19

JMSS

JOURNAL OF MANAGEMENT AND SOCIAL SCIENCES

Journal of Management and Social Sciences

Volume 6, Number 1. May 2017.

College of Management & Social Sciences
Fountain University

Article

Journal of Management and Social Sciences

Evaluating the Causality Effect of Exchange Rate and Nigeria Balance of Payment: An Empirical Analysis

Abdullahi, I.B.
Department of Finance, University of Ilorin, Nigeria

Fakunmoju, S.K.
Department of Finance, University of Ilorin, Nigeria

Abubarkar, M.A.
Department of Accounting, University of Ilorin, Nigeria

Giwa, K.O.
Department of Finance, University of Ilorin, Nigeria

Abstract
A country's exchange rate and balance of payment are usually regarded as one of the indicator by which a nation's strength can be measured especially its economic strength. Exchange rate plays a major role in international trade because no nation can remain in autarky due to varying factor endowments. Nigerian economy experienced chronic deficit on the balance of payment account, fall in the price of Naira and gross domestic product growth rate due to over-dependency on imported products, reliance of revenues from oil exports, massive imports of refined petroleum, and other related products. The study evaluates the causality effect of foreign exchange rate and Nigeria balance of payment between the periods of 1970 and 2015. The data obtained were subjected to VECM Granger Causality method of analysis. The results revealed that exchange rate and balance of payment granger cause each other at 5% level of significance. The study recommended that there should be a restriction on trade openness of goods or services that can be produced locally and diversification of Nigerian economy by the economy managers. The study concluded that there is high propensity for Nigerian economy to achieve favourable balance of payment, if the above recommendations are implemented.

Keywords
Exchange rate, balance of payment, VEC Granger causality and Johansen co-integration, Nigeria economy

Introduction

A country's exchange rate and balance of payment is usually regarded as the sum of indicators by which economic strength can be measured. Exchange rate plays a key role in international economic transactions because no nation can remain in autarky (close economy) due to varying factor and resource endowment of different economies. Movements in the spread of exchange rate or price of currencies have effects on other macroeconomic variables such as interest rate, balance of payment, inflation rate, unemployment, money supply, gross domestic product (GDP), standard of living etc. In Nigeria, exchange rate has changed within the time frame from regulated to deregulated regimes. In 1986 when the Federal government adopted Structural Adjustment Programme (SAP), the country moved from a pegged regime to a flexible exchange rate regime where exchange rate is left completely to be determined by market forces; but the prevailing system is the managed float whereby monetary authorities intervene periodically in the foreign exchange market in order to attain some strategic objectives (Mordi, 2006).

Ewa (2011) agreed that the exchange rate of the Naira was relatively stable between 1973 and 1979 during the oil boom era and when agricultural products accounted for more than 70% of the nation's GDP. The diversion and building of Nigerian economy on oil sector as a major source of national revenue while neglecting agricultural sector caused the fluctuation and poor value of Naira to other countries currencies like dollar, pounds sterling, euro etc. This in turn encouraged imports and discouraged non-oil export (agricultural products), and over dependence of Nigerian economy on imported inputs over exported output caused unfavourable balance of payment and devalued Naira compared with other foreign currencies, for instance the Nigeria Naira to dollars is $1 to ₦310.35, pounds-sterling is £1 to ₦408.48 etc (Central Bank of Nigeria, 2016).

Exchange rate is a key determinant of the balance of payments (BOP) position of any country. If it is judiciously utilised, it can serve as nominal anchor for price stability (Oladipupo & Onotaniyohuwo, 2011). The Nigeria budget over relies so much on revenues from oil exports but it equally massively imports refined petroleum and other related products which negatively affect Nigeria exchange rate, economic activities, growth and standard of living. The fact that crude oil is an exhaustible asset makes it unreliable for sustainable development of the Nigerian economy (Utomi, 2004). When Nigeria started recording huge balance of payments deficits and very low level of foreign reserve in the 1980s, it was felt that a depreciation of the Naira would relieve pressures on the balance of payments (Oladipupo & Onotaniyohuwo, 2011). Consequently, the Naira was devalued. Despite all these policies towards achieving stable foreign exchange rate, it has meant worsening BOP with its attendant effects (Iyoboyi & Muftau, 2014). The global financial crisis of 2008 also contributed to the depreciation of Naira against foreign currencies at the end of 2009 (Aliyu, 2009).

Although several studies have relate balance of payment, exchange rate and other macro-economic variables like government expenditure, real gross domestic product, broad money supply, interest rate and trade openness such as Iyoboyi and Muftau (2014), Oladipupo and Onotaniyohuwo (2011), Asinya and Takon (2014) and Akonji (2013), Aliyu (2009), Obi, Oniore and Nnadi (2016) among others but no study in Nigeria has examine the causality effect between Nigeria balance of payment and exchange rate. Therefore, this study aims to examine the causality effect of exchange rate and Nigeria balance of payment, and set the hypothesis of no causality effect between balance of payment and exchange rate in Nigeria.

In order to achieve this, the paper is divided into five sections of introduction, literature review, methodology, presentation of result and discussion of findings, and finally conclusion and policy recommendations.

Review of Related Literature

Exchange Rate

Iyoboyi and Muftau (2014) defined exchange rate as the price of one country's currency in relation to another country currency. This means that exchange rate deals with price strength of one currency against another currency. Stemming from this, Asinya and Takon (2014) and Akonji (2013) opined that exchange rate is an important economic measurement because it reflects the economic strength and competitiveness with other economies. Exchange rate of currency established the connection between domestic and foreign prices of goods and services and also serves as one of the indicators for economic activities performance (Obi, Oniore & Nnadi, 2016). Exchange rate can either appreciate or depreciate. It is appreciated if less unit of local currency is exchanged for a unit of foreign currency and depreciated if more unit of domestic currency is exchanged for a unit of foreign currency.

Asinya and Takon (2014) noted that if foreign exchange rate is not properly managed, such economy can face the problem of balance of payment, poor economic activities, low capital formation, increase in general price of goods and services and currency devaluation, which will automatically reduce level of economic growth. The major factor that causes higher fluctuation in the Nigeria exchange rate is over importation compared to export that is very low; this has led to deficit in the Nigeria balance of payment and general increase in price (Aliyu, 2009; Obi, Oniore & Nnadi, 2016; Asinya & Takon, 2014).

Central Bank of Nigeria (CBN) (2016) revealed that the Naira has been flagging against the U.S. Dollar in terms of exchange rate since CBN scrapped the currency peg that had kept it at an artificially-high value around 198 NGN per USD for over a year. The removal of peg currency by CBN has caused over 40% of currency lost in value against the USD and since then, the Naira has been fluctuating at low exchange rate compared to other foreign currencies like U.S. Dollar, Pound-Sterling etc (Central Bank of Nigeria, 2016).

In the era of trade liberalization, appropriate policy mix that ensures an effective rate of exchange is imperative because the variation of exchange rate has economic implications and a sound foreign exchange system increases the condition and economic activities of a nation if properly managed and encourage foreign investors into the economy. Policies on exchange rate serve as a key determinant to balance of payments (BOP) position of any country. If it is judiciously utilized, it can serve as nominal anchor for price stability, boosting economic activities and growth in standard of living.

Table 1: Monthly Exchange Rate

Monthly Average Exchange Rates of the Naira (Naira Per Unit of Foreign Currency) – 2016			
Month	**January**	**October**	**November**
DAS (USD)			
IFEM (USD)	197.00	305.21	305.18
BDC (USD)	289.78	462.03	415.36
GB POUNDS	283.62	375.71	379.49
EURO	214.09	336.21	329.84
CFAFr	0.33	0.51	0.50

Source: Central Bank of Nigeria (2016)
N.B: *DAS/WDAS = Dutch Auction System/Wholesale Dutch Auction System, IFEM is Inter-bank Foreign Exchange Market, BDC is Bureau de Change*

It can be seen from table 1 that there is fluctuation in the exchange rate of Naira to other currencies. This volatility fluctuation of exchange rate of Naira was caused by over dependence of Nigeria economy on importation trade over exportation, as this volatility fluctuation continues, Nigeria as a nation will continue to experience unfavourable balance of payment. As noted by Oladipupo and Onotaniyohuwo (2011) that changes in exchange rate have direct effect on demand and supply of goods, causes of unfavourable balance of payment, determine level of investment and employment generation as well as distribution of income and wealth, and thus this variation in exchange rate is an important endogenous factor that affects economic performance, due to its impact on macroeconomic variables like outputs, imports, export prices, interest rate, balance of payment and inflation rate in Nigeria (Iyoboyi & Muftau, 2014; *Asinya & Takon, 2014*).

Balance of Payment

Balance of payment can be defined as a summary review record and statement of an economy transaction with the global economies within a time period. The balance of payments account is divided into two main parts: the Current Account and the Capital Account. The Current Account measures the money flow, which is derived from the money gained and spent from the trade in goods and services and it is subdivided into three sections: balance of trade in goods, balance of trade in services and net income flows.

Iyoboyi and Muftau (2014) opined that Balance of payment (BOP) is a needed statement in a country because it will give an account of import of a country and this will act as signal for some domestic policies. On the export side, balance of payment (BOP) tells us our export composition and the extent to which a country depends on certain commodities for our foreign exchange earnings. Oladipupo and

Onotaniyohuwo (2011) stated that if fiscal discipline is imposed, the depreciation in exchange rate will improve the Nigerian BOP position and also inappropriate distribution and misapplication of domestic credit, fiscal corruptions and misappropriation expenditure control policies in government contribute to the continuous persistent of unfavourable balance of payment in Nigeria.

Balance of payments problems or deficit balance of payment arises in connection with a deficit in the current account, mainly because imports trades exceed exports trade over a long period of time. A current deficit is caused by the following factors: overvalued local currency, increasing economic growth, a decline in competitiveness, inflation, recession in other countries, and borrowing money. A continuously BOP deficit may be a symptom of a wider structural economic problem such as poor investment in new capital, a change in comparative advantage towards other economies. Large trade deficits replicates an unbalanced economy which is usually the result of the consumer demand for imported items at high level contrasted with a weaker and local industrial sector, thus cause a sharp fall in the country BOP.

Table 2: Trend analysis of BOP in Nigeria

Yr	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
BOP	16.01	5.61	1.83	5.01	19.17	32.54	25.11	16.61	14.01	8.18	3.55	\2.59	3.77	3.70	0.16	-3.28

Source: World Development Indicators (2016)

Theoretical Framework

The table 2 depicts how volatility fluctuation in exchange, deficit in current account and other macro-economic variables sharply fall Nigerian BOP into negative figure, that is, unfavourable BOP.

Iyoboyi and Muftau (2014) noted that major factor that causes economic destitution and unfavourable balance of payment is the exchange rate volatility and over reliance on imported product in Nigeria. According to Ajayi (2014), the fall in the world market prices of Nigeria's principal exports and considerable increase in the volume of imports into the country causes unfavourable balance of payment and several factors seem to have contributed to the growth of the deficit balance of payment. A large deficit in the balance of trade can also lead to a sharp fall in the value of the exchange rate; which in turn can push the central bank to raise interest rates. The rise in inflation and interest rates would result in a fall in demand, output and employment. On other hands, a country that experience surplus in current account or BOP spring up appreciation in local currency, if the currency is floating. Such a country will encounter difficulty in export, and imports will become cheaper; this may increase inflation inside the economy, if the country is dependent on imports such as crude oil.

Aliyu (2009) opined that countries experiencing balance of payments problems should embark on devaluation or gradual depreciation of her currency to effect a change on the payments problems, since devaluation which is the reduction of the value of one's country is expected to have significant impact on international capital movements. Through its effects on the volume of imports and exports, exchange rate exerts a powerful influence on a country's balance of payments position.

Theoretical Review

Marshall–Lerner Condition Theory

The argument of the traditional school is that exchange rate depreciation would promote trade balance, alleviate BOP difficulties and consequently expand output and employment, provided the Marshall–lerner conditions are met. The Marshall–lerner condition states that depreciation would lead to expansion in output if the sum of price elasticity of demand for export and the price elasticity of demand for imports is greater than unity. The mechanism behind these positive effects is to make export industries more competitive in international markets, stimulate domestic production of tradable goods and induce domestic industries to use more domestic inputs.

The Monetary Approach

The monetarists on the other hand consider exchange rate volatility as having no effect on real variables in the long run. Accordingly, exchange rate devaluation affects real magnitudes mainly through real balance effect in the short run but leaves all real variables unchanged in the long run (Iyoboyi & Muftau, 2014). This view is based on the assumption of the purchasing power parity, which predicts that in the short run, devaluation improves the level of output, but in the long run the monetary consequence of the devaluation ensures that the increase in output and improvement in BOP is neutralised by the rise in prices.

The two theories above were used by Iyoboyi & Muftau (2014) in their study. Therefore, this paper was built upon both theories in order to establish the causal effect between BOP and exchange rate.

Empirical Evidence

Several studies have shown the empirical investigation of exchange rate on Nigeria economy and balance of payment and the debate of the effect of exchange rate fluctuation are equally not resolved. For instance, Oladipupo and Onotaniyohuwo (2011) examined the impact of exchange rate on the Nigeria BOP. Their study employed Ordinary Least Square (OLS) method of analysis within the period of 1970 to 2008. They found that exchange rate has significant effect on BOP position and exchange rate depreciation can essentially improve BOP position if fiscal discipline is imposed. This study failed to investigate whether exchange rate affect BOP in the long run and causality exist between BOP and exchange rate. They also revealed that poor allocation of local credit, fiscal indiscipline and poor expenditure control policies are the major sources of deficit BOP in Nigeria.

Patricia and Osi (2010) investigated the BOP equilibrium in the West African Monetary Zone. They employed panel regression; the study revealed that within country effects, the regression result indicate that interest rate and output growth plays a significant role in achieving a favourable BOP, while the cross-country effects indicate similar result. The study therefore, ponders an appropriate and tight strap on domestic credit creation as a necessary condition for achieving stability in the BOP without considering the effect of excess money supply in the circulation. Iyoboyi and Muftau (2014) examined the impact of exchange rate depreciation on BOP in Nigeria over the period of 1961-2012. Their study employed multivariate vector error correction model. They revealed that long run relationship exist between BOP, exchange rate, government expenditure, real gross domestic product, broad money supply, interest rate and trade openness but failed to determine causality effect between BOP and exchange rate.

Eme and Johnson (2012) investigated the effect of exchange rate movements on real output growth in Nigeria for the period 1986–2010. The result revealed that there is no evidence of a strong direct relationship between changes in exchange rate and output growth. Rather, Nigeria economic growth has been directly affected by monetary variables. Imoisi (2012) examined the trends in Nigeria's BOP. The results indicate a significant relationship between BOP, exchange rate and interest rate; the author therefore recommends an increase in non-oil export through a diversified productive base as a vehicle to correct the deficit in the current account section of the BOP.

Nwani (2006) studied the long-run determinants of balance of payment dynamics in Nigeria between 1981 and 2002, using econometric method of co-integration and error correction mechanism. The results indicate that balance of payment co-integrated with all the identified explanatory variables, suggesting that balance of payment fluctuations in Nigeria could be caused by the level of trade openness, external debt burden, exchange rate movement and domestic inflation. Umer, Abro and Ghazali (2010) examined how Pakistan balance of payments deficit is being influenced by different factors using OLS, co-integration, ECM. The results show that the roles of monetary variables for Pakistan balance of payment do not determine economic growth empirically, that fiscal variables have significant effect on Pakistan BOP.

Aghion, Bacchetta, Ranciere and Rogoff (2006) found that the effect of exchange rate volatility, which is the consequence of how well the economy is managed on real activity, is relatively small and insignificant at 5% level of significance. This is in consonance with the findings of Dubas and Lee (2005), who both found a robust relationship between exchange rate stability, growth and balance of payment. However, Iuhia and Bogdan (2012) viewed that the stability of exchange rate does not encourage economic growth especially if obtained by enormous government official interventions to sustain the exchange rate regime. Razmi, Rapetti and Skott (2012) also discovered positive relationship between investment growth and real exchange rate undervaluation.

Amassoma and Odeniyi (2016) *examined the impact of exchange rate fluctuation on the Nigerian economic growth using an annual data of forty-three (43) years covering the period (1970–2013). The study employed Multiple Regression Model, Johansen Co-integration test and the Error Correction Model*

(ECM). Evidence from this study exhibited that there exists a positive but insignificant impact of exchange rate fluctuation on Nigerian economic growth in both the long run and short run. Their result is attributed to the ability of the Nigerian government to effectively regulate some other important macroeconomic variables which can infuriate exchange rate which has thereby helped curtail the effects of exchange rate fluctuation during the study period.

Although previous studies have established the impact of exchange rate on balance of payment, effect of monetary policy on balance of payment, determinant of balance of payment and exchange rate and other macro-economic variables in Nigeria context. The study of Iyoboyi and Muftau (2014) that examined the relationship between BOP, exchange rate and other macro-economic variables like government expenditure, real gross domestic product, broad money supply, interest rate and trade openness do not consider the causality effect between BOP and exchange rate. Therefore, no study in Nigeria has examined the causality effect between balance of payment and exchange rate. This study finds it expedient to fill this gap in the literature.

Methodology

This study focuses on the evaluation of the causality effect of exchange rate and Nigeria balance of payment. Secondary data were employed in this study which was sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin of various years within the period of 1970-2015. The time series data were subjected to Ordinary Least Squares (OLS) statistical technique, Jusulius and Johansen Co-integration and granger causality analysis. The Nigeria balance of payment is used as dependent variable while exchange rate, money supply, real gross domestic product, interest rate and consumer price index as the independent variables.

Model Specification

This study adapted the econometric model of Oladipupo and ***Onotaniyohuwo*** (2011) and the model was re-modified. The model specified below:

BOP = f(EXRT, MS, ROUT, PRICE, INTR, INF) ------------------------- eqn 1

The re-modified model is:

BOP = f(EXRT, MS, RGDP, CPI, INTR) ---------------------------------- eqn 2

The econometric model is:

$BOP_t = \beta_o + \infty_1 EXRT_t + \alpha_2 MS_t + \pi_3 RGDP_t + \alpha_4 CPI_t + \pi_5 INTR_t + \mu_t$ --------- eqn 3

Also, in order to achieve the main objective of the study, that is, to examine the long run causality effect between BOP and exchange rate, the study employs the Vector Granger causality test suggested by Granger (1969, 1986) to examine the causal effects of exchange rate and balance of payment.

Thus,

$$BOP_t = \infty_0 + \sum_{j=1}^{n} b_j \, \Delta BOP_{t-1} + \sum_{j=1}^{m} c_j \, \Delta EXRT_{t-1} + \delta_1 EC_{t-1} + \varepsilon_{1t} ---- \quad --- eqn\ 4$$

$$EXRT_t = \emptyset_0 + \sum_{j=1}^{m} b_j \, \Delta EXRT_{t-1} + \sum_{j=1}^{n} c_j \, \Delta BOP_{t-1} + \delta_2 EC_{t-1} + \varepsilon_{2t} ---- \quad --eqn\ 5$$

ε_{1t}, ε_{2t} are the stationary error terms for Equations (4) and (5), while δ_1 and δ_2 of the Error Correction Term denote the coefficients of long-run causality effect for Equations (4) and (5) since the residual of the variables are stationary at level and co-integrated of the same order. Where BOP = Balance of Payments, EXRT = Exchange rates, MS = Money supply, RGDP = Real gross domestic product rate, CPI = Consumer price index, INTR = Interest rate, **ROUT=** Real Output. μ_i = Error Term.

The apriori expectations are $\beta_1<0$, $\beta_2>0$, $\beta_3<0$, $\beta_4<0$ and $\beta_5<0$, which means we expect a mixture of positive and negative relationship between the dependent variable and the independent variables.

Presentation of Result and Discussion of Findings

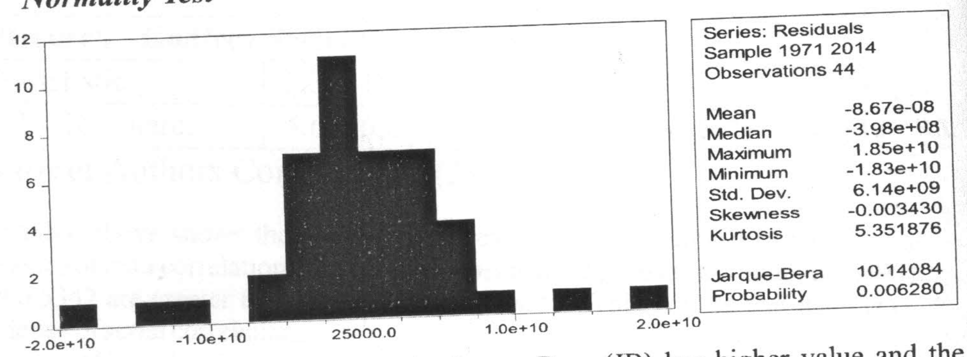
Table 4.1: Summary Statistic

	BOP	EXRT	CPI	RGDP	INTR	MS
Mean	2.865401	54.48596	18.65320	4.406326	-2.012273	22.50928
Median	1.474803	19.59143	12.77549	4.649226	-0.934928	21.16292
Maximum	32.54304	192.4405	72.83550	33.73578	25.28227	43.26613
Minimum	-14.16760	0.546781	3.457650	-13.12788	-43.57266	10.04202
Std. Dev.	9.681645	65.12414	16.23591	7.908744	15.84299	7.170380
Skewness	0.689767	0.667586	1.815698	0.980340	-0.723345	0.528072
Kurtosis	4.006312	1.711425	5.395054	6.665632	3.505071	3.336285
Jarque-Bera	5.588570	6.599295	36.26969	33.12216	4.500347	2.354676
Probability	0.061159	0.036896	0.000000	0.000000	0.105381	0.308098
Sum	131.8085	2506.354	858.0471	202.6910	-92.56456	1035.427
Sum Sq. Dev.	4218.041	190851.9	11862.21	2814.671	11295.02	2313.646
Observations	46	46	46	46	46	46

Source: Authors Computation (2016)

From table 4.1 it can be seen that the deviation of exchange rate is very high, this is due to over importation of Nigerian economy which has led to speed changing or fast reaction of Nigeria exchange rate and continuously reduce the value of Nigeria currency. BOP, INTR and MS are normally distributed since their Jarque-Bera (Prob) is greater than 5% while EXRT, CPI and RGDP are not normally distributed as their Jarque-Bera (Prob) is less than 5%.

Normality Test



The series fail normality test as the Jarque-Bera (JB) has higher value and the probability of the JB is less P<5%.

Table 4.2: Time Series Stationary Tests

	ADF Test for Unit Root at Level					ADF Test for Unit Root at Difference				
Variables	**Test Statistic**	**1% Critical Value**	**5% Critical Value**	**10% Critical Value**	**Order**	**Test Statistic**	**1% Critical Value**	**5% Critical Value**	**10% Critical Value**	**Order**
BOP	2.3497	4.1809	3.5155	3.1883	I(0)	4.9113	4.1865	3.5181	3.1897	I(1)
EXR	1.7925	4.1809	3.5155	3.1883	I(0)	6.2340	4.1865	3.5181	3.1897	I(1)
MS	3.0215	4.1809	3.5155	3.1883	I(0)	3.9261	4.1865	3.5181	3.1897	I(1)
RGDP	2.6528	4.1809	3.5155	3.1883	I(0)	7.3571	4.1865	3.5181	3.1897	I(1)
CPI	2.0673	4.1809	3.5155	3.1883	I(0)	3.6510	4.1865	3.5181	3.1897	I(1)
INTR	7.2121	4.1809	3.5155	3.1883	I(0)	8.0299	4.1865	3.5181	3.1897	I(1)

Source: Authors Computation (2016)

Table 4.3: PP Test for Unit Root at Level **PP Test for Unit Root at Difference**

Variables	**Test Statistic**	**1% Critical Value**	**5% Critical Value**	**10% Critical Value**	**Order**	**Test Statistic**	**1% Critical Value**	**5% Critical Value**	**10% Critical Value**	**Order**
BOP	2.4800	4.1809	3.5155	3.1883	I(0)	4.4784	4.1865	3.5181	3.1897	I(1)
EXR	1.8099	4.1809	3.5155	3.1883	I(0)	6.2340	4.1865	3.5181	3.1897	I(1)
MS	2.3182	4.1809	3.5155	3.1883	I(0)	4.7331	4.1865	3.5181	3.1897	I(1)
RGDP	2.6557	4.1809	3.5155	3.1883	I(0)	7.3285	4.1865	3.5181	3.1897	I(1)
CPI	1.3472	4.1809	3.5155	3.1883	I(0)	4.1328	4.1865	3.5181	3.1897	I(1)
INTR	7.6255	4.1809	3.5155	3.1883	I(0)	9.3121	4.1865	3.5181	3.1897	I(1)

Source: Authors Computation (2016)

Table 4.4: Serial Autocorrelation Test

Breusch -Godfrey Serial Correlation LM Test			
F-statistic	2.328152	Prob. F(2,42)	0.4931
Obs*R-squared	4.670632	Prob. Chi-Square(2)	0.5342

Source: Authors Computation (2016)

The table above shows the Breusch-Godfrey Serial Correlation LM test for the presence of auto correlation. The result reveals that the probability values of 0.4931 and 0.5342 are greater than the critical value of 5%. This implies that there is no evidence of serial correlation.

Table 4.5: Heteroskedasticity Test

Table 4.5: White Heteroskedasticity Test			
F-statistic	0.619940	Prob. F(2,42)	0.4931
Obs*R-squared	11.40198	Prob. Chi-Square(2)	0.5342

Source: Authors Computation (2016)

The white test of heteroskedasticity table above reveals that the p-value of about 0.4931 is greater than critical value of 5%. This shows that there is no evidence for the presence of heteroskedasticity since the p-values are considerable in excess of 0.05.

Table 4.6: Ramsey RESET Test

Table 4.6: Ramsey RESET Test			
F-statistic	0.304090	Prob. F(2,42)	0.59631
Obs*R-squared	0.596906	Prob. Chi-Square(2)	0.43972

Source: Authors Computation (2016)

The Ramsey RESET test table above shows that the p-value of about 0.59631 is greater than critical value of 5%. This shows that there is no apparent non-linearity in the regression equation and it would be concluded that the linear model is appropriate.

Table 4.7: Regression Output

Dependent Variable: D(BOP) at First Difference				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.014191	1.35E+09	-0.016054	0.9873
D(EXR)	-1.101724	0.060196	-0.135541	0.0029
D(MS)	-0.001637	0.001859	-0.880453	0.3841
D(RGDP)	0.010298	0.042682	0.241277	0.8106
D(CPI)	1.73E+08	4.09E+08	0.423388	0.6744
D(INTR)	-3.406332	0.128682	-0.498408	0.6211
ECM(-1)	-0.216437	0.019091	-4.178442	0.0354
R-squared	0.545255			
Adjusted R-squared	0.557369		Durbin-Watson stat	1.570906
F-statistic	9.360240			
Prob (F-statistic)	0.002398			

Source: Authors Computation (2016)

The regression result shows that the explanatory variables explained approximately 56 percent variations in Nigeria balance of payment. The value of the F-statistic shows that the equation has a good fit, that is, the explanatory variables are good explainer of changes in balance of payment. The Durbin-Watson statistic indicates that there is no serial autocorrelation among the variables as the value of the Durbin-Watson statistic is closer to 2.00. The ECM indicates the correction of disequilibrium in the system, that is, the speed at which the ECM is correcting the disequilibrium of the variables in the model is 21.6% and it is significant at 5% level of significance.

Table 4.8: Multicollinearity Test

Variance Inflation Factors			
	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
C	1.82E+18	1.877157	NA
EXR	7.75E+15	1.171058	1.068006
MS	3.46E-06	2.715829	2.105247
RGDP	0.001822	2.472265	2.171364
CPI	1.67E+17	4.686156	2.796234
INTR	5.97E+15	1.462544	1.443719

Source: Authors Computation (2016)

Table 4.8 revealed that the model in this study does not suffer from multi-collinearity problem since the centered VIF of each variable do not exceed 5.

Table 4.9: Johansen Co-integration Result

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.980063	352.8505	125.6154	0.0000
At most 1	0.954366	235.3959	95.75366	0.8200
At most 2	0.893009	142.7825	69.81889	0.9800
At most 3	0.764094	75.73220	87.85613	0.4129
At most 4	0.567267	32.40255	39.79707	0.9245
At most 5	0.192919	7.273545	15.49471	0.5460
At most 6	0.027729	0.843611	3.841466	0.3584
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.980063	117.4546	46.23142	0.0000
At most 1	0.954366	92.61335	40.07757	0.7400
At most 2	0.893009	67.05031	33.87687	0.8100
At most 3	0.764094	43.32965	57.58434	0.5102
At most 4	0.567267	25.12901	41.13162	0.4129
At most 5	0.192919	6.429934	14.26460	0.5587
At most 6	0.027729	0.843611	3.841466	0.3584
Max-eigenvalue test indicates 6 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Having confirmed the stationarity of the variables at I(1), there is need to examine the presence of co-integration among the variables. The Johansen co-integration confirms that 6 variables are co-integrated.

Table 4.10: VEC Granger Causality/Block Exogeneity Wald Tests

Dependent variable: D(BOP)

	Chi-sq	Df	Prob.
D(EXRT)	0.547655	2	0.7605
D(MS)	4.790930	2	0.0911
D(RGDP)	1.830883	2	0.4003
D(CPI)	5.037625	2	0.0806
D(INTR)	2.462776	2	0.2919
All	18.92775	10	0.0468

Dependent variable: D(EXRT)

	Chi-sq	Df	Prob.
D(BOP)	2.014134	2	0.3653
D(MS)	2.012936	2	0.3655
D(RGDP)	1.218286	2	0.5438
D(CPI)	0.323388	2	0.8507
D(INTR)	1.692397	2	0.4290
All	9.808333	10	0.0161

Source: Authors Computation (2016)
*Significance at 1% level. **Significance at 5% level. ***Significance at 10% level

From the VEC causality table 9 above the results revealed that causality exist between balance of payment and exchange rate, since their (P<5%).

Table 4.11: Granger Causality Result

Null Hypothesis:	Obs	F-Statistic	Prob.
BOP does not Granger Cause EXRT	46	7.85985	0.0345
EXRT does not Granger Cause BOP		4.38621	0.0133

Source: Authors Computation (2016)

The criteria for granger causality between variables are determined by the probability value. If the P-value of the two variables are less than 5% level of significance, then there is granger causality or bi-directional relationship between the variables and vice-versa. From table 4.11, it can be seen that bi-directional causality exist between EXRT and BOP, that is, causality exist between the variables, since their P <5%. This result is consistence with Iyoboyi and Muftau (2014) that depreciation of exchange rate improve balance of payment condition if there is an increase in total export condition in Nigeria while Onyinye (2012) and Ajayi (2014) also show an empirical evidence that an increase in exchange rate of foreign currencies over Nigeria local currency was due to import over export and the Nigeria balance of payment will continue to increase, if unfavourable balance of trade continue in Nigeria.

Conclusion and Policy Suggestions

This study concludes that causality flow exchange rate to BOP and vice-versa. The causality effect between BOP and exchange rate is statistically significant as their P <5% level of significance. Therefore, this study accepts the alternative hypothesis that causality exist between exchange rate and balance of payments (BOP) in Nigeria. Empirical literatures also revealed that over importation or an economy that depend on importation will suffer high level of fluctuation in its exchange rate, which will automatically cause BOP deficit.

Policy Suggestions

Based on the outcome of this study, the following recommendations are suggested:

i. Nigeria government should have a restriction on trade openness of product that can be produced locally because over importation affects the balance of payment negatively. Trade should not be too open to import especially to advanced countries and Nigeria government should increase exportation. The restriction can be achieved by import tariffs, quotas.

ii. Policies that will encourage diversification of the economic base which in turn make the Nigerian economy more independent and less dependent on crude oil, such that it will encourage growth of domestic industries, businesses, more investment in agricultural sectors and investment in manufacturing sector.

iii. The government should embark on efficient and effective expenditure switching policy leading to a favourable balance of payments position in the country.

iv. Appropriate monitoring machinery should be set up at the levels of the Central Bank of Nigeria, National Planning Commission, National Bureau of Statistics, Federal Ministry of Industries and the Custom Department to ensure that foreign exchange and available credit are properly allocated to the end users.

References

Aghion, P., Bacchetta, P., Ranciere, R. & Rogoff, K. (2006) *Exchange rate volatility and productivity growth: The role of financial development. NBER Working Paper No. 12117.* http://dx.doi.org/10.3386/w12117.

Ajayi, F.O. (2014) Determinants of balance of payments in Nigeria: A partial adjustment analysis. *Journal of Africa Macroeconomic Review*, 5(1): 304-310.

Akonji, D.R. (2013) The Impact of Exchange Rate Volatility on the Macro Economic Variables in Nigeria. *European Scientific Journal*, 9(7): 152-165.

Aliyu, S.U.R. (2009) Impact of oil price shock and exchange rate volatility on economic growth in Nigeria: An empirical investigation. *Research Journal of International Studies, 11*: 4–15.

Amassoma, D. & Odeniyi, B.D. (2016) The nexus between exchange rate variation and economic growth in Nigeria. *Singaporean Journal of Business Economics* *and Management Studies*, 4(12): 8-28.

Asinya, F.A. & Takon, N. (2014) Exchange rate depreciation and government policy is Nigeria: An Empirical Evidence. *The Business and Management Review*, 4(3): 161-170.

Central Bank of Nigeria (2016) Weekly report on exchange rate. *Central Bank of Nigeria.*

Central Bank of Nigeria (CBN) (2013) Statistical Bulletin. *Central Bank of Nigeria*, Vol. 23.

Dubas, J.M. (2009) The importance of the exchange rate regime in limiting misalignment. *World Development*, 37(10): 1612-1622.

Dubas, J.M. & Lee, B.J. (2005) Effective exchange rate classifications and growth. *NBER* Working Paper No. 11272.

Eme, O.A. & Johnson, A.A. (2012) Effect of exchange rate movements on economic growth in Nigeria. *CBN Journal of Applied Statistics*, 2(2): 1-28.

Ewa, A. (2011) The impact of exchange rate fluctuation on the Nigeria economic growth (1980–2010). Unpublished B.Sc Thesis of Caritas University Emene, Enugu State, Nigeria.

Hafeez, B. (2013) The rise and fall of the China FX carry trade. *Deutsche Bank Markets Research*, 11 June.

Inimole, B. & Enoma, A. (2011) Exchange rate depreciation and inflation (1986-2008). *Business and Economics Journal*, 1-12.

Imoisi, A.I. (2012) Trends in Nigeria balance of payments: An empirical analysis from 1970–2010. *European Journal of Business and Management, 4:* 210–217.

Iulian I. & Bogdan, C. (2012) Exchange rate regimes and economic growth in Central and Eastern European Countries. *Procedia Economics and Finance*, 3: 18–23.

Iyoboyi, M. & Muftau, O. (2014) Impact of exchange rate depreciation on the balance of payments. Empirical evidence from Nigeria. *Cogent Economics & Finance*, 2: 1-23.

Mordi, M.C. (2006) Challenges of exchange rate volatility in economic management of Nigeria. In the dynamics of exchange rate in Nigeria, *CBN Bullion*, 30(3): 17-25.

National Bureau of Statistics. *NBS of various years within 1970-2014.*

Nwani, V. (2006) Determinants of balance of payment fluctuation in Nigeria. *Global Deposit Net, Paper series*, 1-17.

Obi, K.O., Oniore, J.O. & Nnadi, K.U. (2016) The impact of exchange rate regimes on economic growth in Nigeria. *Journal of Economics and Sustainable Development*, 7(12): 115-127.

Oladipupo, A.O. & Onotaniyohuwo, F.O. (2011) Impact of exchange rate on balance of payment in Nigeria. *An International Multidisciplinary Journal, Ethiopia, 5(4): 73-88.*

Oloye, D.O. (2012) Fiscal approach to balance of payments: A case of Nigeria. Being a Post-Graduate Project Work Submitted to the Department of Economics and Development Studies, College of Development Studies Covenant University, Ota, Ogun State.

Onyinye, O.G. (2012) The effect of exchange rate on the Nigerian balance of payments. Caritas University Enugu, Amorji-Nike, Enugu.

Patricia, A.A. & Osi, C.I. (2010) Balance of payments adjustment in the West African monetary zone experience. *Journal of Economic and Monetary integration, 10*: 100–116.

Razmi, A., Rapetti, M. & Skott, P. (2012) The real exchange rate and economic development. *Structural Change and Economic Dynamics*, 23: 151–169.

Sahil, A.S.A. (2015) Currency crashes in emerging markets: an empirical treatment. *Journal of Financial Management and Economics*, 41: 351–366.

Umer, M., Abro, S. & Ghazali, H. (2010) The balance of payments as a monetary phenomenon: Econometric Evidence from Pakistan. *International Research Journal of Finance and Economics,* 38(5): 123-154.

Utomi, P. (2004) The curse of oil. A paper delivered for henrich boil foundation. Oil conference by Lagos Business School, May.

Vieira, F.V., Holland, M., Da Silva, C.G. & Bottecchia, L.C. (2013) Growth and exchange rate volatility: *A Panel Data Analysis, Applied Economics*, 45(26): 3733–3741.

World Bank (2014) World Development Indicators. *The World Bank, Washington DC.*

APPENDIX

YEAR	BOP	EXR	MS	GDP RATE	CPI	INTR
1970	0	0.714286	10.92786	25.00724	13.75708	-29.2695
1971	0	0.712856	10.04202	14.23753	15.99911	5.576789
1972	0	0.657895	10.91285	3.364262	3.45765	3.991658
1973	0	0.657895	11.18303	5.39276	5.402664	1.569258
1974	0	0.630282	13.22281	11.16067	12.67439	-25.6668
1975	0	0.615502	17.58566	-5.22775	33.96419	-13.9682
1976	0	0.626601	19.94904	9.042352	24.3	-6.86748
1977	-2.81938	0.644701	22.85336	6.024118	15.08783	-4.2576
1978	-10.2779	0.635272	20.86095	-5.76416	21.70925	-6.28957
1979	3.534728	0.604007	22.95116	6.759431	11.70973	-3.31985
1980	8.064537	0.546781	28.62522	4.204831	9.972262	-3.54742
1981	-10.5997	0.617708	29.45752	-13.1279	20.81282	-8.05542
1982	-14.1676	0.673461	31.11037	-1.05319	7.697747	4.491262
1983	-12.2189	0.72441	32.83836	-5.05045	23.21233	-3.33206
1984	0.430272	0.766527	33.02333	-2.02154	17.82053	-2.67134
1985	9.016999	0.893774	31.48268	8.32283	7.435345	3.686666
1986	1.017704	1.754523	31.51216	-8.75418	5.717151	-1.49676

YEAR	BOP	EXR	MS	GDP RATE	CPI	INTR
1987	-0.30385	4.016037	25.81954	-10.7517	11.29032	-31.9218
1988	-1.27385	4.536967	25.96019	7.542522	54.51122	-5.12928
1989	4.496343	7.364735	18.98473	6.467191	50.46669	-16.96
1990	16.2182	8.038285	20.44169	12.76601	7.3644	14.64821
1991	4.390047	9.909492	24.02745	-0.61785	13.00697	2.072104
1992	7.739596	17.29843	23.23999	0.433725	44.58884	-25.767
1993	-4.94262	22.0654	27.74994	2.090378	57.16525	4.374451
1994	-11.7654	21.996	28.2315	0.909763	57.03171	-8.03441
1995	-9.03206	21.89526	15.87022	-0.30747	72.8355	-43.5727
1996	10.02308	21.88443	13.23075	4.993706	29.26829	-9.71197
1997	1.539682	21.88605	14.78455	2.802256	8.529874	16.61355
1998	-13.2591	21.886	18.66342	2.71564	9.996378	25.28227
1999	1.409923	92.3381	21.12571	0.474238	6.618373	2.767927
2000	16.01101	101.6973	21.96325	5.318093	6.933292	-10.3198
2001	5.613734	111.2313	26.66987	4.411065	18.87365	23.83785
2002	1.832124	120.5782	21.82599	3.784648	12.87658	-10.8121
2003	5.011641	129.2224	20.19996	10.35418	14.03178	8.613594
2004	19.17037	132.888	18.25631	33.73578	14.99803	19.36914
2005	32.54304	131.2743	17.73216	3.444667	17.86349	-3.34037
2006	25.11044	128.6517	19.04188	8.210965	8.239527	-0.3731
2007	16.60754	125.8081	28.05878	6.828398	5.382224	11.61433
2008	14.01209	118.546	37.76613	6.270264	11.57798	4.190484
2009	8.182395	148.9017	43.26613	6.934416	11.53767	23.7065
2010	3.552578	150.298	21.02587	7.839739	13.7202	-42.3102
2011	2.591038	153.8616	20.68483	4.887387	10.84079	5.941526
2012	3.769214	157.4994	21.20013	4.279277	12.21701	6.883106
2013	3.699084	157.3112	21.36449	5.394416	8.475827	10.24735
2014	0.158171	158.5526	20.16246	6.309718	8.057383	11.35621
2015	-3.27673	192.4405	19.54045	2.652694	9.017684	13.59583

Source : World Development Indicator (2015)