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Original Article

Insurgence News Asymmetry and Volatility of Equity Performance in Nigeria: An Aparch Approach

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Abstract: *The study examines the nexus between insurgence news and volatility of equity returns in Nigeria from January 2018 to June 2022 using Asymmetry Power Autoregressive Conditional Heteroskedastic (APARCH) by Ding, Granger, and Engle (1993) with Generalized Error Distribution. The results showed that the asymmetric parameter, Gamma or sign effect, (γ_1) is negative (-0.156480) and statistically not significant at (12.01%) level, indicating that insurgence news did not have an asymmetric effect on the volatility of equity returns. However, (γ_2), the Delta or magnitude effect, demonstrates that insurgence news have a positive (1.042523) and significant symmetric effect on volatility of equity returns. The sum of the ARCH and GARCH coefficients indicated by* $\alpha_j + \beta_i$ *(0.981815) tested the volatility persistence (clustering hypothesis) in the absence of asymmetric effect and is relatively homogenous and approximately close to unity which suggests that the volatility was persistent and that large and small change in the market are followed by large and small change in different directions. The Autoregressive Fractionally Integrated Moving Average (ARFIMA), which has a positive coefficient of 0.045683 and is statistically significant at the 1% level, indicated that the market has long-memory processes and that the autocorrelation functions decay slowly. These findings also showed that the volatility persistence will take a longer period to attenuate.*

Keywords: *Asymmetric, Volatility, APARCH, insurgence, Terrorists, Fractionally Integrated.*

I. INTRODUCTION

In order to optimize portfolios, manage risks, price securities, and make cross-border investments, it is essential to understand the relationship between asymmetry of recent news and stock performance volatility (international diversification). Insurgency manifests in different dimensions such as terrorism, ethnic militia, and civil war, It is characterized by bombing, killing, mass murder, abduction, kidnapping, assassination, displacement, raping, torturing, forced marriage, burning, environmental degradations and other crimes against humanity, usually in form of invasion, attack, resistance, combating, and ambushing. Armed opposition organizations find it very simple to undermine the government and endanger national security while eluding the state's coercive capabilities, which is why insurgency is most frequently used in situations where the traditional mechanisms of dialogue and negotiation have failed. Insurgency by armed extremist groups in Nigeria is rooted to the July 2009 deadly clashes erupted between the Nigerian police and members of the Islamist extremist group known as "Boko Haram", led by the group leader, Mohammed Yusuf in Maiduguri, the Borno state capital. The deadly attacked claimed hundreds of lives (NST, 2011). In the crack-down, Yusuf was arrested, detained, and finally died in the police custody. The former Commissioner of Religious Affairs, Bornu State, Malam Buji Foi was killed in this operation. Nigeria peace no longer holds since the death of the duo because of the pervasive threat from the insurgence news. The insurgence news do have important security and economic implications, not only for the economy, but also for the market. As such, insurgency has consumed many lives, properties damaged, several people disabled, displaced several: families, villages, towns, people into refugees. The threat generated by insurgence was very pervasive especially in the northern part of the country and have snowballed and widely spread like cancerous infection to every part of the country with significant security and economic implications that have degenerated into divestment by some local and international investors from the equity market. The uncertainties tend to trigger volatility in the equity market to exhibit asymmetry volatility as insurgence information non-linearly entered the market with its kurtosis greater than 3.0 and skewness varies from zero as well as the variance of error term, in time-varying manner (Emenike, 2010).

Several investigations have been carried out on the cause and effect of asymmetric volatility behaviour of the equity performance in different countries. Some were attributed to macroeconomic news announcements, some only by diagnosing the market index using heteroscedastic tests (Emenike, 2010; Aliyu, 2012; Atoi, 2014). The distinctive feature of this study, however, is that it investigates the asymmetric impact of escalating news announcements on the volatility of equity performance in Nigeria using the Asymmetric Power Autoregressive Conditional Heteroskedasticity Model by Ding, Granger,

and Engle (1993) and Generalized Error Distribution with Leptokurtic Returns that captures stylized facts in financial time series and clustering where volatility caused by escalating information more likely to.

II. LITERATURE REVIEW

When it comes to the volatility distribution, financial time series typically display a number of distinctive characteristics. One of the hallmarks of financial time series is asymmetry in stock returns (Wdowinski & Malecka, 2010). Engle (1982) developed the Autoregressive Conditional Heteroscedasticity (ARCH) model in an effort to test for ARCH effects on the variance of United Kingdom inflation. Bollerslev (1986) later revisited the model and added the ARMA structure to better capture some of these stylized characteristics. These models take into consideration the distinction between a stochastic process's unconditional and conditional variance.

While traditional econometric models assume a constant variance, the ARCH/GARCH process permits the conditional variance to change over time while maintaining a constant unconditional variance, which makes both negative and positive news seem to have an equal impact on a stock's volatility. This model is referred to as symmetric ARCH/GARCH. The conditional variance in symmetric models only depends on the underlying asset's magnitude, not its sign. Due to the shortcomings of symmetric models, a variety of sophisticated asymmetric models have been developed to capture volatility and its characteristics (the stylized facts). Examples of these models include the Glosten, Jagannathan, and Runckle or GJR-GARCH (1993) model, which is similar to the Threshold GARCH or TGARCH model introduced by Zakoian (1994) and has different effects of negative and positive shocks while accounting for the leverage phenomenon and Exponential GARCH (EGARCH) model of Nelsen (1991) version used for U.S. stock market returns. The original GARCH model was altered and expanded by Ding, Granger, and Engle (1993) to address model flaws and incorporate asymmetries, volatility clustering, and leptokurtosis. This new model is known as Asymmetric Power Autoregressive Conditional Heteroskedasticity (APARCH).

Research researchers have conducted a number of empirical investigations on the asymmetric behaviour of securities, with inconsistent results. It was applied to foreign currency rates by Hsieh (1989), Theodossiou (1994), and Koutmos and Theodossiou (1994). It was used by Akgirary et al. (1991) to analyse the pricing distribution of precious metals. The student's t distribution was used by Bollerslev (1988) and Baillie and Bollerslev (1989) to predict the foreign exchange rate. Using data from Standard and Poor's, Ding, Granger, and Engle (1993) apply the asymmetric power autoregressive conditional heteroscedastic (APARCH) model. For their financial study, Hsieh and Tauchen (1997) used a non-normal distribution. The Student's t distribution with skew was utilised by Fernandez and Steel (1998). For the UK stock market, McMillan, Speight, and Ap Gwilyn (2000) provided symmetric and asymmetric densities. Siourounis (2002) and Jun Yu (2005) both favoured the non-normal distribution. The skewed generalised Student's t distribution was used by Harris, Kucukozmen, and Yilmaz (2004) to represent stylized facts (skewness and leverage effects) of daily returns. Positive or negative shocks of the same magnitude affect future volatility differently in asymmetric models.

Nonetheless, information's significance in the development of asset prices has been recognised by current finance theory. According to the efficient market hypothesis (EMH) put forth by Fama in 1970, investors are assumed to be rational, risk-averse, and mean-variance optimizers in informationally efficient markets. This implies that investors assess the risk and return of securities in terms of expected return and variance, respectively. The theory further assumed that prices of securities spontaneously respond promptly and fully reflect all available information, that no investor can consistently outperform the market in terms of risk-adjusted returns, that there are no transaction costs or taxes associated with trading in shares, and that all participants have uniform expectations of the distribution of expected returns and are amenable to information at the same time.

However, the empirical studies on the Nigerian capital market carried out by Ogum, Beer, and Nouyrigat (2005), Olowe (2009), Emenike (2010), Okpara and Nwezeaku (2009), Aliyu (2011), Emenike and Aleke (2012), Osazevbaru (2014), Mgbame and Ikhama (2013), Atoil (2014), Bala and Asemota (2013), Onakoya (2013) and Amaefula and Asare (2014) establish evidence of volatility clustering and asymmetric volatility of stock returns. Their studies did not investigate effects of insurgence news on volatility of stock returns but only diagnosed market index.

III. DATA AND METHODOLOGY

A) Research Design

The study employed ex-post-factor research designed based on time series market index data obtained from the Nigeria Exchange Group (NGX) and historical data on deaths resulting from terrorism and other perpetrators from the Nigeria Security Tracker from August 2018 to June 2022. The study applied descriptive statistics to describe the moments about the basic features of the data from the first to the fourth moments. Also, the study carried out diagnostic tests of the stationarity, linearity, autocorrelation, normality, and heteroskedasticity of suitability of the dependent variable and used numeric variables or dummy variable that represent categorical data for the independent variables. Following this, the study also used multiple

regression analysis whereby the analysis treats the missing dummy variable as a baseline with which to compare all others. Application of the Asymmetric Power Autoregressive Conditional Heteroskedasticity (APARCH) proposed by Ding, Granger, and Engle (1993) modified and extended the original GARCH model to overcome model-related issues and to capture asymmetries and volatility clustering and leptokurtic. This is necessary to test the impact of asymmetry insurgence news announcements on the volatility of stock returns.

B) Data Collection

The study used secondary daily time-series data obtained from the Nigeria Security Tracker Council on Foreign Relations and Nigeria Exchange Group (NGX) from 2018 to 2022 consisting of the dependent variables of NGX All-Share Index (Index) while TERRST, SA, SEA, OA, KB, and Others were used as dummy variables to proxy State Actor, Sectarian Actor, Other Armed Actor, Kidnapping and Bandits, and Other factors that formed the independent variables respectively. The perpetrators of instability in Nigeria were categorized into six headings (NST, 2022): the terrorists (Boko Haram and Islamic State's West Africa Province (ISWAP)), State Actors (Military troops: Air Forces, Army, and Police Forces), Sectarian Actor (Communal killing and herder-farmer conflicts), Other Armed Actor (Gunmen, herder-farmer conflict), Kidnapping (kidnap, abduction, banditry), others (robbers, electoral-related death)

C) Model Specification

a. Measurement of Daily Equity Market Return

First, the raw data was transformed by taking the difference on daily market index and obtained stock returns as shown below in equation 3.1

$$R_t = LN\left[\frac{Index_t}{Index_{t-1}}\right] * 100 \qquad 3.1$$

Where R_t is equity return at time *t*, *LN* indicates logarithm of index at time *t* ($Index_t$) divided by index at *t-1* ($Index_{t-1}$)

b. Measuring Autoregressive Conditional Returns

Consider this autoregressive conditional model:

$$R_t = \mu + \lambda_1 R_{t-1} + \varepsilon_t \qquad t = 1, 2, \dots, T \qquad 3.2$$

$$\varepsilon_t = z_t \sigma_t \sim N(0,1) \qquad 3.3$$

$$R_t = E(R_t|\Psi_{t-1}) + \varepsilon_t \qquad 3.4$$

$$\psi_t = \{y_t, y_{t-1}, \dots, y_1, y_0, x_t, x_{t-1}, \dots, x_1, x_0\} \qquad 3.5$$

Where E(.|.) denotes the conditional expectation operator, Ψ_{t-1} is the information set available at time t-1 and ε_t are the random innovations (surprises) with E(ε_t) = 0

Where $E(R_t|\psi_{t-1})$ is the conditional mean of R_t given ψ_{t-1},

ψ_{t-1} = the whole information at *t-1*

It is not unusual to find that the stock return in the present period depends, among other things, on the stock returns of the preceding period as expressed in 3.2 above in a time series regression of the stock market index return.

c. Measuring Autoregressive Conditional Returns with Insurgence news

$$R_t = \mu + \lambda_1 R_{t-1} + \eta_1 Z_{TERRST} + \eta_2 Z_{SA} + \eta_3 Z_{SEA} + \eta_4 Z_{OAA} + \eta_5 Z_{KB} + \eta_6 Z_{Others} \qquad 3.6$$

Where $\eta_1, \eta_2, \dots, \eta_6$ are coefficients of the insurgence news. Z is the insurgence news proxy by treatment dummy variable Z on reported cases of death and control dummy variable Z when there was no death reported. Z_{TERRST} indicates terrorist news; Z_{SA} represents state actor news; Z_{SEA} proxy sectarian actor news; Z_{OAA} is other armed actor news; Z_{KB} indicates kidnapping and bandits news; and Z_{Others} represents other insurgence news.

d. Dummy Variables

$$y_i = \beta_0 + \beta_1 Z_i + \varepsilon_i \qquad 3.7$$

The treatment dummy variable, when the variable (Z_i) is one, is represented by equation 3.7.

$$y_T = \beta_0 + \beta_1 Z_i + \varepsilon_i \qquad 3.8$$

$y_i = outcome\ score\ of\ ith\ unit$
$\beta_0 = coefficient\ for\ the\ intercept$
$\beta_1 = coefficient\ for\ the\ slope$
$Z_i = 1\ if\ the\ ith\ unit\ is\ in\ the\ treatment\ group$
$Z_i = 0\ if\ the\ ith\ unit\ is\ the\ control\ group$
$\varepsilon_i = residual\ for\ the\ ith\ unit$
Equation 3.8 on the other hand is the control dummy variable where the variable (z_i) is zero

e. Conditional Variance Using APARCH Model without Insurgence News Effect

Ding, Granger, and Engle (1993) created the Asymmetric Power Autoregressive Conditional Heteroskedasticity (APARCH) model. Following is a generalization of the model:

$$R_t = \mu + \lambda_1 R_{t-1} + \varepsilon_t \qquad t = 1, 2, \dots, T \qquad 3.9$$
$$\varepsilon_t = \sigma_t z_t,\ z_t|\Omega_{t-1}\Psi\sim(0,1) \qquad 3.10$$
$$\sigma_t^{\delta} = \omega + \sum_{j=1}^{q} \alpha_j\left(|\varepsilon_{t-1}| - \gamma_j\varepsilon_{t-1}\right)^{\delta} + \sum_{i=1}^{p} \beta_i(\sigma_{t-1})^{\delta} \qquad 3.11$$

Where $\lambda_1, \omega, \alpha_j, \gamma_j, \beta_i, and\ \eta_i$ are parameters to be estimated?

λ_1= coefficient of the conditional return, (Ω_{i-t}) is a set of information available in the previous period with a conditional density function $\Psi(.)$. In the conditional variance (σ_t^{δ}) in equation (3.11), there are four vector parameters to be estimated:$\omega_{i,}\alpha_i, \gamma_i, \beta_i$ where $\omega_{,}$ is a constant term in the variance equation. It measures the time-invariant component of volatility associated with "no-news" (Kim et al., (2010), the estimated parameter α_j represents the autoregressive coefficient of ARCH term that measures the magnitude of the short-term effect of the insurgence information on stock volatility (the symmetric effect of the model). It is the first order ARCH term which transmits news about volatility from previous periods, while δ is the asymmetric power or leverage effect. γ_i measures the asymmetric effect of the shocks on volatility. β_i is the coefficient of GARCH model or the parameter that measures the long-term effect of volatility. β_i is a moving average coefficient of component of conditional variance which can be interpreted as persistent coefficient that measures the impact of the old news on volatility or the first order GARCH term. σ_t^{δ} is the asymmetric power conditional standard variation. η_i measures the coefficient of the insurgent news, z_t is the insurgence variable, and $\alpha_j + \beta_i$ measure persistent volatility. $\alpha_j(|\varepsilon_{t-1}|)^{\delta}$ represents the ARCH term that measures the short-term effect of the insurgence news on stock volatility, while $\beta_i(\sigma_{t-1})^{\delta}$ represents the GARCH term that measures the long run term effect of news on stock volatility, $|\varepsilon_{t-1}|$ is the absolute value of the standardized residuals, and ε_{t-1} = lagged error term. The presence of asymmetric effects can be tested by the hypothesis that $\gamma_i = 0$. $if\ \gamma_i$=0, it implies a symmetric effect where positive and negative macroeconomic news shocks of the same magnitude have the same effect on volatility of stock returns. The effect is asymmetric if $\gamma_i \neq 0$. If $\gamma < 0$, (negative and significant) then, positive shock (good news) generates less volatility than negative shocks (bad news). When $\gamma > 0$, (positive and significant), it signifies that positive innovations are more destabilizing than negative innovations (Chang Su, 2010). The persistence of conditional volatility irrespective of anything that happens in the market is measured by coefficient β_i. When β is relatively large, then, volatility takes a long time to face out following a crisis in the market (see Alexander, 2009).

f. Conditional Variance Using APARCH Approach with Asymmetry Effect on Insurgence News

The variance of return after capturing the effect of the insurgence news is generalized as follows:

$$\sigma_t^{\delta} = \omega + \sum_{j=1}^{q} \alpha_j\left(|\varepsilon_{t-1}| - \gamma_j\varepsilon_{t-1}\right)^{\delta} + \sum_{i=1}^{p} \beta_i(\sigma_{t-1})^{\delta} + \eta_1 Z_{TERRST} + \eta_2 Z_{SA} + \eta_3 Z_{SEA} + \eta_4 Z_{OAA} + \eta_5 Z_{KB} + \eta_6 Z_{Others}$$
3.11

Where $\eta_1, \eta_2, \dots, \eta_6$ are the coefficients of the independent variables and other variables as previously defined.

IV. DATA ANALYSIS

The existential security challenges facing the country has claimed an average life of 25 persons daily, maximum of 280 lives lost on 2nd January 2019 and median of 14 lives, resulting from the perpetrations of the armed extremist groups as shown in table 4,1.

Table 4.1 Descriptive statistics of Insurgence Perpetration in Nigeria from 2018 to 2022

	RTN	TERST	SA	SEA	OAA	KB	DEATH	OTHERS
Mean	0.039232	0.626709	0.544690	0.524711	0.600421	0.676130	24.88959	0.464774
Median	-0.004143	1.000000	1.000000	1.000000	1.000000	1.000000	14.00000	0.000000
Maximum	6.047828	1.000000	1.000000	1.000000	1.000000	1.000000	280.0000	1.000000
Minimum	-5.044362	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Std. Dev.	0.883302	0.483933	0.498261	0.499652	0.490070	0.468197	31.02131	0.499020
Skewness	0.510318	-0.523938	-0.179478	-0.098964	-0.410037	-0.752773	3.154488	0.141255
Kurtosis	9.665003	1.274511	1.032212	1.009794	1.168131	1.566667	18.33909	1.019953
Jarque-Bera	1801.509	161.4860	158.5411	158.5038	159.6201	171.2240	10900.47	158.5158
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	37.30933	596.0000	518.0000	499.0000	571.0000	643.0000	23670.00	442.0000
Sum Sq. Dev.	741.2121	222.4816	235.8507	237.1693	228.1598	208.2482	914205.4	236.5699
Observations	951	951	951	951	951	951	951	951

Source: Author, 2023

The Nigerian equity return is examined on daily trading basis using various descriptive statistical tools as shown in tables 4.1 and 4.2. The study finds out that the average daily value of the market return is very small at 0.04 percent or annualized at 10.0% (for 250 trading days per annum) with a higher standard deviation of a daily average of 0.88%. This implies that the equity return is volatile given the high value of standard deviation. The daily return has skewness and kurtosis values of 0.508 and 9.67, respectively. This suggests that the returns have an asymmetrical distribution and a fat tail. The return distribution is strongly leptokurtic, indicating that the null hypothesis for the kurtosis coefficient that conforms to the normal distribution's value of 3.0 is rejected.

Table 4.2 below displays the results of the diagnostic statistics test for normalcy, reversibility, autocorrelation, linearity, stationarity, and heteroskedasticity during a constrained time period from August 1, 2018, to June 30, 2022:

Table 4.2 Diagnostic statistics of Insurgence Perpetration in Nigeria from 2018 to 2022

	Mean	Stdv	Skew	Kurt	J-Bera	Q-stat	BDS	ADF	ARCH	SC
	0.04	0.883	0.508	9.67	1806.7*	54.244*	0.028*	-16.92*	49.49*	25.03
p-value					0.0000	0.0000	0.0000	0.0000	0.0000	

Note that stdv, skew, kurt, J-Bera, Q-stat, BDS, ADF, and ARCH are standard deviation, skewness, kurtosis, Jarque-Bera, correlogram, Brock-Dechert-Scheikman, Augumented-Dickey-Fuller, Heteroskedasticity, and serial Correlation statistics respectively; while * implies significance level at 1 percent

Source: Author (2023)

The Jarque-Bera statistics (1806.7) denies normality at a one percent significant level based on residual diagnostic tests. The return series moving ahead is not evenly distributed. The Q-statistics (54.244) correlogram, which indicates that the daily market returns are autocorrelated and rejects the identically independent distribution under the linear regression model, is asymptotic and significant at the one percent level. Serial correlation data (65.96) at the 1% level support Fama (1970) and Taylor (1986) theory that the market's return volatility has a long memory. At the one percent level, both the BDS (0.028) and ADF (-16.92) figures are significant. They imply either chaotic, non-linear dependent/stationary, or reversible market returns. The BDS result shows that the information did not enter the market normally and non-linearly. The equity returns also show evidence of the ARCH impact (49.48), making APARCH and ARCH/GARCH models the best fit for the study.

Asymmetry, fat tail, heteroskedasticity, non-linear dependence, serial correlation, non-normality, and reversibility are all characteristics of the historical behaviour of the daily equity returns in Nigeria, according to the inquiry. Further research employing autoregressive conditional variance equations is prompted by these features.

However, figure 4.1 demonstrates the movements of market index and its corresponding first difference data in Appendix I

Figure 4.1: Daily movement on NGX-All-Share Index (28th August 2018- 30th June 2022)

Source: Author, (2023)

The daily index movement declined from August at 35,000 to 20,669.38 on 6th April 2020. This was at the time the insurgence was at peak under the watch of Abubakar Shekau, the long-time leader of Boko Haram. The death of Shekau, the head of Boko Harm extremist group on May 19, 2021**,** could be ascribed to the uptrend in the equity market index. This is not to say that the armed extremist has decimated completely, the Islamic State West Africa Province (ISWAP) also evolved coupled with the remint of Boko Haram to terrorize the economy. The index in figure 4.1 is white noised, which is one of its odd properties. The majority of integrated level zero, I (0) variables have these features, which is why they need to be differentiated. This motion is indicative of a random walk.

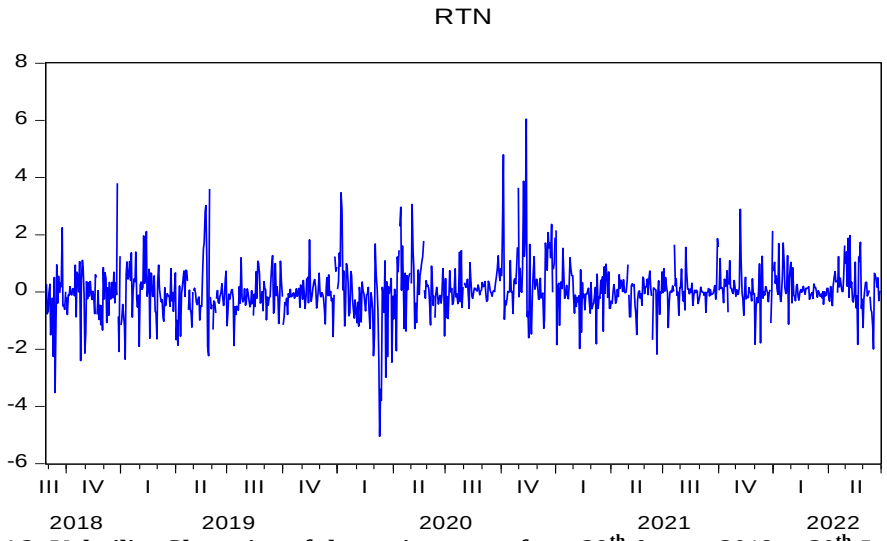

Figure 4.2: Volatility Clustering of the equity return from 29th August 2018 to 30th June 2022

Source: Author, (2023)

This is the volatility clustering (figure 4.2), where the index return is constant around the mean value. Positive and negative regions both experience fluctuations, which tend to cluster during tumultuous times and change during calmer ones. Figure 4.2's absolute values illustrate the volatility clustering property, whereby big absolute returns are more likely to be followed by another large absolute return than tiny absolute returns (Mandelbrot, 1963; Fama, 1965). After the index was altered, the random walk that characterised its movement did not reappear. Since the residual is thus conditionally heteroskedastic, ARCH and GARCH models can be used to describe it. Moreover, there is evidence of volatility clustering persistence in the time-varying variance of the error term (Schwert, 1989; Bollerslev, 1986; Nelson, 1994; and Ding, Granger and Engle, 1993).

Table 4.3 Insurgence News Announcement on Equity Return 2018-2022

Variable	Coefficient	Std-Error	T-Stat	P-Value
Cst(M)	0.058635	0.00015031	390.1	0.0000
TERST (M)	-0.014648	0.00017166	-85.33	0.0000
SA (M)	-0.052226	0.00017131	-304.9	0.0000
SEA (M)	-0.030292	0.00017187	-176.3	0.0000
OAA (M)	-0.020671	0.00017879	-115.6	0.0000
KB (M)	-0.019583	0.00018972	-103.2	0.0000
OTHERS (M)	-0.007782	0.00016088	-48.37	0.0000
d-Arfima	0.045683	0.00019327	236.4	0.0000
AR(1)	-0.187497	0.00014437	-1299.	0.0000
MA(1)	0.254745	0.00021266	1198.	0.0000
Cst(ω)	0.098914	0.039041	2.534	0.0115
ARCH(α_j)	0.307651	0.056276	5.467	0.0000
GARCH(β_i)	0.674164	0.068074	9.903	0.0000
APARCH(γ_1)	-0.156480	0.10058	-1.556	0.1201
APARCH(γ_2)	1.042523	0.22417	4.651	0.0000
G.E.D.(DF)	0.825386	0.048987	16.85	0.0000

Source: Author's computation, 2023

The asymmetric parameter of interest is (γ). The (γ_1) is the Gamma 1 or sign effect that measures asymmetric effect while (γ_2) is the Delta or magnitude effect that measures the symmetric effect. The coefficient of (γ_1) is negative (-0.156480) and statistically not significant at (0.1201 or 12.01%) level. However, the coefficient (γ_2) is positive (1.042523) and statistically significant at 1% level. This finding reveals that insurgent news (APARCH (γ_1) does not establish any significant asymmetry effect on the volatility of equity returns in the market during the period under review using innovation distribution of the generalized error distribution. However, the symmetric effect of insurgence news on volatility of equity return is positive and significant.

The sum of the arch and GARCH coefficients indicated by $\alpha_j + \beta_i$ (0.981815) tested the volatility persistence (clustering hypothesis) in the absence of asymmetric effect is relatively homogenous and approximately close to unity it implies that the volatility was ongoing, that significant market changes are followed by equally significant changes in the opposite direction, and that smaller changes are followed by smaller changes. The results also showed that the volatility persistence will endure for a longer time. This is demonstrated by the Autoregressive Fractionally Integrated Moving Average (ARFIMA), which has a positive coefficient of 0.045683 and is statistically significant at the 1% level, indicating the presence of stationary or long-memory processes in the market, as indicated by the slow decay of the autocorrelation functions.

V. CONCLUSION

The study concludes that the Nigerian equity market exhibits asymmetry, fat tail, heteroskedasticity, non-linear dependence, serial correlation, non-normality, and reversibility. Further research employing autoregressive conditional variance equations is prompted by these features. The beneficial and large symmetrical and not asymmetrical impact of the revival news announcements on equities returns during the time period under investigation. However, it was established of the persistence effect of insurgence news announcements on equity returns in Nigeria ($\alpha_j + \beta_i$) or 0.307651+0.674164 (0.981815) will continue for a long term before it will be completely attenuated. This is demonstrated by the Autoregressive Fractionally Integrated Moving Average (ARFIMA), which has a positive coefficient of 0.045683 and is statistically significant at the 1% level, indicating the presence of stationary or long-memory processes in the market, as indicated by the slow decay of the autocorrelation functions. Furthermore, using a Generalized Error Distribution (GED) function, the study finds that all of the insurgence variables have a symmetrical and not asymmetrical negative and substantial impact on equity performance in Nigeria. The National Bureau of Statistics should be required to disclose daily data on insurgence in Nigeria, and the government should develop methods to lessen the impact of insurgence on equity performance in Nigeria.

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