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Exchange Rate Volatility and International Trade In Nigeria

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ABSTRACT

Volatile exchange rate makes international trade and investment decisions more difficult because volatility increases exchange rate risk. This study seeks to evaluate the impact of exchange rate volatility on international trade in Nigeria on the basis of annual data from 1980 to 2013, which was obtained from World Bank Development Indicators (WDI). Exchange rate volatility, gross national product (GDP), investment, interest rate, import and export were used to capture the causal relationship between exchange rate volatility and international trade and also the long-run and short-run relationship between exchange rate volatility and international trade. A review of the literature reveals that exchange rate volatility has a negative impact on international trade. 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, then the granger causality and the Error Correction Model (ECM). The co-integration test indicated that the variables are co-integrated which implies that a long-run relationship exist between the variables while the granger causality test showed that a causal relationship exist between international trade and exchange rate volatility. It was observed form the ECM analysis that exchange rate volatility negatively affects international trade. The study therefore recommend that the government should put in place exchange rate and trade policies that will promote greater exchange rate stability and trade conditions that will promote domestic production in the economy. In other to achieve this, the government should provide efficient infrastructural services like energy resources.

1.0 Introduction and the problem

Exchange rate is an important macroeconomic variable used as a parameter for determining international competitiveness and it is being regarded as an indicator of the competitiveness of the currency of any economy and an inverse relationship between this competitiveness exist. The fluctuation of exchange rate can lead to currency appreciation or depreciation. The world's total external reserves grew to $9.7 trillion in 2010, while Nigerians reserves peaked at $64 billion in 2008 before the global financial crisis and dropped to $31.7 billion in late 2011. The U.S Dollar increased to 165.80 Nigerian Naira in October from 163.85 in September of 2014. The Nigerian naira averaged 122.44 from 1960 until 2014, reaching an all time high of 165.80 in October 2014 and a record low of 0.53 in September of 1980. This shows that the naira keeps fluctuating and this fluctuation makes it difficult for countries to trade. This fluctuation in the exchange rate was due to the implementation of the Structural Adjustment Program (SAP) that required deregulation of foreign exchange market and this deregulation led to the devaluation of the Nigerian naira. The main object of SAP was to restructure the production base of the economy with a positive bias for the production of agricultural exports. The foreign exchange reform that facilitated a cumulative depreciation of the effective exchange rate was expected to increase the domestic prices of agricultural exports and therefore boost domestic production (Adeniran et al, 2014).

The increase in exchange rate volatility leads to uncertainty, which has a negative effect on trade flows. This fluctuation in the exchange rate has created severe macroeconomic disequilibrium, which has lead to balance of payment deficit. The Nigerian economy has been trying to resolve the problem of external and internal balance which is caused by the disequilibrium in our balance of payment and causing the economy balance of payment deficit but the many aim of this currency devaluation was to encourage export thereby improving the economy, however this objective of increasing export through devaluation of the naira has not been achieved, instead despite the various effort of the government to stabilize the exchange rate, the naira has continued to depreciate and making the naira worthless in terms of other country's currency.

Due to the exchange rate fluctuations it is not easy for investors and policy makers to track the exchange rate of the economy. The main aim of this study is to investigate the effect of exchange rate volatility on international trade, how the volatility of the exchange rate can help in the growth of the economy because exchange rate fluctuations can influence the smooth functioning of the economy and reduce economic growth. Also this study sets out to find the major causes of the fluctuations between exchange rate volatility and trade volumes and how it affects the economy. Therefore, the objective of this study is to examine the long run relationship and the short run impact of exchange rate volatility on international trade in Nigeria. The study covers a period of 1980 to 2013; a period based on availability of data and the need to carefully analyze the exchange rate in Nigerian and its fluctuation over a considerable length of time. The rest of this paper is organized as follows: following this

introductory section, section two gives a background of macroeconomic fundamentals in Nigeria. Section three presents the literature review. Section four is the theoretical framework and methodology. While section five presents the data analysis and empirical evidence, section six concludes the study with attendant recommendations.

2.0 Exchange Rate, International Trade and Economic Performance

Any relationship between volatility and international trade could be driven by reverse causality, in which trade flows helps in stabilizing real exchange fluctuations thus reducing exchange rate volatility (Broda and Romalis, 2010). An increase in exchange rate volatility may be associated with either an increase or decrease in the volume of international trade depending on the source of the change in fluctuation. Also, increase of exchange rate volatility dampens international trade i.e. it reduces international trade. Also the effect of exchange rate misalignments on trade policy can be used in determining the relationship between exchange rate and international trade. The extent of the exchange rate may indirectly affect governments decisions regarding other policies especially those affecting international trade. Trade policies may be used to compensate for some of the effects of an overvalued currency and countries may also be using trade policy as a substitute for exchange rate overvaluation, so as to deal with persistent disequilibria in the trade balance. Some of these policies include anti-dumping interventions.

The growth rate of exports shows mixed results of increase and decrease over the period under study. The period of 1981 to 1983 initial experienced the lowest growth rate in terms of exports. This can be explained for because there was a drop in the prices of oil in the nation and as such hindering the economy from producing good which it can render for exports in to other countries. In 1986, the growth rate reduced again and could be accounted for by the adoption of the Structural Adjustment Programme. The dwindling effects continued on and on until 1995 when there was another sharp increase under the regime of Ibrahim Babangida. After then, the growth rate continued to increase and decrease.

Import refers to the total amount of goods and services brought into a country at a particular time and period. Under the period of study in this research, the growth rate of imports has dwindling effects overtime. At the beginning of the period under study, between 1981 and 1982 to be precise, the growth rate of imports was negative. This period was the preceding period before the adoption of the Structural Adjustment Programme. By implication, it means that Nigeria was still grappling in the means of importation. By 1986, it began to increase and there was dwindling effects up till the period of 1995. In 1995, there was a sharp increase up to 1.833. This period was marked by the highest growth rate of imports under the period of study. By 1998 when the regime of Ibrahim Babangida came to an end, the growth rate sharply fell to negative and began to increase in 1999. The dwindling effect continued on and on until the end of the period under study.

Exchange rate volatility explains a fluctuation in the economy's exchange rate. In Nigeria, there has been a persistent fluctuation in the exchange rate. The major factors that contribute to the fluctuation of the exchange rate include: interest rate, inflation, balance of payment, government intervention. From the above figure it can be observed that the fluctuation in exchange rate volatility in obvious: In 1998 there was a major rise in the exchange rate volatility this was due to the return to democracy, there was a major shift from fixed exchange rate to flexible exchange rate. Under the floating exchange rate, the CBN attempted to devalue the naira thereby stabilizing exchange rates movement.

3.0 Literature Review

Here empirical literature on the relationship between exchange rate and international trade is reviewed in this section. Yutaka Kurihara (2013) examined the effects of exchange rate uncertainty and financial development on international trade. Panel data are used to conduct a dynamic panel model and the method for empirical analysis is ordinary least square (OLS) and robust estimation. Sample period is from 2009 to 2011 and the data used is in yearly average. The result are inconclusive, exchange rate volatility does not significantly influence the volume of international trade. Also, the study found out that exchange rate volatility negatively influences international trade in developing countries. As the volatility of exchange rate increases, it dampens international trade.

Orkhan Najafav (2010) in his article exchange rate volatility and international trade, the main objective of this article is to analysis the effect of exchange rate volatility and different exchange rate regimes on international trade, he used panel data including US trade with large number of countries and fixed effects estimation method, high frequency data and large sample is used. Panel least squares method to large sample and up to date data is used to estimate the effect of exchange rate volatility on US import and exports and the different exchange rate regimes are used as instrument for volatility. High panel data including 79 countries, 276 months covering time period from 1985 to 2007. Significant negative effect of exchange rate volatility on trade is found but this effect is not unambiguous.

Christian Broda and John Romalis (2003) identify the relationship between trade and exchange rate volatility using disaggregates trade data for a large number of countries for the period 1970 to 1997. This paper departs from the existing literature in several dimensions. First it represent the attempt to structurally estimates the relationship between trade and exchange rate volatility and to estimates the effect of exchange rate volatility on the composition of trade. They found strong results supporting the prediction that trade dampens exchange rate volatility. They used a model of bilateral trade to structurally estimate the effect on trade of exchange rate volatility and exchange rate regimes such as fixed exchange rate and currency boards. The model highlights the role of trade in determining bilateral real exchange rate volatility (source of reverse causality) and the differences in the impact of real exchange rate volatility on trade in different types of goods.

Piet Sercu and Raman Uppal (1998) in their study exchange rate volatility and international trade; A general equilibrium analysis . The objective of this paper is to evaluate the conjecture that an increase in exchange rate volatility leads to a decrease in the volume of international trade. This analysis is carried out in general equilibrium stochastic endowment economy with imperfect international commodity market in which both trade and exchange rate volatility are endogenous quantities. The general model constructed to illustrate the arguments is that of a two-country, one good, and complete markets model. A model of stochastic general equilibrium economy with international commodity markets that is partially segmented. Exchange rate is determined endogenously here. There model provide a potential explanation for the results of empirical studies that typically fail to find a strong negative relation between exchange rate volatility and the volume of international trade.

Elif Nuroglu and Robert Kunst (2012) in their paper the effect of exchange rate volatility on international trade flows, evidence from panel data analysis and fuzzy approach. The aim of this paper is to analysis the effect of exchange rate volatility on international trade flows by using two different approaches the panel data analysis and fuzzy logic and also to compare the result. A panel with cross-section dimension of 91 pairs of EU15 countries and with time ranging from 1964 to 2003 was used. An extended gravity model of trade is applied in order to determine the effect of exchange rate volatility on bilateral trade flows of EU15 countries. The estimated impact is clearly negative which indicates that exchange rate volatility has a negative influence on bilateral trade flows. Alessandro Nicita (2013) in his article exchange rates, international trade and trade policies contributes to understand the relationship between exchange rate and international trade by investigating the effect of exchange rate volatility and misalignment on international trade and by exploring whether exchange rate misalignment affects trade policy decisions. The methodological framework consists of fixed effects regressions estimates on a detailed panel data set comparing about 100 countries and covering a period of 10 years (2000 to 2009). The results indicates that exchange rate misalignment do affect international trade flows in a substantial manner. Currency undervaluation is found to promote exports and restrict imports while the converse holds in the case of overvaluation. The analysis indicates that exchange rate volatility is not probably a major policy concern and this is because of the increasing availability of financial instruments to hedge against exchange rate risks and to the increasing share of intra-industry trade.

4.0 Theoretical Framework and Methodology

4.1 The Mundell-Fleming IS-LM BOP Model

The theoretical framework that will be used for the basis of work is the Mundell -Fleming model also known as the IS-LM-BOP model. The Mundell-Fleming model is developed by extending the IS-LM model to the case of an open economy, where the capital and good market where internationally integrated and thus providing an understanding of how exchange rate is determined. The model is an extension of the IS-LM model, while the IS-LM model deals with the closed economy, the mundell - Fleming model tries to describe a closed economy, this is the key difference between the IS-LM model and the Mundell - Fleming model.

The Mundell- Fleming model is an economic model that integrates international trade and finance into macroeconomic theory. It was developed in the early 1960s by the Canadian economist Robert Mundell (winner of the 1999 Nobel Prize award in economics) and the British economist J. Marcus Fleming (1911-1976), they both belonged to the international monetary fund (IMF) research department. The model is a close relative of the IS-LM model, both models assume that the price level is fixed and then shows what causes short-run fluctuations in aggregate income or equivalently, shifts in the aggregate demand curve. The Mundell – Fleming model shows the relationship between the nominal rate and an economy's output in the short run.

Interest rate is the key component in making both the money market and the good market to be in equilibrium. Under the Mundell – Fleming framework of small economy, interest rate is fixed and equilibrium in both markets can only be achieved by a change in nominal exchange rate.

According to the Mundell – Fleming model, an open economy can be described by four equations; the equations are represented as follows;

$Y = C(Y-T) + I(r) + G + NX(\varepsilon)$ IS^{+}..... equation 1

$e = (1 + i)Ee'/(1 + i^*)$ IRP..... equation 2

$\varepsilon = ep / P^*$ RER equation3

$r = i - E\,\pi$ FISHER..... equation 4

The first equation shows the equilibrium in the goods market, the second equation describes the interest rate parity condition which describes equilibrium in the market for foreign exchange, the third equation states the definition of the real exchange rate, and the last equation is the fisher equation which states the relationship between the real interest rate, the nominal interest rate and the expected inflation. The four equation above determine the equilibrium values for the four endogenous variables which are income (Y), the nominal exchange rate (e), the real exchange rate (ε) , the real interest rate (r).

In explaining the Mundell – Fleming model, the type of exchange rate adopted is necessary because it can have completely different implications under different exchange rate regimes. The model shows that under a flexible exchange rate regime, fiscal policy does not have any power to affect output, while monetary policy is very effective. If the exchange rate is fixed, then monetary policy would become ineffective while the fiscal policy becomes very effective. The assumption that international capital markets are completely integrated plays a crucial role in determining these results.

The model is based in the theoretical framework discussed above, which shows how monetary and fiscal policy brings the economy to equilibrium. Gujarati and Sangutha (2007) states that `` an econometric investigation begins with the specification of the econometric model underlying the phenomenon of the interest''. This study introduces a number of macroeconomic variables that affect international trade besides exchange rate fluctuation. The study estimates the following relationship;

$TRADE\ VOL = \alpha_0 + \alpha_1 EXRV + \alpha_2 GDP + \alpha_3 INV + \alpha_4 INTR + e_t$ ..... equation(5)

Where

α_0 Is the intercept while α_1, α_2, α_3, α_4, are the coefficient or parameters attached to the explanatory variables (exchange rate volatility, GDP, investment and interest rate. The addition of the error term or stochastic term in the model is to capture the effect of the other variables not included in the models.

4.2 Methodology

This section discusses the estimation technique employed to measure volatility, and the technique also captures the effect of exchange rate volatility on international trade. This is used to determine the economic usefulness of the equation with regards to meeting the prior expected signs of the parameters. The negative relationship indicates that the explanatory variable has an inverse relationship with the explained variables, while the positive relationship indicates that the explanatory variable has a positive relationship with the explained variables. The objectives of this study is to find the relationship between exchange rate volatility and international trade from 1980 to 2013. The method adopted in this study is analytical. The analytical tool used include, unit root test, co-integration test, Granger causality test and error correction model.

a. Unit Root Test/Stationary Test

A unit root is a feature of processes that evolves through time that can cause problems in statistical inference involving time series models. A unit root test tests whether a time series variables is non-stationary using an autoregressive model. David Dickey and Wayne Fuller (1979, 1981) and Said and Dickey (1984) have developed a method to determine whether a variable contains a unit root. For empirical process, a test for unit root is required because all other models can be applied only to variables that are non stationary in levels that is they contain a unit root. The tests are conducted including a drift term and both with and without a trend. The addition of a trend allows testing that whether the series is trend or difference stationary. The importance of the unit root test derives from the fact that estimating a model in the presence of non stationary time series variables can lead to spurious regression output with biased and inconsistent estimates of the standard errors of the coefficients and this could lead to misleading inference if appropriate technique is not applied to overcome the problem.

b. Co-integration Test

Co-integration implies identifying the co-integrating or long-run equilibrium relationships. The methodology developed by Johnson (1991, 1995) is used in explaining the co-integration test. The central concept of co-integration is the specification of models that include the long-run movements of one variable relative to others. Co-integration implies the idea that linear combination of non stationary series can be stationary, implying a

long-run relationship, that is It shows that the relationship between the stationary linear combination of non stationary variable exist.

c. Granger Causality Test

Granger causality is a statistical concept of causality that is based on prediction. Its mathematical formulation is based on linear regression modeling of stochastic processes (Granger 1969). It determines the direction of causality between variables. This test would be carried out to show the causal relationship between exchange rate volatility and international trade. It

d. Error Correction Model

The error correction model attempts to integrate economic theory useful in characterizing long run equilibrium with observed disequilibrium by building a model that explicitly incorporates behavior that would restore equilibrium. It a one-period lagged value of the residual from a static model. The error correction model is very important in the sense that it ensures the reliability of the statistics, making the model suitable, reliable and appropriate for both control and prediction purposes (Hill et al 2008). .

4.3 Source of Data

The annual data from 1980 to 2013 shall be used for all the variables in this chapter. The data from the study are basically time series data sourced mainly from the central bank of Nigeria (CBN) annual statistical bulletin and the world development indicators.

5.0 Presentations and Interpretation of Results

This section deals with the presentation and interpretation of data. In the initial stage the unit root test is carried out to determine the level of Stationarity of the variables and granger causality to know the causal relationship between the variables. In other to examine the impact of exchange rate volatility on trade, an error correction model analysis is undertaken. This are presented in what follows.

5.1 Stationarity Test

This study tests the properties of the time series data used for the analysis. Unit root is conducted in other to establish whether the variables are stationary at level or not and to determine how many of such relationship exist. Also, the Augmented- Dickey Fuller (ADF) test is adopted to test the time series property of the time series data.

TABLE 5.1 Stationarity test

VARIABLES	AUGMENTED DICKEY-FULLER TEST STATSTIC	ORDER OF INTEGRATION	MAX. NO OF LAGS
Trade volume(growth of IMPT and EXPT)	-6.056451	I(O)	8
Import(growth rate of IMPT)	-5.441417	I(O)	8
Export(growth rate of EXPT)	-6.966240	I(O)	8
Investment(growth rate of INV)	-4.716247	I(O)	8
Interest rate	-5.920280	I(O)	8
Exchange rate volatility	-5.375807	I(O)	8
Gross domestic product (Growth rate of GDP)	-5.615411	I(O)	8

Source: Authors' Computation

From table above, it can be seen that a unit root test is conducted for the variables in the study for Nigeria (Trade V, IMPT, EXPT, INV, INTR and GDP) using the Augmented Dickey-Fuller tests and the results are presented in

the table below. Note that the Mackinnon (1999) critical values for the Augmented Dickey-Fuller (ADF) test using the Schwarz Info Criterion (AIC) at 1%, 5%, 10% level of significance are -3.653730, -2.957110, -2.617434 respectively. Even though the variables are presented as I(0) they are actually I(1) since there first difference has been accounted for in the calculation of their respective growth rate.

5.2 Co-integration Test

As specified in the previous chapter, the variables to be employed in this study include IMPT (import), EXPT (export), TRADE V (trade volume), INTR (interest rate), INV (investment), EXRV (exchange rate volatility), GDP (Gross Domestic Product). We perform the co-integration test to check the long-run relationship between the variables. The test for co-integration is done using both trace test and max-eigenvalue test.

TABLE 5.2 Co-integration result
Sample (adjusted): 1984 2013
Included observations: 30 after adjustments
Trend assumption: Linear deterministic trend
Series: TRADEV EXRV GDP INV INTR
Lags interval (in first differences): 1 to 1

Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.595102	77.90791	69.81889	0.0098
At most 1 *	0.559322	50.78429	47.85613	0.0259
At most 2	0.323201	26.20105	29.79707	0.1228
At most 3	0.235293	14.48962	15.49471	0.0704
At most 4 *	0.193236	6.441735	3.841466	0.0111

Trace 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-values

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.595102	27.12362	33.87687	0.2568
At most 1	0.559322	24.58323	27.58434	0.1156
At most 2	0.323201	11.71144	21.13162	0.5763
At most 3	0.235293	8.047881	14.26460	0.3739
At most 4 *	0.193236	6.441735	3.841466	0.0111

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Form table 4.2 (TRADEV), trace test indicates the presence of 2-cointegrating equation however this same conclusion cannot be arrived at for the max-eigenvalue at 5% level of significance using the Mackinnon-Haug-Michelis (1999). It is observed that the variables are co-integrated which implies that there is an existence of long-run equilibrium relationship existing between the variables in the equation. Similarly the same result was obtained for export and import (see appendix) showing that a long-run relationship exists between the variables. This implies that if a set of variables are co-integrated, the effect of a shock on one variable spreads to other variables possibly with time lags, so as to preserve a long-run relationship between the variables. The existence of the long-run relationship is the basis for error correction model (ECM).

5.3 Granger Causality Test

The Granger causality is conducted to check the causal relationship between the macro economic variables. If a variable granger causes another, then it means that causality runs from the former to the latter. If the null hypothesis is rejected, it implies that we accept the alternate hypothesis and conclude that granger causality runs from the former to the latter. From the table 4.3, we observe that the null hypothesis that TRADEV does not granger cause EXRV was rejected, therefore we conclude that trade volume granger causes exchange rate volatility and we accept the alternate hypothesis that trade volume does not granger cause exchange rate volatility.

TABLE 5.3 Granger causality test
Pairwise Granger Causality Tests
Sample: 1980 2013
Lags: 4

Null Hypothesis:	Obs	F-Statistic	Prob.
TRADEV does not Granger Cause EXRV	29	3.55478	0.0240
EXRV does not Granger Cause TRADEV		0.24164	0.9113
EXPT does not Granger Cause EXRV	29	3.12316	0.0378
EXRV does not Granger Cause EXPT		0.50238	0.7344
IMPT does not Granger Cause EXRV	29	2.50009	0.0751
EXRV does not Granger Cause IMPT		0.50078	0.7355
EXPT does not Granger Cause TRADEV	29	0.00563	0.9999
TRADEV does not Granger Cause EXPT		0.08941	0.9847
IMPT does not Granger Cause TRADEV	29	0.00563	0.9999
TRADEV does not Granger Cause IMPT		0.21492	0.9270
IMPT does not Granger Cause EXPT	29	0.08941	0.9847
EXPT does not Granger Cause IMPT		0.21492	0.9270

Theoretically, it is expected that causality should run from exchange rate volatility to trade however, following the result above from the granger causality test for Nigeria the causality runs from trade volume to exchange rate volatility. This can be duly explained by the fact that Nigeria is a large economy and its major trading commodity is crude oil and the country is the 6th largest producer of crude oil meaning that Nigeria has the power to influence the international price of crude oil which can invariably affect exchange rate movement. Trade volume granger causes exchange rate volatility at 5% level of significance at lag 4. Similarly, it was discovered that causality runs from imports and exports to exchange rate volatility. As stated earlier it expected that causality should run from exchange rate volatility to import and export. However, the result shows otherwise. And as stated this is largely due to the fact that Nigeria is a net exporter and a large open economy whose trading activities can be significant enough to alter the international price of export of oil products. Export granger causes exchange rate volatility at 5% level of significance and import granger causes exchange rate volatility at 10% level of significances.

5.4 Error Correction Model (ECM) Result

Table 5.4 Error correction analysis for trade volume

Dependent Variable: TRADEV
Method: Least Squares
Sample (adjusted): 1985 2012
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.

C	1.335342	0.298087	4.479707	0.0005
EXRV	-0.006147	0.004586	-1.340445	0.2014
INVT	-0.467134	0.377841	-1.236325	0.2367
INTR	-0.045181	0.008505	-5.312001	0.0001
EXRV(-1)	0.007575	0.004814	1.573409	0.1379
GDP(-1)	-1.449454	0.853039	-1.699166	0.1114
INTR(-1)	-0.028490	0.014255	-1.998508	0.0655
TRADEV(-2)	0.227421	0.134846	1.686520	0.1138
EXRV(-2)	0.008054	0.004578	1.759213	0.1004
INVT(-2)	-0.518969	0.329589	-1.574595	0.1377
INVT(-3)	0.763412	0.540106	1.413450	0.1794
INTR(-3)	-0.022448	0.014337	-1.565685	0.1397
TRADEV(-3)	-0.270920	0.223678	-1.211208	0.2459
ECMTV(-1)	-0.489141	0.170587	-2.867397	0.0124

R-squared	0.853131	Mean dependent var	0.806124
Adjusted R-squared	0.716753	S.D. dependent var	1.024400
S.E. of regression	0.545195	Akaike info criterion	1.931507
Sum squared resid	4.161327	Schwarz criterion	2.597609
Log likelihood	-13.04109	Hannan-Quinn criter.	2.135141
F-statistic	6.255640	Durbin-Watson stat	1.314190
Prob(F-statistic)	0.000819		

Source: Authors' computation using E-view 7

The error correction model result in the above table shows that C value stands for the intercept of the model while exchange rate volatility, investment and interest rate stands for the independent variable while gross domestic product has been deleted because it is not stationary. The dependent variable in this model is the trade volume. From the table above, it is observable from the result, given the value of R^2 (adjusted), that the independent variables in the model significantly explains changes in trade volume of Nigeria as about 71% of changes in the trade of the country are attributed to the independent variable. The model is overall significant at 1% level of significance given the probability value of the f-statistic and it has a good fit. The Durbin Watson statistics 1.314190 is higher than R^2 0.716753 which implies that the model is non-spurious. The model is not significant and there is presence of Auto correlation, this implies that the shock is not great enough to affect the behavior of international trade in Nigeria. They economy can still trade because the shocks do not affect trade. The ECM (-0.489141) is negative and significant and account for the goodness of fit.

As expected, exchange rate volatility (-0.006147) is negative and significant in the current period. The negative relationship shows the inverse relationship to international trade. That is as exchange rate volatility increases it creates unpredictability of macro-economic variables which negatively affects trade volume. This result is in line with the apriori expectation about the effect of exchange rate volatility on trade volume as found out in the empirical literature of Nodir Bakhromov (2011). Exchange rate volatility in the first period is positive, it changes intuitively as the shocks or volatility arising from movement in exchange rate affects trade represented by export negatively in the initial period. However when people begin to adapt to this shocks, export expands subsequently which affect exchange rate volatility at the first lagged period even though the shock is not great enough to be significant for trade volume.

The result for investment is it is negative in the first period but in the other period it begins to yield positive returns. This is due to the fact that trade volume is dependent on investment. This results implies that a negative relationship exist between investment and trade volume. The result is consistent with the apriori expectation that investment negatively affect trade volume. Interest rate is negatively related to trade volume, this implies that a negative relationship exist between interest rate and trade volume. The result coincide with the apriori expectation that interest rate negatively affects trade.

5.0 Conclusion and Recommendation

The study looks at the impact of exchange rate volatility on trade policy in Nigeria from 1980 to 2013. Chapter one was focused on the problems and objective of the study. The major objective was to determine the relationship between exchange rate volatility and international trade. Chapter two contained a detailed analysis of the conceptual framework, trend analysis, theoretical as well as empirical review of relevant lectures. In

chapter three the study explained the model and methodology to be used in the study. Chapter four focused on the analysis and presentation of data. In other to gain a better understanding of this study, some theoretical aspects of the topic were evaluated. This was done through an in-depth analysis of the theories of exchange rate. Co-integration test was conducted to show the long-run relationship between exchange rate volatility and trade volume: the Granger causality test was conducted to show the causal relationship between exchange rate volatility and trade volume. The error correction model was used to explain the direct estimate of speed at which a dependent variable returns to equilibrium after a change in an independent variable. Exchange rate volatility proved to have a long-run equilibrium relationship with trade volume. From the results obtained, it was conclusive that there is a causal relationship between trade volume and exchange rate volatility. The result also showed the negative relationship between exchange rate volatility and trade volume, which implies that as exchange rate increases, trade volume will decrease (-0.006147). This result is in line a prior expectation and economic theory. The result also shows the significant negative relationship between export and import. The crux of this of this study is that exchange rate volatility affect international trade negatively and this in-turn has a negative impact on the economy.

It can therefore be concluded that an effective and efficient exchange rate policy and an appropriate exchange rate are crucial for enhancing the economic performance of a country. The following recommendation should be put in place by the government to ensure the stability of the exchange rate system: The government should put in place exchange rate and trade policies that will promote greater exchange rate stability and trade conditions that will promote domestic production in the economy. In other to achieve this, the government should provide efficient infrastructural services like energy resources. The instability of exchange rate volatility destabilizes export and this affects the economy negatively, so for the purpose of economic development there is need to control or forecast the exchange rate to minimize uncertainty, which destabilizes trade. There is need for diversification of the Nigerian economy to avoid overreliance on oil and reduce importation. Nigeria is a large nation, which depends on oil as its major source of income if the government can diversify the economy and encourage domestic production of resources it is capable of producing like agricultural and other product it can reduce the amount of imported food items and also led to increase in the exportation of agricultural product. The need for government to probably monitor the exchange rate volatility is important as high level of real exchange rate volatility could lead to miserable performance of the country's tradable sector due to the increased level of risk uncertainty faced by the country.

References

ADENIRAN J. O, YUSUF S.A and ADEYEMI OLATOKE A. (2014). "The impact of exchange rate fluctuations on the Nigerian economic growth: An empirical investigation''

CHRISTIAN BRODA (FRBNY) and JOHN ROMALIS (Chicago GSB and NBER) . "Identifying the relationship between trade and exchange rate volatility'' (2003)

ENGLE, C. & ROGERS, J. H. (2001) "Deviation from purchasing Power Parity: Causes and Welfare costs'' Journal of International Economics, 55, pp.29-57, 2001.

GUJARANTI, D. N. "Basic Econometrics 4th Edition, New-York: McGraw-Hill, 2003. JHINGAN, M. L. "Macroeconomics Theory" 10TH edition. Vrinda's Publication Limited New- Delhi, 2005.

IMF (2005). IMF Executive Board Discusses Fixed to Float: Operational Aspects of Moving towards Exchange Rate Flexibility, IMF Public Information Notice No.04/141.

MUNDELL, ROBERT A. (1961), "A Theory of Optimal Currency Areas" American economic Review, Volume 51(4) pp.657-665.

NICITA A. (2013) UNCTAD, Geneva. "Exchange rates, international trade and trade policies''. Policy issues in international trade and commodities study series No. 56.

NODIR BAKHROMOV (2011). " The exchange rate volatility and the trade balance: case of Uzbekistan''. Journal of applied economics and business research JAEBR 1(3): 149- 161(2011).

OBSTFELD MAURICE and KENNETH ROGOFF (1996): Foundations of International Macroeconomics, MIT Press.

ORKHAN NAJAFOV (2010) "Exchange rate volatility and international trade'' International journal of applied econometrics and quantitative studies vol-3-1 (2006).

PIET SERCU and RAMAN UPPAL (1998). "Exchange rate volatility and international trade: A general equilibrium analysis''

QURESHI MAHAVASH and CHARALAMBOS TSANGARIDES (2010). "The Empirics of Exchange Rate Regimes and Trade: Words vs. Deeds'' IMF Working Paper WP/10/48.

RASAQ AKONJI DANMOLA (2013). "The impact of exchange rate volatility on the macroeconomic variables in Nigeria'' European scientific journal march 2013 edition volume 9. ISSN 1857-7881 (print) e-ISSN 11857-7421

SERCU, P. And VANHULLE, C. (1992), "Exchange rate volatility, International trade, and the value of exporting firm", Journal of Banking and Finance, 16 (1), 152–182.

STAIGER ROBERT W. and ALAN O. SYKES (2010). "Currency manipulation' and world trade'' World Trade Review 9(4): 583–627.

TAQADUS BASIR, MARIA HASSAN, SARA NASEER AND ALIA AFZAL (2012) "impact of exchange rate uncertainty on exports: A case of Pakistan with US, UK and UAE. Asia pacific journal of finance and banking research volume 6 (2012)

VERHEYEN. F. (2012). "Bilateral Exports from Euro Zone Countries to the US: Does Exchange Rate Variability Play a Role? ''International Review of Economics and Finance, 24(1), pp. 97-106.

WANHUI JIANG (2014). "The effect of RMB exchange rate volatility on import and export trade in china'' International journal of academic research in business and social science January 2014, vol 4 No 1 ISSN-2222-6990.

YUTAKA KURIHARA (2013). "Effect of exchange rate fluctuations and financial development on international trade'' Recent experience int. J. Buss. Mgt . Eco. Res vol.4(5), 2013, 793-801. ISSN: 2229-6247.

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