EXTERNAL SECTOR RESPONSE TO EXCHANGE RATE FLUCTUATION: EVIDENCE IN NIGERIA FROM 1986 TO 2014

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ABSTRACT
This study assays the external sector response to exchange rate fluctuation proxied by the balance of payments in Nigeria. Based on official data published by the Central Bank of Nigeria (CBN), the balance of payment, real exchange rate, nominal exchange rate, inflation rate and foreign direct investments were analyzed for the 1986-2014 period. Three research questions and hypothesis were used in the study. The researcher adopted historical research design. The instruments were face validated by two experts in the department of finance and banking in University of Port Harcourt. The instruments were analyzed using multiple regression models and estimation technique. From the findings of the study Augmented Dicky Fuller Test (ADF) shows that all the variables are stationary at 0.05. The Johansen Co-Integration Test shows two (2) co-integrating equation at 0.05 level of significance indicating the non-existence of co-integration among the other parameters. Based on regression analysis model, the Eviews 7.0 was used to determine the coefficient of determination (R^2), F-statistic and t-test in the specified models. All the four variables in the real exchange rate, nominal exchange rate, inflation rates and foreign direct investment were insignificant in explaining the behavior of the external sector proxied by the balance of payments. In a world of high capital mobility, the policy direction should be such that will encourage market-determined exchange rates. Policies aimed at maximizing foreign reserves would guarantee the balance of payment equilibrium in the long run. It was recommended that market determined exchange rates should be adopted because it will be effective in promoting growth in exports, non-oil exports, and current account viability and will also enhance Nigeria's balance of payments position.

Keywords: Exchange rate, Balance of Payments, Foreign Direct Investment.

INTRODUCTION

Economic transactions between one country and the rest of the world are capable of generating equilibrium or disequilibrium between nations. In order to maximize equilibrium or minimize disequilibrium arising from external sector performance in balance of payments, a number of policies have to be put in place and executed at various times and in various forms depending on whether the country is experiencing equilibrium or disequilibrium in the balance of payment. By equilibrium, we are referring to a situation where the value of a country's total export is equal to the value of her imports (Gbosi, 2005). In practice, however, a country's export can hardly be at balance. An ideal external sector, therefore, is viewed to be one that is stable over time (Salvatore, 2000). The external sector has to be viewed in context with other sub-sectors in the process of macroeconomic policy formulation, implementation, and monitoring. The external sector, therefore, is considered to be very important due to its linkage effects on the economy as a whole. To achieve a high level of "balance of payment equilibrium" has always been the major objective of the external sector policies of the Nigerian authorities (CBN, 2000). This objective has been vigorously pursued through the maintenance of a relatively stable exchange rate through CBN interventions. According to CBN (2002), the external sector has been under severe pressure as the balance of payment has been more on the deficit than on the surplus because prior to 2001, the external sector was under severe pressure due to accumulated deficits in the balance of payments.

Deliberate efforts were made towards integrating Nigeria with the world economy and attracting private capital thus new policies were introduced. These policies ranged from austerity measures adopted by then Shagari's administration between1979-1983, the structural adjustment program of 1986 as well as debt equity conversion and debt rescheduling policies of Babangida era coupled with various exchange rate regimes and trade policies. More recently is Jonathan Austerity measure to cushion the balance of trade. Therefore the main policy thrust of Nigeria's foreign exchange policy is to promote export; control imports build up the external reserves and reduce external debts. To achieve these objectives, policies were structured to diversify the productive base of the Nigerian economy in order to reduce the country's dependence on oil and import (Nnanna, 2003). This policy further translated into significant inflow of foreign capital. External reserves provided a cushion to manage real and external sector shocks arising from falling oil prices (Reddy, 2007). Exchange rate policy which is the sum total of all institutional framework and measures were put in place to gravitate relative prices in the international market in order to stimulate the productive sectors.

In the views of Obadan, (1990), the fluctuation in the price of oil in the international market is one of the factors responsible for the nation's inability to define its developmental goals. Nigeria's development will involve massive investment in social infrastructural facilities. To put this on ground, the nation needs all the foreign exchange it could amass for the purpose of such development, which will go further to reduce the cost of production and consequently create the positive impact on the nation's export drive and on the balance of payment.
Nigeria's foreign exchange assets before the 1970s were held mainly in British pounds sterling. The nature of the Nigerian economy has made foreign exchange be highly volatile and further aggravates the positioning of external sector performance proxy by the balance of payment. Nigeria as a country requires the huge foreign exchange to service her external debt, to import

raw materials, spare parts and for infrastructural developments which are prerequisite for industrial development.

The exchange rate in foreign exchange variation has the potential to distort factors like lending rate and price stability that matter for economic performance. Afolabi, (1999) in his work on exchange rate determination was concerned with the demand for foreign exchange and the determinants of foreign exchange, which themselves are determined by the market forces of demand and supply. Lipsey & Chrystal, (2004) focused on the linkages of the balance of payment between one economy, and the rest of the world. Such linkages could be financial linkages and real linkages through international investment trade and finance. Salvatore's, (2000) work on foreign exchange dynamics examined the changes in exchange rate overtime. The model which was limited in scope strictly examined the sequence of events that led short run equilibrium to over shooting long run equilibrium and further stressed the implication of exchange rate volatility in international finance.

Several research studies have been carried out in the area of foreign exchange management and balance of payments of Nigeria but none of the studies have dwell on the influence of exchange rate and external sector performance. This research will focus on the influence of exchange rate on the external sector performance proxy by the balance of payment in the period covering 1986 and 2014.

LITERATURE REVIEW

Theories of Foreign Exchange (Rate)

Prior to the era modern currency, goods were exchanged for individuals and the value of one good was expressed in terms of other goods (trade by barter). The weighty nature of the barter system encouraged traders to use another medium of exchange such as pieces of iron and cowries to determine the value of goods. These medium were with time replaced with precious metals which were more acceptable as a medium of payment for goods (Onoh, 2002). It also had many advantages including storage, divisibility, and durability. The introduction of gold coin followed by silver played a key role in the development of the trade and foreign exchange. Both coins gained wide approval in the Middle East and other parts of the world forming an elementary international monetary standard. By the middle ages, the increased usage of bills further encouraged foreign trade among nations. In the course of time, currency notes were introduced and redeemable in gold-or-silver. A country was either on gold standard or silver standard (monometallic standard) or on the two standards (bimetallic standards).

Therefore, a country was said to be on monetary standard if it adopted a particular form of money as a standard of money (Onoh, 2002). As time progresses increased paper money without a corresponding gold cover will lead to a devastating inflation and economic instability.
Under the gold standard regime, if the economy weakened, heavy export of goods was required to earn more gold until gold reserves reached the required level to back the existing paper money thereby restoring equilibrium. Throughout the gold standard era paper currency backed by gold, exchange rate and balance of payment management were made easy. A gold standard country

which suffered from the deficit in the balance of payment in gold bars deflated its currency stock to the level of gold loss. If it achieved surplus i.e. gold gains it increased its currency stock to equate the gold gains from trade thereby restoring equilibrium.

PAYMENT, INFLATION AND FOREIGN DIRECT INVESTMENT.

a. Foreign Exchange Rates Variation and the Balance of Payments

Foreign exchange is regarded as a means of payment for international financial transactions. It, therefore, refers to convertible currencies that are generally accepted for the settlement of international trade and other external transactions (Gbosi, 2005). Prior to the adoption of SAP in 1986, the authorization of foreign exchange disbursement was a shared responsibility of the federal ministry of finance and CBN. The ministry was responsible for public sector applications while the CBN was responsible for foreign exchange allocation in respect of the private sector. In 1984, there was a major reform in the area of foreign exchange management, one of such reforms was that the federal government through the central bank were able to decentralize foreign exchange allocations whereby licensed banks were allowed to approve applications and make allocations of foreign exchange to customers based on the minimum allocated to the bank by the CBN. Due to round tripping and abuses by the banks, the CBN discontinued this practice; this led to the CBN taking over the direct allocation of foreign exchange control. It had her shortcomings, due to its inability to achieve the external balance of payment, and also unable to guarantee equilibrium in the long run. The administration of the exchange control brought about increased dependence on imports, depletion of external reserves, and encouragement of black market activities and reduction of competitiveness in export activities. All these brought about an abrupt reduction in capital inflow and the inability to make payments on the current basis as a result of its immediate impact and effect on the country's balance of payment.

b. Foreign Direct Investment and Balance of Payment

The foreign direct investment consists of external resources including technology, managerial and marketing expertise and capital. All these generate a considerable impact on host nation's productive capabilities. FDI is expected to contribute to economic growth not only by providing foreign capital but also by crowding in additional domestic investment. By promoting both forward and backward linkages with the domestic economy, additional employment is indirectly created and further economic activity stimulated. Also, FDI helps fill the domestic revenue-generation gap in a developing economy, given that most developing countries' governments do not seem to be able to generate sufficient revenue to meet their expenditure needs. Other benefits are in the form of externalities and the adoption of foreign technology. Externalities here can be in the form of licensing, imitation, employee training and the introduction of new processes by the foreign firms.

PURPOSE OF THE STUDY

The study looked into external sector response to exchange rate fluctuation: evidence from Nigeria. Specifically the study seeks to:

1. Find out the relationship between Nominal Exchange Rate and Balance of Payments.

2. Determine relationship between Real Exchange Rate and Balance of Payment.

3. Find out the relationship between Foreign Direct Investment and Balance of Payments.

RESEARCH QUESTIONS

The following research questions guided the study:

1. What is the relationship between Nominal Exchange Rate and Balance of Payments?

2. What is the relationship between Real Exchange Rate and Balance of Payment?

3. What is the relationship between Foreign Direct Investment and Balance of Payments?

RESEARCH HYPOTHESES

The following research hypotheses were used for the study.

Ho_1: There is no significant relationship between Nominal Exchange Rate and Balance of Payments.

Ho_2: There is no significant relationship between Real Exchange Rate and Balance of Payment.

Ho_3: There is no significant relationship between Foreign Direct Investment and Balance of Payments.

SIGNIFICANCE OF THE STUDY

This study will be of benefit to local and foreign investors, government, financial and investment analyst.

For foreign investors, the findings of the study will give them a platform to carry out long time plan to base on the exchange rate policy. The findings of this study will enable the government to consider the effect of exchange rate policy in budget planning and implementation.
For financial and investment analyst, the findings of the study will give them necessary information to determined exchange rates and its effect in promoting growth in exports.

SCOPE OF THE STUDY

The study is limited to external sector response to exchange rate fluctuation in Nigeria. Data gathered from Central Bank of Nigeria (CBN), relating to Balance of Payment (BOP), Nominal Exchange Rate, Real Exchange Rate, Inflation Rate and Foreign Direct Investment for the periods 1986 to 2014 were used.

METHODOLOGY

This researcher adopted historical research design. This is because data were gathered from CBN between the periods 1986 to 2014. The researcher used secondary source of data collected from the Central Bank of Nigeria (CBN), on data relating to Balance of Payment (BOP), Nominal Exchange Rate, Real Exchange Rate, Inflation Rate and Foreign Direct Investment for the period 1986 to 2014 as instrument for the study. The instruments were face validated by two experts in the department of finance and banking in University of Port Harcourt. They checked if the data presented were in line with the current CBN record provided. The researcher analyzed the instruments using multiple regression models and estimation technique.

RESULTS
DATA ANALYSIS

Model Specification:
The model is stated in the following way:
BOP = f(NEXR, REXR, FDI) …………………………………………………..1
$BOP = d_o + d_1 NEXR + d_2 REXR + d_3 FDI + U_t$…………………………………………………………….……………………2

Where:

BOP = Balance of Payments
NEXR = Nominal Exchange Rate
REXR = Real Exchange Rate
FDI = Foreign Direct Investment
d_o = constant (estimated) i.e. the variation in the dependent variable not explained by the independent variables.
U = Stochastic error term is a surrogate or proxy for all the omitted or neglected variables that may affect the predictor variable but is not included in the regression model.
Apriori Expectation
Apriori: $d1 > 0$; $d2 > 0$, $d3 > 0$,

The nominal exchange rate is expected to have a positive increase on the external sector proxied by the balance of payment (i.e. NEXR>0, BOP>0).
The real exchange rate is expected to positively influence the balance of payment (i.e. REXR>0, BOP>0). The inflation rate is expected to increase the balance of payment if its low, and an inverse influence are expected when it is high (i.e. INFLATE<0, BOP>0). While the FDI is expected to have a linear influence on the BOP (FDI>0; BOP>0).

RESULTS AND DISCUSSIONS OF FINDINGS

Table 1: Ordinary Least Square Estimation

Dependent Variable: BOP			
Method: Least Squares			
Date: 10/24/15 Time: 19:29			
Sample(adjusted): 1986 2013			
Included observations: 28 after adjusting endpoints			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	263472.2	482768.9	0.545752	0.5905
REXR	-2490.530	7384.900	-0.337246	0.7390
NEXR	-9098.814	5598.728	-1.625157	0.1178
INFLATE	-1851.887	10892.52	-0.170015	0.8665
FDI	-0.023182	0.016414	-1.412273	0.1713
R-squared	0.623606	Mean dependent var	-696669.1
Adjusted R-squared	0.523364	S.D. dependent var	1163186.
S.E. of regression	956811.9	Akaike info criterion	30.54103
Sum squared resid	2.11E+13	Schwarz criterion	30.77893
Log likelihood	-422.5745	F-statistic	1.225823
Durbin-Watson stat	1.441709	Prob(F-statistic)	0.010400

Compilation using E-views 7.0
Table 1 showed that of the estimated OLS regression equation above, the coefficient of the multiple determinations - R-squared of 0.624 shows that if the independent variable in REXR, NEXR, Inflate and FDI increased by 1% the dependent variable Y (BOP) will increase by 52.4% and the adjusted R-square of 62.3% provide a good fit for the regression line that is the changes in Y was accounted for by changes in REXR, NEXR, Inflate and FDI. The F-statistics of 1.236 was within the acceptable region thus it's significant. However, the Durbin-Watson statistics of 1.4417 shows the presence of auto-correlation. Hence, the result may be unreliable as the time series may not be stationary. Hence, the need for a unit root test.

Table 2: Augmented Dickey Fuller test of stationarity

VARIABLES	ADF STATISTICS	MACKNON CRITICAL VALUE 1%	5 %	1 0 %	PROB.	ORDER OF INTEGRATION
REXR	-4.836551	-3.6959	-2.9750	-2.6265	0.0001	1 (1)
NEXR	-5.353764	-3.6959	-2.9750	-2.6265	0.0000	1 (1)
Inflate	-4.943687	-3.6959	-2.9750	-2.6265	0.0000	1 (1)
FDI	-5.235394	-3.6852	-2.9705	-2.6242	0.0000	1 (1)
BOP	-5.558484	-3.7076	-2.9798	-2.6290	0.0000	1 (1)

Researchers Compilation using E-views 7.0
The above Augmented Dickey Fuller Test shows that all the variables are stationary at first difference; this means all the variables are integrated of I(1). This could be traced to their volatility nature. The result implies that all variables, which were I (1) series have to be differenced once, to yield meaningful results that will be useful in making inference within the study.

Table 3: Testing for Co-integration (The Johansen Approach)

Eigenvalue	Trace statistics Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
	Series: REXR NEXR INFRATE FDI BOP			
	Lags interval: 1 to 1			
0.814788	94.28681	68.52	76.07	None **
0.602895	50.44424	47.21	54.46	At most 1 *
0.583714	26.43184	29.68	35.65	At most 2
0.113318	3.645866	15.41	20.04	At most 3
0.019759	0.518879	3.76	6.65	At most 4
*(**) denotes rejection of the hypothesis at 5%(1%) significance level				
L.R. test indicates 2 cointegrating equation(s) at 5% significance level				
Researchers Compilation using E-views 7.0				

The trace and maximum eigen-value test results reveal the existence of three unique co-integrating vectors between test variables.

Using the trace likelihood ratio, the results point out that the null hypothesis of no co integration among the variables is accepted in favor of the null hypothesis up to three co-integrating equations at 5% significant level because the values fall below the critical values. This means there are no integrating equations except in the first two equations in REXR and NEXR which signify long run relationship among the variables under consideration, while the remaining implies that there is no long-run relationship existing among the variables and the coefficients of estimated regression can't be taken as equilibrium values. Thus, this facilitates the need for granger causality tests.

Test of Hypotheses
Ho_1: B = 0   there is no significant relationship between real exchange rate and balance of payments.
Ha_1: B ≠0   there is a significant relationship between real exchange rate and balance of payments.
Based on the decision criterion, the calculated t-statistics is expected to be greater than the tabulated t-statistics to be significant. From the findings in the regression, the result shows that the t-statistics of -0.337246is less than the tabulated value of 1.703 at 5% level of significance. Hence, the null hypothesis of no significant relationship between real exchange rate and Balance of payment is accepted.
Ho_2: B = 0   there is no significant relationship between nominal exchange rates and balance of payments.
Ha_2: B ≠0   there is a significant relationship between nominal exchange rates and balance of payments.
The tabulated t-statistics is expected to be less than the calculated t-statistics to be significant. From the findings in the regression, the result shows that the t-statistics of -1.625157 is less than the tabulated value of 1.703 at 5% level of significance. Hence the null hypothesis of no significant relationship between Nominal exchange rate and Balance of payments is accepted.

Ho$_3$: B = 0 there is no significant relationship between inflation rate and balance of payments.
Ha$_3$: B $\neq$0   there is a significant relationship between inflation rate and balance of payments.
The decision criterion state that the t-calculate statistics should be greater than the t-tabulated statistics to be significant. From the findings in the regression, the result shows that the t-statistics of -0.170015 is far less than the tabulated value of 1.703 at 5% level of significance. Hence, the null hypothesis of no significant relationship between inflation rate and Balance of payment is accepted.

Ho$_4$: B =0   there is no significant relationship between foreign direct investment and balance
        of payments.
Ha$_4$: B $\neq$0   there is a significant relationship between foreign direct investment and balance
        of payments.

Based on the foregoing criterion, the t-statistics is expected to be higher than the tabulated t-statistics to be significant. Thus, the output of the regression prove that foreign direct investment didn't impact positively on the balance of payment based on the output in t-statistics of-1.412273 which is less than the t-tabulated value of 1.703 at 5% level of significance. Thus, the study accepts the null hypothesis that state that there is no significant relationship between foreign direct investment and balance of payments.

SUMMARY OF FINDINGS
The following are summary of the findings;

1. Exchange rate is a very important factor which influences Balance of Payment. The exchange rate of Nigeria's naira to the American dollar has skyrocketed over time which is unfavorable to BOP. In the review of existing literature so far, it is observed that exchange rate variation plays a critical role in international monetary transactions of an economy. From the findings of the study, the output portrays real exchange rate to have affected the Nigerian Balance of Payment negatively. This as a result of the fact that real exchange rate of the naira to the America dollar has been increasing rapidly over time with a corresponding negative Balance of payments of the Nigerian economy in the international market. Imoisi, Olatunji, & Ekpenyong, (2013) in their study of the impact of monetary policy on balance of payment stability in Nigeria from 1980 to 2010, found that money supply, exchange rate and balance of payment have the positive relationship, which is contrary to the findings of this study.

2. The negative effect of real and nominal exchange rate variation was made worsened by the existence of double-digit inflation rate over the period of the study. The inflation rate in Nigeria affected the possible value of the naira to the dollar; the inflation rate from the findings has an ineffective impact on the Balance of Payment of Nigeria. Thus, the inflation rate has negatively impacted the Balance of Payment.

3. The findings also show that FDI had an insignificant impact on the balance of payment as it has an adverse effect on the balance of payment. The study proves that regardless of the existence of moderate FDI; with the presence of high inflation rate and real exchange rate, the balance of payment is affected negatively in Nigeria which doesn't conform to

the priori expectation. This is supported by the findings of Alexander D. (2013) in a study on Ghana's BOP Monetary approach from 1980-2010 using Dicker Fuller model.

4. Finally, the study also finds out from the regression that the impact of foreign direct investment was not good enough to cause a positive balance of payment. As a result, the relationship between the two variables was insignificant and negatively correlated because from the table of variables as FDI increases the BOP was, however, decreasing and negative most of the period of the study. This, however, doesn't conform to the a priori expectation between FDI and BOP.

CONCLUSION

This study examined empirically, the impacts of exchange rate proxied by the real exchange rate, nominal exchange rate, inflation rate and foreign direct investment on the balance of payments. To investigate the impact, valid and reliable data were generated and analyzed to arrive at certain findings. The results of the findings thus provide the following conclusion.
There is therefore, an insignificant relationship between the real exchange rates and the balance of payment.

The study also proved that a variation in the real exchange rate does not cause a significant relationship between nominal exchange rate and balance of payment in the period under study.
The study also concludes that there was an insignificant relationship between the inflation rate and the balance of payments.

It was concluded that the application of multiple regression results shows that the Balance of Payment responded insignificantly to the four exchange rate variation including foreign direct investment. This doesn't corroborate the position held by Agresti, (1996).

RECOMMENDATIONS

The following recommendations are proffered based on findings and conclusion of the study.
1. The central bank of Nigeria should take appropriate intervention measures to ensure that there is relative stability in the naira exchange rate in order to guarantee stability in the balance of payment.

2. The nominal exchange rate should be managed in manners not to scare away both foreign real and portfolio investors because of the semi-fixed exchange rate of the naira.
3. The relevant financial authority should ensure that sufficient economic growth is achieved through ensuring that moderate inflation rate is maintained to boost investment environment, money supply to investment sector/entrepreneurial sector and to correct the balance of payment deficit.

4. The study also recommends the encouragement of conducive macroeconomic environment which will boost foreign direct investment (foreign capital inflow) and

domestic investment within the economy. Since oil export is not susceptible to the influence or domestic policies, trade policy should be vigorously promoted in the area of non-oil exports.

REFERENCES

Afolabi, L. (1999). Monetary Economics, Lagos: Heinemann Educational Books.

Agresti, A. (1996). An Introduction to Categorical Data Analysis, New York: John Wiley and Sons.

Alexander D. (2013) "Empirical Analysis of Balance of Payment in Ghana; Monetary Approach (1980-2010)". European Journal of Business and Management Vol 5, No 8..

Central Bank of Nigeria (2002) Handbook of Statistical Methods, Denmark's National Bank Financial Statistics Sources and Methodology

Central Bank of Nigeria (2000) Annual Report and Statement of Accounts. Abuja: Central Bank of Nigeria.

Gbosi, A. N. (2005). Contemporary issues in International Trade and Development, Port Harcourt: France Sodek Associates.

Gbosi, A.N. (2005). Modern Macroeconomics and Public Policy, Port-Harcourt: Sherbrook Associates.

Imoisi, A.I, Olatunji L. M. and Ekpenyong B.I (2013). "Monetary Policy and Its Implications for Balance of Payments Stability in Nigeria: 1980-2010" International Journal of Economics and Finance; Vol. 5, No. 3

Lipsey, R. O. and Chrystal, K. A. (2004).Economics, London: Oxford University Press.

Nnanna, O. (2003). "Foreign Private Investment in Nigeria" Central Bank of Nigeria, Economic and Financial Review, 41 (4), 87-95..

Obadan, M. I. (1990). "Nigeria's External Debt Problems and Option of Debt-equity Conversion", proceeding of a Conference on Nigeria Debt Problems: Way Forward, Ekpoma: Ambrose Alli University.

Onoh, J. K. (2002). Dynamics of Money, Banking, and Finance in Nigeria. An Emerging Market, Aba: Astra Meridian.

Salvatore, D. (1998). *International Economics* (Sixth edition). New Jersey: Prentice-Hall. *Series*.Vol. 4, No. 2.