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Exchange Rate and Inflation Volatility and Stock Prices Volatility: Evidence from Nigeria, 1986-2012

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Abstract

This study investigated the relationship between exchange rate and inflation volatility and stock prices volatility in Nigeria, using time series quarterly data from 1986Q1-2012Q4. The volatilities of exchange rate and inflation in this study were calculated using standard GARCH(1,1) models. The relationship between exchange rate, inflation volatility and stock prices volatility was examined using GARCH(1,1)-S models of an extended GARCH-X models. The findings of the study show that there is a negative relationship between stock market prices volatility and exchange rate and inflation volatility in Nigeria. This result has an important implication for the investors and regulators in the stock market. Investors and regulators in the Nigeria stock market should take note of the systematic risks revealed by the exchange rate and inflation volatility when structuring their investment portfolios and diversification strategies as well as in formulating policies respectively.

JEL classification numbers: G1, G11, G12, G14, G17
Keywords: Exchange Rate, Inflation, Stock Prices, Volatility.

1 Introduction

The Nigerian stock market has recorded significant losses as indicated by its stock prices volatility. At the same time, we have been experiencing fluctuations in inflation and exchange rate. The volatility of inflation and exchange rate have

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shifted the attention of investors from the stock market instruments to an alternative financial instruments, that is, fixed income securities- treasury bills and bonds which are risk-free. Hence, Nigerian stock market has not been able to live up to its primary obligation of meeting long-term capital needs of the deficit sectors, by effectively playing its financial intermediation role.

Previous studies like Chen, Roll, and Ross (1986), and Schwert (1989), among others, indicate a link between stock price volatility and macroeconomic variables volatility. However, Oseni and Nwosa(2011) examined the relationship between stock market volatility and macroeconomic variables volatility in Nigeria for the periods 1986 to 2010. Their result revealed that there is no causal relationship between stock market volatility and the volatility in interest rate and inflation rate except real growth of GDP. In view of this mixed results, the question still remains: Do inflation and exchange rate volatilities bring about stock prices volatility? This question can only be resolved by appealing to empirical evidence. This is what motivated this study.

The rest of the work is structured as follows; Section two provides reviews of the related literature; Section three explains the data and methodology; Section four focuses on the empirical results and discussion and, section five presents the summary of findings and their implications, six deals with conclusions and recommendations.

2 Empirical Literature

Schwert (1989) was among the first to carry out study in advanced markets. He examined the relationships between the U.S. stock market returns volatility and, real and nominal macroeconomic volatility, economic activity, financial leverage, and stock trading activity using GARCH-X model. His finding revealed that macroeconomic volatility, as measured by changes in real output and inflation, did not explain or predict stock and bond return volatility. However, Schwert (1989) provided evidence that the volatility of financial assets helped to predict future macroeconomic volatility. This finding supported his claim that the prices of speculative assets should react quickly to new information about economic events. Niarchos and Alexakis (2000) investigated whether it is possible to predict stock prices by the behavior of some macroeconomic variables which include inflation, money supply and exchange rate in the Athens stock exchange using correlation technique. The result of the study established that stock prices are positively correlated to inflation, money supply and exchange rate. Sekmen (2011) highlighted the effect of exchange rate volatility and stock returns for the U.S stock market using autoregressive moving average (ARMA) models. The study indicated that, exchange rate volatility negatively affected U.S. stock returns. Talla (2013) investigated the impact of macroeconomic variables on stock prices of

Swedish stock market using multivariate regression model computed on standard ordinary linear squares method and Granger causality. The results revealed that among other variables, inflation and currency depreciation significantly impacted on stock prices. The result of the Granger causality showed that no causality was found between stock prices and macroeconomic variables except from stock prices to inflation.

Studies conducted in the emerging markets also had different findings. These studies include Leon (2008), Yaya and Shittu (2010), Evbayiro-Osagie and Emeni (2015) , Samadi, et al (2012), Sichoongwe (2016), Issahaku et al (2013), Khan and Ali (2015) and Zia and Rahman (2011). Leon (2008) examined the effects of interest rate volatility on stock market return volatility in the Korean economy using two Generalised Autoregressive Conditional Heteroskedascity (1,1) (GARCH) models: one without interest rates, and another one with interest rates in both the conditional mean and variance. His result showed that the conditional market returns have a significantly negative relationship with the interest rates. Also, the conditional variance had a positive, but insignificant relationship with the interest rates. In addition, Leon's result indicated that interest rates have strong predictive power for stock returns in Korea, but weak predictive power for volatility. Based on these findings, investors in the Korean stock market should adjust their portfolios in response to changes in monetary policy. Yaya and Shittu (2010) used Sentana's QGARCH model to x-ray the effect of inflation and exchange rate on conditional stock market volatility in Nigeria. The finding of the study demonstrated that a significant relationship exists between inflation and exchange rate and, conditional stock market volatility. Evbayiro-Osagie and Emeni (2015) established that changes in inflation rates, financial openness and exchange rates have no significant impact on stock returns volatility in Nigeria using ARCH and GARCH models. Osseni and Nwosa (2011) using AR (k)-EGARCH (p, q) and LA-VAR Granger Causality test techniques documented the existence of a bi-causal relationship between stock market volatility and real GDP volatility and no causal relationship between stock market volatility and the volatility in interest rate and inflation rate in Nigeria for the period 1986-2010. Similarly, Mlambo et al (2013) used GARCH(1,1) model to explore the link between exchange rate volatility and stock market performance for South African data for the period 2000 – 2010. The findings demonstrated that a very weak relationship exists between exchange rate volatility and the stock market. Samadi, et al (2012) investigated the relationship between stock returns in the Tehran stock exchange and macroeconomic variables of interest; exchange rates, world gold prices, inflation, liquidity and oil price using monthly data over the period 1979 to 1989. In doing this, they employed GACH economic model. In this study, the finding showed that the gold price, inflation and exchange rate variables influenced the stock return while oil price and liquidity had no impact on the stock returns. Sichoongwe (2016) evaluated the impact of exchange rate volatility on stock returns of Zambian stock market using GARCH (1,1) approach. The result revealed that stock market returns is negatively related to exchange rate volatility.

Issahaku et al (2013) investigated the interaction between macroeconomic variables and stock returns in Ghana using Vector Error Correction (VECM) model. The results of the study indicated that a significant long run relationship exists between stock returns and inflation, money supply and Foreign Direct Investment (FDI). The short-run result also established that a significant relationship exists between stock returns and interest rate, inflation and money supply except FDI. Furthermore, the causality test result showed that a causal relationship runs from inflation and exchange rate to stock returns. Khan and Ali (2015) examined the relationship between volatilities of exchange rate and stock market prices in Pakistan using Granger causality test. The result showed a bidirectional relationship between the exchange rate volatility and the variability of stock market prices. Zia and Rahman (2011) investigated exchange rate and stock price relationship in Pakistan by employing Co-integration technique and Engle-Granger causality. The results obtained revealed that, there is no long-run relationship between exchange rate and stock prices. Also, the result emphasized that there is no causal relationship between the variables.

The works reviewed so far show mixed results. It is difficult to generalize the results because each market is unique in terms of its own rules, regulations and type of investors. It is also true from the review that a lot of work has been done on stock prices and selected macroeconomic variables in the Nigerian economy. However, there is the need to extend and deepen these studies using different methodology to see how existing studies can be improved and value added. Given this backdrop, this work focuses on the relationship between exchange rate and inflation volatility and stock prices volatility using GARCH technique. We limited our macroeconomic variables to exchange rate and inflation. The reasons for adopting GARCH technique is that, in measuring volatility GARCH models are widely used. Specifically, this study adopted GARCH-S model. The reasons for adopting GARCH-S model among others; is that it accounts for volatility clustering, leptokurtosis, leverage effect and the assumption of heteroskedasticity. This technique allows the conditional variance to change over time. It overcomes the asymmetries problem associated with the standard GARCH model and account for different shocks that may affect the behavior of specific stock market. Also this technique tells us the nature and the extent of the relationship that exist between stock prices volatility and macroeconomic variables volatility.

3 Methodology

To execute this work we used time series data sourced from Central Bank of Nigeria (CBN) Statistical Bulletin, Federal Office of Statistics (FOS) Statistics and Nigeria Stock Exchange Quarterly and Statistics of various issues. The macroeconomic data used include; Inflation Rate (INF)(calculated as DLNINFt = (INFRt / INFt-1)), Foreign Exchange Rate (EXR)(calculated as DLNFEXRt =

(FEXRt / FEXRt-1)) and, Nigerian Stock Exchange market All Share Index was used as a proxy for stock market returns (SMR)(Calculated as DLNSMRt = (SMRt / SMRt-1)), between 1986Q1 and 2012Q4. This period was adopted because of the non-availability of data on All Share Price index before 1986. The All Share Price Index was first publicly published in the Nigerian Stock Market in 1985, with 1984 value as a base year.

To determine volatility, Generalized Autoregressive Conditional Heteroskedasticity (GARCH) models are widely used. Thus, GARCH model Process:

Conditional Mean Equation

$$R_t = \psi_0 + \sum_{i=1}^{k} \theta_t R_{t-1} + \varepsilon_t \qquad \varepsilon_t / \Omega_{t-1} \sim N(0, h^2 t) \qquad (1.1)$$

Conditional Variance Equation

$$h^2{}_t = \psi_0 + \sum_{i=1}^{p} \theta_i \varepsilon^2{}_{i-1} + \sum_{j=1}^{q} \beta_j h^2{}_{t-j} + \beta_n VX_t \qquad (1.2)$$

$$\omega > 0, \quad \theta_i, \beta_j \geq 0 \rightarrow h^2{}_t \geq 0, \quad i = 1 \ldots p, \text{ and } j = 1, \ldots q$$

Equation (1.1), the conditional mean equation, is an autoregressive process of order k (AR(k)). R_t represents the stock prices/returns, Parameter ψ_0 is the constant, Rt-1 is the autoregressive component, k is the lag length, ε_t is the heteroskedastic error term with its conditional variance. The equation is a pure autoregressive process, AR(p). Equation (1.2) is the conditional variance equation where p is the number of ARCH terms, and q is the number of GARCH terms. $\theta_i \varepsilon^2{}_{i-1}$ (the ARCH term) captures the news about volatility from the previous period measured as the lag of the squared residual $\varepsilon^2{}_{t-1}$ from the mean equation. $\beta_j h^2{}_{t-j}$ (the GARCH term) measures the last period's forecast variance as a function of the past residuals ε_{t-2}, ε_{t-3},. VX_t is a vector of explanatory macroeconomic variables volatility at time t. VX_t = *[VEXR, VINF]*. That is, exchange rate volatility and inflation volatility.

3.1 Estimation Techniques

As earlier stated, this study employed the AR(K)-GARCH-S model to investigate the relationship between stock prices volatility and exchange rate and inflation volatility in Nigeria. This model by nature accounts for time varying effects of macroeconomic variables on stock prices. These techniques allow the conditional variance to change over time. Above all, the time varying degree of interactions between the exchange rate and inflation and, stock price can be best captured by GARCH-S model. However, before the application of AR(K)-GARCH-S

technique, preliminary tests were conducted, such as the stationarity test of the variables using the Augmented Dickey Fuller test (1979) (ADF) and Kwiatkowski-Phillips-Schmidt-Shin test statistic(1992) (KPSS), the long-run relationship test of the Nigeria's stock returns and exchange rate and inflation was conducted using Johansen and Juselius cointegration test(1990) and, the descriptive analysis of the underlying variables was carried out to check the characteristics of the series.

After the preliminary tests, the volatility of exchange rate and inflation are calculated using AR(1)-GARCH(1,1) model while that of stock price is embedded in the conditional variance equation that is used for the relationship we investigated. Given, the calculated predicted volatility for exchange rate and inflation, the relationship between the conditional volatility in exchange rate, inflation and, stock prices is examined by estimating the conditional variance equation of GARCH model as shown in equation 1.2.

To ascertain the robustness of the GARCH model, the study adopted some in-sample diagnostic techniques. These diagnostic techniques includes; the Ljung-Box (1978) test statistics, $Q(p)$and $Q^2(p)$. These tests examine the null hypothesis of no autocorrelation and homoskedasticity in the estimated residuals, and squared standardized residuals, up to a specific lag, respectively. Engle's (1982) LM statistic is used to test the null hypothesis of no ARCH effects up to a specific order. In fact, if the GARCH model is specified correctly, then the estimated standardized residuals should behave like white noise, that is, they should not display serial correlation, conditional heteroskedasticity, or any other type of nonlinear dependence.

3.2 Properties of the Data

Table 1 shows summary statistics of stock market prices, exchange rate and inflation. For instance, the standard deviations indicate that Stock Market prices(SMR) and Exchange Rate(EXR) respectively are more unstable/volatile compared with inflation(INF).

Table 1: Descriptive Statistics of Nigeria's Stock Market pricess and Some Selected Macroeconomic Variables, 1986Q1-2012Q4

Statistical Features of the Quarterly Data in Level			
	SMR	**EXR**	**INF**
Mean	8.423055	3.872159	2.694421
Max	11.01786	5.055503	4.355767
Min	4.929425	0.000267	0.668434
Std. Dev	1.826527	1.341283	0.815074
Skewness	-0.572130	-1.007520	0.276327
Kurtosis	2.012481	2.617464	2.502671
Jarque-Bera	10.28036	18.93023	2.487429
P-Value	0.005857	0.000078	0.288311
Observations	108	108	108

Note: The standard value for normal distribution is equal to 3, the normal distribution skewness value is equal to zero. Jarque-Bera is used to test the hypothesis of normality.

Source: Author's calculation with E-View 6.0

The Jarque-Bera statistics, a test for departures from normality, reveal that the sample skewness and kurtosis are significantly different from zero and three respectively; except inflation in Table 1. The kurtoses of the macroeconomic variables are less than three. This implies that these series strongly departs from normality, since they are less than 3 which is the normal distribution value(Stock and Watson, 2006). Also, negative values of the skewness tests for SMR and EXR suggest that these variables have long left tails. The implication of left skewed of SMR, shows that investors in Nigeria's stock market are likely to earn negative returns. The positive value of the skewness tests for INF suggests that inflation has long right tails. On average, SMR, EXR and INF grew at about 8.4%, 3.9% and 2.7% respectively on quarterly basis, during the whole period.

3.3 Unit Root Result

Table 2 presents the summary of the ADF and KSPP tests results for each series and also included in the test-model are the intercept and trend. The reason for including intercept and trend in the model, is because the model with these parameters is the least restricted.

Table 2: ADF/KPSS Unit Root Test for the Log Value of All Variables(with constant and Trend)

Panel (A): ADF UNIT ROOT TEST	**Data in Levels**	**Data in Difference**
Variable	T-Statistics	T-Statistics
SMR	-0.858489	-7.798739*
EXR	-0.636729	-10.87595*
INF	-3.959675**	-5.828222*
Panel (B): KPSS UNIT ROOT TEST	**Data in Levels**	**Data in Difference**
Variable	LM-Statistics	LM-Statistics
SMR	0.260640	0.056350*
EXR	0.320880	0.066600*
INF	0.081642*	0.035816*

* Significant at 1%, ** Significant at 5%, ‡ The variables are not log
Source: Authors' calculation using EVIEWS

Table 2 revealed that all variables were non-stationary (I(1)) at levels but become stationary at first difference (I(1)). Hence, cointegration test is carried out.

3.4 Johansen Cointegration Test Results

Cointegration test is employed to establish whether the underlying variables are cointegrated, that is, whether they have a long-run relationship and the number of cointegration vectors (equations).

Table 3: Johansen-Juselius Cointegration Test Assuming the System Has Linear Trends and the Cointegrating Relationship Has Only an Intercept

Panel A: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.168238	33.82267	29.79707	0.0163
At most 1	0.095828	14.84920	15.49471	0.0624
At most 2 *	0.042501	4.473386	3.841466	0.0344

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

Panel B: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.168238	18.97347	21.13162	0.0976
At most 1	0.095828	10.37581	14.26460	0.1884
At most 2 *	0.042501	4.473386	3.841466	0.0344

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Authors' calculation using EVIEWS

Table 3 (Panels (a) and (b)) reports the results of the cointegration tests which include the trace test and eigenvalue test at 5 percent significant level. A cursory examination of Table 3 reveals that the trace tests indicate the existence of two cointegrating equations in a linear combination of all the three variables. The eigenvalues tests indicate one cointegrating equations at 5 percent significant level. The results of trace test and max-eigenvalue test differ. We adopted the results of Max-eigenvalue test because the max-eigenvalue test has a sharper alternative hypothesis.

Next, we examined the extent to which exchange rate and inflation volatility affects stock market prices volatility.

4 Results Analysis

Table 4 presents the results of the relationship between exchange rate, inflation volatility and Nigeria stock market prices volatility from the estimated GARCH (1.1)-S models. This enabled us answer the last question raised in section one of this study which is our main objective. However, to calculate the volatility of each macroeconomic variables(exchange rate and inflation), this study employs AR(1)-GARCH(1,1) model for each series (Zakaria and Shamsuddin, 2012), as stated earlier. After calculating the predicted volatility for all series, the relationship between the conditional volatility of the stock prices which is embedded in the conditional variance equation of 1.2 and the macroeconomic variables volatility is examined by using AR(1)-GARCH(1,1)-S models. This is done in order to capture

the individual macroeconomic variable volatility impact, rather than capturing the entire macroeconomic variables volatility under the residual generated from the long run equation as done by Alshogeathri(2011). The summing up of the entire volatility into residual series may not give us the true position of the individual variable. The implication of the impact of the summed residual series may be misleading and unrealistic. Also, the application of Granger Causality test will not give us the nature of the relationship between the underlying variables which is very necessary for investment purposes. Rather the Granger causality Wald test only tells us direction of causation between the underlying variables. This also may be misleading the investor's consideration. Therefore, investigating the individual variable volatility impact will be more appropriate as it enables us to identify the direction of relationship between stock market prices volatility and the volatility of selected macroeconomic variables, as well as to measure the magnitude of the impact of macroeconomic volatility on stock volatility.

Table 4: Exchange rate, Inflation volatility and the Nigeria Stock Market Prices Volatility

Panel 1:	**Mean Equations**	
Coefficients	Model A	**Model B**
ψ	0.054[0.000]*	0.049[0.000]*
AR(1)	0.321[0.000]*	0.334[0.000]
Panel 2:	**Variance Equations**	
C	0.010[0.000]*	0.009[0.000]*
ε^2_{t-1}	0.374[0.000]*	0.408[0.034]*
h^2_{t-1}	-0.186[0.006]*	-0.167[0.00]*
$\varepsilon^2_{t-1} + h^2_{t-1}$	**0.187919**	**0.241146**
VΔLNEXR	**-0.007[0.000]***	-
VΔLNINF	-	**-0.003[0.010]***
Panel 3:	**Robustness Diagnostic Tests**	
Q-test(36)	27.589[0.809]	28.055[0.791]
Q^2-test(36)	15.241[0.999]	15.047[0.999]
ARCH-LM test (36)	0.520[0.972]	0.546[0.962]
Skewness	-0.631	-0.637
Kurtosis	4.298	4.335
Jarque-Bera	14.482[0.000]	15.039[0.000]

Prob-values are in square brackets. For the parameters, prob-values are associated with z-statistics and for diagnostic test, prob-values are associated with the F-statistic. The standard value for normal distribution is equal to 3, the normal distribution skewness value is equal to zero. Jarque-Bera is used to test the hypothesis of normality.
Note: VEXR = conditional volatility of Exchange rate and VINF = conditional volatility of Inflation. * Significant
Source: Authors' calculation using EVIEWS

Table 4 shows the results of the two AR(1)-GARCH-S(1,1)) models of each selected macroeconomic variable volatility and the volatility of Nigeria stock prices. The mean equation in Panel 1 of Table 4 of the AR(1)-GARCH-S(1,1) models shows that the current stock prices in the two models are significantly affected by previous stock prices, positively, in the Nigerian stock market at 5%

significant level. Also, the constant terms, ψ of the two models in the mean equation are statistically significant. This implies that the stock market returns exhibit random walk movement within the period of study.

The variance equation in panel 2 of Table 4 indicates that, the ARCH(ε^2_{t-1}) and GARCH(h^2_{t-1}) coefficients in the two models are found to be significant. The significance of the parameters shows that there exists volatility clustering. Also, the results indicate that the sum of the ARCH and GARCH coefficients ($\varepsilon^2_{t-1} + h^2_{t-1} < 1$) are less than one in the both models. With low values of $\varepsilon^2_{t-1} + h^2_{t-1} < 1$, one can conclude that the volatilities associated with each of the significant variables do not last for long before it fades away. Also, the ARCH is greater than GARCH estimates in the two models; it implies that the volatility of stock prices is less affected by the past volatility than the related news from the previous period.

With respect to the impact of exchange rate and inflation volatility on the stock prices volatility in the estimated models in panel 2, exchange rate and inflation volatility are negatively statistically significant at 5% significant level. This reveals that, exchange rate and inflation volatility have significant impact on Nigeria stock prices volatility within the period of study. That is, volatilities of these macroeconomic variables, do explain the Nigeria stock prices volatility. This implies that the future stock prices volatility can be forecasted by interpreting the volatility in exchange rate and inflation. Therefore, these variables can be taken as significant variables of the determinants of Nigeria stock prices volatility. Also, with respect to inflation, this result is consistent with Zakaria and Shamsuddin(2012) but inconsistent with exchange rate volatility. These results are predicated on the fact that good news about the volatilities of exchange rate and inflation correspond to negative volatility/shocks of stock prices, since it reduces the conditional volatility while bad news about the volatilities of exchange rate and inflation correspond to positive volatility/shocks of stock prices as it increases the conditional volatility. Good news is referred to exchange rate and inflation appreciation/stability and price stability respectively while bad news is referred to as exchange rate and inflation depreciation/instability and price instability respectively.

Panel 3 in Table 4 provides the diagnostic tests to examine the robustness of estimates and models. The Q-test and Q^2-test statistics established that no serial correlation of the residuals upto order 36. The ARCH-LM tests results also confirmed the above results. The Jarque-Bera statistic rejects the hypothesis of normality with the kurtosis statistics. This is true, as most times series are not normally distributed. These findings show evidence for the adequacy of the AR(1)-GARCH-S(1,1) model in relation to examining the volatility of exchange rate and inflation and, Nigeria's stock prices volatility.

5 Summary of Findings and Implications

5.1 Findings

Based on the results from the estimated AR(1)-GARCH-S(1,1) model, the following findings are made:

- Nigeria stock prices exhibited a random walk movement and the current stock prices are affected by previous stock prices, positively.
- Volatilities associated with each of the significant variables did not last for long before it faded away. This means that volatility was not highly persistence.
- Relatively, the past volatility of stock prices affected the current volatility of Nigeria stock prices less, than the news from the previous period volatilities.
- There was a negative statistically significant relationship between exchange rate and inflation volatility, and Nigeria stock prices volatility. That is, there is a negative relationship between Nigeria stock prices and the short run deviation of these macroeconomic variables

5.2 The implications of the Findings are:

The forecast of the future Nigeria stock prices volatility may not be difficult as the volatility of exchange and inflation rate increases in the short run. That is, the more volatile exchange and inflation rate are, the less intricate it is to predict Nigeria stock prices.

The volatility of exchange and inflation rate does explain the volatility of Nigeria stock prices. Hence, these variables provide significant knowledge about the behavior of Nigeria stock prices volatility. This result reveals the evidence of the importance of exchange rate and price stability to the local economy and, for the companies listed on the floor of the stock market.

Investors in the Nigeria stock market should take note of the systematic risks revealed by the exchange rate and inflation volatility when structuring their investment portfolios and diversification strategies.

6 Conclusion and Recommendations

This study empirically examined the relationship between the stock market prices volatility in Nigeria and the volatility in exchange rate and inflation. The study revealed that the exchange rate and inflation have a long run relationship with stock market returns in Nigeria. These results are consistent with the results of previous works which show that emerging markets are influenced by their domestic indicators.

The results of GARCH-S indicate that exchange rate and inflation volatility are negatively statistically significant at 5% significant level. This reveals that,

exchange rate and inflation volatility does explain the volatility of Nigeria stock market prices. Hence, they can serve as significant sources of Nigeria stock market prices volatility.

This study supports the evidence of the existence of the relationship between stock market volatility and, exchange rate and inflation volatility in the emerging market, like Nigeria. The results of this study have important implications for the investors and financial regulators and policy makers in the capital market. Investors in the Nigeria stock market should take note of the systematic risks posed by the exchange rate and inflation volatility when structuring their investment portfolios and diversification strategies. The financial and policy makers need to take these macroeconomic factors into consideration when formulating economic and financial policies and programmes.

Recommendations

- **Stabilizing Exchange Rate:** exchange rate volatility was found to have a negative statistically significant impact on stock prices volatility in Nigeria. The stabilization of exchange rate will minimize the volatility in the stock market prices in Nigeria. Therefore, relevant authorities should adopt policies and measures to control exchange rate instability, however, not to the disadvantage of investors who rely on the forces of demand and supply of exchange rate to invest. Such policies and measures should include; foreign trade and exchange rate policy measures that encourage non-oil export discourage the use of foreign currencies for domestic transactions and frequent intervention of monetary authority in the foreign exchange market in order to safeguard the naira. This could directly attract foreign investors into domestic capital market. Therefore, constant monitoring/moderate intervention in exchange rate market by monetary authority is required to sustain and stabilize stock market returns in Nigeria.
- **Price Stability:** inflation volatility was found to have a negative statistically significant impact on stock prices volatility in Nigeria. The influence of inflation is relatively minimal. The implication of this influence is that, price stability will bring about stock market prices stability in Nigeria. Therefore, to archive this, relevant authorities should adopt policies and measures that regulate cash reserve requirements and liquidity ratios for private and corporate entities taking cognizance of its consequences on the larger economy. This will help checkmate the inflationary tendencies. Therefore, there is need for constant monitoring of inflation by relevant authorities in order to achieve stock market stability in Nigeria.

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