

Analysis of Balance of Payments Trend in Nigeria: A Test of Marshall-Lerner Hypothesis

Nwanosike DU¹, Uzochina B¹, Ebenyi GO¹, Ishiwu V²

¹Department of Economics, Renaissance University, Ugbawka, Enugu, Nigeria

²Department of Economics, University of Nigeria Nsukka, Nigeria

*Corresponding Author:

Nwanosike DU

Email: mcdom2015@gmail.com

Abstract: The Marshall-Lerner hypothesis states that a nominal devaluation of exchange rate improves the trade balance. But the empirical evidence from Nigeria over the years has been inconsistent and inconclusive with regards to Marshall-Lerner conditions. Therefore, this study adopts multivariate regression model to ascertain the effects of devaluation of domestic currency on balance of payment of the Nigerian economy as in line with the arguments of the Marshall-Lerner (ML) condition. To measure the effect of exchange rate devaluation on the Nigerian balance of payments, exchange rate, trade openness and foreign direct investment were used as the independent variables (exogenous) while balance of payment was used as the dependent variable (endogenous). The result revealed that, a unit devaluation of exchange rate on the average will result to 2.28138 percentage decrease in balance of payment (BOP) through balance of trade mechanism. The study concluded that the Marshall-Lerner condition is not satisfied in the short run in Nigerian case within the time period reviewed, 1970- 2014.

Keywords: Marshall-Lerner hypothesis, BOPs, Devaluation & Nigerian Economy

INTRODUCTION

The balance of payments account is a periodic report that summarizes the flow of economic transactions with foreigners. It provides information on the nation's exports, earnings of domestic assets owned by foreigners, international capital movements, and official transactions by Central Banks and governments.

In the recent times, Nigeria has been faced with sharply declining oil revenue which provides approximately 90% of the nation's foreign exchange, with a crushing debt services burden resulting from the inability of the nation to tailor its import needs to the available foreign exchange and resultant to severe pressures on the balance of payment in the past few years [1]. This is traceable to the fact that Nigeria economy is highly import dependant. And that the process of deregulation coupled with an appreciable degree of openness during the SAP era made the economy vulnerable to international trade shocks and the widening of the size of disequilibrium in balance of payments. Another noteworthy fact about the balance of payments account disequilibrium is the persistent deficit on the services account. Between 1950 and 1974, it rose from N12.0m to N1, 314.7m and from 1993 till date, the existence of a deficit in the service account is a phenomenon common to Nigeria economy [2].

As such, Nigeria's balance of payment (BOP) had started to show signs of disequilibrium having been

managed over the years within a policy framework of direct control. Following the sudden collapse of international oil prices in 2014 and the consequent fall in foreign exchange receipts, controls were tightened. However, the controls proved counterproductive as it became clear that the economy could not be managed within a policy framework that placed heavy reliance on direct controls [3].

Amidst complex economic development problems (broadly, summarized under huge external and internal debts, chronic fiscal deficit and serious economic decline, inflationary pressure and persistent balance of payment deficit), there is the general consensus in Nigeria that the primary goal of current macroeconomic policy is not only to achieve internal balance but also external balance. Thus, appropriate policies to address external imbalance in any economy become necessary given that developments in the external sectors affect the internal sectors.

A number of theoretical postulations were made to explain how adjustment process works to restore equilibrium condition in a country's BOP. Among these is Marshall-Lerner theory. Marshall [4] and Lerner [5] argued that exchange rate changes restore equilibrium in balance of payment (BOP) by devaluing a country's currency. Marshall-Lerner states that when the sum of price elasticity of demand for exports and imports in absolute terms is greater than

unity, devaluation will improve the country's balance of payments (BOP). The reason according to Marshall – Lerner is that devaluation reduces the prices of exports in terms of foreign currency and at the same time cheapens exports & imports dearer, thus have corrective effect on balance of payments (BOP).

Based on the current happenings, Nigeria is faced with challenging policy decision of whether to devalue exchange rate or embark on internal/external debt financing. Empirical literatures on developing and transition economies have established that currency devaluation will lead to improvement in balance of payment in the long-run, [6].

Because of the increasing argument on the policy decision of whether to devalue exchange rate or embark on internal in Nigeria, there arises an important question though: *does devaluation of a domestic currency always improves balance of payment of the domestic economy?* Therefore, the aim of this study is to examine whether Nigeria's economic behaviour is consistent with the Marshall-Lerner theory that currency devaluation will lead to improvement in balance of payments. The broad objective of this study is to test the Marshall-Lerner hypothesis as a balance of payments (BOPs) correcting mechanism in Nigeria.

RETROSPECT OF NIGERIA BALANCE OF PAYMENT

For a long period now, Nigeria has suffered from an undiversified export basket and a somewhat inflexible import basket, as 95% of all exports are made up of oil and gas. As a result, the inflow of export receipts is highly dependent on energy prices and the performance of one main sector. In spite of the strong domestic demand for foreign goods and despite low oil prices in 2008 till date, as well as low production due to bombing in the Niger Delta region, Nigeria's trade balance stayed in the black [7]. Furthermore, the services balance generally reports a deficit. This is the result of large imports of technical and financial expertise by oil companies. Nigeria mostly exports tourism and business services, but both sectors are relatively underdeveloped. The deficit on the income balance is a reflection of the profit repatriation by foreign oil producers.

Ogboru [8] maintained that one of the basic problems facing most developing countries is the trade gap—a conflict between accelerating internal development and maintaining external balance. For Nigeria, however, the trade gap problem has not been as acute as it has been for some other developing countries, except for 1978 where she recorded a deficit of N2147.3m. Nigeria's balance of trade for the period;

- 1970 – 1977, was characterized by a favourable balance of trade with the trade surplus rising from N130m in 1970 to N1697.6m in 1976 and falling to N537m in 1977. Between 1981 and 1983, Nigeria

sustained a deficit in her trade account each year amounting to N1816.3m, N2564.1m and N1401.2m for 1981, 1982 and 1983 respectively. The period 1979-83 was one in which the country witnessed the greatest economic mismanagement as politicians returned to power after 13years of military rule (1966–79).

- From 1984 – 1997, Nigeria's trade balance ran back into surplus. By 1996, the trade surplus amounted to N 746916.8m [7].
- Except for 1998 which recorded a deficit of N85562m, the periods 1999 – 2006 recorded trade surpluses with an all-time high between 2003 and 2006. In 2003, N1007651.1m was recorded while N2615736.2m, N3892729.9m and N3224661.7m were recorded for the years 2004, 2005 and 2006 respectively [2].

However, since the situation worsened in 2008 as a result of the global financial and economic meltdown coupled with the falling prices of crude oil in the international oil market, Nigeria balance of payments records have been deficits. The reversal of the situation was a reflection of the increasing importance of petroleum in the Nigerian Economy. Several other factors seem to have contributed to the growth of the deficit in Nigeria's services account over the years. Among these are: lower interest earnings from reduced overseas assets; higher interest payment abroad resulting from the growth. Government expenditure abroad for embassies, missions etc. and increased earnings of foreign-owned enterprises in Nigeria reflected the growth of foreign investments.

THEORETICAL AND EMPIRICAL LITERATURE

The elasticity approach to balance of payments is built on the Marshall Learner condition which states that the sum of elasticity of demand for a country's export and its demand for imports has to be greater than unity for a devaluation to have a positive effect on a country's balance of payments. If the sum of this elasticity is smaller than unity, then the country can instead improves its balance of trade by revaluation. Thus, Marshall-Lerner (ML) condition [4, 5] is a major tenet of the elasticity approach to exchange rate-trade balance relationship. The theory that a devaluation of a domestic currency will improve current account balance is founded on a number of elasticity approach models such as the monetary and absorption views.

Monetary view

Analysis of the theory of policy instruments for correcting balance of payments equilibrium is, however, clearly spelt out in the work of Meade [9]. Meade [9] proposes that a country can offset adverse trends in its balance of payments by a change of financial policies. A policy of price adjustments, which involves changes in money wage and changes in the exchange rate, is devaluation. This is presently called

expenditure – switching policy. The aim of expenditure reducing policies is to reduce domestic expenditure on consumption and investment and thereby releases goods for export, while leaving aggregate output unchanged. On the other hand, the aim of expenditure switching policy is to switching domestic demand from imported to home made goods [10]. The extent to which the switching is achieved depends on elasticity of supply and demand for tradeable goods.

Absorption View

The absorption approach emphasizes changes in real domestic income as a determinant of a nation's balance of payments –exchange rate relationship. It treats prices as constants and therefore all variables are in real term. The absorption approach emphasizes changes in real domestic income as a determinant of a nation's balance of payments –exchange rate relationship.

However, empirical literatures on developing and transition economies have established that currency devaluation will lead to improvement in trade balance in the long-run. According to Soderstan [11], devaluation tends to make imports more expensive in domestic currency terms, which are not matched by a corresponding rise in export prices. This implies that the terms of trade will deteriorate. Deterioration in the terms of trade represents a loss of real national income and can lead to balance of payments crisis because more units of exports have to be given to obtain one unit of imports. Hence, the terms of trade effects caused by devaluation lowers income while devaluation of currency causes an increase in the import prices and general price level.

In the view of Nwani [12], balance of payments crisis distorts the workings of the entire system (economy) because it creates disequilibrium between the supply and demand for money. Balance of payments disequilibrium is a reflection of disequilibrium in the money market. Monetary disequilibrium produces adverse effect on the aggregate expenditure for goods and services (absorption) in the sense that, if the public has an excess supply of money it gets rid of it by passing its excess cash balance to foreign countries in exchange for goods and services. If the public desires to keep more money than it has in stock, it achieves it by reducing absorption and ultimately passes goods and services on in foreign countries in exchange for money [13].

It is apparent that the Balance of Payments position in the country has reached an unviable proportion and has become a binding constraint in the realization of government objectives. Imoisi [14] examined the trends in Nigeria's Balance of Payments position from 1970-2010 using a multiple regression analysis using the ordinary least square method for both linear and log linear form. The study found that Balance

of Payments position have been undermined by a relatively poor non oil export, high import bill, stagnated agriculture, high taste for foreign goods and services, continuous fall in the country's foreign exchange, inflationary pressure, inefficient manufacturing sector and mishandling of the oil boom. The study recommended that the government should increase the non oil exports and diversify the productive base of the Nigerian economy so as to correct the deficits in the current account of the country's balance of payments.

Similarly, Ajayi [15] studied the determinants of balance of payments in Nigeria using a partial adjustment analysis. It employs ADF unit root test, Engel Granger co-integration and Ordinary Least Square tests for method of analysis with data span from 1970 to 2010. Findings from the study revealed that a decline in openness to trade, a lower money supply, a greater private investment, a higher fiscal deficit to economic size, a larger exchange rate and a lesser monetary policy rate will raise the balance of payments of the Nigerian economy. Hence, the study recommended a suitable reform targeted at stabilizing the balance of payments as well as boosting proceeds from the economy's interaction with the rest of the world.

Adopting fiscal approach to balance of payments in Nigeria, Oloye [7] evaluated the impact of fiscal deficit on current account balance in the country between from 1970 to 2010. The study employed unit root test, co-integration and Granger Causality test. The variables used in the study are current account, fiscal deficit, real GDP, nominal Effective Exchange Rate (ERR) and prime rate which are the determinants of balance of payments. The Johansen-Juselius co-integration techniques revealed a long run equilibrium relationship among the variables and the results indicated that no co-integrating relationship was found among the variables. This is similar to Ajayi [15] findings. However, the causal long term relationship between budget deficit and current account was tested using Pair wise Granger causality test. The result showed that fiscal deficit causes current account deficits indicating a unidirectional causality between fiscal deficit and current account deficit. The study recommends among others the export promotion and import substitution strategies to increase the non-oil exports and reduce the volume of imports and the overvaluation of the official naira exchange rates.

On the other hand, conventional wisdom states that a nominal devaluation of exchange rate improves the trade balance. Ogbonna [16] examined the empirical relationship between the real exchange rate and aggregate trade balance of Nigeria. This study tests the ML conditions to see if it is satisfied for Nigeria. The results suggest no co integration for the trade balance model. The results further show that

depreciation/devaluation improves trade balance and that Marshall-Learn (ML) condition holds for Nigeria. This is in reversal with empirical the evidence for Nigeria has been inconsistent in either rejecting or supporting ML conditions. This is in line with Orji [17] that shows a negative relationship between balance of payment and trade openness.

METHODOLOGY AND MODELS

The researcher employed a single multivariate linear equation technique of econometric simulation for

$$\begin{aligned}
 \text{BOP} &= (\text{EXR}, \text{DOP}, \text{FDI}, \text{MS}, \text{FD}) && - && - && - && - && - && - && - && 1 \\
 \text{BOP} = \text{BOP} &= \alpha_0 + \beta_1 \text{EXC}_t + \beta_2 \text{MS}_t + \beta_3 \text{FD}_t + \beta_4 \text{DOP}_t + \beta_5 \text{FDI}_t + \mu_t && && && && && && && && 2
 \end{aligned}$$

Where, BOP=Balance of payment (dependent variable);
 EXR=Exchange rate
 DOP= Trade openness of the economy; MS = money supply
 FDI = foreign direct investment; FD = fiscal deficit
 U =stochastic error term; α = intercept or constant.

The data used in this research work are secondary data sources from the Central Bank of Nigeria Statistical Bulletin 2014 and the Central Bank of Nigeria Annual Report. The period used covered from the years 1970 to 2014.

its analysis. The merits of this technique included its theoretical plausibility, explanatory ability, accuracy of the parameter estimate, simplicity and forecasting ability [18]. In the study, exchange rate, openness and foreign direct investment were used as the independent variables (exogenous) while balance of payment was used as the dependent variable (endogenous). To measure the effect of exchange rate devaluation on the Nigerian balance of payments,

RESULTS AND DISCUSSION

The fundamental data for the work are balance of payment, real exchange rate, money supply, foreign direct investment, and trade openness. To determine whether the mean value and variances of the variables are time invariant, that is, constant over time, unit root test for stationarity is applied using the Augmented Dickey Fuller (ADF) test at 5% critical value and the result is presented below as table 1. The null hypothesis is that the series has a unit root if the t-statistics is less than the critical value (5%), otherwise the study rejects. The summary of the result is presented below in table 1.

Table 1: Summary of Unit Root Test

Variables	Criteria	Tab	Prob
EXC	-5.187606	-2.957110	0.0002
DOP	-5.683290	-3.552973	0.0003
FDI	-3.597707	-3.552973	0.0090
MS	-2.186272	-1.955681	0.0304

Source: Stata13.0 computation by the Researchers

From The results, reported in table 1, it can be observed that all the variables were stationary after taking their first difference. This means that these variables were integrated of order one; I(1). This is, the mean, variance and auto-covariance of each series are constant over time after difference at the chosen critical level. The variables were tested basically at 5% critical, and the null hypothesis of non-stationarity is rejected and it is safe to conclude that the variables are

stationary. The models were further subjected to the test of multicollinearity and it was confirmed that there is no pair-wise correlation coefficient that is in excess of 0.8, hence, they cannot be said to be collinear. Essentially, the necessary and sufficient condition for stability and reliability of the model is that all characteristic roots lie inside the unit circle. The result obtained in this study is graphically presented as follows;

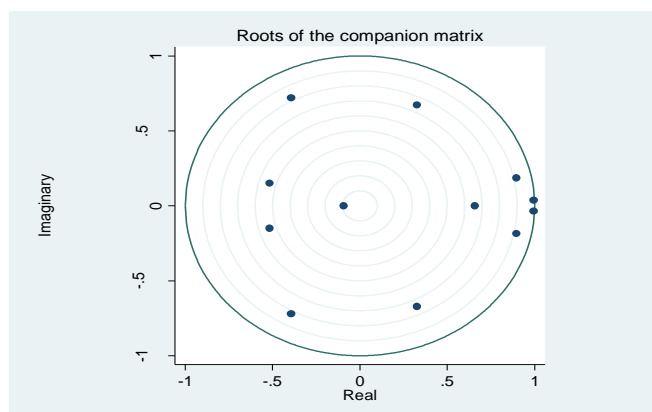


Fig-1: Stability Test

Source: Stata13.0 computation by the Researchers

In other words, using the Eigenvalue stability condition, the model satisfies stability condition if all the Eigenvalues lie inside the unit circle. The reported result in fig 1 shows that eigenvalues of the model lies inside the unit circle. Hence, the model is not a spurious regression. Thus, any form of forecasting done with the model is reliable and there is nothing to suggest that the short-run dynamic balance of payments (BOPs) equation is mis-specified.

Furthermore, from the regression result below, the sign of each variable in the model conforms to its “a priori” expectation. That is, the estimated coefficients in equation II as reported in table 2 have the expected signs and sensible magnitudes on the basis of the monetary approach to balance of payments theory.

Table 2: the summary of computed regression result

Variables	Coefficients	t-values	p-values
Cons	.7796875	0.16	.871
EXC	-2.28138	-3.37	0.003
MS	0.565659	1.22	0.237
FDI	-3.465434	-2.03	0.056
DOP	-0.151548	-0.64	0.528

Source: Stata13.0 computation by the Researchers

From the reported regression result, there is nothing to suggest that the exchange rate devaluation will improve balance of payments as in consonance with the elasticity approach. For instance, the coefficient of the exchange rate was found to be -2.28138. This means that, a unit increase in real exchange rate on the average will result to 2.28138 percentage decrease in balance of payments (BOPs) through balance of trade mechanism. This inverse relationship could be as a result of the fact that exports did not respond as expected, mainly due to a decline in terms of trade for primary commodities and manufactured products or due to heavy dependence on imported inputs. When trade volumes do not respond to exchange-rate changes, the trade balance moves in the “wrong” direction and as a result, devaluation makes the country’s trade deficits even worse at least in the short term. This finding is similar to Ogundipe, Ojeaga and Ogundipe [19] that found that exchange rate devaluation would cause Nigeria’s trade balance to deteriorate in the long-run.

Though, from the model, the mean of the trade openness can be negative or positive. The coefficient of

the trade openness (DOP) is -0.151548 which show that if the degree of trade openness (DOP) increases by 1 percent, on the average, the balance of payments (BOPs) decreases by about 1.51548 percent. The coefficient of (DOP) is negative which does conformed to a priori sign that degree of trade openness is ambiguous according to Krueger [21]. This inverse relationship between BOPs and DOP could be attributed to opening the economy of a nation with advanced world at tender stage. That is when the domestic economy has little or nothing producing and to exchanged with the advanced nations of the world. This result shows the effect of unregulated openness to trade both in the short run and long run will result to balance of payment disequilibrium. Hence, the International competitiveness of the economy continues to dwindle which further led to decline in output growth.

Furthermore, the coefficient of the money stock was found to be 0.565659. This result implies that a percent increase in the real money stock will led to 5.65659 percent increase in balance of payment, which is an improvement of the balance of payment.

This is similar to the submission of Hernán [20] that if there is a rapid increase in prices that offset the increase in the nominal money stock, people would have a shortfall of real money balances, which will result in hoarding (agents want to restore their real money balances) and in a trade balance improvement.

SUMMARY OF RESEARCH FINDINGS

The major findings of this paper are as follows.

- The Marshall-Lerner condition is not satisfied in the short run in Nigeria case within the time period reviewed. This is because, depreciation left net export and income unchanged within this period. Depreciation is theoretically expected to have positive effect on export since it makes domestic goods cheaper to foreign consumers. It is expected that depreciation would reduce import as a result of the higher relative price of imported goods. And this was not the case of Nigeria within this period.
- The findings further revealed that if devaluation of domestic currency will improve Nigeria's competitive position, it will be in the long run and not in the short run as argued by empirical evidence and specified by Marshall-Lerner condition.
- That is to say that in the short run, the identity is stated thus; $E_x + E_m < 1$. BOP disequilibrium will worsen when the sum (absolute term) is less than unity. This is in variance with the expectation that the sum of price elasticity of demand for exports and imports in absolute terms will be greater than unity, $E_x + E_m > 1$, so that devaluation can improve the country's BOPs or have no effect on BOPs; $E_x + E_m = 1$. That is, If the sum is equal to unity.
- The study unveiled factors that have contributed to the disequilibrium of the Nigeria's Balance of Payment and deviation of the Marshall-Lerner condition over the period revealed. Among these are: the degree of trade openness, foreign direct investment, exchange rate devaluation, money supply.
- This study revealed that The Marshall-Lerner condition that states that a nominal devaluation of exchange rate improves the trade balance is never automatic as it assumed.
- Findings revealed that depreciation/ devaluation of a domestic currency does not always improve balance of payment of the domestic economy especially when the domestic economy in question is productively inactive or not viable, and has nothing to export.
- The variable specification of the statistical model showed that exchange rates do play a role in determining the short-and-long equilibrium behavior of the Nigerian BOPs.
- In this case of Nigeria, devaluation of domestic currency is only hoped to improve country's competitiveness as well as improvement of relative competitiveness position of domestic producers in the run long. That is to say that exported goods

become cheaper for foreign consumers and imported goods become more expensive to domestic consumers only in the run long as asserted by Marshall-Lerner condition that devaluation of domestic currency causes an increase in the import prices.

TESTING OF RESEARCH HYPOTHESIS AND CONCLUSIONS

Therefore, following the economic interpretation and econometric evaluation of results, the study asserts based on the working null hypothesis that devaluation of a domestic currency does not always improve balance of payment of the domestic economy. In fact, the improvement or response of the balance of payments of the domestic economy depends on demand-supply elasticity of the commodity, the capacity of domestic productivity and export, the degree of trade openness, the taste of the domestic consumers and among other factors.

This study concludes that a short-run equilibrium relationship between those variables exists with a temporary long run relationship between exchange rate and balance of payment which may not be sustained. This is because, the estimation revealed a significant positive short-run relationship between the balance of payments and the exchange rate. This implies that exchange rates have only temporary effects on balance of payments in Nigeria.

This study concludes that the reason behind the negative impact and temporary effects of devaluation in Nigeria economy could be as result of intensive trade interactions with advanced economies with strong manufacturing sector. Whereas Nigeria economy is predominantly agricultural and primary products exporting economy as well as intermediate and capital goods import dependent economy.

This paper recommends urgent re-position of the Nigerian economy through diversification to salvage it from mono-economy (over dependency on oil sector). This ugly situation needs to be corrected so that manufacturing sector can have it rightly position in the economy so as to correct the BOPs disequilibrium. Doing this would require institutional reforms, maintaining strong and stable macroeconomic environment including improvement in hardcore infrastructure and security. Again, lower band tariff should exclusively apply to imported raw materials while duties on locally manufactured and exporting products should be reduced to exports and correct the balance of payments (BOPs) disequilibrium.

REFERENCE

1. Nwanosike, D. U. (2010). Econometric analysis of the impact of trade openness on Balance of Payments (BOPs), using constant Elasticity Model (1970-2007). A B.Sc Project work submitted to

- Department of Economics, University of Nigeria, Nsukka.
2. Central Bank of Nigeria. (2013). Research and Statistics Department, Sept. 2013, pp. 44 -46.
 3. Imoisi, A. I., Olatunji, L. M., & Ekpenyong, B. I. (2013). Monetary Policy and Its Implications for Balance of Payments Stability in Nigeria: 1980-2010. *International Journal of Economics and Finance*, 5(3).
 4. Marshall, A. (1923). *Money, Credit and Commerce*. London: Macmillan.
 5. Lerner, A. P. (1944). *The Economics of Control: Principles of Welfare Economics*. London: Macmillan Company, N.Y.
 6. Agbola, F. W. (2004). Does devaluation improve Ghana's trade balance? Contributed paper presented at the *International Conference on Ghana's Economy*, MPlaza Hotel, Accra, Ghana, 18-20 July.
 7. Oloye D. O. (2012). *Fiscal Approach to Balance of Payments: A Case of Nigeria*. An M. Sc project work submitted to the Department of Economics and Development Studies, College of Development Studies, Covenant University, Ota, Ogun State, Nigeria.
 8. Ogboru, I. (2010). *Nigeria's Public Budget, Trade and Balance of Payments*. Department of Economics, University of Maiduguri Publishers. Salawe Prints, Wulari Ward, Maiduguri.
 9. Meade, J. (1951). *The Balance of Payments*, Oxford: Oxford University Press
 10. Komolafe, O. R. (1996). Exchange Rate Policy and Nigeria's External Sector Performance. *Nigeria's Journal of Economics and Social Studies*, 38(2).
 11. Soderstan, R. O. (1989), *International Economics*, New York, Harper and Row, PP. 226 – 241.
 12. Nwani, V. M. (2013). *Determinants of Balance of Payment Fluctuation in Nigeria*.
 13. IMF. (2000). Training in the use of Balance of Payments Statistics – staff notes, Thirteenth meeting of the IMF committee on Balance of Payments Statistics, Washington, D.C. October 23 – 27, 2000.
 14. Imoisi, A. I. (2012). Trends in Nigeria's Balance of Payments: an Empirical Analysis from 1970-2010. *European Journal of Business and Management*, 4(21).
 15. Ajayi. O. F. (2014). Determinants of Balance of Payments in Nigeria: A Partial Adjustment Analysis. *Journal of African Macroeconomic Review*, 5(1).
 16. Ogbonna, B. C. (2011). The Impact of exchange rate variations on trade balance: Evidence from Nigeria, 1970 – 2005. *JORIND*, 9(2).
 17. Orji, G. O. (2012). *The Effect of Exchange Rate on the Nigerian Balance of Payments (1970-2010)*. A B. Sc project work submitted to the Department of Economics, Faculty of Management and Social Science, Caritas University, Amorji-nike enugu. August 2012.
 18. Koutsoyannis, A. (1997). *Theory of Econometrics: Second Edition*, Palgrave Publisher.
 19. Ogundipe, A. A., Ojeaga, P., & Ogundipe, O. M. (2013). Estimating the Long Run Effects of Exchange Rate Devaluation on the Trade Balance of Nigeria. *European Scientific Journal*, 9(25).
 20. Hernán, R. C. (1998). *Testing the Short-and-Long-Run Exchange Rate Effects on Trade Balance: The Case of Colombia*.
 21. Krueger, A. (1983). *Exchange Rate Determination*. England: Cambridge University Press.