflation.

12. SUMMARY

The study evaluate the performance of selected macroeconomic variable within 1988 – 2010, worries have been expressed over the ability of macroeconomic policies to stabilize the naira exchange rate and to solve the attendant macro-economic disequilibrium. Basically the study therefore, to determine the impact of exchange rate variation on GDP, Bop and Inflation. Relevant data for this study were obtained for secondary source which include publication from the Central Bank of Nigeria statistical bulletin, statement of Account economic and financial review journal. Data collected were analysis using and economic data analysis technique of multiple aggressions.

The analysis of the result on GDP revealed negative sign of the coefficient of t-calculate /-0.956 is an indication that increases in exchange rate had a negative impact on GDP. The relationship is not only insignificant, it also negates the postulate that an increase in exchange rate of a domestic currency (deprecations) will attract foreign demand for the domestic good and services and the expectation that an increase in exchange rate (depreciation) will increase export and thereby stimulate economic growth.

In Balance of Payment (BOP), the negative sign of the confident of t-calculated=/-0.989/ is an indication also that increases in exchange rate had a negative impact on Balance of Payment (BOP), it is not only insignificant, it also negates the expectation of a positive relationship between exchange rate and Balance of Payment (BOP). It was expected that an increase in the exchange rate depreciation will encourage foreign demand for our domestic goods and services in the international market and in inflation. The negative sign of the coefficient of t-calculated=/-0.944/ is an indication that increases in exchange rate had a negative impact on inflation rate though this effect is not significant, the sign is correct confirming the theoretical understanding that inflation and exchange rate had a negative relationship. Implying that an increase in exchange rate depreciations will be lead to a reduction in imported inflation.

The major findings revealed by the study are summarized as follows:

1) The study revealed the existence relationship between Gross Domestic Product, Balance of Payment and Inflation with exchange rate, the explanatory variable used under the period of investigation.
2) The correlation Coefficient is very low indicating that a very weak correlation exists between the Gross Domestic Product and exchange rate variation within the period of the study.
3) This implies that 4.2% variation in level of Gross Domestic Product was influence by exchange rate variation. The remaining 95.8% is explained by other variable not included in the modal. The model therefore shows a very poor goodness of fit (250% explanation of the dependent variable).
4) Very low explanatory power also indicating that, a very weak correlation exists between the exchange rate variation and Balance of payment within the period of the study.
5) The coefficient of Determination (R^2) = 0.045. This implies that a 4.5% variation in level of Balance of Payment was influenced by exchange rate variation. The remaining 95.5% is explained by other variable not included in the model. The model therefore shows a very poor goodness of fit and
6) That of inflation also shows very low correlation coefficient indicating that a very weak correlation exists between the exchange rate variation and inflation rate within the period of the study.

This shows that 4.1% variation in level of inflation rate was influenced by exchange rate variation. The remaining 95.9% is explained by other variable not included in the model. The model therefore shows a very poor goodness of fit.

13. CONCLUSION

This work investigated the impact of exchange rate variation on selected micro-economics performance using 1988-2010 study period. Many policies had been introduced, by the monetary authorities in Nigeria in the past years, over the ability of the policies to stabilize the naira exchange rate and the Dollar in the economy.

The result of the study revealed that exchange rate dos not significantly affect Gross Domestic Product (GDP), balance of payment (BOP) and inflation. The study therefore suggests, the diversification of the productive base, and the employment of realistic exchange rate to promote export and discourage imports.

Recommendations

Based on the findings of the study, the following recommendations are made.

Recommendations for Policy

The monetary authorities should established mechanism that would lead to the stability in exchange rate, since exchange rate is a determinant of macroeconomic performance. This will curtail the volatility in the exchange rate that has had long term negative effect on production in general

(ii) Also considering the importance of the exchange rate variation as a major price that affect all sectors of the economy and all economic agents, it is imperative to monitor the movement in the real exchange rate in order to foster competitiveness and improve the supply of exports in the medium to long term.

(iii) Those who advocate for a ***"strong***" Naira on the grounds that the economy is import-dependent, should remember that import-dependency creates unemployment and therefore that import-dependency is a vice not virtue. Policies that perpetuate a vicious circle in Nigeria macroeconomic environment must be avoided at all cost.

Recommendations for further Studies

The research work recommends using the Nigeria data, to investigate the impact of exchange rate variation on foreign Direct Investment and interest rate, and the effect of exchange rate variation on foreign reserves in Nigeria.

Appendix 1

Table 4.4:Statistical Data on exchange Rate, Exchange Rate Variation, GDP, BOP, and Inflation.

Year	Exchange Rate	Exchange rate Variation	G.D.P (₦ Million)	B.O.P (₦ Million)	Inflation (Percentage)
1988	4.54	0	139085.3	-2294.10	38.30
1989	7.39	2.85	216797.5	8727.80	40.90
1990	8.04	0.65	267550.0	-18498.20	7.50
1991	9.91	1.87	312139.8	-5959.60	13.00
1992	17.30	7.39	532613.8	-65271.80	44.50
1993	22.05	4.75	683869.8	-13615.90	57.20
1994	21.89	-0.17	899863.2	-42623.30	57.80
1995	21.89	0	1933211.6	-195316.30	72.80
1996	21.89	0	2702719.1	-53152.00	29.30
1997	21.89	0	2801972.6	1076.30	8.50
1998	21.89	0	2708430.9	-220675.10	10.00
1999	92.69	70.81	3194023.6	-326634.30	6.60
2000	102.11	9.41	4537637.2	314139.20	6.90
2001	111.94	9.84	4685912.2	24738.70	18.90
2002	120.97	9.03	5403006.8	-56383.90	12.90
2003	129.36	8.39	6947819.8	-162298.40	14.00
2004	133.50	4.14	11411066.9	1124157.20	15.00
2005	132.15	-1.35	14610881.5	22476.20	17.90
2006	128.65	-3.50	18564594.7	3544.50	8.20
2007	125.83	-2.82	23280715	3654.00	5.40
2008	118.86	-6.97	242963893	3254.00	14.80
2009	148.01	31.15	210146.9	3947.30	12.50
2010	150.65	0.64	228208.2	4578.77	13.70
Sum	***1673.38***	***146.11***	***349236159.40***	***351571.07***	***526.60***
Average	***72.76***	***6.35***	***15184180.84***	***15285.70***	***22.90***
SD	***56.80***	***15.91***	***50053267.18***	***268906.28***	***19.36***
Max	***150.65***	***70.81***	***242963893.00***	***1124157.20***	***72.80***
Min	***4.54***	***-6.97***	***139085.30***	***-326634.30***	***5.40***

Source: CBN Statistical Bulletin, Various Issues