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EXCHANGE RATE VOLATILITY AND ECONOMIC GROWTH IN NIGERIA

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Abstract

This study examines the effect of exchange rate volatility on Economic Growth in Nigeria from 1970 to 2011. The model formulated depicts Real GDP as the dependent variable while Exchange Rate (EXR), Balance of Payment (BOP) Oil Revenue (OREV) and inflation (INF) are independent variables. These data were sourced and extracted from CBN Statistical Bulletin. We employ the Johansen Co-integration estimation techniques to test for the short and long runs effect of the variables used. The ADF test reveals that all the variables are stationary. From the parsimonious model, the results show that OREV and EXR are positively related to GDP. Further findings reveal that there exist two equations at 5% level in both trace and Max – Eigen statistic. This implies that exchange rate volatility and oil revenue contributes positively to GDP in the long run. We recommend that graft should be tackled frontally in the oil sector to ensure better utilization of oil revenue. Also the monetary authorities should pursue policies that would curb inflation and ensure exchange rate stability for a sustainable economic growth in Nigeria.

Keywords: Exchange rate, volatility, economic growth, depreciation, appreciation, transmission channels and stability

INTRODUCTION

Exchange rate management has been a topical issue among academics and policy makers for a very long time. This started predominantly when the Gold standard collapsed in the 1930's and subsequent emergence of the Breton Wood System of adjustment peg from the 1940's,

through to the flexible exchange rate given by the developing nation in 1970 and those carrying out structural reforms in the 1980s as well as in the wake of the currency crises in developing economies in the 1990s. Flexible exchange rate is accompanied by the fluctuation of exchange rate making it the major focus in the debate due to its impact on business outcome as nations' business partners would prefer a stable exchange rate to a volatile one. It has been recognized in previous studies that maintaining a relatively stable exchange rate is important in boosting economic growth.

Volatility of exchange rate induces uncertainty and risk in investment decision with destabilizing impact on the macroeconomic performance (Mahmood and Ali, 2011). Mordi (2006) noted that operators in the private sector are concerned about volatility of exchange rate because of its effect on their investment which may be capital gains or losses. Exchange rate volatility has asymmetric effects on macro economic variables. Aliyu (2011) cited that appreciation of exchange rate results in increased imports and reduced export while depreciation would expand export and discourage import. Also, depreciation of exchange rate tends to cause a shift from foreign goods to domestic goods. Hence, it leads to diversion of income from importing countries to countries exporting through a shift in terms of trade, and this tends to have impact on the exporting and importing countries' economic growth. Exchange rate depreciation has a negative effect on developing countries (Razaxadehkarsalari, Haghiri and Behrooznia, 2011). Exchange rate is the price of one country's currency in relation to another country. It is the required amount of units of a currency that can buy another amount of units of another currency.

In Nigeria, the management of the exchange rate is carried out by the Central Bank of Nigeria. Following the adoption of Structural Adjustment Policy (SAP) in 1986, the country has moved from a peg regime to a flexible exchange rate regime in practice, no exchange rate is clean or pure float, that is, a situation where it 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).

Despite various efforts by the government to maintain a stable exchange rate, the naira has depreciated throughout the 80's (Iyeli, Nenbee and Opue, 2011). It depreciated from No. 61 in 1981 to N2.02 in 1986 and further to N7.901 in 1990, all against the US dollar. The policy of guided or managed deregulation pegged the naira at N21.886 against the US dollar in 1994. Further deregulation pushed it to N86.322 = S1.00 in 1999 (Aliyu, 2011). It depreciated further to N120.97 in 2002 and 135.5 in 2004. Thereafter, the exchange rate appreciated to N132.15 in

2005 and later N118.57 in 2008. Towards the end of 2008 when the Global Financial Crisis took its toll, the naira depreciated to N150.0124 at the end of 2009.

It is against this background, that the paper seeks to examine the effect of volatility of exchange rate on economic growth in Nigeria as the major objective of the study.

LITERATURE REVIEW

Theoretical Literature

The effect of exchange rate volatility on economic growth has gained considerable importance in literature since 1970s, when many developing countries shifted towards floating exchange rate from fixed exchange rate regime through adoption of the Structural Adjustment Policy. Apart from being an important macroeconomic variable, it is also a very important variable in international trade.

Exchange rate has been defined as the price of one currency in terms of another (Mordi, 2006). The increase or decrease of real exchange rate indicates strength and weakness of currency in relation to foreign currency and it is a standard for illustrating the competitiveness of domestic industries in the world market (Razazadehkarsalari, Haghiri and Behrooznia, 2011). When there is deviation of this rate over a period of time from the benchmark or equilibrium, exchange rate is called exchange rate volatility. It also indicates that misalignment of exchange rate as occurred where there is multiplicity of markets parallel with the official market. It is a general believe that appreciation of currency expand imports and reduce export while depreciation increase cost of importation thereby discouraging import and encouraging export.

A major goal of macroeconomic policy is rapid economic growth in a country. Economic growth is measured in terms of persistent growth in national income which translates to increase in the amount of goods and services produced in an economy. Growth is said to occur when a country's productive capacity is on the increase Akpan (2008). Production of goods and services involve exports and imports which in turn involves transactions in foreign exchange. Exchange rate in post Breton Wood System has been characterized by instability and this has raised concern about its effect on economic growth.

The effects of exchange rate of volatility on growth is seen as a comprehensive measure of the benefits and costs of exchange rate stability can be x-rayed through international trade (imports/exports), foreign direct investment, credit flow, and asymmetric shock. These are some of the most important transmission channels from exchange rate volatility on growth (Arratibel, Furceri, Martin and Zdzienicka, 2009).

Furthermore, the earliest and leading theoretical foundation for the choice of exchange rate regimes rests on the optimal currency area (OCA) theory, developed by Mundell (1996) and

McKinnon (1963). This theory is based on concepts of the symmetry of shocks, the degree of openness, and labor market mobility. However, since the links between the nominal exchange rate regime and macroeconomic performance both counterbalance and reinforce each other, the OCA theory is unable to present an unambiguous proposal for the optimal exchange rate regime. For example, according to the theory, a fixed exchange rate regime can increase trade and output growth by reducing exchange rate uncertainty and thus the cost of hedging, and also encouraging investment by lowering currency premium from interest rates. However, on the other hand it can also reduce trade and output growth by stopping, delaying or slowing the necessary relative price adjustment process.

Later theories focused on financial market stabilization of speculation of financial behaviour as it relates particularly to emerging economies. According to the theory, a fixed exchange rate regime can increase trade and output growth by providing a nominal anchor and the often needed credibility for monetary policy by avoiding competitive depreciation, and enhancing the development of financial markets (Barro and Gordon, 1983).

On the other hand, however, the theory also suggests that a fixed exchange rate regime can also delay the necessary relative price adjustment and often lead to speculative attacks. Therefore, many developing and emerging economies suffer from a "fear of floating" in the words of Calvo and Reinhart (2002), but their fixed exchange rate regimes also often end in crashes when there is a "sudden stop" of foreign investment and capital flight follows, as was evidence in the East Asian and Latin American crises and some sub-Saharan African Countries.

Not surprisingly, there is little theoretical consensus on this question of regime choice and subsequent economic growth in the development economics literature as well. While the role of a nominal anchor is often emphasized, factors ranging from market depth (or the lack of it), political economy, institutions and so on often lead to inclusive suggestions as to which exchange rate regime is appropriate for a developing country (Montiel and Ostry, 1991). The literature in development economics acknowledges the importance of the effects of the level of development to the relationship between exchange rate regime and growth.

Empirical Literature

However, empirical evidence on the effect of exchange rate volatility on economic performance has produced mixed pattern of results providing positive and negative effects. Empirical evidence carried out on the negative effect of exchange rate volatility on trade in open developing economies has remained mixed (European Commission, 1990). Arize (1995) has found that there is a negative effect of exchange rate volatility on imports as well as exports and this effect is significant in the long and short run. The idea of risk transfer from highly volatile

investment to less risky ones by risk averse investors led many researchers to suggest that there exists a negative effect of exchange rate volatility on volume of trade because of increase in this risk level (De Grauwe, 1988). Risk averse investors invest in export so as to have less worry about the changes in exchange rate and prevent sudden loss of revenue (Mahmood and Ali, 2011).

Barkoulas et al (2002) examined the impact of exchange rate fluctuation on the volume and variability of trade flows. They concluded that, exchange rate volatility discourages expansion of the volume of trade thereby reducing its benefits. Eichengreen and Leblang (2003) carried out their research in 12 countries over a period of 120 years and found strong inverse relationship between exchange rate in stability and growth. They concluded that the results of such estimations strongly depend on the time period and the sample.

Schnabi (2007) identified robust evidence through panel estimation that exchange rate stability is associated with more growth in the European Monetary Unit (EMU) periphery. The evidence, according to him, is strong for emerging Europe which has move to more stable environment. David, Umeh and Ameh (2010) examined the effect of exchange rate fluctuations on Nigerian manufacturing industry. They employed multiple regression econometric tools which revealed a negative relationship between exchange rate volatility and manufacturing sector performance.

Jin (2008) carried out a comparative study and found that appreciation of exchange rate increases GDP in Russia while it reduces GDP in Japan and China. Razazadehkarsalari, Haghiri and Benhrooznia (2001) identified in Iran that during Stagnation and low price period, depreciation of currency have positive and significant effects on real GDP in high price period. Aliyu (2011) found that appreciation of exchange rate exert positive impact on real economic growth in Nigeria.

Previous researches on the impacts of exchange rate stability on economic growth had tended to find weak evidence in favor of a positive impact of exchange rate stability on growth. For large country samples such as Ghosh, Gulde and Wolf (2003), there is weak evidence that exchange rate stability affects growth in a positive or negative way. The panel estimations for more than 180 countries by Edwards and Levy-Yeyati (2003) find evidence that countries with more flexible exchange rates grow faster. Eichengrean and Leblang (2003) reveal a strong negative relationship between exchange rate in stability and growth for 12 countries over a period of 120 years. They concluded that the result of such estimations strongly depend on the time period and the sample.

Mckinnon and Schnabi (2003) argue for the small open East Asian economic, that the fluctuations of the Japanese yen against the U.S dollars strongly affected the growth

performance of the whole region. They identified trade with Japan as crucial transmission channel. Before 1995, the appreciation of the Japanese yen against the U.S. dollars enhances the competitiveness of the smaller East Asian economies who kept the exchange rate in the region accelerated. The strong depreciation of the yen against the dollar from 1995 to 1997 slowed growth, contributing to the 1997/98 Asian Crises.

Although the short term and long term swings of exchange rates can strongly affect the growth performance of open economies through the trade channel, the empirical evidence in favor of a systematic positive or negative effect of exchange rate stability on trade (and thereby growth) has remained mixed (IMF 1984, European Commission, 1990). Bacchetta and Van Wincoop (2000) find that exchange rate stability is not necessarily associated with more trade.

From a short term perspective, fixed exchange rate can foster economic growth by a more efficient international allocation of capital when transaction costs for capital flows are removed. From a long term angle, fluctuations in the exchange rate level constitute a risk to growth in emerging market economies as they affect the balance sheet of banks and enterprises where foreign debts tend to be denominated in foreign currency (Eichengreenand Hausmann, 1999).

In debtor countries with highly dollarized financial sector, the incentive to avoid sharp exchange rate fluctuations is stronger (Chmelarov and Schnabi, 2006). Maintaining the exchange rate at a constant level or preventing sharp depreciation is equivalent to maintaining growth (Mckinnon and Schnabi, 2004).

Earlier studies have not captured the period 1970 to 2014 which this study seeks to accomplish using the co integration method. It is our opinion that the outcome of the study will stimulate effective policy formulation and implementation towards driving Nigeria on the path of economic growth and development.

METHODOLOGY

Scope and Sources of Data

The study will cover a period of 44 years (1970-2014). Data used were sourced from the Central Bank of Nigeria statistical bulletin, various issues.

Model Specification

Our Model for this study is based on Razazadehkarsalari, Haghiri and Behrooznia (2011) and Aliyu (2011) models with slight modification and the optimal currency area (OCA) theory developed by Mundell (1996) and Mckinnon (1963) which states that a fixed exchange rate regime can increase trade and output growth by reducing exchange rate uncertainty and thus

the cost of hedging, and also encourage investment by lowering currency premium from interest rates. On the other hand it can also reduce trade and output by stopping, delaying or slowing the necessary relative price adjustment process. Based on this premise we specify our model as follows:

RGDP = f (EXR, BOP, OREV, INF,) . . . . (1)

The econometric model is expressed below:

$RGDP = \beta_0 + \beta_1 EXR + \beta_2 BOP + \beta_3 OREV + \beta_4 INF + \mu$. (2)

Where:

RGDP = Real Gross Domestic Product

EXR = Nominal Effective Exchange Rate

BOP = Balance of payment

OREV= Oil revenue

INF= inflation rate

By log linear, the model becomes

$Log\ (RGDP) = \beta_0 + \beta 1 log\ (EXR) + \beta_2\ log\ (BOP) + \beta_3 log\ (OREV) + \beta_4 log\ (INF) + \mu$ (3)

Where: log = Natural log

From Equation 3, the model can be specified in a time series form as;

$Log\ (RGDP)\ t = \beta_O + \beta_1\ log\ (EXR)\ t + \beta_2\ (BOP)t + \beta_3\ log\ (OREV)t + \beta_4 log\ (INF)\ t + \mu$ (4)

Estimation Techniques

The Johansen cointegration estimation technique is employed to examine the long and short run effect of exchange rate volatility on economic growth.

ANALYSIS AND DISCUSSION OF FINDINGS

Unit Root Test

It has often been argued that macroeconomic data is characterized by a stochastic trend, and if untreated, the statistical behavior of the estimates is influenced by such trend (Aliyu, 2011). The treatment which involves differencing the data to determine the level of integration is carried out using Augmented Dickey Fuller test (ADF). The result as presented below shows that all the variables were stationary at first difference and significance at 1%, 5% and 10% except BOP which is significant at 5% and 10% and RGDP which is significant at 10%.

Table 1: Unit Root Result

Variable	ADF value	Decision
BOP	-3.525203	1(1)
EXCR	-5.151147	1(1)
INF	-5.482900	1(1)
OREV	-7.507182	1(1)
RGDP	-3.000844	1(1)
Critical values		
1% = -3.769597		
5% = -3.004861		
10% = -2.642242		

Cointegration Result

Having established the order of integration of these series, next we determined the number of long run equilibrium relationships or co-integrating vectors among the variables. Note that when series are found to be integrated of the same order, it implies that an equilibrium relationship exist among the variables. Co-integration among these variables is tested through the Johnson Co-integration test. The results of the test in trace statistic and Max-Eigen statistic is as presented below.

Table 2: Unrestricted Cointegration Rank Test (Trace)

Prob**	0.05 Critical value	Trace statistic	Eigenvalue	Hypothesized no. of CE(s)
0.0001	69.81889	95.93516	0.86228	None *
0.0110	47.85613	54.30538	0.763005	At most 1*
0.1974	29.79707	24.07127	0.404809	At most 2
0.1085	15.49471	13.17493	0.332863	At most 3
0.0306	3.841466	4.674961	0.199579	At most 4*
Trace test indicates 2 cointegratign eqn (s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-value				
Unristricted cointegration Rank Test (Maximum Eigenvalue)				

Table 3: Unrestricted Cointegration Rank Test (Maximum Eigen value)

Prob**	0.05 Critical value	Max-Eigen statistic	Eigen value	Hypothesized no. of CE(s)
0.0049	33.87687	41.62978	0.862258	None *
0.0223	27.58434	30.23411	0.763006	At most 1*
0.6577	21.13162	10.89634	0.0404809	At most 2
0.3301	14.26460	8.499965	0.332863	At most 3
0.0306	3.841466	4.674961	0.199579	At most 4*

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

** Mackinnon-Haug-Michelis (1999) p-value

The result reveals that there exist two cointegrating equations at 5% level in both the trace and Max-Eigen Statistic. According to the trace statistics, 95.93516 (none*) and 54.30538 (at most 1*) are greater than their critical values 69.81889 and 47.85613 respectively. The Max-Eigen values of 41.62928 and 30.23411 are also greater than their critical value at 5% level denoting a rejection of the null hypothesis.

Error Correction Mechanism

An over parameterized error correction as shown below was estimated to determine the significant and non significant variables. At this level, the over parameterized model is difficult to interpret in any meaningful way; its main function is to allow us to identify the main dynamic patterns in the model.

Table 4: Over Parameterised Result

Prob**	t-statistic	St. Error	Coefficient	Variable
0.1462	1.553612	0.469146	0.728871	C
0.5360	0.233812	0.035984	0l947743	Log (RGDP(-1)
0.7454	2.332288	1.065208	3.541509	D(OREV)
0.0578	2.097379	1.123108	2.340708	D(OREV(1)
0.1677	1.468447	0.001099	-0.001614	D(INF)
0.0798	-1.913463	0.001099	0.001633	D(INF(-1))
0.0016	-1.774845	0.001358	-1.900102	D(EXCR(-1))
0.1387	1.786244	4.392107	6.972207	BOP(-1)
0.0575	2.100522	4.550107	-0.550607	ECM(-1)

Table 4...

12.92797	Mean dependent var	0.912075 R-squared
0.376392	S.D dependent var	0.886791 Adjusted R-squared
-3.145736	Akaike info criterion	0.043258 S. of regression
-2.698084	Schwarz criterion	0.022455 Sum square resid
-3.048584	Hannan-Quinn Criter	42.03023 Log likelihood
1.715760	Durbin-Watson stat	187.771 F-Statistic
		0.000000 Prob (F-Statistic)

Therefore, we consider the parsimonious model that is more interpretable as well as more suitable for policy formulation.

Table 5: Parsimonious Result

Prob**	t-statistic	St. Error	Coefficient	Variable
0.0000	2.109749	0.061198	12.60532	C
0.0000	8.420897	1.810008	1.521007	OREV
0.0093	2.076812	3.221208	2.502008	D(OREV(-1))
0.0039	2.010370	0.002267	-0.001905	D(INF(-1))
0.0292	1.908544	8.863007	1.102107	D(EXCR(-1))
0.3458	2.973455	1.522106	-0.480106	ECM(-1)
12.92797	Mean dependent var		0.866029 R- squared	
0.376392	S.D dependent var		0.828039 Adjusted R-squared	
-0.765545	Akaike info criterion		0.146726 S.E of regression	
-0.467110	Schwarz criterion		0.322927 Sum square resid	
0.700777	Hannan-Quinn criter		14.03822 Log likelihood	
1.592264	Durbin-Watson stat		23.32255 F-Statistic	
			0.000001 Prob(F-Statistic)	

From the parsimonious model, after excluding the insignificant variables of the over parameterized model, the result shows that oil revenue (OREV) is positively related to economic growth and conforms to economic theory. This implies that a 5% increase in OREV will lead to 7.695% increase in log of real Gross Domestic Product ceteris paribus.

Also, a year lagged of oil revenue is positive indicating a 5% increased in it will instigate a 12.510% increase on the dependent variable (RGDP). Inflation sign conforms to economic theory, meaning that an increase of 5% in inflation (INF) will stimulate a 0.009% reduction in RGDP. One year lagged of exchange rate violates a prior expectation. From the result a 5% increase in EXCR (-1) will lead to an increase of 5.511% on the dependent variable (RGDP).

Judging from the result estimated, all the variables were statistically significant at 5% level of significance including the ECM. The strong significance of the coefficient of the error correction mechanism (ECM) supports our earlier argument that the variables are indeed cointegrated. The ECM shows a slow speed of adjustment (i.e 48%) from the short run to long run equilibrium behaviour between real Gross Domestic Product and its explanatory variables. The adjusted R-squared shows that 82.80% of the total variation is explained by the explanatory variables employed leaving about 17.2% for factors not captured in the model. The t-statistic is statistically significant showing that the model has a good fit and can be relied upon for forecasting the behaviour of the dependent variable (RGDP). The Durbin-Watson Statistic falls under the in conclusive region. This means that we cannot really affirm the existence or non existence of auto correlation in our estimates.

SUMMARY AND CONCLUSION

Volatility in exchange rate affects aggregate demand and supply of any nation but the degree of effectiveness and their consequences depend on the existing economic conditions. This study employs empirical analysis in examining the effect of exchange rate volatility on economic growth using data from 1970 to 2011. ADF was employed in testing for the stationarity of the variables and the hypothesis of non stationarity. The result of the Johansen co-integration test reveals two co-integration equations at 5% level of significant. This is an indication that, there is a tendency for the variables to be at equilibrium in the long run. The findings shows that (i) exchange rate is significant in stimulating economic growth even though it violates theoretical postulation. The results shows that a 5% change in exchange rate will stimulate growth by about 5.511%. (ii) OREV and lagged one year period of OREV are both positively and statistically significant in stimulating growth in Nigeria (iii) The statistical significant of the model shows that our model can be relied upon in forecasting the future behavior of real Gross Domestic Product in Nigeria. It therefore follows that appropriate policy is required to enhance sustainable growth. In the light of our findings, we recommend that:

i. A renewed commitment by the government to frighten graft in the administration of oil wealth will ensure that oil wealth is adequately utilize in stimulating growth process in Nigeria
ii. Monetary authorities should focus on reversing persistent inflation trend in the economy through appropriate policy mix to an acceptable level favorable to economic growth in Nigeria.
iii. Also monetary authorities should pursue policies that would ensure stability of the exchange rate for a sustainable economic growth in Nigeria.

Subsequent studies should explore the relationship between exchange rate volatility and other real sectors of the Nigerian economy to assess the extent to which volatility impact on the performances of such sectors.

REFERENCES

Akpan I. P. (2008) "For1eign Exchange Market and Economic Growth in an Emerging Market: Evidence from Nigeria'. African Economic Business Review, Volume 2 fall.

Aliyu, S. R. U. (2011) Impact of Oil Price Shock and Exchange Rate Volatility on Economic Growth in Nigeria: An Empirical Investigation, Research Journal of International Studies, Issue 11, July.

Arize, A (1995) "The Effects of Exchange Rate Volatility on US Exports. An Empirical Investigation Southern Economic Journal 62, 34 – 43.

Arratibel Olga, Davide Furceri, Reiner Martin and Aleksandra Zdzienicka (2009) "The Effect of Nominal Exchange Rate Volatility on Real Macroeconomic performance in the CEE Countries'. Gate Groupe d'Analyse et al Theorie Documents De travail – Working papers W. P. 09-34

Bachetta P and Van Wincoop E (2000) "Does Exchange Rate Stability increase Trade and Welfare? American Economic Review 90, 1093-1109

Barkoulas, J. T, Baum C and Caglayan, M. (2002). Exchange Rate Effect on the volume and Variability of Trade Flows, Journal on International Money and Finance, No. 21 pp. 481-406

Barro, R. J. and Gordon, D. B. (1983), "Rules, Discretion, and Reputation in a Model of Monetary Policy, " Journal of Monetary Economics 12, pp 101-20.

Calvo, Guillermo and Carmen Reinhart, (2002), Fear of Floating. Quarterly Journal of Economics, 117, no. 2 May, pp. 379-408.

Chmelarova V and Schnabi G. (2006) "exchange rate stabilization in developed and underdeveloped capital market European Central Bank Working Paper 636.

David, Umeh & Ameh (2010). The Effect of Exchange Rate Fluctuations on Nigeria Manufacturing Sector, African Journal of Business Management 4 (14): 29994-2998.

De Grauwe P., (1988). Exchange Rate Variability and the Slowdown in Growth of International Trace, IMF Staff papers, Vol. 35 (March) pp. 63-84.

Edward S. and Levy – Yeyati E. (2003) 'flexible Exchange Rates As Shock Absorber'. NBER working paper

Eichengreen B and Hausmann R. (1999) 'Exchange Rate Financial and Fragility' NBER working paper 7418.

Eichengreen B and Leblang D (2003) 'Exchange rates and cohesion: historical perspective and political economy considerations'. Journal of Common market studies 41, 797-822.

European Commission, (1990). One market, One money: An Evaluation of the Potential Benefits and Costs of Forming an Economic and Monetary Union, European Economy, vol. 44.

Ghosh A, Gulde A, and Wolf H. (2003) Exchange Rate Regimes: Choices and Consequences. Cambridge Masschusette: MIT Press.

IMF (1984) 'Exchange rate variability and world trade'. IMF Occasional paper 28.

Iyeli, I. I., S. G. Nenbee and J. A Opue (2011), Exchange Rate Volatility and its effects on Tradeable goods in Nigeria Annals of Humanities and Development Studies. Universal Academic Services, Beijing, China. Vol. 3 No. 2 September.

Jin, Guo (2008). The Impact of Oil Price Shock and Exchange Rate Volatility on Economic Growth: A comparative Analysis for Russia Japan and China, Research Journal of International Studies, Issue 8, pp 98-111.

Leblang, D. & Eichengreen, B. (2003). Exchange Rates and Cohesion: Historical Perspectives and Political – Economy Considerations, Journal of Common Market Studies Vol. 41, pp. 797-822.

Mahmood, I. & Ali, S. Z. (2011). Impact of Exchange Rate Volatility on Macroeconomic performance of Pakistan, International Research Journal of Finance and Economics, issue 64. pp. 1450-2887.

Mckinnon R. and Schnabl G. (2003) 'Synchronised Business Cycles in East Asia and Fluctuations in the Yen/Dollar Exchange Rate. The World Economy. 26, 8 1067 – 1088.

Mckinnon R. and Schnabl G. (2004) The East Asian Dollar Standard Fear of Floating' Review of Development economics 8, 3, 169 – 201

McKinon, Ronald, (1963), Optimal Currency Areas. American Economic Review, 53, pp. 717-724.

Montiel, Peter J. and Jonathan Ostry, (1991), "Macroeconomic Implication of Real Exchange Rate Targeting in Developing Countries" IMF Working Paper 91/29. International Monetary Fund.

Mordi, M. C. (2006). Challenges of Exchange Rate Volatility in Economic Management of Nigeria, In the Dynamic of Exchange Rate in Nigeria, CBN Bullion Vol. 30 (3), July September. Pp. 17-25

Razazadehkarsalari A., Haghir F. & Behrooznia, A. (2011). The Effect of Exchange Rate Fluctuations on Real GDP in Iran, American Journal of Scientific Research Issue, 26, pp. 6-18.

Robert A. Mundell, (1996), "The Monetary Dynamics of International Adjustment under fixed and Flexible Exchange Rates', Quarterly Journal of Economics, 74, 1960, pp. 227-257.

Schnabi, G. (2007). Exchange Rate Volatility and Growth in Small Open Economics at the Emu periphery, European Central Bank, Working Paper Series, NO 773.