

Exchange Rate Volatility and Economic Growth In Nigeria

Oyovwi O. Dickson

*Economics Department
College of Education, Warri, Delta State, Nigeria.
Email: doyovwi@yahoo.com*

Doi: 10.5901/mjss.2012.v3n3p399

Abstract *This study seeks to evaluate the effect of exchange rate volatility on economic growth in Nigeria on the basis of annual data from 1970 to 2009. A review of the literature reveals that exchange rate volatility can have either positive or negative effect on economic growth. The empirical analysis began with testing for stationarity of the variables by applying the Augmented Dickey-Fuller (ADF). This was followed by co-integration test of the model. The unit root test results show that all variables except exchange rate volatility were integrated at order one, that is $I(1)$ while exchange rate volatility is integrated at order zero that is $I(0)$. Also, co-integration analysis indicated that variables are co-integrated. Employing the Generalised Autoregressive Conditional Heteroscedasticity (GARCH) technique to generate exchange rate volatility, the relationship between exchange rate volatility and economic growth was estimated. Findings further show that in the short run, economic growth is positively responsive to exchange rate volatility while in the long run, a negative relationship exist between the two variables. The long run result also indicate that increase in oil price depress economic growth in Nigeria. Thus, the income effect of rising oil price is not felt while the output effect is evidenced in factory closure and re-location to neighbouring countries. The study recommends control of import content of both public and private expenditure, greater diversification of the economy through investment in key productive sectors of the economy to guard against the vicissitude exchange rate volatility. Also, domestic refining of crude oil to avoid the current massive importation and in the short run, we recommend the legalisation of the refining activities in the creeks to supplement the existing refineries in the country.*

Keywords: *exchange rate, Nigeria, FDI, economic growth, GDP.*

1. Introduction

Initially, exchange rate as a factor did not feature in the analysis of economic growth. It did not feature in first generation neoclassical growth model Solow 1957 and Rostow 1960 (as contained in Todaro and Smith 2004) which focused on savings and investment. The fact that they were closed economy models dictated that there is no role for exchange rate or exchange rate volatility.

However, a variant of the neoclassical counter revolution - liberalization of national market - that propelled export led growth gave exchange rate prominence. Thus the use of exchange rate as an incentive to shift resources into export sector became a policy of interest as a way of boosting national income.

Post exchange rate consideration studied the impact of exchange rate volatility on growth. This literature seeks to establishment that exchange rate volatility discourages trade and investment, which are important for growth. Exchange rate volatility refers to short term fluctuation in exchange rate. These fluctuations could be positive or negative and it stems primarily from flexible exchange rate regime.

Flexible exchange rate that followed the collapse of the Bretton Wood system brought to the fore worries by economists and policy makers about the effect of exchange rate volatility on economic growth. Theoretical and empirical work on the subject has produced mixed results. The paper seeks to analyse the effect of exchange rate volatility on economic growth in Nigeria. Similar studies have also been carried out like Aliyu (2009), Akpan (2008), Ogunleye (2008), Obiora and Igue (2006) Alaba (2003) Adubi and Okumadewa (1999) Egwaikhide (1999) e t c. Aliyu (2009) for instance, studied the impact of oil price shock and exchange rate volatility on economic growth in Nigeria, Obiora and Igue (2006) investigated the likely effects of exchange rate volatility on U.S – Nigeria trade flows, while Ogunleye (2008) and Alaba (2003) focused on exchange rate volatility and foreign direct investment in Nigeria. Despite these efforts, volatility in exchange rate still persists. Could the persistence of the problem due to inappropriate policies or gaps in the studies already carried out? This is one specific goal of this study. This study departs from the above studies because it focuses on exchange rate volatility and economic growth from 1970 to 2009 using annual data. It has wider coverage in addition to using a measure of exchange rate volatility. The remainder of the paper is organized thus: the next section is on review of literature and it is followed by the method of study. Section four is data presentation and analysis while the last section summarizes and concludes the study.

2. Literature Review

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 Bretton Wood System has been characterized by instability and this has raised concern about its effect on economic growth.

The effects of exchange rate volatility on growth, seen as a comprehensive measure of the benefits and costs of exchange rate stabilization can be x-rayed through international trade (imports/exports), foreign direct investment, credit flow, and asymmetric shock, some of the most important transmission channels from exchange rate volatility on growth Arratibel, Furceri, Martin and Zdzienicka (2009). Previous research on the impact of exchange rate stability on growth has tended to find weak evidence in favour of a positive impact of exchange rate stability on growth. For large country samples such as by 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) found evidence that countries with more flexible exchange rates grow faster. Eichengreen and Leblang (2003) reveal a strong negative relationship between exchange rate 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 Schnabl (2003) argue for the small open East Asian economies, 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 enhanced 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 into 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 favour of a systematic positive or negative affect effect of exchange rate stability on trade (and thereby growth) has remained mixed (IMF 1984, European Commission 1990). Bacchetta and Van Wincoop (2000) found 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 Eichengreen and Hausmann (1999). The case of Commerce Bank of Nigeria buttress this when the then NERFUND Loans were given out in 1995. High depreciation inflates the liabilities in terms of domestic currency, thereby increasing the probability default and crises. In debtor country with highly dollarized financial sector, the incentive to avoid sharp exchange rate fluctuations is stronger Chmelarova and Schnabl (2006). Maintaining the exchange rate at a constant level or preventing sharp depreciation is equivalent to maintaining growth McKinnon and Schnabl (2004).

3. Research Methodology

There are different indicators to measure the performance of growth of an economy. This study focuses on the Gross Domestic Product (GDP). Also, large numbers of macroeconomic variables affect economic growth beside exchange rate volatility which will be considered to increase the fit of the model. Based on the theoretical background, this study will estimate the following relationship:

$$GDP = f(EVAT, FDI, FTB, OP, RES, MS, INR, INF) \dots\dots\dots(1)$$

Where:

GDP: Real Gross Domestic Product, EVAT is exchange rate volatility, FDI is foreign direct investment, FTB is foreign trade balance, OP is international oil price, OPN is international oil price in naira, RES is external reserve, MS is money supply, INR is interest rate, INF is inflation rate.

* All variables are in their log form

The linear approximation of the functional form of the model as expressed below:

$$GDP = \alpha_0 + \alpha_1EVAT + \alpha_2FDI + \alpha_3FTB + \alpha_4OP + \alpha_5RES + \alpha_6MS + \alpha_7INR + \alpha_8INF + U_t \dots\dots\dots(2)$$

Annual data from 1970-2009 shall be used for all variable. This is informed by the fact that for most developing countries, data are available on yearly basis. For this reason, volatility measures are derived from yearly averages of monthly exchange rate changes Schnabl (2007). To avoid the problem of multicorrearlearty and to bring the variables to the same scale, given that some are in millions and others in percentages, we opt for the log-model as given below:

$$LogGDP = \alpha_0 + \alpha_1LogEVAT + \alpha_2LogFDI + \alpha_3LogFTB + \alpha_4LogOP + \alpha_5LogRES + \alpha_6LogMS + \alpha_7LogIR + \alpha_8LogINF + U_t \dots\dots\dots(3)$$

$$\alpha_1 > 0; \alpha_2 > 0; \alpha_3 > 0; \alpha_4 > 0; \alpha_5 > 0; \alpha_6 > 0; \alpha_7 < 0; \alpha_8 < 0 <$$

The above sign $\alpha > 0$, implies a positive relationship between GDP and the explanatory variables, while the sign $\alpha < 0$, indicate negative relationship. All the explanatory variables are expected to be positive related, interest and inflation while exchange rate volatility is indeterminate. The variable (interest) is expected to be negative for the following reasons. In Nigeria, the performance of manufacturing sub-sector has been hindered by high interest rates. Economic theory states that when there is an increase in money stocks people have excess money balances, they used the money balance to buy financial assets with the view that the prices of such financial assets will rise. Such a rise in the price of bonds is equivalent to a fall in the rate of interest and this will lead to a rise in investment and increase in the industrial production which leads to improvement in GDP.

With the formulated model above, we will carry out estimations of the model, using the Autoregressive Conditional Heteroskedasticity (ARCH) and GARCH model. We tested for stationarity of the series using the Augmented Dickey Fuller (ADF) and Phillip Perron (PP) procedures. All these tests are based on the series in equations as presented below:

$$\Delta y_t = \alpha y_{t-1} + \sum_{i=1}^m \beta \Delta y_{t-1} + \delta + \gamma t + \epsilon_t \text{ (for levels) } \dots\dots\dots(4)$$

$$\Delta \Delta y_t = \alpha \Delta y_{t-1} + \sum_{i=1}^m \beta_i \Delta \Delta y_{t-1} + \delta + \gamma t + \epsilon_t \text{ (for first difference) } \dots\dots\dots(5)$$

Where:

Δy are the first differences of the series, m is the number of lags and t is the time.

4. Presentation and interpretation of results

An econometric regression is carried out. In this study, we estimated the model equations using the (ML-ARCH - GARCH) normal distribution method, in order to capture the z-statistic. Before estimating the ARCH-GARCH, we test for variables stationary using the Augmented Dickey-Fuller (ADF) unit root, also we test for the co-integration using the Johansen’s co-integration test that yields the log likelihood estimates for the unconstrained co-integration vectors, and establishes the error correction model (ECM).The Augmented Dickey –Fuller unit root test results are reported in the table below:

Table 1: Summary of Results of Unit Root Tests

Series	Prob.	Order Of Integration	ADF t-stat	Max Lag	Obs
D(EXR(-1))	0.0003	I(1)	-5.556079	1	38
EXV(-1)	0.0002	I(0)	-5.739252	1	39
D(INF(-1))	0.0000	I(1)	-6.203716	1	37
D(INR(-1))	0.0000	I(1)	-6.993011	1	37
D(LOGFDI(-1))	0.0001	I(1)	-6.158176	1	37

D(LOGFTB(-1))	0.0000	I(1)	-7.010575	1	38
D(LOGMS(-1))	0.0083	I(1)	-4.291317	1	38
D(LOGOPN(-1))	0.0000	I(1)	-6.711831	1	38
D(LOGRES(-1))	0.0000	I(1)	-6.514290	1	38
D(LOGRGDP(-1))	0.0001	I(1)	-6.058054	1	38
Test critical values:		1% level			-4.219126
		5% level			-3.533083
		10% level			-3.198312

Source: Computed by author using E-View 7.0

From the ADF test statistics, the results show that EXR, INF, INR, FDI, FTB,MS, OPN,RES, and GDP were integrated at order one, that is I(1) or they were stationary at first difference. Comparing the variables levels with their first difference (the ADF unit root test statistic) and various probabilities, the test statistics show that the variables are integrated at order of one. All the variables were statistically significant at 1%, 5% and 10% critical values in first difference. Except for EXV integrated at order zero.

From the results in the above tables' summary, there is an existence of unit root. This implies that all the series are non stationary at levels except one. Therefore the null hypothesis ($\rho = 1$) is accepted at levels and the null hypothesis ($\rho = 1$) that the series are non stationary after the first and second difference is rejected for all the series except one the EXV. For the random walk above, there are unit roots, so it is an I(1) series. We therefore concluded that the series are of order one I(1) except one. These are MacKinnon critical values for the rejection of hypothesis of a unit root. Next we look for the short-term linear relationship using the (ML-ARCH - GARCH) normal distribution method, and possible existence of a cointegrating relationship among the variables.

The result of the empirical analysis with respect to gross domestic product (GDP), which is our proxy for economic growth, is presented in the table below:

Table 2: Summary of GARCH Results

Variables	Coefficient	Std. Error	z-Statistic	Prob.
C	5.98799	2.70926	2.21019	0.0271
EXV	0.00009	0.00139	0.61428	0.5390
D(LOGFDI)	-0.37575	0.10857	-3.46075	0.0005
D(LOGFTB)	0.03165	0.18367	0.17230	0.8632
D(LOGOPN)	0.34939	0.41211	0.84780	0.3965
D(LOGRES)	-0.30171	0.15066	-2.00268	0.0452
D(LOGMS)	0.86136	0.29058	2.96432	0.0030
D(IR)	0.01795	0.03010	0.59632	0.5510
D(INF)	0.00501	0.00791	0.63328	0.5265
AR(1)	0.46975	0.21065	2.22997	0.0257
Std$\alpha_0 >$ Std$\alpha_2 \cdot \alpha_9$				
R-squared	0.921154	Mean dependent var		11.90168
Adjusted R-squared	0.875161	S.D. dependent var		1.418918
S.E. of regression	0.51340	Sum squared resid		6.032201
Durbin-Watson Statistics	2.012614	F-Statistics		20.02801

A look at the regression result in table 2 above indicate partial conformity of the result with our apriori expectation, the coefficients of EXV, FTB, OPN and MS present the apriori expected signs with MS being significant. Foreign direct investment (FDI), external reserve (RES), IR and INF are not rightly signed, however, FDI and RES are significant. As evidenced by the above result, gross domestic product is positively responsive to exchange rate volatility and it is in conformity with the theory that postulates that exchange rate volatility may affect growth positively or negatively (Cerra, Panizza and Saxena 2009, Furceri and Zdzienicka 2009), though statistically insignificant in explaining variation in dependent variable, and as such the null hypothesis is accepted. This corroborates Levine and Carkovic (2001) study on the effect of exchange rate volatility on growth in seventy-three countries. They concluded that the effect of exchange rate volatility is hidden in other variables (pushing up the interest rate, which indirectly reduces investment, tax revenues, economic growth, and the ability of exporters to produce and sell goods abroad).

Also, the insignificance of oil price in the short run analysis is an indication that the over reliance of the Nigerian Government on revenue from oil to generate desired level of economic growth has not produced the desired result. This is not surprising however, due to the non-utilization of the proceeds from crude oil sales to develop the key sectors of the economy –manufacturing, mining, agriculture etc – has slowed the pace of economic growth.

Further more, an examination of the result shows a good fit in terms of the standard error of the parameters ($Std\alpha_0 > Std\alpha_1 - \alpha_8$), which indicate a non-negative constant term for economic growth no matter the changes in the independent variables and apriori expectation and statistical significance of the explanatory variables.

The z-statistics, which is computed as the ratio of an estimated coefficient to its standard error is used to test the hypothesis that a coefficient is equal to zero. To test our hypothesis, we used the probability (p-value) of observing the z-statistics given that the coefficient is equal to zero. For this study, we are performing the test at the 1%, 5% and 10% significance level, that is a p-value that ranges between 0.00 -0.10 are taken as evidence to reject the null hypothesis of a zero coefficient. From the result of the estimated model, the probability value for foreign direct investment (FDI), external reserve (RES) and money supply (MS) ranges between 0.00 and 0.05. Thus, we therefore reject the null hypothesis and accept the alternative hypothesis. The result showed that two variables that fell short of the apriori expectation (FDI and External Reserve), are significant at 1% and 5% respectively. While money supply, is significant at 5% level.

The R^2 value is of 0.9212. The variables in the regression equation explain 92 percent of all variation in economic growth (GDP) in Nigeria for the period 1970 to 2009. The F-statistics with a value of 20.03 revealed that the explanatory variables are important factors to be considered in explaining changes in gross domestic product.

The Durbin-Watson (DW) test statistic (d^*) shows the absence of first order serial correlation between the error terms. From the result d^* is greater than 2, that is $2.012614 > 2$. We therefore accept the null hypothesis (H_0), which says that there is no positive autocorrelation of the errors' terms; we reject the alternative hypothesis (H_1), which says that there is positive weak autocorrelation of the errors' terms.

4.1. Analysis of Co integration Test Results

The summary of the Johansen' co integration tests are presented below in Table 3 and the comprehensive results are presented in Appendix

Table 3 A Summary of Johansen Co integration Test

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized			0.05	
No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value	Prob.**
None *	0.993733	533.2392	179.5098	0.0000
At most 1 *	0.982849	345.5582	143.6691	0.0000
At most 2 *	0.895614	195.1281	111.7805	0.0000
At most 3 *	0.712146	111.5208	83.93712	0.0001
At most 4 *	0.488387	65.44461	60.06141	0.0164

At most 5 *	0.445919	40.64766	40.17493	0.0448
At most 6	0.265296	18.80121	24.27596	0.2099
At most 7	0.156298	7.394570	12.32090	0.2875
At most 8	0.029455	1.106219	4.129906	0.3409
Trace test indicates 6 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.993733	187.6810	54.96577	0.0000
At most 1 *	0.982849	150.4301	48.87720	0.0000
At most 2 *	0.895614	83.60730	42.77219	0.0000
At most 3 *	0.712146	46.07618	36.63019	0.0030
At most 4	0.488387	24.79695	30.43961	0.2143
At most 5	0.445919	21.84645	24.15921	0.0997
At most 6	0.265296	11.40664	17.79730	0.3489
At most 7	0.156298	6.288351	11.22480	0.3181
At most 8	0.029455	1.106219	4.129906	0.3409
Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Tables 3 show the estimation of the Johansen co-integration relation among the variables. From the table, the maximum Engel test indicates four (4) co-integrating equations at the 5% level. This differs from the Trace statistic which indicates six (6) co-integrating equation at 5% level. However, according to Gujarati 2003, if such situation arises, the Trace Statistic supersedes the Maximum Engel. We can thus proceed to estimate our error correction, since there is at least one (1) co-integrating equation. The detail result in appendix 1

4.2 Analysis of Vector Error Correction Result

A vector error correction (VEC) model is a restricted VAR designed for use with non-stationary series that are known to be co-integrated. The VEC has co-integration relations built into the specification so that it restricts the long-run behavior of the endogenous variables to converge to their cointegrating relationships while allowing for short-run adjustment dynamics. The co-integration term for a single model is known as the "error correction term" since the deviation from long-run equilibrium is corrected gradually through a series of partial short-run adjustments.

Since the variables are non-stationary at levels but co-integrated, then their dynamic relationships must be specified by vector error correction model (VECM) in order to capture both the short-run and long-run relationships. The results from the vector error correction estimates for the model are shown in Appendix 2 VEC includes both the long run

and short run dynamic relationships. The vector Error Correction model equation for the long run RGDP is presented below:

Vector Error Correction Model Equation

$$D(\text{LOGRGDP}) = -0.026*(\text{LOGRGDP}(-1)) - 0.023*\text{EXV}(-1) + 0.676*\text{LOGFDI}(-1) - 0.717*\text{LOGFTB}(-1) - 1.338*\text{LOGOPN}(-1) + 0.463*\text{LOGRES}(-1) + 0.358*\text{LOGMS}(-1) + 0.017*\text{INR}(-1) - 0.009*\text{INF}(-1) - 12.364) + 0.132 \dots \dots \dots 5.1 \text{Model:}$$

From the result, the adjustment coefficient or the speed of adjustment of RGDP if deviated from its long run equilibrium is -0.026. Also the error correction estimate equation shows that the long run behavior of EXV, INF, FTB, and OPN appear to have negative relationship in adjusting to long-run disequilibrium given the ECM value while the long run behavior of FDI, MS, INR and RES appear to have positively relationship in adjusting to long-run disequilibrium given the ECM value.

Looking critically at the numerical value of the coefficients and their corresponding signs in equation 5.1, a 1 percent increase in exchange rate volatility will cause RGDP to decrease by 0.026 percent. Theoretically, there is no agreement. Similar findings were reported by Schnabl (2007 a and 2007b) study on emerging Europe and East Asian countries and in small open economies at the EMU periphery. This result is at variance with Aliyu 2009 study on impact of oil price shock and exchange rate volatility on economic growth in Nigeria. Exchange rate stability is generally recognised as the pillar behind the Asian miracle and the World Bank (1993) and McKinnon (2005) saw a link between decline in growth in Asia and their move towards flexible exchange rate system. This, we believe, stem from the perceived positive impact of exchange rate stability on economic performance of the East Asian economies prior to 1997/1998 when economic crisis engulfed the region McKinnon and Schnabl (2003, 2004) emphasize the role of low transaction costs for international and intra-regional trade and capital flows.

The wrong sign of oil price indicates that a 1 percent increase in oil price reduce economic growth by 1.34 percent. This is inconsistent with our apriori expectation and is also at variance with Aliyu (2009) work on the Nigerian economy and Jin (2008) study of the Russian economy (oil exporting countries). The wrong sign is consistent with similar study on New Zealand (Grounder and Barleet 2007 cited in Aliyu 2009) and Japan (Jin 2008), both oil importing countries. This result is not unexpected given the Nigerian situation. Emphasis on the petroleum sector, to the neglect of the manufacturing and agricultural sectors, the core of any developing economy, account for the negative impact. This is evident as the Nigerian government predicate annual budget to expected price of crude oil. Thus, volatility in oil prices negatively affects government expenditure. A good example is in 2008 when the federal government had to reduce its budget as a result of downward swing in oil prices. Moreover, the country export crude oil, and massively import petroleum product, making a negative sign expected for oil importing countries (Aliyu 2009), applicable to Nigeria.

Also, the results of the long-run analysis contradict prevailing opinion on the impact of higher oil prices on the level of economic growth. This impact may be divided into two effects - an income transfer effect and an output effect. The income transfer effect can be either positive or negative depending on the oil trade position of an economy while the output effect is generally negative (Jin 2008). The income transfer effect occurs because the rise in oil prices increases the value of oil exports relative to that of other traded commodities. This should leads to an improvement in the terms of trade for net oil exporter like Nigeria, and deterioration in the terms of trade for net importer like China. This situation brings an income transfer from the net importing economy (China) to the net exporting economies (Nigeria). Thus the increase of oil price will give a positive effect to the GDP of Nigeria, and the negative sign of the coefficient of oil price is unreasonable and contradictory. The output effect is the decline in output, particularly in oil intensive industries, because of the increase in production cost associated with the rise in oil prices. This happens to be the case in Nigeria. All sectors in Nigeria rely on petroleum products to generate energy for production. And an economy with relatively high oil intensity and high reliance on imports will be more adversely affected by rising oil prices than an economy with lower oil intensity (Jin 2008). It is this development that explains the reallocation of companies from Nigeria to neighbouring countries with cheaper cost of energy This explicitly explains the Nigerian situation hence oil prices exert negative effect on the economy.

The neglect of key sectors of the economy (manufacturing and agriculture) has reduced level of economic growth because improvement in these sectors would have diversified revenue base for the country and there will be no total reliance on oil prices for budgetary allocation. Moreover, these two sectors employ a large proportion of labour as can be observed in emerging economies of the world, and they constitute the engine room of economic growth.

The result seems to contradict report of growth figures reported by the government. Nigeria's economic managers are fond of reeling out economic indices and informing the country that the economy is doing well. Very often, they adjudge the economy as doing well with economic growth rate. The Minister of Finance and the Central Bank of Nigeria

Governor have at various point over the years comforted the nation that the economy has grown by as much as 7 per cent but the question is: Can any economy grow by as much as 7 per cent without absorbing more labour in an economy where close to 40 per cent of the able-bodied labour force willing to work cannot find jobs? Can an economy grow by this margin in the face of retrenchment in the critical sectors of the economy? Can an economy grow in a situation where financial institutions are not granting credit, can an economy grow in a situation where there are no new investments, no replacement of machinery, instead of industrial expansion, there are closures?. All these confirm the result.

5. Conclusion and Recommendation

The study scrutinizes the impact of exchange rate volatility on economic growth in Nigeria from 1970 to 2009. Exchange rate variability was measured using the GARCH approach. The policy conclusions predicated on the evidence are clear. The empirical results confirm that exchange rate volatility have a significant negative effect on economic growth. This implies that policy that will enhance stability of the exchange rate will promote growth. In this regard, the import content of both public and private expenditures be controlled. One way of achieving this, is to stop importation of goods and services that can be produced locally as an avenue for reducing demand for foreign exchange.

When the current increasing importation of petroleum products halts, coupled with concerted efforts to improve electricity supply, the positive income effect of increasing international oil price will be felt in the economy, while the negative output effect, experienced as a result of importation of petroleum products, will disappear. The end result is economic growth.

Another interesting aspect of our result is that, international oil price depresses economic growth more than volatility in exchange rate. It reveals misallocation and management of oil revenue. As a result, we recommend prudence in management of public funds by making stealing or misallocation unattractive. In this regard, the Economic and Financial Crime Commission (EFCC) should be re-organized to prosecute culprits. Other recommendations includes the following:

- Legalization of the local refining of crude oil in the creeks as an interim measure of increasing local supply of petroleum product
- Domestic refining of all petroleum product consumed in the country
- Measures to stop unviable trips abroad by political office holders that has no economic value,
- Policies to stop Nigerians from storing wealth in the U.S dollars. This will reduce demand for foreign exchange and,
- Infrastructural development to stem the relocation of companies to neighbouring countries.

References

- Adubi A.A and Okumadewa F(1999) 'Price exchange rate volatility and Nigeria agricultural trade flows: a dynamic analysis' *African Economic Research Consortium* Nairobi. March.
- Akpan I.P (2008) 'Foreign Exchange Market and Economic Growth in an Emerging Market: Evidence from Nigeria'. *African Economic Business Review* volume 2 fall
- Alaba, O. (2003) 'Exchange Rate Uncertainty and Foreign Direct Investment in Nigeria.' A Paper Presented at the WIDER Conference on Sharing Global Prosperity, Helsinki, Finland, 6- 7, September.
- Aliyu Shehu Usman (2009) Impact of Oil Price Shock and Exchange Rate Volatility on Economic Growth in Nigeria: An Empirical Investigation. Central Bank of Nigeria
- Arratibel Olga, Davide Furceri, Reiner Martin, Aleksandra Zdzienicka (2009) 'The Effect of Nominal Exchange Rate Volatility on Real Macroeconomic Performance in the CEE Countries.' *GATE Groupe d'Analyse et de Théorie 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.
- Carkovic M and R Levine (2001) 'Does FDI Accelerate Economic Growth?' *Internet*. Central Bank Of Nigeria (CBN) Several Publications.
- Cerra, V, U. Panizza and S.C. Saxena (2009), "International Evidence on Recovery from Recessions" IMF Working Paper, No. 09/183.
- Chmelarova V and Schnabl G (2006) ' exchange rate stabilization in developed and underdeveloped capital market' *European Central Bank Working Paper* 636
- Edward S and Levy- Yeyati E (2003)'flexible Exchange Rate As Shock Absorber'. *NBER working paper*
- Eichengreen B and Hsusmann R (1999) 'exchange rate financial fragility' *NBER Working paper* 7418.
- Egwakhide F.O. (1999) "Determinants of Imports in Nigeria: A Dynamic Specification" *African Economic Research Consortium, Research Consortium, Research Paper No. 91* Nairobi, March.

- 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 Potential Benefits and Costs of Forming an Economic and Monetary Union' *European Economy*44.
- Furceri, D. and A. Zdzienicka (2009) "The Real Effect of Financial Crises in the European Transition Economies" GATE Working Paper No. 2.
- Ghosh A, Gulde A, and Wolf H (2003) *Exchange Rate Regimes: Choices and Consequences*. CambridgeMasschusette: MIT Press.
- IMF (1984) 'Exchange rate variability and world trade'. *IMF Ocassional paper* 28.
- 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.
- Johnson J. and Dunardo J. (1997) *Econometric Modeling System*. Oxford: Institute of Economics and Statistics.
- McKinnon, Ronald (2005) *Exchange Rates under the East Asian Dollar Standard: Living with Conflicted Virtue*. Cambridge, Massachusetts.
- Mckinnon R and Schnabl G (2003) 'Synchronized 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
- Obiora K.I and Igue N.N (2006) 'Exchange Rate Volatility and U.S-Nigeria Trade Flows: An Econometric Appraisal of the Evidence.' Paper Presented at the 11th Annual Conference of the African Econometric Society. 5th -7th July. Dakar, Senegal
- Ogunleye, Eric Kehinde (2008) 'Exchange Rate Volatility and Foreign Direct Investment Inflows in Selected Sub-Sahara African Countries, 1970-2005'. PhD. Dissertation. University of Ibadan.
- Scnabl Gunther (2007a) 'Exchange Rate Volatility and Growth in Small Open Economies at the EMU Periphery' European Central Bank Working Paper No. 773
- Scnabl Gunther (2007b) 'Exchange Rate Volatility and Growth in Emerging Europe and East Asian'CESIFO Working Paper No. 2023
- Singh M.P. (1985) *Import Policy of A Developing Economy*, India Chugh Publications.
- Todaro P Michael and Smith C. Stephen (2004) *Economic Development* Pearson Education Limited Delhi 110092 India
- World Bank (1993) *The East Asian Miracle: Economic Growth and Public Policy*, London Oxford University Press.

