Effect of Exchange Rate on Balance of Payments in Nigerian Economy (1989-2013)

Ifedoro, Ndubuisi Nicholas[1], Kurah, Joshua T[2], Emerole, Ikechukwu Chimezie[3]
[1]*Department of Banking and finance, The Federal Polyechnic Damaturu, Yobe State. Nigeria.*
[2]*Department of Business Administration and Management Studies, the Federal Polytechnic Damaturu, Yobe State. Nigeria.*
[3]*Department of Management Technology, the Federal University of Technology, Owerri.Imo State. Nigeria.*

*Corresponding Author:
Ifedoro, Ndubuisi Nicholas
Email: ifedorondubuisi@gmail.com

Abstract: This study examines the effect of exchange rate on balance of payment in Nigeria for the period of 1989-2013. The data used for this study was obtained from the publications of Central Bank of Nigeria (CBN) and also from National Bureau of Statistics (NBS). Ordinary Least Square method was implored for data analysis with time series statistical package of econometrics. Exchange rates, import, export and interest rate where the independent variables used while balance of payments stands as the dependent variable. The researcher also used those macro-economic variables to ascertain their contribution to both positive (favorable) and negative (unfavorable) balance of payments which foreign exchange movement always determines. The result shows that an increase in exchange rate will result in a decrease in BOP (unfavorable), while export and interest rate has positive effect on balance of payment unlike import that contributes negative effect on balance of payment (unfavorable) as it increases.
Keywords: Central Bank of Nigeria, National Bureau of Statistics, exchange rate, BOP.

INTRODUCTION

The principle of opportunity cost demands that each country has to produce goods and services in which they enjoy a comparative advantage over others. This then means that those goods and services they cannot produce they will buy from other countries. This leads to international trade. When there is buying and selling across national borders, payments have to be made as is done locally, the different being that payments in international trade involves currencies other than the currency of the nation making the payments.

In order to do this, foreign exchange will be involved. Nzotta [1] defined exchange rate as "the price of one currency in terms of another". It is the price of one unit of a foreign currency in relation to a domestic currency. Exchange rate policy is a fundamental macroeconomic policy that guides domestic investors on the best way to strike a balance between their trading partners abroad [2].

Since the introduction of the Structural Adjustment Programme (SAP) and the second tier foreign exchange market (SFEM) in 1986 the foreign exchange regimes has passed through many phases from fixed to flexible exchange rate regimes and even guided deregulated exchange regimes.

A number of economist believe that a market driven exchange rate will augur well for the Nigeria Naira as is the case with some other nation's currencies.

Exchange rate in other words refers to the price of one currency (the domestic currency) in terms of another (the foreign currency). Movements in the exchange rate have ripple effects on other economic variables such as interest rate, import, export, inflation rate, unemployment, money supply, etc. These facts underscore the importance of exchange rate to the economic well-being of every country that opens its doors to international trade in goods and services.

Exchange rates can be fixed, managed floating and free floating or flexible or fluctuating rates.

Nigeria has practiced both fixed and flexible exchange rate polices. From the period of 1967 through to 1970, Nigeria experienced a civil war. This adversely affected the fixed exchange rate regime which was in place at the time. The fixed exchange rate regime was accompanied by strict controls and regulations which ultimately resulted in the overvaluation of the exchange rate. This had negative implications for the economy as it encouraged the importation of finished goods which created more competition for the domestic producers.

Besides, the balance of payments position and the country's external reserves level were both compromised by the overvalued exchange rate [3.4]. In 1980 Nigeria was an oil-exporting country faced with high capital inflows which resulted in the appreciation of the naira. The oil boom came to an end by 1983 and the prevailing currency appreciation distorted the growth of the economy. In 1986, Nigeria implemented the IMF-World Bank imposed Structural Adjustment Program (SAP) which emphasized a market oriented approach to exchange rate determination [5]. However, the exchange rate depreciated throughout the 1980s. This decision was informed by the compromised balance of payments position as well as the country's declining external reserves level. Both the nominal and the real exchange rate were depreciated so as to align them to their equilibrium levels [6, 5].

The institutional agenda in place in 1986 was the Second-Tier Foreign Exchange Market (SFEM). The objective of the SFEM was to attain a realistic exchange rate through a series of exchange rate devaluations. SFEM implemented a dual exchange rate system and in 1987, the two rates merged at the rate of 3.74 Naira-US$ for one US dollar. A Dutch Auction System (DAS) was introduced in 1987 in order to improve the level of efficiency in the bidding system. The SFEM and DAS were then replaced by the Foreign Exchange Market (FEM) before in 1987 in an attempt to reduce the replications in the Nigerian exchange rate system, as well as ensure the depreciation of the Nigerian Naira. In 1989, the Bureau de change and the Inter-bank Foreign Exchange Market (IFEM) were initiated in order to cater for the needs of small end-users [6]. In 1990, the IFEM was re-organized to accommodate the re-enunciation of the DAS. The reduction in arbitrage opportunities in the oil marketing sectors combined with stronger controls in foreign exchange practices led to a noticeable moderation in foreign exchange net demand [6]. The volatility in the official rates, however, was limited with the coefficient of variation being 1.28 per cent for the year as a whole compared to 0.32 per cent in 2010. From 1992 to 1993 the exchange rate system in Nigeria was deregulated and this was further enhanced by realigning the official exchange rate with the exchange rate in the parallel market [7]. In 1994 the Autonomous Foreign Exchange Market (AFEM) replaced the IFEM to ensure that foreign exchange rate was sold at a market determined price, by authorized dealers.

STATEMENT OF PROBLEM

The statement of problem of this study is to determine the contribution of some selected macro-economic variables that determine the effect of exchange rate on balance of payments, be it positive (favorable) or negative (unfavorable).

OBJECTIVE OF THE STUDY

The major objective is;To determine the effect of exchange rate on balance of payment.

This study shall also examine the following specific objectives;

- To determine the effect of export on Balance of Payments.
- To determine the effect of import on Balance of Payments.
- To determine the effect of interest rate on Balance of Payments

FORMULATIONS OF HYPOTHESES

In order to carry out this study, the following hypothesis has been formulated to guide the study.

HO1: Exchange rate has no significant effect on Balance of Payments.

HO2: There is no significant effect of Export on Balance of Payments.

HO3: There is no significant effect of Import on Balance of Payments.

HO4: The level of interest rate has no significant effect on Balance of Payments.

REVIEW OF RELATED LITERATURE

This includes the various definitions, descriptions, highlights and opinions about the subject matter. Below are some examples; Oladipupo andOnotaniyohuwo [8]. Exchange rate refers to the price of one currency (the domestic currency) in terms of another (the foreign currency). It is the amount of foreign currency that may be bought for one unit of the domestic currency or the cost in domestic currency of purchasing one unit of the foreign currency [9]. Anifowose [10] describes foreign exchange as a monetary asset used on a daily basis to settle international transactions and to finance deficits in a country's balance of payments. He emphasizes that it is an important component of a country's stock of external reserve.

Nzotta [11] defines foreign exchange as the value of foreign nation's currency in terms of the home nation currency. In finance, the exchange rates (as also known as the foreign exchange rate or forex rate) between two currencies specify how much one currency is worth in terms of the other.

Anifowose [10] describes foreign exchange as a monetary asset used on a daily basis to settle international transactions and to finance deficits in a country's balance of payments. He emphasizes that it is an important component of a country's stock of external reserve. Other components include holding of monetary gold and Special Drawing Rights (SDRs). He considers foreign exchange management as a conscious effort to control and use available foreign resources optimally while ensuring to build up external reserves in other to

avoid external shocks attributable to dwindling of foreign exchange receipts.

The foreign exchange rate is the price of one currency in terms of another. It reflects the strength of an economy vis-à-vis another, by comparing the changes in the volume of goods and services of a given unit of a domestic currency, measured in foreign currency terms can buy over a period of time [12].

According to Olisadebe [13], in Nigeria the specific objectives of exchange rate policy include the following:-

- The achievement of balance of payments viability in the medium term
- Reduction of dependence on imports and oil exports
- Diversification of the export base
- Reduction of the elimination of incidence of capital flight
- Elimination of payment arrears
- Encouraging local production inputs
- Correction of the over-valuation of the naira exchange rate through the achievement of a realistic rate
- Reducing or eliminating the parallel market premium thereby improving resource allocation and enlarging the scope of legitimate foreign exchange etc.

Balance of payment is a very important feature of international finance. This is because it depicts the financial situation of a country in relation to other countries of the world at given period of time. Balance of payment has been variously defined.

Johnson [14] defined the balance of payment as merely a way of listing receipt and payment in international transaction of a country. He explained that it shows a country's trading position changes in its net position as foreign lender or borrower and changes in its official reserve holding. For Jane [15], the balance of payment may be defined as a statistical statement which summarizes for a specific time frame, economic transaction between residents of an economy and the rest of the world. For him, in a very simple term, balance of payment records the import and export of goods and services and income, and transfers as well as change in a country's liabilities to and claims (assets) on the rest of world or non-residents.

FACTORS AFFECTING BALANCE OF PAYMENTS

A surplus or deficit balance of payment may be caused by a number of factors. Some of the factors includes temporary disequilibria caused by random variation in trade, seasonal fluctuations, effects of weather or agricultural production etc. others are chronic or fundamental disequilibria, technological

changes, changes in a country's national income, inflation, stage of economic development and finally borrowings and lending. Jane [15] while looking at trends in BOP said the major factors that effects Nigeria's balance of payment include hostile international economic environment, external debt burden and other factors which include strategy of managing oil blocks misalignment of the naira exchange rate and lack of the harmonization in the implementation of monetary and fiscal policies.

THEORETICAL FRAMEWORK

The theoretical basis for this study is provided by those theories, which deal with the instruments for correcting balance of payments deficits. Such theories have existed in international trade theory as far back as 1752. Detailed analysis of the theory of policy instruments for correcting balance of payments equilibrium is, however, clearly spelt out in the work of McKinnon [16]. McKinnon [16] proposes that a country can offset adverse trends in its balance of payments by a change of financial policy.

RESEARCH METHODOLOGY

Annual (secondary) data of the variables are used and they were collected from the Central Bank of Nigeria statistical bulletin (publications issued for period 1989-2013). The variables are measured as follows:

From the hypothesis, there is a model dependency of BOP on the macro-economic variables i.e (exchange rate, export, import and interest rate).

The data to be used in this project is showcase thus,

$$BOP = f (EXRT, EXPT, IMPT, INTR)$$

Where;

BOP = Balance of Payments.
EXRT = Exchange rates
EXPT = Export
IMPT = Import
INTRT= Interest rates
f = Foreign Currency

The econometric form of the model is given as:
$$BOP = \alpha 0 + \alpha 1EXRT + \alpha 2EXPT + \alpha 3IMPT + \alpha 4INTRT + Ut$$

Where,

Ut is a random error term representing all other variables not specified in the model.

The model estimation technique of this study is the Ordinary Least Squares Method of estimation, for single equation model. The OLS method is chosen because of the considerable advantages associated with it [17].

Table-1: DATA PRESENTATION

YEAR	EXPORT	IMPORT	EXCHANGE RATE	BALANCE OF PAYMENTS	INTEREST RATE
1989	57971.20	3086.20	7.39	8727.80	20.44
1990	109886.10	45717.90	8.04	18498.20	25.30
1991	121535.40	89488.20	9.91	5959.60	20.04
1992	205611.70	14161.20	17.30	-65271.80	24.76
1993	218770.10	165629.40	22.05	13615.90	31.65
1994	206059.20	162788.80	21.89	-42623.30	20.48
1995	950661.40	755127.70	21.89	-195316.30	20.23
1996	1309543.40	562626.60	21.89	-53152.00	19.84
1997	1231662.70	845716.60	21.89	1076.30	17.80
1998	751856.70	837418.70	21.89	-220675.10	18.18
1999	1188969.80	862515.70	92.69	-326634.30	20.29
2000	1945723.30	985022.40	102.11	314139.20	21.27
2001	2001230.30	1358180.30	111.94	24738.70	23.44
2002	1882668.20	1512695.30	111.94	24738.70	24.77
2003	2889846.70	2080235.30	129.36	-162298	20.71
2004	4620085.20	1987045.30	133.50	1124157.20	19.18
2005	6310247.90	3792821.20	132.15	2395864.30	17.95
2006	5752747.70	4296716.40	128.65	2206500.50	16.90
2007	8126000.50	5289824.40	125.81	2124143.62	16.94
2008	9568949.20	3299095.00	118.55	3395065.84	15.48
2009	7434543.90	5047831.00	149.97	-3225065.84	18.36
2010	13009905.73	6648525.89	150.65	1162859.03	17.59
2011	19466959.54	13407126.11	154.74	2177553.08	16.02
2012	5892940.80	5624870.44	157.50	-59220072	16.79
2013	875690.50	1028194.30	157.31	410598.90	16.55

Source: Central Bank of Nigeria (CBN) & National Bureau of Statistics, Publications 2014

Regression Analysis

Model 1: OLS, using observations 1989-2013 (T = 25) Dependent variable: BOP

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	-7.26434e+06	1.71842e+07	-0.4227	0.67700	
EXR	-45416.8	53420.8	-0.8502	0.40529	
EXP	4.66788	1.72729	2.7024	0.01370	**
IMP	-6.86692	2.70718	-2.5366	0.01964	**
INR	396049	744651	0.5319	0.60068	

Mean dependent var	-1924115	S.D. dependent var	12005841
Sum squared resid	2.41e+15	S.E. of regression	10967752
R-squared	0.304545	Adjusted R-squared	0.165454
F(4, 20)	2.189542	P-value(F)	0.107067
Log-likelihood	-437.9459	Akaike criterion	885.8918
Schwarz criterion	891.9862	Hannan-Quinn	887.5822
Rho	-0.413686	Durbin-Watson	2.731225

Source: Computed using Gretl 1.9.8

FINDINGS AND DSICUSSION

From the analysis, exchange rate has a t-value of -0.8502, meaning that exchange rate has a negative effect on Balance of Payment (BOP), though not statistically significant. This shows that an increase in exchange rate will result in a decrease in BOP (unfavourable).

Export has a positive effect on Balance of Payment. This is shown by a t-value of 2.7024 statistically significant at 5%. This means that an increase in export will result in an increase in BOP (favourable).

Import has a t-value of -2.537 statistically significant at 5%. It shows that import has a negative effect on BOP meaning that an increase in import causes unfavourable balance of payment. This depicts that we pay more than we earn.

Interest rate has a positive effect on Balance of Payment, though not statistically significant. This is shown by a t-value of 0.5319.

R-squared shows that 30% of the changes in the dependent variable are caused by the independent variables. Adjusted R-squared suggests approximately 17%.

Testing of Hypotheses
Hypothesis 1

H_O: Exchange rate has no significant effect on Balance of Payments.
H_1: Exchange rate has a significant effect on Balance of Payments.

From the result of the analysis, the negative effect exchange rate has on Balance of Payment is not statistically significant. Therefore, the null hypothesis which states that exchange rate has no significant effect on Balance of Payment is accepted while the alternative hypothesis is rejected.

Hypothesis 2

H_O:There is no significant effect of Export on Balance of Payments.
H_1:There is a significant effect of Export on Balance of Payments.

From the result, export has a statistically significant positive effect on Balance of Payment. Thus, the null hypothesis is rejected while the alternative hypothesis is accepted.

Hypothesis 3

H_O: There is no significant effect of Import on Balance of Payments.
H_1:There is a significant effect of Import on Balance of Payments.

The analysis shows that import has a negative effect, statistically significant at 5%, on Balance of Payment. Therefore, we reject the null hypothesis and accept the alternative hypothesis which says that there is a significant effect of import on Balance of Payment.

Hypothesis 4

H_O: The level of interest rate has no significant effect on Balance of Payments.
H_O: The level of interest rate has a significant effect on Balance of Payments.

Interest rate has a positive effect on BOP but not statistically significant. As a result, the null hypothesis is accepted while the alternative hypothesis is rejected.

CONCLUSION

As long as exchange rate is allowed to depreciate, it will as well affect the elasticity of import, export and balance of payments. Therefore, there is need for currency devaluation for Nigeria to have a surplus Balance of Payments, this was suggested by most of the literature studied and I so much agree with them because of my result findings. Rodrik [18] suggested that exchange rate regime that is driven will make better economic variables studied. Exchange rate has a very positive impact to balance of payment if it is on the increase movement, but the reverse will be the case and it will not end well with the out of balance of payment.

RECOMMENDATIONS

- Foreign Exchange policy measures should be put in place to check the pressures of foreign exchange and act when there is need for devaluation of Naira.
- Activities of fraudulent operators should be checked in the market.
- Government should harmonize monetary and fiscal policies to boost non-oil exports and also pay more attention to other sectors of the economy most especially now oil price is drastically dropping.
- Nigerians should be encouraged to patronize made in Nigeria goods in order to create an inverse relationship between exchange rate, other macro-economic variables and balance of payments.

REFERENCES
1. Nzotta, S.M. (1999): Money, Banking and Finance: Theory and Practice, 1 Edition, International Educational Books Publishers.
2. Marston, R. (1987), "Real Exchange Rates and Productivity Growth in the United States and Japan", in: S. Arndt and J. D. Richardson (eds.), Real-Financing Linkages among Open Economies, MIT Press Cambridge, MA.

3. Nyatepe-Coo, A. A. (1995). Resource shocks, real exchange rate appreciation and the independence of monetary policy in developing oil-exporting countries. *International Economic Journal*, *9*(4), 91-107.

4. Obstfeld, M., & Rogoff, K. (2009). Global imbalances and the financial crisis: products of common causes.

5. Obstfeld, M. (1998). *The global capital market: benefactor or menace?* (No. w6559). National Bureau of Economic Research.

6. Obadan, M. I. (1994). Real Exchange Rates in Nigeria", National Center for Economic Management and Administration, Ibadan Obadan, M. I. (2006), "Overview of Exchange Rate Management in Nigeria from 1986 to Date", In The Dynamics of Exchange Rate in Nigeria, *Central Bank of Nigeria Bullion,* Vol. 30, No. 3, pp. 1-9.

7. Ogiogio, T. M. (1996). Impact of External Sector Policies on Nigeria's Economic Development" *Central Bank of Nigeria Economic and Financial Review,* Vol 34, No 4, December.

8. Oladipupo, A. O. & Onotaniyohuwo, F.O. (2011).Impact of Exchange Rate on Balance of Payment in Nigeria. *An International Multidisciplinary Journal, Ethiopia Vol. 5 (4), Serial No. 21, July, 2011.*

9. Grabbe, J. O. (1983). The pricing of call and put options on foreign exchange. *Journal of International Money and Finance*, *2*(3), 239-253.

10. Anifowose, O.K.(1994). "Allocation and Management of foreign exchange, The Nigerian Experience" *The CBN Bulletin, Vol. 18*,No 4.

11. Nzotta, S.M.(2004). *Money Banking and Finance: Theory and Practice*. Owerri: Hudson-Judge Nigerian Publishers.

12. Ülkü, N., & Demirci, E. (2012). Joint dynamics of foreign exchange and stock markets in emerging Europe. *Journal of International Financial Markets, Institutions and Money*, *22*(1), 55-86.

13. Umoru, D., & Odjegba, O. P. (2013). Exchange Rate Misalignment and Balance of Payment Adjustment in Nigeria. *European Scientific Journal*, *9*(13).

14. Johnson, H. G. (1977). The monetary approach to the balance of payments: A nontechnical guide. *Journal of international economics*, *7*(3), 251-268.

15. Jane, K. G. O. (2013). The Effect of Exchange Rate Fluctuation On The Nigeria Maufacturing Sector (1986-2010).

16. McKinnon, R. I. (1988). Monetary and exchange rate policies for international financial stability: a proposal. *The Journal of Economic Perspectives*, *2*(1), 83-103.

17. Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern methods for business research*, *295*(2), 295-336.

18. Rodrik, D. (2008). The real exchange rate and economic growth. *Brookings papers on economic activity*, *2008*(2), 365-412.