

Evaluating the Granger Causality Effect of Exchange Rate On Nigerian Balance of Payment: A Granger Causality Analysis



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ARTICLE INFO

ABSTRACT

A country's exchange rate and balance of payment is usually regarded as a signal by which a nation's strength can be measured especially its economic strength. Exchange rate plays a major role in countries international trade because no nation can remain in autarky due to varying factor endowments of different economies of the world. Nigerian economy continue to experience chronic deficit on the balance of payment account, fall in the price of Naira and face many difficulties in monetary actions, fall in gross domestic product due to over-dependency on imported products, reliance of revenues from oil exports, massive imports of refined petroleum and other related products. The main objective of this study is to evaluate the granger causality effect of foreign exchange rate on Nigeria balance of payment. The study employed secondary data which was obtained from Central Bank Statistical Bulletin and National Bureau of Statistics within the period of 1970-2014. The data obtained were subjected to ordinary least squares regression technique and granger causality analysis.

The results revealed that exchange rate and money supply have positive effect and significantly affect Nigeria balance of payment at 5% significant level. Money supply, real gross domestic product, consumer price index and interest rate have negative effect but insignificant on Nigeria balance of payment at 5% significant level. Exchange rate and balance of payment granger cause each other, since their $P < 0.05$.

The study therefore recommends that Nigeria government should create enabling environment for foreign investors, make funds available for domestic investors in order to increase local production, diversification of the economy to agricultural sectors, restriction on importation of products that can be produce locally and relevant monetary policies to curb exchange rate pressure.

The study concluded that there is high propensity for Nigeria economy to achieve favorable balance of payment if the above recommendations are implemented

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Introduction

A country's exchange rate and balance of payment is usually regarded as the sum of indices by which a nation's strength can be measured especially its economic strength. Exchange rate plays a key role in international economic transactions because no nation can remain in autarky due to varying factor endowment. Movements in the exchange rate have ripple effects on other economic variables such as interest rate, balance of payment, inflation rate, unemployment, money supply, gross domestic product (GDP) etc. Exchange rate regime remain important issues in developing nations, with more economies embracing trade liberalization as a requisite for favorable balance of payment economic growth (Obansa, Okoroafor, Aluko and Millicent, 2013).

In Nigeria, exchange rate has changed within the time frame from regulated to deregulated regimes. 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. In 1986 when Federal government adopted Structural Adjustment Policy (SAP) the country moved from a peg regime to a flexible exchange rate regime where exchange rate is left completely to be determined by market forces but rather 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).

The diversion and building of Nigerian economy on oil sector as a major sources of national revenue and neglecting agricultural sector cause the fluctuation and poor value of Naira to other country currencies like dollar, pounds sterling, euro etc. Exchange rate is a key determinant of the balance of payments (BOP) position of any country. If it is judiciously utilized, it can serve as nominal anchor for price stability (Oladipupo, 2011). Changes in exchange rate have direct effect on demand and supply of goods, investment, employment as well as distribution of income and

wealth. 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, 2011). Consequently, the Naira was devalued. The irony of this policy instrument is that our foreign trade structure did not satisfy the condition for a successful balance of payment policy. This inconsistency in policies and lack of continuity in exchange rate policies aggregated unstable nature of the Naira rate (Gbosi, 2005).

The issue of exchange rate and the achievement of a realistic exchange rate for the Naira have continued to generate a great challenge to macroeconomic policy formulators, owing to its unarguable significance in bringing about economic growth. In any country, foreign exchange policy is an important policy instrument that determines economic performance of any nation. Many developing countries like Nigeria have experienced chronic deficit on the balance of payment account and face many difficulties in monetary actions due to over-dependency on imported product, the Nigeria budget over relies so much on revenues from oil exports but it equally massively imports refined petroleum and other related products.

In Nigeria up to the time of structural adjusted programme (SAP), it appeared that Nigerian's exchange rate policy tended to encourage over-valuation of the Naira, because in 1981, it was 0.90 cents to ₦1. This in turn encouraged imports and discourages non-oil export and over dependence of Nigerian economy on imported input over exported output. An economy that its import exceed export will experience unfavorable balance of payment and such economy currency will be devalue against other country currencies that involve in trades i.e the exchange rate of that economy to other currencies will be low in terms of value, for instance the Nigeria Naira to dollars is \$1 to ₦197.00, pounds-sterling is £1 to ₦281.29 naira etc (CBN, 2016).

The effect of the global economic meltdown on Nigerian exchange rate was phenomenon as the Naira exchange rate to the dollar rose astronomically from about ₦120/\$ to more than ₦180/\$ between 2008 and 2009. This is attributable to the sharp drop in foreign earnings and national revenue of Nigeria as a result of persistent fall of crude oil price in the world crude oil market. The renewed emphasis on the production of alternatives to fossil-fuel energy, such as solar, wind and bio-energy in the advance economies has reduce the demand for crude oil and consequently caused its price to sharply drop from \$110 per barrel to below \$50 per barrel between mid 2014 and early 2015 and currently at \$33.62 per barrel in early 2016, and further weaken and reduce Nigeria foreign earnings and revenues to finance priorities sectors that will boost the economic activities, increase per capita income, create employment and increase standard of living.

The fact that crude oil is an exhaustible asset makes it unreliable for sustainable development of the Nigerian economy (Utomi, 2004). Base on the major investigation of this paper; the study set *hypothesis (H₀)* that there is no granger causality effect between balance of payment and exchange rate in Nigeria. Previous studies have established the impact of exchange rate on balance of payment, effect of monetary policy on balance of payment and determinant of balance of payment and exchange rate in Nigeria context but most these past never consider the evaluation of granger causality effect of balance of payment and exchange rate in Nigeria.

2. Review of Related Literature

2.1 Conceptual Clarifications

A country's balance of payments is a summary of its financial transactions with the rest of the world. It is a systematic record of all payments to and receipts from foreign countries during a specific time period, usually a year. It is a flow and not a stock concept because it is defined for a specified period (Adebayo, 1999). Balance of payment is

needed in a country because it will give an account of import of a country and this will act as signal for some domestic policies. For example, if the amount spent on importation of consumable goods is too high, domestic policies may be needed towards restriction or setting up of import substitutions industry. 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.

According to Otaki (2005), balance of payments is a systematic record of all economic transactions, visible as well as invisible in a period between one country and the rest of the world. It shows the relationship between one country's total payments to all other countries and its total receipts from them. BOP, thus is a statement of payments and receipts and international transactions. Payments and receipts on international account are of three kinds; (a) The visible balance of trade (b) The invisible items and (c) Capital transfers. Moreover, it provide basis for comparison of trade relations among countries so as to know if a country is incurring deficit or surplus. Furthermore, it provides historical data on import and export overtime and this could be used for planning purposes. It also provides statistics for the net foreign investment component of the national income (Afolabi, 1999).

Exchange rate is the price of one currency in terms of another. 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 (Soderstine, 1998). It is the rate at which one currency exchanges for the other, and it is used to characterize the international monetary system (Iyoha, 1996). Anifowose (1994), 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. Hence, in examining the relationship that exist between exchange rate misalignment and balance of payments

adjustment, there is need to recall that exchange rate is the price of one currency in terms of another, while balance of payments is a country's state of affairs in international trade (Beatrice, 2001). The relationship is therefore established since there cannot be international trade if a country's currency is not priced in another country so as to allow trade across boarder (Takaendesa, 2006).

Obaseki (1991) cited in Aliyu (2008), observes that foreign exchange can be acquired by a country through exports of goods and services, direct investment inflow or external loans, aids and grants which can be used in settling international obligations. When there is disequilibrium in the foreign exchange market as a result of inadequate supply of foreign services, this may exert pressure on foreign exchange reserves, and if the foreign reserves are not adequate, this may deteriorate into balance of payments problems. Therefore, there is need to manage a nation's foreign exchange resources so as to reduce the adverse effects of foreign exchange fluctuations.

There are two broad methods of exchange rate management namely fixed and flexible exchange rate regimes. Exchange rate regimes refer to different systems of managing the exchange of a nation's currency in terms of other currencies. According to Aliyu (2008), fixed exchange rates are to promote orderliness in foreign exchange markets and certainly in international trade transactions. On the other hand, a flexible exchange rate system is one which the exchange rate at any time is determined by the interaction of the market forces of demand and supply for foreign exchange. Ojo (1990) cited in Takaendesa (2006), opines that international experience has shown that no country leaves its exchange rate determination completely to market forces alone as some level of intervention is applied from time to time as situation demands. Obadan and Nwobike (1991) opine that some countries with a weak balance of payments position adopt multiple exchange rate systems as an alternative to

devaluation, which is viewed as too costly from a political or social perspective. They emphasize that a rationalized and properly administered dual exchange rate system can be very helpful to developing countries for ensuring the satisfaction of basic needs, ensuring fixed and balance of payments viability and general resource mobilization.

Khan and Lizondon (1987) cited in Aliyu (2008), observe 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. Cooper (1976) cited in Beatrice (2001), examines the effect of devaluation on the balance of payments of some developing countries. He discovers that three quarter of the cases examined showed that the current account of the balance of payments improved. This implies that devaluation leads to higher exports and lowers imports, which in the long run would improve the balance of payments position of a country.

Ogiogo (1996) found substantial deterioration in the balance of payments position of developing countries is caused among other factors as, worsening terms of trade, excessive imports and over valuation of the currencies. Olisadebe (1996) favoured exchange rate appreciation as a means of attaining favourable balance of payments position. To Cheung, Chinn and Fujii (2007), overvaluation of the exchange rate enhances deficits in the balance of payments position through the current and capital accounts. Dubas (2009), findings suggest that overvaluation will improve the current account without significant import liberation. Other studies like Anifowose (1994) results favoured exchange rate devaluation as a significant remedy to finance deficits in a country's balance of payments. Dufrenot and Yehoue (2005), found that exchange rate devaluation influence significantly balance of payments. Their results show that improvements

in the reserve position of the devaluing countries. In effect, improvement on the reserve position constitutes an improvement on the balance of payments position.

2.4 Theoretical Review

2.4.1 Keynesian or Fiscal Approach

The Keynesian approach (KA) to balance of payments was developed and based basically on the work of John M. Keynes in the twentieth century. The most well-known theories are 'elasticities theories' and 'absorption theories' of balance of trade and payments. The elasticities approach provides an analysis of how devaluations of exchange rate and price level will affect the balance of trade depending on the elasticities of supply and demand for foreign exchange and foreign goods. The theory of elasticities leads to what is called the "J-curve effect", which refers to the pattern of the balance of trade following devaluation.

The Elasticity Approach

In its simplest form, the elasticity approach focuses on the current account of the balance of payments and is concerned with the condition under which exchange rate changes can compensate for price distortions in international trade, which are assumed to be the major cause of the value of imports exceeding exports. The Marshallian partial equilibrium analysis is applied to markets for exports and imports. Capital movements are assumed away and the domestic price level varies with respect to the world price level. Whether an improvement in the balance of payments occurs as a result of devaluation depends crucially on the foreign elasticity of demand for exports and home elasticity of demand for imports denoted e_x and e_m , respectively. If the elasticity condition, that is,

$$e_x + e_m > 1$$

held, devaluation would improve the balance of payments (assuming of course that the foreign exchange market was stable). This is called the Marshall- Lerner condition. If the sum is equal to unity, a change in the exchange rate

will leave the balance of trade unchanged. If the sum is smaller than unity, depreciation will make the balance unfavorable and an appreciation will make it more favourable. The logic behind this condition is as follows. Suppose the elasticity of demand for exports is zero. In this case exports in domestic currency are the same as before devaluation. If the sum of the elasticities is greater than one, the elasticity of demand for imports must be greater than one, so that the value of imports falls. With no fall in the value of exports and a fall in the value of imports, the balance of payments improves. In contrast, Ogun (1985) cited in Dubas (2009), is of the view that most less developed countries who are exporters of raw materials or primary products, and importers of necessities may not successfully apply devaluation as a means of correcting balance of payments disequilibrium, because of the low values for the elasticity of demand

b) The Income - Absorption Approach

As seen that in the elasticity approach to the analysis of devaluation, the effect of exchange rate adjustments on the balance of payments depends principally on the elasticities of imports for home and foreign goods. In this analysis, income is assumed fixed. Thus, the income multiplier effects of devaluation are ignored. Alexander (1952) cited in Dubas (2009), criticizes the elasticity approach as a partial equilibrium analysis and developed an alternative approach, which is known as the income-absorption or the aggregate spending approach, to analyze the effect of devaluation on the trade balance. This approach takes into account the effects of changes in both price and income following devaluation. The central tenet of the absorption approach is that a favourable configuration of price elasticities may not be sufficient to produce a positive balance of payments effect resulting from devaluation, if devaluation does not succeed in reducing domestic absorption.

The starting point of the absorption approach is the national income identity:

$$Y=C+I+G+X-M \text{ -----(1)}$$

Where Y = national income;

C = private consumption of goods and services purchased at home and from abroad;

I = total investment, by firms as well as by government;

G = government expenditure on goods and services

X = exports of goods and services; and

M = imports of goods and services.

National income identity can be used to explain the current account as the difference between optimal savings and investment decisions. Combining C + I + G expenditure terms into a single term, A, representing domestic absorption (i.e., total domestic expenditure) and X - M terms into B, net exports/trade balance, we get:

$$Y = A + B. \text{ ----- (2)}$$

Thus national income is the sum of absorption and the trade balance. It follows that the trade balance must always be the difference between income and absorption, as given by

$$B = Y - A. \text{ ----- (3)}$$

Thus if $Y > A$, the trade balance is in surplus, while if $Y < A$, it is in deficit. If devaluation is to affect the trade balance, it can do so in two ways: (i) it can change production as a result of an induced change in absorption and (ii) it can change the amount of real absorption associated with any given level of real income. Thus a change in the trade balance (dB) is equal to the difference between the change in output (dY) and the change in absorption (dA):

$$dB = dY - dA. \text{ ----- (4)}$$

Devaluation leads to two effects on the absorption of goods and services in a devaluing country. First, devaluation leads to an increase in real income, which boosts real consumption (absorption) proportionately to the increase in income (that is, cdY). Second, devaluation has a direct effect on absorption (DE):

$$dA = cdY - DE \text{ ----- (5)}$$

where c is the propensity to absorb, which is equal to the propensity to consume plus the propensity to invest, and DE is the direct effect of

devaluation on absorption. Substituting equation (5) into equation (4), we obtain

$$dB = (1 - c)dY + DE. \text{ ----- (6)}$$

Equation (6) is useful because it provides answers to three basic questions pertaining to the processes whereby (i) devaluation affects income, (ii) a change in income affects absorption, and (iii) devaluation affects absorption directly at any given level of income. These questions also pertain to the values of c and DE. To provide answers to these questions in precise terms, one has to take into consideration the entire economic structure of the devaluing country and of the rest of the world (Dhliwayo, 2006; Moosa and Bhatti, 2010).

2.4.2 The Monetary Approach

The monetary approach views imbalances in the balance of payments in terms of imbalances between the demand for and supply of money stock. The approach focuses its analysis on the monetary account of the balance of payments in the context of a general equilibrium analysis. Thus, the balance of payments is a monetary and not a real phenomenon and balance of payments disequilibria are stock and not flow disequilibria. The monetary approach to balance of payments postulates that the overall balance of payments measured by international reserves is influenced by imbalances prevailing in the money market. Under a system of fixed exchange rates excess money supply induces increased expenditure, which shows itself in increased purchases of foreign goods and services by domestic residents. These purchases have to be financed by running down foreign exchange reserves, thereby worsening the balance of payments. The outflow of foreign exchange reserves reduces money supply until it is equal to money demand, thereby restoring monetary equilibrium and halting an outflow of foreign exchange reserves. An excess demand for money leads to an opposite adjustment, which in turn induces foreign exchange reserves inflow, domestic monetary expansion and eventually a restored balance of

payments equilibrium position. The monetary approach to balance of payments model specifies a money supply identity, a money demand function and an equilibrium condition. The model consists of the following set of equations:

$$M^s = (R+D)$$

$$M^d = L(Y,P,I)$$

$$M^s = M = M^d$$

Where M^s = money supply;

R = international reserves;

D = domestic credit;

M^d = money demand;

V = level of real domestic income;

P = price level;

I = rate of interest; and

M = equilibrium stock of money.

2.5 Empirical Evidence

Nwani (2003), he investigates 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. He found that all the variables except balance of payment, exhibited non-stationarity. The results also 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. Nwani (2003), concluded that a reduction in fiscal deficits, an increased domestic production through private investment, inflation targeting and regulated capital market integration are the panacea to the negative fluctuation in the Nigerian balance of payment.

Umer, Abro and Ghazali (2010), examined how Pakistan's 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's balance of payment do not determine economic growth empirically. Furthermore, Odusola and Akinlo (2001), found a mixed result on the impacts of the

exchange rate depreciation on the output in Nigeria. In the medium and long term exchange rate depreciation exerted an expansionary impact on output but in the short run exchange rate depreciation does not expand output. This result partially corroborates what Aliyu (2008) found using Vector Error Correction Model (VECM) technique while Odusola and Akinio (2001), used VAR and VECM. So, the difference in their results can be attributed to the difference in their methodologies.

Harris (2002), using the Generalised Least Square technique found that real exchange rate, when well managed affect productivity growth in both the short and long run, the result is consistent with the competitiveness hypothesis, which suggests that exchange rate depreciates boost productivity growth in the short run. Aghin et al., (2006), in his study also 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. Unaimikogbo and Enoma (2011), evaluate the effect of monetary policy instruments on balance of payments in Nigeria with a simulation equation model 1986-1997 using ordinary least square estimation technique of data analysis, the study found that both polices contribute significantly to balance of payment. They concluded that monetary variable is more effective and dependable than fiscal variable in affecting changes in economic activities.

3. Methodology

This study focus on the evaluation of granger causality effect of exchange rate on Nigerian balance of payment. Secondary data were employed in this study which was sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and National Bureau of Statistics within the time frame of 1970-2014 and 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 independent v

3.1 Model Specification

This study adopted the econometric model of Oladipupo and Onotaniyohuwo (2011) and the model was modified to suit the study of the impact of exchange rate on balance of payment:

$$BOP = f (EXRT, MS, ROUT, PRICE, INTR, INF) \text{ ----- eqn 1}$$

$$BOP = f (EXRT, MS, RGDP, CPI, INTR) \text{ ----- eqn 2}$$

The econometric model is:

$$BOP_t = \beta_0 + \alpha_1 EXRT_t + \alpha_2 MS_t + \alpha_3 RGDP_t + \alpha_4 CPI_t + \alpha_5 INTR_t + \mu_t \text{ ----- eqn 3}$$

Also, in order to achieve the main objective of the study, it employs the Granger causality test suggested Granger (1969, 1986) to examine and also measure the causal effects of exchange rate on balance of payment.

$$X_t = \alpha_1 + \sum_{k=1}^m \beta_{1,k} X_{t-k} + \sum_{k=1}^m \beta_{1,k} Y_{t-k} + \sum_{k=1}^m \beta_{2,k} Y_{t-k} + \sum_{k=1}^m \beta_{2,k} X_{t-k} + \mu_t$$

The model above describes the Granger causality between foreign exchange rate and Nigeria balance of payment. Recall that time series X_t (Exchange rate) Granger causes a time series Y_t (balance of payment) if the past of X_t helps to forecast the future of Y_t after controlling for the past of Y_t . The series X_t Granger causes Y_t if the $_{2,k}$'s are jointly significant, while Y_t Granger causes X_t if the $_{1,k}$'s are jointly significant. If both the $_{1,k}$'s and the $_{2,k}$'s are jointly significant, there is evidence for a feedback relationship between X_t and Y_t .

Where;

BOP = Balance of Payments; EXRT = Exchange rates; MS = Money supply; RGDP = Real gross domestic product; CPI = Consumer price index; INTR = Interest rate; ROU= Real Output.

μ_t = 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 positive and negative relationship between the dependent variable and the independent variables.

4. Analysis of Data and Presentation of Result

4.1 Stationarity Tests

Table 1: Augmented Dickey Fuller (ADF) Test

Series	ADF Values	Test Critical Values		
		1%	5%	10%
BOP	5.25491	4.27328	3.55776	3.21236
EXRT	6.91721	4.27328	3.55776	3.21236
MS	5.31903	4.27328	3.55776	3.21236
RGDP	5.23143	4.28458	3.55776	3.21236
CPI	4.21301	4.27328	3.55776	3.21236
INTR	6.41569	4.27328	3.55776	3.21236

E-view Output: Computed by the authors, 2016

Table 2: Phillip and Perron Test (PP) Test

Series	PP Values	Test Critical Values		
		1%	5%	10%
BOP	5.48912	4.25227	3.15775	3.42636

EXRT	7.03458	4.25227 3.15775 3.42636	I(1)
MS	5.36171	4.25227 3.15775 3.42636	I(1)
RGDP	6.6343	4.25227 3.15775 3.42636	I(1)
CPI	8.70232	4.25227 3.15775 3.42636	I(1)
INTR	5.70823	4.25227 3.15775 3.42636	I(1)

E-view Output: Computed by the authors, 2016

4.2.1 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

E-view Output: Computed by the authors, 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.

4.2.2 Heteroskedasticity Test

White Heteroskedasticity Test:

F-statistic	0.619940	Prob. F(2,42)	0.4931
Obs*R-squared	11.40198	Prob. Chi-Square(2)	0.5342

E-view Output: Computed by the authors, 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 no is evidence for the presence of heteroskedasticity

since the p-values are considerable in excess of 0.05

4.2.3 Ramsey RESET Test

Ramsey RESET Test:

F-statistic	0.304090	Prob. F(2,42)	0.59631
Obs*R-squared	0.596906	Prob. Chi-Square(2)	0.43972

E-view Output: Computed by the authors, 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 no is apparent non-linearity in the regression equation and it would be concluded that the linear model is appropriate.

4.3 Regression Output and Test of Hypotheses

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	837533.0	391586.9	2.138818	0.0424
EXRT	6.530306	5.673624	1.159430	0.0172
MS	-0.0167340	0.007160	-2.330653	0.0103
RGDP	-0.3053410	0.209387	-1.073127	0.5486
CPI	-23.870779	1.19053	3.706901	0.2141
INTR	-18.629281	95613.5	0.952351	0.5210
R-squared	0.664595	Mean dependent var		1276836
Adjusted R-squared	0.674290	S.D. dependent var		2024462
S.E. of regression	1850546	Akaike info criterion		8
Sum squared resid	7.26E+13	Schwarz criterion		7
Log likelihood	-518.4668	Hannan-Quinn criter.		4
F-statistic	26.84532	Durbin-Watson stat		4
Prob(F-statistic)	0.000037			

E-view Output: Computed by the authors, 2016

The regression results show that the explanatory variables explained approximately 67 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 2.00.

The exchange rate was found to have positive effect and significantly affect Nigeria balance of payment at 5% significant level, as there is an increase in exchange rate of Dollar to Naira, the Nigeria balance of payment will rise due to excess of import over export. The null hypothesis (H_0) was rejected that exchange rate fluctuation does not positively affect Nigeria balance of payment at 5% level of significance. Exchange rate of Naira vis-a-vis U.S dollar (EXR) as a measure of relative price stability have positive effect on overall balance of payment in Nigeria between a decade period after Nigeria's independence and 2010 fiscal year and all of these effects are in tandem with the theoretical expectation. This result is consistence with Onyinye (2012) and Ajayi (2014) that as increase in exchange rate of foreign currencies over Nigeria local currency and excess of import over export, the Nigeria balance of payment will continue to increase.

The broad money supply (MS) and real gross domestic product (RGDP) exert negative effect overall on balance of payments positions in Nigeria during the review periods and this conforms with the apriori expectations and the broad money supply is significant at 5% significant level. This finding is in line with Ajayi (2014) that broad money supply has negative effect on balance of payment. Therefore, null hypothesis (H_0), that there is no significant effect between money supply and Nigeria balance of payment was rejected.

The consumer price index and interest rate have negative effect on Nigeria balance of payment and insignificant at 5% level. This result is consistence with Oloye (2012), that consumer price index and interest rates have negative effect on Nigeria balance of payment. The alternative hypothesis (H_A) was accepted that consumer price index and interest rate negatively affect balance of payment in Nigeria.

4.4 Johansen Co-integration

Date: 08/04/16 Time: 14:53
 Sample (adjusted): 1970 2014
 Included observations: 44 after adjustments
 Trend assumption: Linear deterministic trend
 Series: BOP EXRT MS RGDP CPI INTR
 Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized	No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0	0.900107	240.5563	159.5297	0.0000
At most 1 *	1	0.770514	169.1430	125.6154	0.0000
At most 2 *	2	0.694202	123.5138	95.75366	0.0002
At most 3 *	3	0.658182	86.78407	69.81889	0.0012
At most 4 *	4	0.558742	53.50629	47.85613	0.0134
At most 5	5	0.434973	28.14437	29.79707	0.0766

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

E-view Output: Computed by the authors, 2016
 Using the trace likelihood ratio, the results point out that the null hypothesis of no co-integration among the variables is rejected in favor of the alternative hypothesis up to five co-integrating equations at 5% significant level because the values exceed the critical values at 5%. This means there are at least five integrating equations, which implies that a unique long-run relationship exists among the variables.

4.4.1 Granger Causality Result

Null Hypothesis:	Obs	F-	
		Statistic	Prob.
BOP does not Granger Cause EXRT	44	7.85985	0.0345
EXRT does not Granger Cause BOP		2.42622	0.0133
RGDP does not Granger Cause EXRT	44	0.37693	0.0095
EXRT does not Granger Cause RGDP		0.46852	0.0159

E-view Output: Computed by the author, 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. But if it is one variable that its P-value is less than 5% significant level and the second variable P-value is greater than 5% level of significance then there is uni-directional relationship between the variables and vice-versa. Thus, balance of payment and exchange rate significantly Granger Cause each other as the P-value is less than 5% significant level and also real gross domestic product and exchange rate significantly Granger Cause each other as the P-value is less than 5% significant level.

5. Conclusion and Recommendations

This study concludes that the exchange rate is statistically significant at 5% level but statistically and has a positive effect on balance of payments. The price or exchange rate of Dollar, Pound Sterling and other currencies are higher than Nigeria Naira due to over dependence of importation, imbalance of trade between Nigeria and other countries i.e import exceed export trades, poor domestic output and over dependence of Nigeria national revenue on crude oil. The

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study therefore accepts the alternative hypothesis that there is positive and significant effect between exchange rate and balance of payments (BOP) in Nigeria.

Policy Recommendations

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

Nigeria government should have a restriction on openness because it affects the balance of payment negatively. They should not be too open to import especially to advanced countries and Nigeria government should increase exportation. The restriction can be done by import tariffs, quotas, etc.

as such other policies which will aid in developing the Nigerian economy should be pursued, such policies which will aim at the diversification of the country's economic base would 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. This will lead to the appreciation of the Nigeria foreign exchange rate in comparison to other countries.

the government should embark on efficient and effective expenditure switching policy or devaluation of Nigeria Currency (Naira), as devaluation of the country's currency will make exports cheaper and imports more expensive, thus, leading to a favourable balance of payments position in the country.

appropriate monitoring machinery should be set up at the levels of the Central Bank of Nigeria, National Planning Commission, Federal Office of Statistics, Federal Ministry of Industries and the Custom Department to ensure that foreign exchange and available credit are properly allocated and not abused.

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