

## **INVESTORS' SENTIMENT, VOLATILITY AND STOCK RETURN: EVIDENCE FROM THE NIGERIAN EXCHANGE GROUP (NGX)**

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### **Abstract**

For decades, theory has been put forward that investors in the market are rational and the price of assets fully reflects all available information in the market. Thus, when either good news or bad news about a firm's prospect becomes public, both the firm's value and equity prices appreciate or depreciate. Sequel to this, this study examines investor sentiment, volatility and stock return in Nigeria. that Direct investor sentiment significantly affects stock risk return of companies listed on the NGX; indirect investors' sentiments significantly affect stock risk return of company listed on the NGX; and selected macroeconomic indicator (inflation, exchange rate, oil price) significantly affect stock risk return of company's listed on the NGX. Thus, direct investors sentiment, indirect investor sentiment and selected macroeconomic indicators are responsible for stock risk return fluctuations and should therefore be taken as a systematic factor which place a critical role in predicting stock return and stop volatility in the Nigerian stock market.

Keyword: Investors' sentiment, Nigerian exchange Group, volatility, stock return

### **1.0 Information**

For decades, the Efficient Market Hypothesis (EMH) which puts forward that investors in the market are rational and the price of assets fully reflects all available information in the market, stood as the dominant theoretical framework for stock market analysis (Hu, Sui & Ma, 2021). Incidentally, a number of empirical studies established that stock markets around the globe are designed to attain efficiency, whether at the weak form, semi-strong form or strong form (Sherif & Chen, 2019), so that no individual investor or institutional investor can consistently outperform the average expected performance of the market due to past, present or future publicly available information, Similarly. across financial markets around the globe, the development of financial policies, strategies and price modeling was centered on the assumptions of, market efficiency (Brodeur. Gray. Islam & Bhuiyan. 2021; Padhan & Prabheesh 2021; Koleosho, Adegbe & Ajayi-Owoeye, 2020). According to EMH, changes in equity prices are impossible to predict from available public information and the only thing that can move stuck prices is the news that changes themarket's perception of the asset value of a firm (Nageri & Abdulkadir, 2019). Thus, when either good news or bad news about a firm's prospect becomes public, both the firm's value and equity prices appreciate or depreciate respectively (Kim, Ryu & Yang, 2019). This claim by the EMH that neither technical analysis which is the study of past stock prices in an attempt to predict future stock price nor even the fundamental analysis, which is the analysis of financial information such as company's earnings, asset Price, etc., is considered to be important indices for choosing undervalued stocks; has been confronted with mixed reactions from researchers, academics and policy analysts all over the world (Latif, Shunqi, Bashir, Ali, & Ramzan, 2021; Anjala & Jeppaniyot, 2018).

In recent times however, the efficient market hypothesis has faced quite a lot of theoretical and empirical criticisms, arising from the observed flaws in its adoption (Garleanu & Pedersen, 2018). As a consequence, the emergence and evolution of behavioral finance has become a center of discourse in financial literatures, introduced as a response to the classical finance theories (Rupande, Muguto & Muziindutsi, 2019). It replaces the supposition that investors always act rationally when making investment decisions with the idea that investors do not always act rationally as they are prone to various behavioral biases (Lekovic, 2019). This displacement, however, has certain consequences for asset pricing. It implies that the mean-variance portfolio theory by Markowitz is replaced by the behavioral portfolio theory. It also implies that the traditional asset pricing models such as the Capital Asset Pricing Model (CAPM) and Arbitrage Pricing Theory (APT) by Linter and Sharpe are replaced by Behavioral Asset Pricing Model (Rupande et al., 2019). This is because the mean-variance portfolio theory and the traditional asset pricing models are based on the assertion that expected returns are determined by risk while risk is determined by movements in fundamental factors only (Kapoor & Prosad, 2017). Instead, in addition to the fundamental risk, behavioral portfolio theory and behavioral asset pricing models recognize the impact of behavioral biases on investor's decisions (Ghazan. & Ebranimi, 2019; Rupande, et al. 2019). Departing fundamentally from conventional thinking, the school of behavioural finance proposed that certain financial phenomena and market patterns are better explained by the models in which the players participating in markets are not fully rational (Kumari, 2019). It argues that in a sense, arbitrage may be limited and investor may be affected by noise psychology biases, or sentiment. In other words, behavioral theory of finance relaxes the rationality Assumption which is the cornerstone of the propositions of traditional theory of finance (Harithe & Rishad, 2020). Also it submits that equity price movements reflect psychological processes of market participants and the information structure around financial markets systematically influences investors' attitudes and perceptions towards the market (Sakariyahu, Sherif, Paterson & Chatzivgert, 2020). It is a research area that applies psychological theories to financial models to explain asset mispricing and market anomalies with the belief that sentiment of investors may reflect their risk profile (Lopez-Cabarcos, Pérez-Pico, Vazquez-Rodriguez & Lopez-Perez, 2019). Therefore, behavioral financial analysis investors behaviors and how it affects stock market from a psychological point of view (Khan, Shaorong & Ullah, 2017).

Furthermore, within the Great Verity of concept in behavioral finance, there is one that is acquiring great relevance in recent years, which is investor sentiment and its relationship with real economy as well as great stock market activities (Lacelle, 2017). This relevance is reflected in increased number of publications in recent years, partly due to the emergence of new and disruptive measures of sentiments (Zhou, 2018). A large body of empirical evidence has reviewed that irrational Traders of sentimental investors trade on known fundamental information and their trading activities significantly account for recurrent movements in stock price. For instance, the 2008-2009 global financial crisis which led to a wide deviation of stock prices from their fundamental value generated questions and draws attention to find out if market and known economic indicators are responsible for such deviations. Therefore, there has been a shift in the disclosure of equity price movement or favoring investors behaviors and perceptions (Sakariyahu et al. 2020). Thus, in the pricing of equities and other financial

assets, investor sentiment is of major concern for financial analyst and it is seen as a key determinant of the value of most financial assets (Ballinari & Behrendt, 2021).

In addition, there is an argument in favor of efficient market hypothesis that rational Traders are eradicated from the markets by the rational counterparts through the process of arbitrage. On the contrary, the sophisticated rational arbitrage yes exploits less abnormal returns down the retail investors and noise Trader (Lin, Sias, & Wei, 2018). The process of exploitation of the mispricing is aided by increased liquidity that comes with the activities of a rational Traders. Thus, it might not occur as quickly as expected meaning that irrational Traders may survive in the market of protracted period (Rupande, et al., 2019; Lin, et al., 2018). Empirically however, there is evidence of prolonged price anomalies in the stock markets where rational investors demand a risk premium to trade stocks that are prone to noise trading because the unpredictable activities of a rational Traders create risks, termed as noise Trader risk, in the price of the asset which deters rational arbitrageurs from aggressively betting against them even if there is some form of Mispricing that can be exploited to make a profit (Rupande, et ai., 2019). Thus, rational investors face the risk that assets mispricing might get what's in the short run command there by forcing early liquidation of their positions at a loss( Akbas, Boehner, Jiang, & Koch, 2019; Kaivanto & and Zhang, 2019).

In the light of the above, it becomes imperative to assess the investors' sentiment and stock risk-return nexus in the Nigerian stock market. This is because of price discovery, risk management, portfolio management and policymaking are all aspects of financial markets that profoundly depend on the ability of market participants to evaluate investment's risk-return. Failure to do so would result in poor risk-return Management. inefficient portfolio strategies, persistent mispricing and poor price discovery. Also, literature reviews revealed that investors' sentiment undermines the link between asset pricing and their Fundamental values. As such, Chu, Li, He and Tu, (2018) documented that the forecast of stock prices depends more on non-fundamental indicators (such as noise, hearsay, or rumor) when sentiment is high, implying that irrational traders' participation and their trading activities are more aggressive. However, when sentiment is low, the connection between fundamentals and stock prices is stronger. Thus, during the periods of high sentiment and low sentiment, noise traders act differently to keep their positions secure.

In addition, Shen, Yu and Zhao (2017) also showed that the period of high sentiment undermines the traditional risk-return tradeoff. They found that stock with higher sensitivity to a set of macro-related risk factors earn lower returns in times of high sentiment. This consequently points to the fact that macro-related risk factors are priced differently during times of high versus low investor sentiment (Yang & Chi. 2020). Therefore, studies from developed economies like the USA, UK, China, Germany amongst others are far ahead in understanding the investors' sentiment-related market dynamics while those in emerging economies with rapidly growing capital markets like Nigeria are still in infancy. More importantly, most prior studies focused on either the effect of direct investors' sentiment using survey-based measurements or the impact of indirect investors' sentiment on stock return using market-based indicators. Whereas the impact of the combination of direct and indirect

investors' sentiment on stock risk-return is totally ignored or less explored particularly in Africa, thereby creating omitted-variable bias gap and geographical gap.

Hence, understanding how investors' sentiment affects stock risk-return during times when stock prices are less connected to fundamentals is key for investors, policymakers, and academics. This therefore motivated the study to examine the influence of investor sentiment on stock return and stock volatility on the Nigeria exchange group.

Despite a growing body of empirical literature on the influence of investors' sentiment on stock risk return over the last decade, there is disagreement on the most efficient indicators to measure investors sentiment. According to Sakariyahu, et al.,(2020), empirical studies have employed several indicators (such as trading volume, dividend yield, new issues, trading volume, close end fund, equity issue over total new issues, turnover ratio, initial public offering, etc. ) to capture indirect or market based investor sentiment, but thus far there is no consensus about which one provides the best results. However, it appears there is a consensus in empirical literature that investor sentiment experts impact on stock mix return among stock markets in emerging markets(Cheng, 2019; Pandey & Sehgal, 2019) which corroborates the finding of (Alajekwi, Obiolor, Okoro & Ibenta, 2017) who found that settlement significantly affects market risk and return in Nigeria. On the other hand, some empirical studies found new evidence among developing and emerging economies(Zainudin, Zaki, Hadi, Hussain & Kantakji, 2019). This, Studies on investor sentiment and market risk and return among emerging and developing economics remain open for further discussion. However, previous studies relied on different investors sentiment measures according to each country situation, thus their results may be limited to the country where the study originated from because the Indices published by one country and not the same as others and market rules and regulation also differs(Chen, Zhao, Li, & Lu, 2020), thereby creating variable measurement gap and geographical gap in literature.

For instance, some studies neglected investors behavioral bias and the information structure around financial markets by using only consumer confidence index(Alajekwu, et. al., 2017; Bibiana et al.,2020). Even though nutritious supports the use of investor confidence index as proxy for direct investors sentiment(Yang et al.,2017), yet this alone is incomplete to measure investors sentiment, thereby creating omitted variable bias gap in literature. Similarly, few studies constructed a composite index from more than one indicator as a proxy for indirect investors sentiment (Haritha & Rishad, 2020; Peng,2019). However, constructing a composite index comes with disadvantages. For instance, your construction process involves objective judgment in several steps such as weight, filling of missing values, etc. Also, it may be misused to support a desired outcome if the construction process is not transparent.

## **2.0 Literature Review**

Unlike the efficient market hypothesis (EMH), behavioral finance Theory argues that investors are often irrational, and their decision making is limited by their cognitive ability(Daiane, Newton, Marco, & Jessica, 2019). For example, investors may be over optimistic or over pessimistic about stock related news. This means that the basic assumption of EMH may be when reliable in some circumstances and, in tone, suggests and investor sentiment may play a

significant role in the determination of stock prices(Phan, et al., 2021;Yan,Zhou,Zhao,Tian&Yang,2016). Hence, the Nexus between investor sentiment and stock risk return is a complex one. According to the behavioral finance Theory, the presence of many emotional driven investors can lead to price deviations from fundamental value. Therefore, stock risk return sentiment, which is supported by several studies. For instance, contradicting the fundamental tenets of the efficient market hypothesis, Kin, et al., (2019) establish that individual investors had stronger means reaction to known fundamental information during periods of high sentiments in the Taiwan options market. Rield, Sunand Wang(2021) also found that emotions could affect investors' expectations of Returns, especially for lose making companies. In another vein, Li, Yu and Mei(2022),Jindra and Moeller (2020) found that investor sentiment has a significant asymmetric effect on stock return. When investors turn bullish (bearish), the Friedman effect prevails and creates space (and vice versa), while the relationship between sentiment and expected return is positive but relatively weak during trough-to-peak episode(sentiment expansion). Similarly, He, et al. (2020) found in the case of shiny stock market, that the effect of investor sentiment on the stock return is asymmetric, with only optimistic sentiment having a significant nonlinear impact on stock market return when the stock market is a balanced market. Ding, mazouz, & Wang (2019) established the cross-sectional impact of investor sentiment on stock return. Xi-long, Su-sheng and Ming-zhu(2021) found that investor sentiment has significant predictive power for the expected return of the Chinese stock market.

El-Hayes& Metawa, (2021) established that investor sentiment index has both directing part on stock market liquidity and an indirect effect on the mediating readable (investor herding behavior). Anastasiou, Ballis & Drakos(2022) established that investor sentiment positively predicts the stock return during the covid-19 pandemic. Ugurlu, Kocaarslanand Ordu(2021) found that a significant two-way positive relationship exists between price and investor sentiment in the US markets, for both shorts and long-term investments. Underpricing for underpriced stock. Phan, et al., (2021) established that a negative contemporaneous relationship exists between investor sentiment and market return. Hu, et al., (2021) revealed that the stock to investor sentiments has a significant impact on stock market returns, and the impact in the bullish stock market a significantly higher than in the bearish stock market. Korkmaz and Nur(2022) found a one-way casualty or relationship from investor sentiment measured by VIX index to the S&P Green Bond Index. Their Impulse - response analysis revealed that they stock in the VIX index cause a negative shock in the S&P Green Bond index. While stock markets in the S&P Green Bond Index caused a positive shock in the VIX Index. The shocks later converged to zero.

Yousefnaghani, Dara, Mubareka, Papadopoulos and Sharif (2021) and Sattar and Arifuzzaman(2021) analyzed 1.2 million tweets about covid-19 Vaccines on Twitter and found that the sentiments related to covid-19 Vaccines were positive. Examining the effect of sports sentiment on stock returns Gkillas, Lau and Suleman(2020) reported the national sentiments generated by feeling of optimism or pessimism followed by win or loss of matches respectively using non-parametric casualty test, results should that wins and losses have significant impact on stock price. AlNemer, Hkiri & Khab(2021) established that investor sentiment plays a crucial role on the variation of cryptocurrency prices particularly in the long run and during the

Bitcoin crisis. Investigating the potential change in the behavior of investors over the pre and post bitcoin bubble, Guegan and Renaukt(2020) showed a positive and statistically significant relationship between investor settlement and bitcoin during the Bitcoin bubble, on like in the post bitcoin. (2018 to December 2019).Jagadeeshwaran & Basuvaraj(2020) explored the impact of macrofinance factors and stock Returns of big companies, midcap companies and small companies listed in national Stock Exchange in India and established that macroeconomy indicators significantly affect the stock market performance.Le&Luong(2020) found that oil price and sentiment are net transmitters of shocks in the US Whereas stock market return is the net recipient. For Vietnam however, investor sentiment is the principal net transmitter of shocks while oil price and stock return at the net recipients. Hence, they conclude that interdependence among oil prices, stock market returns and investor sentiment is driven by time specific development and events, and a moderate interdependence relationship exists among them.

The review of empirical literatures on sentiments returns Nexus shows that sentiment indicators significantly influence stock Returns. The behavioral explanation of the presence of investor sentiments causing stocks mispricing continue to remain a widely controversial issue in finance literature previous literatures have linked initial public offering (IPO) an other market based indicators including trading volume, dividend yield, turnover ratioand ratio of equity issue to Total new issues, as measures of investment (Zhang, et. Al., 2020; Haritha & Rishad, 2020;Kumari,2019;Debata, et al., 2018). However, to the extent of literature search, only a few studies have tried to establish the link between investor sentiment and stock Returns in Nigeria (Osabuihien-Irabor, 2021;Bibiana, et al., 2020; Alajekwu, et al., 2017).

Previous studies employed the GARCH model to explore how investor sentiments influence stock market risk and return (Haritha & Rishad, 2020;Kumari 2019; Rupande, et al., 2019;Lao,Nie & Jiang, 2018).However, the variants of GARCH model thus far lack strength to review direction of risk return movements but takes care of magnitude only. It is a linear function of the lag squared of the past residuals and variants and does not capture the asymmetries in stock Returns. A Conclusively, it assumes that positive and negative stocks have the same effects on volatility of financial assets(Omokehinde & Akingunola, 2017), While the GARCH model is a good method of estimation especially when volatility is being considered, but it lacks strength and review direction of risk return movement. However, the vector error correction model (VECM) provides better and rebust result when feedback effect is of utmost importance. The advantage of the VECM over the GARCH model is that it has more effect coefficient estimate and deals with both stationary and non-stational data with different orders of interrogation, with the objective to investigate the dynamic behavior of model and describe how it is adjusting to each. Towards its long run equilibrium state. It allows us to find a parsimonious model for explaining the systematic variation in stock return in Nigeria based on investor settlement (Widjaja & Rokhim, 2020).Thus,VECM validates the presence of casual relationships running from the explanatory variables to dependent variable. It helps to avoid spurious regression results and established the speed of adjustment and direction of Casualty which can be divided into short run and long run Causation(Li & Lou, 2020; John & Lawal, 2019).

### 3.0 Methodology

Adopt e-post facto research since the objective of the study is to test specified hypothesis and to establish specific relationship between a dependent variable and a set of independent variable. Population and sample size. The population for the study comprises of 161 companies listed on the Nigeria exchange group as of December 2020. The study employed purposive sampling technique to select the top 34 companies listed on the Nigerian Stock Exchange. The companies were selected by market capitalization across all sectors, which was why the period chosen was due to availability of comprehensive data. The sample set account for over 90% of market capitalization as well as average daily trading volume on the Nigerian exchange Group and hence is a group representation of the entire market.

The study utilizes both descriptive and inferential statistics as the estimation technique. Mean, minimum, maximum and percentages were employed to cater for the descriptive statistics. Also, the vector error correction model(VECM) was employed as the inferential statistic estimation technique.

### Results and Discussion

During the period under review, table 4.1 reviewed that the average stock return was 61.59 with maximum of 1616.00 and minimum of Zero. In the same vein, the average confidence index was 1.58 with maximum of 9.4 and minimum of minus 9.93, and the sentiment composite index was 0 0 2 with maximum of 1.79 and minimum of -1.07. On the other hand, it was also reviewed that the average inflation during the periods under review was 11.95, with maximum of 18.7 and minimum of 7.7. Also, the average exchange rate was #213 to \$1 with maximum of 381 Naira and minimum of 117 points 72. Lastly during the periods under review command, the average Naira equivalent of price per barrel is 15,215.33 with maximum of 24,376 and minimum of 5,155. Holding every other thing constant 4.1, it is that the average stock volatility was 0.20391, with maximum of 1.1592 and minimum of 0. 0000.

### DESCRIPTIVE STATISTICS

	SR	DSENT	ISENT	INF	EXC	OIL	SMD
Mean	61.5938	-1.5836	0.0002	11.95777	213.04	15215.33	1.462465
Max	1615.00	9.4000	1.7908	18.718	381.00	24376.23	3.7552
Min	0.0000	-9.9333	-1.0789	7.7070	117.72	5155.080	0.8859
S. Dev.	166.49	3.2985	0.9999	2.8129	79.677	0.3306	0.5442
EQUATION 2							
Mean	0.20391	-1.5836	0.0002	11.95777	213.04	15215.33	1.462465
Max	1.1592	9.4000	1.7908	18.718	381.00	24376.23	3.7552
Min	0.0000	-9.9333	-1.0789	7.7070	117.72	5155.080	0.8859
S.Dev	0.17496	3.2985	0.9999	2.8129	79.677	0.3306	0.5442
Obs	5303	5303	5303	5303	5303	5303	5303

Source: Author's computations, (2026).

Regression Results and Hypotheses Testing

Conducting the VECM model, it is required to estimate the vector auto regressive (VAR) equation of the VECM using the ordinary list square (OLA) method. Thus, two OLS regressions equations were estimated. The OLS integration results reveal relationship that exists between the lagged differenced dependent variable and each of the lagged differenced independent variables.

Table 2: OLS Regression Estimates

Variables	First Difference D(SR) <i>Model I</i>			Variables	First Difference D(VOL) <i>Model II</i>		
	Coefficient	t-Stat	Prob.		Coefficient	t-Stat	Prob.
C	-6.35057	-1.88616	0.4474	C	-0.27516	-0.08669	0.6908
DDSENT(-1)	0.201863**	0.97521	0.0329	DDSENT(-1)	-0.00031**	-1.93639	0.0425
DISENT(-1)	8.55941***	5.68496	0.0052	DISENT(-1)	0.010595***	8.75108	0.0000
DINF(-1)	-1.173822**	-2.11366	0.0346	DINF(-1)	-0.00153***	-3.27745	0.0011
DEXR(-1)	0.03432*	1.04737	0.0777	DEXR(-1)	-0.000638**	-2.35164	0.0187
DOIL(-1)	0.002302*	1.17365	0.0634	DOIL(-1)	0.00078*	1.12621	0.0683
DSMD(-1)	3.32675*	1.03812	0.0552	DSMD(-1)	0.00142**	0.55045	0.0143
R-Squared=0.8911				R-Squared=0.9060			
F-Stats=349.96				F-Stats=3.7803			
F-Stats(Prob.)=0.0000				F-Stats(Prob.)=0.0077			
Durbin-Watson Stats=2.0062				Durbin-Watson Stats=2.1242			
<i>Note: t-stats are significant @***1%, **5% and *10%</i>							

Source: Author’s computation, (2026).

This study presents an all-inclusive investigation of the effect of investor sentiments on stock market volatility. This study constructed a sentiment composite index from underlying market-based indicators (i.e. Close-end fund, volume of trade, Equity Share in new issues, total value

of shares traded, turnover rate, and dividend yield) by employing the principal components analysis. This procedure was chosen to because it allowed for the reduction of the dimensionality of the data set command which helped in increasing interpretability without information loss in the determination of whether sentiment influences stock return and volatility (Rawat, et al., 2021; Hu, et al., 2021;He, Zhu & Hu, 2020; Zhang, et al., 2020;Bibiana, et al., 2020;Lekovic,2019;Pandey & Sehgal, 2019).

The two major objectives of this study aimed at assessing the effect of investor sentiment on stock return in the Nigeria and effect of investor sentiment on stock volatility in the Nigeria stock market. The sample used for this study consist of all companies listed on the Nigeria exchange. Both descriptive statistics and inferential statistics were used. Inferential statistic use includes the Augmented Dickey Fuller (ADF) unit Root test and Johansen cointegration test. The result of Johansen cointegration test established the existence of at least one cointegration equation amongst the variables of Interest, these then lead us into estimating the short run causal link between the explanatory variables and stock return as well as stock volatility.

### **5.0 Conclusion and Recommendation**

This study concludes that direct investor sentiment significantly affects stock risk return of companies listed on the NGX; indirect investors' sentiments significantly affect stock risk return of company listed on the NGX; and selected macroeconomic indicator (inflation, exchange rate, oil price) significantly affect stock risk return of company's listed on the NGX. Thus, direct investors sentiment, indirect investor sentiment and selected macroeconomic indicators are responsible for stock risk return fluctuations and should therefore be taken as a systematic Factor which place a critical role in predicting stock return and stop volatility in the Nigerian stock market.

Based on definedings and conclusions drawn, the following recommendations were suggested:

1. Investors sentiments (Direct or indirect) can make or ma the growth and development of Nigeria stock market. Policy makers should Gear effort toward find tuning sentiment indices that can result in long-term pessimism in the stock market(like on pay dividends or delay in dividend payments) by promoting sound Corporate Governance and ethical conducts that prevents on Fair Trading practice, pump and dump, inside that trading activities or market manipulations. These may lead to increased negative sentiment or volatility commanded by transmitting incorrect signals to other macroeconomic indicators which can have protracted negative effects on the economy.
2. The security Exchange Commission (SEC) should adopt policies such as credit support intervention for challenge sectors of the economic including credit facility for households and small scaled and medium scaled Enterprise to minimize uncertainty in the stock market and boost investors' confidence, encourage improvement in stock market patronage, and reduce excessive volatility.

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