Relationship between Exchange Rate Volatility and Stock Market Prices in Nigeria: An Empirical Investigation

Sulieman Sa'ad & Abba, Mohammed
Department of Economics,
Nigerian Defence Academy,
PMB 2109,Kaduna, Nigeria

Abstract

The paper evaluates the relationship between exchange rate volatility and stock market prices in Nigeria, over the period 1985 to 2014, using Generalized Autoregressive Conditional Heteroskedasticity,(GARCH) technique, the Johansen Co-integration and Error Correction Mechanism (ECM).The GARCH result showed that, exchange rate and inflation rate constitute significant sources of volatility to stock prices in both the short-run and long-run, with coefficients: 0.33 and 0.32 of variations in NSE-All Share Index respectively. This was followed by the broad money supply with positive coefficient; 0.19 while, real interest rate has a negative coefficient: 0.35. The ECM result showed that, there exists a long-run co-integration or equilibrium relationship among the variables. Therefore, the paper recommended that, monetary authority should first, embarked on tight exchange rate policy measures through the consistent applications of Dutch Auction System (DAS) to serve the triple purposes of reducing the parallel market premium, conserve the dwindling external reserves and achieve a realistic exchange rate for the Naira per US dollar. This will help to stabilize the Naira exchange rate in Nigeria.

Keywords: Stock market prices, Volatility, Exchange Rate, Nigeria.

1. INTRODUCTION AND BACKGROUND

The effect of exchange rate volatility has been increasingly recognized globally as one of the most important macro-economic variable that is responsible for the performance of Nigerian economy over the years. These have attracted the attention of both policy makers and investors in most economies of the world that have experienced high exchange rate fluctuation and its effects on the attainment of macro-economic objectives of price stability and economic growth. Volatile real exchange rates are associated with unpredictable movements in the relative prices in the economy and it creates a high degree of uncertainty that affect both domestic and foreign investment decisions. Therefore, it could be argued that appropriate exchange rate system is a crucial condition for improving the economic performance of a country and attracting foreign direct investment.

In most countries of the world, including Nigeria, the goals of an exchange rate policy include determining an appropriate exchange rate and ensuring its stability. In 1986 when Federal government of Nigeria, adopted Structural Adjustment Programme (SAP), sponsored by the World Bank and International Monetary Fund (IMF). The country's exchange rates system moved from a peg regime to a flexible exchange rate regime where exchange rate is left completely to be determined by market forces of demand and supply but subject to periodic review by the monetary authority to attain some policy objectives. According to Frankel (1996) flexible exchange rate regime permits a continuous response to changes in the macroeconomics variables in the economy, neutral with respect to inflation, causes higher growth and leads to BOP equilibrium without inducing demand restraints and protectionism that may cause further distortions in financial market.

The stock exchange market has displayed a relatively high degree of volatility in response to the flexible exchange rate regime that followed the SAP era in 1986. The Nigerian Naira, which is the most dominating currency in the Nigerian Stock Exchange (NSE) market, has depreciated several times more than it has appreciated in value relative to other currencies, the US dollar in particular. This, according to Central Bank of Nigeria (2015), is due to the excessive exposure of the stock market to external shocks, severe pressures on external reserve and foreign exchange crisis. This is attributed to the sharp drop in foreign earning of Nigeria as a result of the persistent fall in crude oil's prices in the global market.

Therefore, the study immediately raised a clarification about the effects and the relationship between exchange rate volatility and stock prices in Nigeria. Thus, to makes contribution to the ongoing debate on the existing literature, given that most previous studies such as; Isenmila (2012) David (2013) among others, do not always provide a convergence conclusion on the issue raised earlier about the relationship between exchange rate volatility and stock market prices in Nigeria.

2. LITERATURE REVIEW

2.1 The Conceptual Review

The foreign exchange or exchange rate is rate at which the relative value of a nations currency is expresses in term of another currency that integrate domestic and foreign market for goods and assets in a global market. According to Mike (2013), exchange rate is the domestic price of foreign money. According to Aliyu (2011) an exchange rate is a relative price of one currency in term of other that connects domestic and world markets for goods and assets, but it also signals the competitiveness of a country's exchange power with the rest of the world in a global market. Olubenga (2014) opined that an exchange rate is the rate at which one currency will exchange for another. He added that in dependent economies such as Nigeria's, the exchange rate is an important price because it determines virtually all other prices. The stock market served as a medium through which funds are mobilized from surplus spending units to deficit spending units in an economy.

2.2 THEORETICAL LITERATURE

The Purchasing Power Parity (PPP) model

The purchasing power parity (PPP) theory was developed by Gustav cassel in 1920 to determine the exchange rate between countries on inconvertible currencies. The model is long-term approach used in the determination of equilibrium exchange rate. It is often applied as a proxy for the monetary model in exchange rate analysis (CBN, 2010).The theory posited that the equilibrium exchange rate between two inconvertible currencies is determined by the equality of the relative change in relative prices in the two countries. In other word, the rate of exchange between two countries is determined by their relative price levels. Therefore, it's could be argued that, the exchange rate between two countries should equal ratio of the countries price level of a fixed basket of goods and services. Hence, with every fluctuation in exchange rates, the stock price also changes.

The model assumes the absence of the trade barriers and transactions cost and existence of the purchasing power parity (PPP). When a country's' domestic price level is increasing (i.e a country experiencing inflation), that country's exchange rate must be depreciated in order to return to PPP. The basis of PPP is 'the law of one price'. For over decades, the Purchasing Power Parity (PPP) hypothesis has remained a focal point of policy discussions, models and empirical work. The hypothesis postulates an underlying tendency for changes in the nominal exchange rate to be fully offset (at least after some period of time) by changes in the ratio of foreign to domestic stock price levels.

Arbitrage Pricing Theory (APT)

The model was formulated by Ross (1976) rests on the hypothesis that the equity price (Stock) is influenced by limited and non-correlated common factors and by specific factor totally independent of the other factors. The APT is a new and different approach to determining stock prices. It is tries to capture some of the non-market influences that cause securities to move to gather. It is based on the law of price: two items that are the same cannot be sells at different price. The model gives a characterization of expected returns on asset based on the weak assumption there are no arbitrage opportunities, return follow a factor structure and there are homogeneous expectations. The risk associated with holding a particular security came from two ways. The *first source* of risk is the macroeconomic factors such as inflation, interest rate, etc that affect stock prices. Their influence pervades the whole stock market and cannot be diversified away. The *second source* of risk is the idiosyncratic or peculiar element. This element is unique to each security and, according to the APT, in a broadly diversified portfolio it can be diversified away. In this regard, the mode assumes that macroeconomic variables such as exchange rate can have an effect on the stock market.

2.3 Empirical Literature

In Nigeria, the behavior of exchange rate volatility and stock market prices has been extensively studied by several researchers using different economics and econometric techniques, tools of data analysis in both developed and less-developed nations. However, the results of some of these studies are varying and some are inconclusive. Olubenga (2012) examined the long-run and short-run effects of exchange rate on stock market development in Nigeria over 1985:1–2009:4 using the Johansen co-integration tests and Granger causality test. Results showed a significant positive stock market performance to exchange rate in the short-run and a significant negative stock market performance to exchange rate in the long-run. Isenmila and Dominic (2012) conducted a study on the Stock prices and Macroeconomics factor: A test of the Arbitrage pricing theory in Nigerian stock market for the period of 2001Q1-2010Q4 with the aid of co-integration and Error correction Methodology (ECM) were used for the analysis. The finding revealed that exchange rate was observed to be negatively related to stock market returns in the long run and short run dynamic model in Nigeria. The study confirmed the existence of co-integration among the variables but however failed to explain the magnitude of the impact of each variable in both the short-run dynamic and the long-run static. Also, David and Mike (2013)

examined the dynamic interaction between stock prices and the Naira-dollar exchange rates in Nigeria between 1980-2012 using co-integration and Granger-Sim causality methodology, the results showed that positive relationship between the Naira-US dollar exchange rate and the stock market prices with bi-directional Granger causality found to exist. Furthermore, Mayowa and Olushola (2013) examined the determinant of real Exchange rates volatility in Nigeria from 1981 to 2008. With the aid of GARCH Techniques, Error Correction Model (ECM), while the co-integration analysis reveals the presence of long term equilibrium relationship between real exchange volatility and its various determinants. This study only focused on detecting the effect of lagged value of the variables without measuring the speed of volatility clustering over times. Accordingly, the study by Osaze (2014) examined the relationship between the stock price volatility and few macro-economic variables such as inflation, exchange rate, GDP and interest rate in Nigeria. From 1980-2011 with the use of GARCH model, the Finding of the study suggested that Stock prices are volatile, long run co-integration interest rate and exchange rate is weak. Inflation should be targeted. However, the uses of annual time series data will provide robust results and the study have overlooked the role of trends analysis in explaining the relationship of the variables Mbutor (2010) on an empirical analysis on exchange rate volatility, Stock price fluctuations and the lending behavior of banks in Nigeria from 1970 to 2010. The Vector auto regressive (VAR) approach is applied; the impulse response function and the analysis of variance were used to filter the effects of exchange rate volatility, equity prices and bank loans in Nigeria. The results revealed that exchange rate volatility and stock price fluctuations affected the behavior of banks in Nigeria but that the effects were is insignificant and that the fluctuations of the stock index cause naira to depreciate. The only evidence of the effect of exchange rate volatility on stock price and bank lending behavior cannot be fully ascertained with the used of annual time series data. Another studies by Adeyemi, Adeniran and Yusuf (2014) empirically investigated the impact of exchange rate fluctuation on the Nigerian economic growth from 1986 to 2013.Using the correlation and regression analysis of the ordinary least square (OLS) methodology. The result revealed that exchange rate has positive impact but not significant on economic growth. The result also indicated that interest rate and inflation rate has negative impact but not significant to the economy. However, the study does not explain on how to encourage export promotion strategies in Nigeria and also overlooks the impact of lagged values of the macroeconomic variables during the period of the study. However, despite the huge body of literature on exchange rate volatility and stock market prices, there is however, little or no consensus on the appropriate method for measuring such volatility. There is no generally accepted model of firm behaviours subject to risk arising from fluctuations in exchange rates and stock market prices. Consequently, theories did not provide definitive guidance as to which measure is most suitable.

3. METHODOLOGY

Data Collection Sources

The study used monthly time series data, spanning from 1985:1 to 2014:4, obtained from Central Bank of Nigeria (CBN) statistical bulletin, National Bureau of Statistics (NBS) and Nigerian Stock Exchange (NSE) publications. The variable indicators on which data were collected are; stock prices proxy NSE All-share index (ASI), real Exchange rates (EXR), broad Money supply (MS_2), real Interest rate (INT), and Rate of Inflation (INF).

Estimation Procedures

The empirical approach utilized in this study is the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) technique in estimating relationship between the stock market prices and exchange rate volatility among other variables under reviewed. The choice of GARCH methodology was based on the argument by Andrew at el (2013) that, its proper approach in measuring volatility clustering. This study adopted, Mayowa (2013) model in volatility estimates. However, the point of the departure was that, the later study used NSE-all share index, instead of market capitalization as a proxy to stock market prices. Also, long-run and short-run dynamics are established using different techniques such as the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) Unit Root test, Johansen Co-integration test and Error Correction Mechanism (ECM).

The GARCH modelfor this study is specified as:

$$\sigma^2 = \alpha_0 + \alpha_1 u^2_{t-1} + \alpha_2 \sigma^2_{t-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \textit{(i)}$$

Equation (i) above, suggested that the conditional variance of *u* at time *t* depends not only on the squared error term in the previous time period (as in ARCH [1]) but also on its conditional variance in the previous time period. This model can be generalized to a GARCH (*p*, *q*) model in which there are *p* lagged terms of the squared error term and *q* terms of the lagged conditional variances.As part of the empirical design the basic estimating equation is specified as follows:

$$ASI = \beta_0 + \beta_1 EXR + \beta_2 INR + \beta_3 MS_2 + \beta_4 INF + e_t \ldots\ldots\textit{(ii)}$$

Where: NSE-All share index proxy to Stock prices***(ASI),*** Real Exchange rates***(EXR),***Broad money supply***(MS_2),***Real Interest rate ***(INT),*** Inflation rate ***(INT)***, Stochastic error term***(e_t)***and coefficients ***(β_0, β_b).***The test for co-integration in order to know the disequilibrium error, equation (ii) is re-written as;

$$e = ASI - \beta_0 - \beta_1 EXR - \beta_2 INT - \beta_3 MS_2 - \beta_4 INF \ldots\ldots\ldots \textit{(iii)}$$

The presence of co-integration was tested using the Johansen (1991) approach. In this method, the number of co-integrating relations was tested on the basis of trace statistics and maximum Eigenvalue. The presence of one co-integration is established, the estimated error correction model (ECM) that determine both the long run and short run dynamics. Then the disequilibrium errors in equation (iii) form a stationary time series and have a zero mean, the e_t is stationary, I (0) with E (e_t) = 0. The long run equilibrium may be rarely observed but there is a tendency to move towards equilibrium. Error Correction Methodology (ECM) was used to represent the long run (static) and short run (dynamic) relationships between stock market prices and other variables. Accordingly, the purpose of ECM model is to indicate the speed of adjustment from the short run equilibrium to the long run equilibrium state. The greater the coefficients of the parameter, the higher the speed of adjustment of the model from short run to long run. Considering our base equation (iii), the ECM model is specified as follows:

$$\Delta STP_t = \beta_0 + \beta 1 \sum_{t=1}^{n} \Delta EXRt + \beta 2 \sum_{t=1}^{n} \Delta INTt + \beta 3 \sum_{t=1}^{n} \Delta MS2t + \beta 4 \sum_{t=1}^{n} \Delta INFt - 1\delta ECM(-1) + \varepsilon t \quad \textit{(iv)}$$

Thus, equation (iv) represents ECM, where e_t is the stochastic term, ECM (-1)is the error correction term, δ captures the long run impact. The short run effects are captured through the individual coefficients of the differenced terms (β) while the coefficient of the ECM variable contains information about whether the lagged values of variables affect the current values. The size and statistical significance of the coefficient of the ECM measure the tendency of each variable to return to the equilibrium.

4. Analysis and Discussion of findings

Table 4: Summary of Statistics

	ASI	EXR	INT	MS_2	INF
Mean	15.0%	15.9%	0.21%	12.4%	16.1%
Median	7.41%	24.1%	0.20%	2.31%	13.6%
Maximum	66.7%	41.5%	0.38%	56.9%	14.0%
Minimum	0.31%	0.21%	0.09%	0.46%	15.1%
Std. Dev.	16.2%	0.09%	0.04%	10.8%	0.61%
Skewness	1.12	0.01	0.46	1.35	1.29
Kurtosis	3.48	1.22	4.24	3.36	4.14

Source: Data computed by the researcher's using E-view 9.0

Table 4.1 shows the summary of statistics for the series used in the empirical study, all the series but real interest rate (INT) has a very small mean values, from the values of their respective standard deviations, all the series have a very low except, NSE-all share index (ASI) and money supply (MS_2) standard deviations suggested that, the variables had a significant effect in the model and they are very close to their respective mean values. The series are asymptotically normally distributed. Similarly, skewness and kurtosis presents the nature of departure from normally in the series. This suggested that, all variables are positively skewed and asymmetry distributed in the model except, the real exchange rate and interest rate. Also, in the case of kurtosis, all the variables are leptokurtic except the real exchange rate (EXR) is platykurtic.

Table 5: Unit Root Test of Stationarity; H_0: The Series has a Unit Root

Variables	ADF Levels	ADF Difference	PP Levels	PP Difference	Remarks
LASI	-2.565[1]	-19.58[1]**	-2.735[1]	-15.82[1]**	**I (1)**
LEXR	-2.372[1]	-26.14[1]**	-2.632[1]	-26.82[1]**	**I (1)**
LINF	-2.320[1]	-18.24[1]**	-2.969[1]	-18.75[1]**	**I (1)**
LMS2	-1.292[1]	-16.84[1]**	-1.459[1]	-25.14[1]**	**I (1)**
LINT	-0.755[1]	-23.77[1] **	-0.605[1]	-25.00[1] ****1(1)**	

ADF Critical Value at 5% = -2.95; **PP Critical Value at 5% = -2.96**

** indicates significant at 5%

[1] Indicates that a maximum lag length of 1 was included in the tests.

Source: Data computed by the researcher's using E-view 9.0

Table 5 shows the result of Augmented Dickey-Fuller (ADF) and Phillips-Parron (PP) test conducted to ascertain the stationarity of the time series data. The results for both ADF and PP at levels, revealed that all the variables are non stationary since their calculated values are less than the critical values at 5%, implying that at levels, the null hypotheses that each of the variables has a unit root cannot be rejected. However, at first differenced, each of the variables becomes stationary. Hence, all the variables are stationary at the same level and integrated of order one [I (1)]. Thus, the presence of a unit root in the series suggested that it is necessary to test for co-integration.

Table 6: Result of Test for Co-integration Rank

No. of CE(s)	λ_{Trace}	5%	λ_{max}	5%
None *	71.89	69.82	39.54	33.88
At most 1	32.35	47.87	14.35	27.58
At most 2	18.01	29.79	10.52	21.13
At most 3	7.478	15.49	7.443	14.26
At most 4	0.035	3.841	0.034	3.841

The result of co-integration in Table 6 above revealed that there is one co-integrating equations in the system with its maximum eigenvalue and trace statistic greater than critical values at 5 percent. Therefore, the null hypothesis of no co-integration is rejected.

Table 7: Estimated Long-run Co-integration Vectors

Variables	Coefficients	Standard Errors	P values
LASI	1.00	0.636	0.213
LEXR	0.25	0.092	0.045
LINF	0.34	0.098	0.181
LINT	-0.23	-0.056	0.096
LMS2	0.05	0.041	0.058

The result of the estimated long run co-integration vector among variable(s) is reported in Table 7. The results indicated that the estimated coefficients of long-run co-integrating for all the variables have the correct expected signs. Similarly, all the coefficients are statistically significant except the lagged value of NSE all share index (ASI).Although, the insignificant of lagged value of NSE-all share index cannot be excluded from the model in the long run since it is depend on other variables in the system during the study period.

Table 8: Estimated Short-run Dynamic Equation for ECM Dependent

Variable (ASI)

Variables	**Coefficients**	**t- Values**	**P- Values**
C	0.962	2.589	0.044
ΔLASI (-1)	0.249	1.651	0.095
ΔLEXR(-1)	0.353	3.572	0.003
ΔLINF(-1)	2.141	1.217	0.176
ΔLINT(-1)	-0.090	0.311	0.316
$\Delta LMS_2(-1)$	0.076	2.846	0.061
ECM_{t-1}	-0.530	4.673	0.004
Diagnostic Test	**Statistics**		**P-values**
R-squared	**0.61**		
DW-stat	**1.75**		
LM test	**0.94**		**0.93**
ARCH test	**0.43**		**0.33**
Jacque-Bera	**79.4**		**0.83**

Source: Data computed by the researcher's using E-view 9.0

From the short run dynamic estimated error correction model in Table 8, it wasestimated that the ECM is consistent with the expected negative sign and significant at 5% level of probability.This revealed that there is feedback adjustment mechanism from short-run (dynamic) to long-run (static) equilibrium relationship among variables used in the analysis. The diagnostic statistics suggested that the data relatively fits the model well. The coefficient of ECM measures an annual speed of adjustment from long-run disequilibrium of about 53% per annum. This suggested that about 53% of the disequilibrium errors, which occurred in the previous year, are corrected in the current year. Furthermore, the lagged values of LASI positively but significantly influenced the current ASI. This suggested that a unit increase NSE-all share index (ASI) during the previous one year increases the current stock price by about 0.5 percent. It was also found that the real exchange rate, inflation rate and broad money supply have positive and significantly affected NSE-All share index (ASI), while the lagged value real interest rate (INT) for one period have negative effects and is statistically significant at 5% level of probability. Thus, the R-square of the model show that about 61 percent of the variation of NSE-All share index (ASI) is explained by the combined effects of all the determinants, suggesting that about 39% variation in Nigerian

stock prices is accounted for by other factors not included in the model. Durbin–Watson statistics value of 1.75 is closer to the value 2. Showed that there is absence of autocorrelation in the data for the model.

Table 9: GARCH (1 ,1) Model Results				
MeanEquation				
Dependent. Variable. ΔASI				
	Coefficient	**Std. Error**	**z-Statistic**	**Prob.**
SQRT (GARCH)	**0.584**	**0.387**	**3.508**	**0.013**
C	**0.435**	**0.332**	**2.541**	**0.058**
D EXR (-1)	**0.327**	**0.254**	**4.857**	**0.000**
	Variance Equation			
C	**0.166**	**2.292**	**4.515**	**0.000**
RESID(-1)`2	**0.546**	**0.213**	**2.897**	**0.012**
GARCH(-1)	**0.422**	**0.254**	**1.963**	**0.090**
INF	**0.320**	**1.391**	**0.406**	**0.684**
INT	**-0.351**	**0.243**	**-0.558**	**0.576**
MS_2	**0.091**	**0.002**	**4.470**	**0.000**
R-squared	**0.677**			

Source: Data Computed by the researcher's using E-views 9.0

Table 9 shows the results of the ARCH/GARCH model. The Table 9 consists of two equations, the mean equation model and the variance equation model. The results indicated that the coefficient of exchange rate is positive and statistically significant at 1 percent level. This implied that a unit change (increase) in EXR during the previous year changes (increases) stock prices by about 33 percentages. The result revealed that inflation rate and broad money supply had positive and significant effect on NSE-all share index. This implied that, a unit change (increase) in inflation rate and broad money supply to the economy resulted to a changes (increases) in the stock market prices by about 32% and 1.9 respectively. While the sign of the interest rates is negative and statistically significant, this implied that, a unit increases in real interest rate (INT) decreases the activities of NSE-all share index (ASI) by about 35 percent. This suggested that when real interest rate is higher, there would be a shift of investment from Nigerian stock market towards investment with lower interest rates in Nigeria.

5. Conclusions and Recommendations

In Nigeria, the relationship between exchange rate volatility and stock market prices plays a significant role during the period of the study. The study therefore, recommended that, there should be a clear the distinction between short-run and long-run exchange rate policy objectives by the monetary authority. For short-run objectives such as controlling volatility of exchange rate and inflation rate. The CBN can embark consistent applications Dutch Auction System (DAS) to serve the triple purposes of reducing the parallel market premium, conserve the dwindling external reserves and achieve a realistic exchange rate for the Naira. The DAS will help to stabilize the naira exchange rate, reduce the widening premium, conserve external reserves, and minimize speculative tendencies of authorized dealers. This can be achieved through prompt deployment of monetary control instruments in support of the DAS as well as restricting the

excessive use of US dollar in domestic transactions, thus assuring a steady supply of foreign exchange. The DAS if allowed to stay and work properly could significantly reduce or eliminate exchange rate volatility and ensure stability in stock market prices.

Reference

Adarmola, A. O. (2012). Exchange rate volatility and stock Market Behaviour: The Nigerian Experience. *Research Journal of finance and Accounting 3(3) 2012*

Adebisi, M. A. (2004). Stability of Money Demand and Monetary Policy in Nigeria: An Error Correction Analysis A Model. *The Journal of Social and Management Sciences,*1(1): 53-70.

Adebiyi, M. A, Adenuga A.O, Abeng, M.O, & Omanukwue, P.N. (2010). Oil price stocks, Exchange Rate and stock market Behaviour : empirical evidence from Nigeria, unpublished manuscript.

Adarmola, A. Olugbenga (2012). Exchange rate volatility and stock Market Behaviour: The Nigerian Experience (1986-2012), *Research Journal of finance & Accounting 3(3)*

Adeyemi,O.A , Yusuf, S. A. & Adeniran,O. (2014). The Impact of exchange rate fluctuation on Nigerian economic Growth, *International Journal of Academic Research in Business and Social and Sciences, August 2014, 4(8) ISSN:2222-6990*

Ajao, Mayowa,& Igbekoyi, O. E. (2013). The determinants of real exchange rate volatility in Nigeria, MCSER-CEMAS Sapiena university of Rome. *The journal of Business management.*SSN2281-3993

Akonji, R. D. (2013). The impact of exchange rate volatility on the macroeconomic variables in Nigeria (1980-2010), *European Scientific Journal 9(1).*

Anjum, L., &Qadar Bakhash, Shahid .J.K (2014). Relationship between exchange rate and stock market index: Evidence from the Pakistani Stock Market.

Amodasu, D. E. (2012). Interest rate, Inflation rate and Exchange rate influence on stock Market index. *An International Journal of Arts and Humanities. August 2012: 357-366*

Ayinde, T.O.(2014).The impact of exchange rate volatility on manufacturing performance in Nigeria' *Fountain journal of social science: 2014;3(2)83-9.*

Bollerslev, T. (1986). "Generalized Autoregressive Conditional Hetroscedasticity."Econometrics. 31. 307-327.

Central Bank of Nigeria {CBN} 2014: Statistical Bulletin –official Data Manual of the Central Bank of Nigeria.

Central Bank of Nigeria {CBN} 2013: Annual Economic Report –official Data Manual of theCentral Bank of Nigeria 31 December, 2013

Chinwenbo, E. U. (2013).Accumulation of external reserves and Effect on exchange rate and Inflation in Nigeria (1986-2010), *International business and management journal 6. (2-23) April 2013.*

Courage, M., Andrew, Mike. & Kin, S. (2013). Effects of exchange rates volatility on Stock market: A case study of South Africa. *Mediterranean journal of social sciences*, MCSER Publisher, Rome Italy.

Dickey, D. A. & Fuller, W.A (1979). Distribution of the Estimators for Autoregressive time series with a unit root. *Journal of American statistical Association,74,427-431*

Frankel, J (1996) Recent exchange rate experiences and proposal reform. American Economic Review paper and proceedings 86: 153

Gujarati, D.N. and Porter, D.C (2009) "Basic Econometrics" fifth edition, New York: Mc Graw Hill Companies Inc.

Jhingan ,M.L. (2010), Macroeconomic Theory, Vrinda Publications Ltd, 11th Revised & Enlarge Edition 2010.

Johansen, S. (1991). Statistical Anaysis of Cointegration Vector, *Journal of Dynamics and Control 12(1)*

Mayowa ,G (2013),The determinant of Real Exchange rate volatility in Nigeria (1981-2008).Academic Journal of interdisciplinary Studies, Published by MCSER-sapienza University of Rome 2(1) (March 2013).

Maku, O. E. & Atanda A. A. (2009). 'Does Macroeconomic Indicators Exert shock on the Nigerian Capital Market? Online at http://mpra.ub.uni-muenchen.de/17917/

Mbutor, O. M. (2010). Exchange rate volatility, Sock price fluctuation, lending of Bankin Nigeria. Research Department, *CBN, Journal of Economics and international Finance2(11) November 2010*

Oluwe, R.A. (2007). "The relationship between stock prices and macroeconomic factors in Nigerian stock market*" African Review of money, finance and Banking*. 79-98

Zhou, S. (1997). "Purchasing Power Parity in High-Inflation Countries: A Cointegration Analysis of Integrated Variables with Trend Breaks*". Southern Economic Journal*. 64(2) 450-467