Testing The Efficiency Of The Nigerian Capital Market

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Abstract
The paper seeks to ascertain if the share price fluctuations on the Nigerian stock exchange are random, as has been observed on other stock exchanges across the globe. Daily Log Returns was calculated using $r_t=ln(P_t/P_{t-1})$. Unit Root Test (Random Walk Test) was calculated using the Augmented Dickey-Fuller (ADF) Test and Autocorrelation Test with Ljung-Box Test. Finally, variation test was also done. It was discovered that the Nigerian stock market deviates from weak efficiency assumptions, indicating the potential existence of exploitable patterns or information in historical returns. Indeed, based on the collective evidence from the statistical analyses, the Nigerian stock market does not conform to the assumptions of weak efficiency.

I.   Introduction

The capital market is a market for long-term loanable funds. that provides debt and equity-backed securities for a more extended period (long-term). The pricing of the securities are determined by market forces in the regulated capital market in Nigeria (Ehiedu & Obi, 2022). The Nigerian Stock Exchange has set a price band that limits the movement of securities prices driven by market forces to 5% above and 5% below the starting price of a trading day (Nwidobie, 2014). The Nigerian capital market was described as efficient in the weak-form form (Adelegan, 2003) due to the existence of market manipulation (Nwidobie, 2013), insider trading, a slow pace at which security and market information was provided to the market (Osaze, 2007), and a dependence on prior security and market information for determining security prices.

As a result of several endogenous and external factors, stock markets experience cycles of rising and falling prices (Osaze, 2017); many large stock market crashes have adversely affected world economies over the years and since the turn of the 20th century (Audu et al., 2022). Stock markets worldwide slumped in the midst of the financial crisis that occured in 2008 which saw the collapse of major financial institutions. In addition, it has cast doubt on the efficiency of capital markets (Audu et al., 2022). Malkiel (2017) argues that the Efficient Market Hypothesis (EMH) is mainly responsible for the current financial crisis.

Stock market efficiency is an essential concept in investment analysis. From an economic perspective, stock markets are crucial to determining optimum resource allocation. From the investor's standpoint, an efficient stock market ensures that investments comply with regulations (Ehiedu & Obi, 2022). Using the Random Walk Theory, however, the efficient market hypothesis (EMH) was developed. As a result, the market is always efficient, meaning that the value of shares always reflects information readily available on the financial market (Ejem et al., 2020). The market is efficient when it is the sole accurate and dependable reference point for choosing shares. Considering the above, this study examines the efficiency of the Nigerian capital market, precisely the weak form of efficiency.

Objective of the Studies
The aim of this research is to ascertain if the share price fluctuations on the Nigerian stock exchange are random, as has been observed on other stock exchanges across the globe.

Research Hypothesis
In order to ascertain if share prices on the Nigerian Stock Exchange are random, the following hypotheses will be tested:

H_O: The Nigerian Stock Exchange's share price fluctuations do not conform to the random walk pattern as defined by Fama (1965).

H_1: The Nigerian Stock Exchange's share price fluctuations exhibit the random walk pattern as defined by the Fama (1965).

The remaining sections are organized as follows: Part two is about the investigated relevant literature. Technique and data sources are included in Section 3. The results of the regression analysis were fully described in part four, and its discussion was concluded in section five.

Part two of this paper deals with the investigated relevant literature. Techniques and data sources are included in Section 3. The regression analysis results were fully described in part four, and its findings and conclusion were in section five.

II.   Literature Review

Conceptual Review

A capital market has been described as market for long-term loanable funds. Osamwonyi (2005) explained that capital market as anexchange system that provides mechanism for long-term credit instruments of high quality. Dealing with this high-quality instrument facilitates the execution of desirable and profitable projects directly related to economic development. Nwankwo (1999) agrees that the Various forms of financial instruments are traded on the floors of capital market which enables economic agents to manage pricing and risk related issues. Ekundayo(2002) opines that sustainable economic and development will be acieved through a vibrant capital market with a flavour of both local and foreign investors. Ewah et al. (2009) think that capital markets provide opportunities to purchase and sell existing securities among investors, encouraging the populace to investin securities and fostering economic growth. Levine and Zervos (1998) posit that the level of financialintermediation is a good predictor of economic growth. Chiwuba and Amos (2011) contend that the capital market can affect economic development by mobilizing long-term resources, providing liquidity, risk diversification, privatization, securitization or risk transfers, and determining the cost of capital for project valuation. Odetayo and Sajuyigbe (2012) also agreethat the capital market is an engine of economic growth and development in the International Journal of Academic Research in Economics and Management Sciences November 2013, Vol. 2, No. 6 ISSN:2226-3624 46 www.hrmars.com/journals same view Ariyo and Adelegan (2005) believe that the liberalization of capital market contributes to the growth of the Nigeria capital market. However, its impacton the macro-economy is quite negligible.

Functions of Capital Market

Sunday, Ewah and Jude (2009) identify the following functions: 1) To provide facilities to the public in Nigeria for the purchase and sale of funds, stocks and shares of any kind and the investment of money. 2) To regulate the dealings of members and their client's interests. 3) To control the granting of a quotation on the stock exchange by guarding foods, stocks, and shares of a company, government, municipality local authority, or other corporate bodies. 4) To promote, support, or propose legislative or other measures affecting the objectives. 5) Provide trading facilities for dealing in securities listed on it. 6) Oversee activities relating to trading in securities. 7) Enhance long-term capital flow into productive investment and ensure the fairness of prices at which quoted securities are traded. Ekineh (1996) says that an efficient capital market reduces the transaction costs of trading the ownership of the physical assets, thereby paving the way for an optimal ownership structure. Thus, efficient and liquid capital markets provide avenues for the effective utilization of funds for long-term investment purposes by mobilizing them from the surplus spending economic units to the deficit spending economic units. Therefore, an efficiently functioning capital market affects liquidity, acquisition of information about firms, risk diversification, savings mobilization and corporate control (Anyanwu, 1998).

Challenges of the Nigerian Capital Market

Olisaemeka (2009) identifies some challenges of the Nigerian capital market as follows:

1. A Global Phenomenon: The present seeming collapse of the world economy has not excused that of Nigeria.Many countries' stock markets, from the USA to Britain, China to Japan, Russia, France and othersare in serious trouble. The world is indeed a global village, and the interrelatedness of world economiesmakes it evident that any development in any part of the world also affects others. Consequently,the Nigerian capital market is not insulated from this global cancer.

2. Pull-Out of Various Foreign Investors: This factor is believed to have contributed to the continuous fall of the Nigerian stock market. Many foreign investors who already have troubles in their home economieshave pulled out of the Nigerian stock market, leading to a liquidity issues in the market as the domestic investyors cannot buy off the available shares in the market. As a consequence of this, the supply of equities has overwhelmed demand, leading to price falls.

3. Lack of Infrastructure and High Production Costs: Nigeria's businesscosts are high. Basic infrastructures like good roads and power supply need to be improved, leading to a high costof doing Business. Many quoted and unquoted companies like Dunlop Nigeria Plc and Michelin Nigeria have closed down shops. Share of most of the textile industries are near to zero and the companies have stopped production. The shares of Dunlop Nigeria Plc that sold above N6 per share a few months ago now trade below N0.6 per share. High production costs reduce profitability or increase losses, negatively impacting the share prices.

4. Impact of Commercial Banks: Following the forced capitalization of banks to a minimum of N25 billion, almost all banks utilizedand accessed the capital market to raise funds. Within two years, many banks besieged the capital market more than once, falling over one another in raising funds through mega offers in a single tranche. The banks competed to suck every liquidity from the Nigerian financial system, thus overheating it. Some banks were able to raised funds from the market using enticing marketing strategies. , the banks succeedeHowever, the market was affected negatively from these fund-raising enticing strategies. During this period, whereas the primary segment of the market experienced a boom, the secondary segment witness crisis.

5. Avalanche of Private Placement Offers: Several private companies did the privateplacement of their shares at lower prices. There were several manipulations at the market. What some companies did was to seek quotation of their shares at higher values on the Nigerian Stock Exchange. This looks attractictive and made some investors to sell off shares of some companies in order to buy the shares. So The regulating bodies were impotent as the Investment andSecurities Act of 2007 does not place private companies under their control.

6. The inability of the Federal Government to Plot a Bailout Option: There were blunt statements from the Federal Governmentthat it would not intervene 'directly in the capital market, which it sees as a purely private affair'. Thegovernment needed more wisdom to examine a failed capital market's socioeconomic implications and chain effects.

7. Regulating Inconsistencies and Pronouncements: The unethical practices in the capital market has been with us for sometime now. In fact, before the recent crash, SEC informed the investing public that share prices were being manipulated and stated that it was already investigatingsome companies suspected to be involed. Just like several investigations/ probes conducted by other agencies in Nigeria, the outcome of the probe is yet to be made public.

8. Pressure from Banks: Following the more than N1 trillion of banks' funds tapped in the capital market, the banks have become violent on the borrowers of funds (investors and stock broking firms) used to acquire shares. Currently, these banks have created significant distortions in the market resulting in more supply thhan demand of shares as invetors were willing to sell their share at any possible prices. Of course the result was the crash we all witnessed.

Empirical Review

Uwubanmwen (2001) and Ilaboya and Ibrahim (2004) investigated the impact of stock market performance on thegrowth of economic activities in Nigeria by relating stock market performance indicators to GrossDomestic Product, and 'the results obtained were generally satisfactory.' Bolbol, Fatheldin, and Omran(2005) also analyzed the effect of financial markets on total factor productivity and growth in Egyptbetween 1974 and 2002. It was discovered that capital market development positively influencedfactor productivity and growth. However, Flavia and Petru (2010) discovered that capital markets still need toreach a level of development that would enable them to fulfill their primary function in the economy; thegap with the countries of Europe still needs to be relativelyhigh. Harris (1997) did not find hard evidence thatstock market activity affects economic growth. And also Osinubi and Amaghionyeodiwe (2003) examine the relationship between the Nigerian stock market and economic growth during the Period 1980- 2000. Their findings did not support the claim that stock market development promotes economic growth; these results align with Ewah et al. (2009), who appraise the impactof capital market efficiency on the economic growth of Nigeria using time series data from 1963 to2004. They find that the capital market in Nigeria has the potential to be growth-inducing. However, it has notcontributed meaningfully to the economic growth of Nigeria because of low market capitalization,low absorptive capitalization, illiquidity, and misappropriation of funds, among others.

Mishra et al. (2010) examine the impact of capital market efficiency on India's economic growth using the time series data on market capitalization, total market turnover and stock price index over the period spanning from the firstquarter of 1991 to the first quarter of 20 0. Their study reveals a linkage between capital market efficiency and economic growth in Ind A. This linkage is established through a high market capitalization rate and total market turnover. The large size of the capital market, as measured by greatermarket capitalization, is positively correlated with the ability to mobilize capital and diversify the risk on an economy-wide basis. The increasing trend of market capitalization in India would undoubtedly bring capital market efficiency and thereby contribute to the country's economic growth.

Afego (2011) used the daily closing prices and annual earnings announcement dates obtained for a sample of firms listed on the Nigerian Stock Exchange between 2005 and 2008 to examine the efficiency of the Nigeria capital market t. The study used the event method and discovered that the market is weak-form inefficient.

Nwosa and Oseni (2011) examined the efficiency of the Nigeria capital market using stock prices over fifteen years [1986 – 2011]. The study used serial auto-correlation and regression analysis. It was discovered that the Nigeria capital market is Weak-Form efficient.

Odetayo and Sajuyigbe (2012) examine the impact of the Nigerian capital market on economic growth and development during the period 1990 – 2011 using the International Journal of Academic Research in Economics and Management Sciences November 2013, Vol. 2, No. 6 ISSN:2226-3624 48 www.hrmars.com/journals ordinary least square regressi n. The authors discover that capital market indices significantly impact economic growth.

Azeez and Sulaiman (2012) studied the efficiency of the Nigeria capital market using returns on 240 stocks from 2003 to 2007, and daily index numbers ranged between January 2008 and December 20. Ordinary Least Squared [OLS] was applied in the study, and it was discovered that the market is Strong-Form efficient.

Kolapo and Adaramola (2012) find that Nigerian capital market development has a significant relationship witheconomic growth. Afees and Kazeem (2010) also critically and empirically examine the causal linkage between the stock market and economic growth in Nigeria between 1970 and 2004, and the result shows that capital market development drives economic growth.

Osinubi and Amaghionyeodiwe (2003) also examine the relationship between Nigeria's stock market and economic growth from 1980-2000 using ordinary least squares regression. The result showeda positive relationship between stock market development and economic growth and suggested pursuing policies geared towards rapid development of the stock market

Yadirichukwu and Ogochukwu (2014) examined the efficiency of the Nigeria capital market using monthly stock market indexes from 1984 to 2002. Johansson's cointegration test was used to establish a relationship between the monthly share prices, and it was discovered that the Nigeria capital market displayed Weak-Form efficiency.

Ejem, Ogbonna, and Okpara (2020) studied the efficiency of the market using Daily data from January 02, 2014, to May 20, 2019, and annual data from 1985 to 2018 collected from the Nigerian Stock Market Fact boo s. The methodology adopted was the GARCH Model and the Autocorrelation, and it was discovered that the market was Weak-Form Inefficient.

Daniel and Omiete (2021) examined the efficiency of the capital market using 30-day data covering the period from 1981-20 0. The study conducted the Runs and Ljung and Box-Pierce tests, revealing that the market is Weak-Form Inefficient.

Studies seen by the researchers arrived at different findings. While some show that the market is weak in efficiency, others revealed that the market is semi-strongly efficient. However, others concluded that the market could be more efficient, which shows the need for further studies to establish the actual market position

III. Methodology

Source of Data

Secondary data was adopted in this research, obtained from meristem website (www.investing.co). They are a historical set of 2722 ASI (All share index) data points of the Nigeria Stock Exchange, e. The justification for using the ASI (All-share index) is that a market index is a quick measure to judge the overall direction of the market and the scope of its movements. Specifically, ASI encapsulates the performance of a diverse range of stocks from various sectors, providing a simplified and easily interpretable snapshot of the market trend. Its role as a benchmark facilitates the comparison of individual stocks or portfolios, while changes in the index offer insights into investor sentiment, economic health, and overall market liquidity. The ASI, with its broad and diversified nature, serves as a valuable tool for investors and analysts seeking a quick and informative measure of the collective performance of the stock market. The sample period extends from January 01, 2013, to December 29, 20 3. The period includes significant policy changes, such as shifts in central bank strategies, trade policies, and responses to global events (e.g., the COVID-19 pandemic). These events can affect market efficiency by influencing information dissemination and investor behaviour.

Method of Data Analysis

The techniques adopted included calculating returns, conducting unit root tests, autocorrelation tests and applying variance ratio tests. Here is a step-by-step guide approach to the techniques to investigate the weak efficiency of a stock market:

i. Calculating Daily Log Returns using $r_t = \ln(P_t/P_{t-1})$
ii. Compute summary statistics for the returns, such as mean, standard deviation, skewness, and kurtosis.
iii. Unit Root Test (Random Walk Test): Using the Augmented Dickey-Fuller (ADF) Test with the following hypothesis:
- Null Hypothesis (H_0): The time series has a unit root (indicating non-stationarity).
- Alternative Hypothesis (H_1): The time series is stationary.
iv. Autocorrelation Test with Ljung-Box Test that states the following hypothesis:
- Null Hypothesis (H_0): The autocorrelations up to lag k are zero.
- Alternative Hypothesis (H_1): Significant autocorrelation exists in at least one of the first k lags.
v. Variance Ratio Test with the hypothesis:
- Null Hypothesis (H_0): Returns follow a random walk (weak form efficiency).
- Alternative Hypothesis (H_1): Returns do not follow a random walk.

Interpretation:
- If the unit root test fails to reject the null hypothesis, it suggests non-stationarity and potential evidence against weak efficiency.
- A failure to reject the null hypothesis in the autocorrelation test aligns with the concept of weak form efficiency, suggesting that historical returns do not contain exploitable patterns for predicting future returns.
- If the variance ratio test fails to reject the null hypothesis, it suggests that the returns exhibit no predictable patterns over different time horizons.

Data Analysis
This section analyses the ASI data to investigate the weak efficiency of the Nigerian stock market.

Table 1: Descriptive Statistics of Data

	ASI PRICE	ASI RETURNS
Mean	37021.03	0.000354
Median	35662.49	1.02E-05
Maximum	74773.85	0.079848
Minimum	20669.38	-0.050329
Std. Dev.	10543.19	0.009782
Skewness	1.205953	0.352690
Kurtosis	4.444389	8.716611
Jarque-Bera	896.3943	3761.465
Probability	0.000000	0.000000
Sum	1.01E+08	0.964522
Sum q. Dev.	3.02E+11	0.260259
Observations	2722	2721

Source: Researchers' Computation using Eviews 9.0

Table 1 provides descriptive statistics for two variables in the data, ASI PRICE and ASI RETURNS. For ASI PRICE, the mean stands at 37021.03, with a median of 35662.49, a maximum of 74773.85, and a minimum of 20669. 8. The standard deviation is 10543.19, reflecting a significant level of variability. The skewness of 1.205953 suggests a positive skew, indicating a tail on the right side of the distribution. The kurtosis of 4.444389 indicates relatively heavy tails and peaked distribution. The Jarque-Bera test further confirms non-normality with a statistic of 896.3943 and a probability of 0.000000.

For ASI RETURNS, the mean is 0.000354, with a median of 1.02E- 5. The data exhibits a maximum return of 0.079848 and a minimum of -0.050329, showcasing variability. The skewness of 0.352690 suggests a positive skew, while the kurtosis of 8.716611 indicates heavy tails and a highly peaked distribution. The Jarque-Bera test, with a statistic of 3761.465 and a probability of 0.000000, reinforces the non-normality of return s. However, the positive skewness and high kurtosis indicate non-normality, suggesting the presence of outliers or extreme even s. The Jarque-Bera test results further confirm the departure from a normal distribution, indicating the existence of predictable patterns in return. While using descriptive statistics, the essential requirement for any market to be random or to follow the weak form of efficient market hypothesis is that the returns should follow an average distribution. The result shows that the Nigerian stock market is not random nor follows the weak form of efficient market hypotheses. Below is the movement of ASI returns
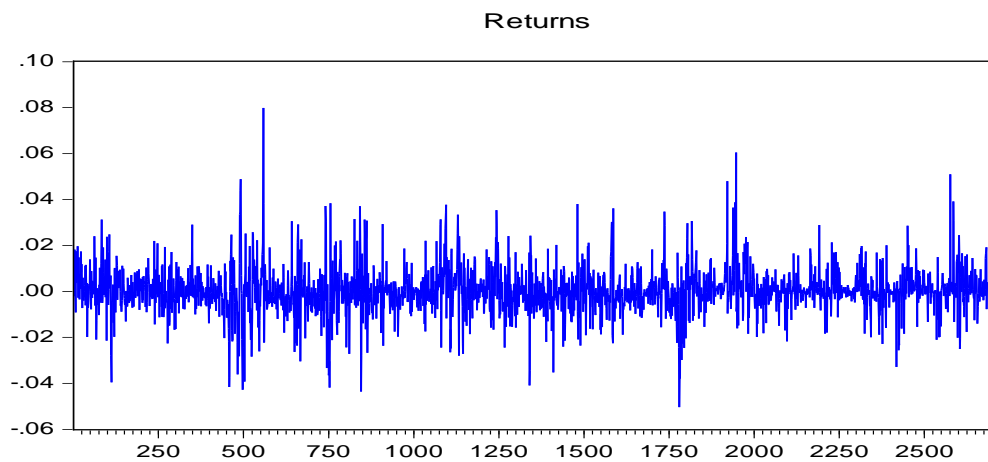

Figure 1: Movement of ASI Returns

The depiction of ASI returns in Figure 1 reveals a discernible pattern in the movement of the Nigeria stock market t. The overall trend indicates that ASI returns are, on average, favourable, and this suggests a prevailing tendency for the market to experience upward movements over the observed period d. The consistently positive returns imply bullish or positive investor sentiment in the Nigerian stock market during the depicted timeframe.

Table 2: Unit Root Test of Weak Efficiency

Null Hypothesis: ASI_RETURNS has a unit root Exogenous: None Leg Length: 0 (Automatic - based on SIC, maxlag=27)			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-38.36711	0.0000
Test critical values:	1% level		-2.565812	
	5% level		-1.940940	
	10% level		-1.616621	
*MacKinnon (1996) one-sided p-values.				

Source: Researchers' Computation using Eviews 9.0

The Unit Root Test of Weak Efficiency conducted on the ASI RETURNS variable using the Augmented Dickey-Fuller (ADF) test indicates a highly negative test statistic -38.36711, accompanied by an extremely low p-value of 0.00 0. These results are significantly below the conventional critical values at 1%, 5%, and 1 %. Consequently, there is compelling evidence to reject the null hypothesis that ASI RETURNS has a unit root, suggesting that the time series is stationary, and this implies that historical returns of ASI RETURNS do not follow a random walk. Past information holds valuable patterns or information for predicting future returns. In the context of weak form efficiency, where market prices are expected to incorporate historical information fully, the rejection of the unit root hypothesis suggests a departure from weak efficiency in the Nigerian capital market t. The findings suggest that investors can exploit historical return patterns for forecasting or predicting future returns, implying that the Nigerian capital market is not weak and efficient.

Table 3: Autocorrelation and Partial Correlation Test of Weak Efficiency

Date: 01/01/24 Time: 12:28 Sample: 1 2722 Included observations: 2721						
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
|** |	|** |	1	0.297	0.297	239.60	0.000
|* |	| |	2	0.088	0.000	260.87	0.000
| |	| |	3	0.013	-0.015	261.31	0.000
| |	| |	4	0.039	0.043	265.49	0.000
| |	| |	5	0.059	0.041	275.14	0.000
| |	| |	6	-0.001	-0.037	275.15	0.000
| |	| |	7	-0.011	-0.005	275.50	0.000
| |	| |	8	-0.009	-0.001	275.71	0.000
| |	| |	9	0.029	0.032	278.03	0.000
| |	| |	10	0.008	-0.012	278.21	0.000
| |	| |	11	-0.021	-0.023	279.41	0.000
| |	| |	12	0.010	0.028	279.68	0.000
| |	| |	13	-0.001	-0.012	279.68	0.000
| |	| |	14	0.030	0.029	282.07	0.000
| |	| |	15	0.022	0.010	283.42	0.000
| |	| |	16	0.049	0.043	289.91	0.000
| |	| |	17	0.044	0.018	295.29	0.000
| |	| |	18	0.047	0.026	301.28	0.000
| |	| |	19	0.010	-0.017	301.58	0.000
| |	| |	20	-0.010	-0.012	301.84	0.000
| |	| |	21	0.015	0.019	302.49	0.000
| |	| |	22	0.025	0.015	304.17	0.000
| |	| |	23	0.011	-0.005	304.49	0.000
| |	| |	24	0.020	0.021	305.56	0.000

|	|	|	|	25	0.026	0.018	307.42	0.000
|	|	|	|	26	0.064	0.050	318.70	0.000
|	|	|	|	27	0.069	0.037	331.86	0.000
|	|	|	|	28	0.040	0.005	336.21	0.000
|	|	|	|	29	0.003	-0.013	336.24	0.000
|	|	|	|	30	-0.011	-0.017	336.60	0.000
|	|	|	|	31	-0.002	-0.004	336.62	0.000
|	|	|	|	32	-0.038	-0.047	340.60	0.000
*|	|	|	|	33	-0.071	-0.056	354.58	0.000
|	|	|	|	34	-0.041	-0.001	359.11	0.000
|	|	|	|	35	-0.020	-0.005	360.22	0.000
|	|	|	|	36	0.019	0.026	361.26	0.000

Source: Researchers' Computation using Eviews 9.0

The Autocorrelation and Partial Correlation Test of Weak Efficiency for the ASI RETURNS variable reveals noteworthy results. The autocorrelation and partial correlation coefficients for lags 1 to 36, along with the associated Q-Stat and probability value s, are displayed. Notably, at each lag, the autocorrelation coefficients (A.C.) and partial autocorrelation coefficients (PAC) are present d. The Q-Stat values, measuring the joint significance of the autocorrelations up to the given lag, are all highly significant (p-values = 0.000), indicating the rejection of the null hypothesis of no autocorrelation n. The consistently low p-values (0.000) across various lags, as indicated by the Q-Stat values, indicate that past returns are correlated with future returns. This finding must be consistent with the expectations of weak form efficiency, which posits that historical price information is already reflected in current prices and should not be systematically correlated with future returns. The observed autocorrelation patterns imply that there may be exploitable patterns or information in historical returns that could be used for forecasting, suggesting a departure from weak form efficiency in the Nigerian capital market, and this implies that the Nigerian capital market is not weak efficient.

Table 4: Variance Ratio Test of Weak Efficiency

Null Hypothesis: ASI_RETURNS is a martingale
Date: 01/01/24   Time: 12:31
Sample: 1 2722
Included observations: 2720 (after adjustments)
Heteroskedasticity robust standard error estimates
User-specified lags: 2 4 8 16

Joint Tests	Value	Df	Probability
Max |z| (at period 4)*	12.34536	2720	0.0000

Individual Tests			
Period	V r. Ratio	Std. Error	z-Statistic	Probability
2	0.648373	0.030172	-11.65419	0.0000
4	0.341939	0.053304	-12.34536	0.0000
8	0.179771	0.077629	-10.56605	0.0000
16	0.085072	0.106208	-8.614518	0.0000

*Probability approximation using studentized maximum modulus with parameter value four and infinite degrees of freedom

Test Details (Mean = 2.10865191782e-06)

Period	Variance	V r. Ratio	Obs.
1	0.00013	--	2720
2	8.7E-05	0.64837	2719
4	4.6E-05	0.34194	2717
8	2.4E-05	0.17977	2713
16	1.1E-05	0.08507	2705

Source: Researchers' Computation using Eviews 9.0

Table 4 presents the Variance Ratio Test of Weak Efficiency for the ASI RETURNS variable in the Nigerian capital market. The test assesses the null hypothesis that ASI RETURNS follow a martingale process, implying that future returns cannot be predicted based on past information. The results strongly reject this hypothesis, as indicated by the joint test statistic 12.34536 with an associated probability of 0.00 0. Individual tests at various periods (2, 4, 8, and 16) consistently show low probabilities of 0.0000, supporting the conclusion

that past returns exhibit predictability. The findings suggest that the Nigerian capital market needs to be more consistent with the efficient market assumption of a martingale process, which implies that historical returns may contain exploitable patterns or information for forecasting future returns.

IV. Conclusion And Recommendations

The analysis of the Nigerian stock market reveals several key findings. Descriptive statistics in Table 1 highlight the central tendency, variability, and distribution characteristics of ASI PRICE and ASI RETURNS, indicating potential deviations from average market assumptions. The Unit Root Test analysis rejects the null hypothesis, indicating that the ASI RETURNS series is stationary, which violates the assumptions of a random walk and weak efficiency. The Autocorrelation and Partial Correlation Test further adds to this narrative, demonstrating significant autocorrelation in returns at various lags, contradicting the notion that past returns do not systematically predict future returns. Lastly, the Variance Ratio Test rejects the null hypothesis of a martingale process, providing evidence for return predictability, which is inconsistent with weak form efficiency. These findings suggest that the Nigerian stock market deviates from weak efficiency assumptions, indicating the potential existence of exploitable patterns or information in historical returns. Indeed, based on the collective evidence from the statistical analyses, the Nigerian stock market does not conform to the assumptions of weak efficiency. Historical returns may contain exploitable patterns that could impact the competitiveness of the Nigerian stock market. It may attract sophisticated investors who seek to capitalize on the identified inefficiencies, potentially influencing market dynamics. As a result, regulatory authorities should closely monitor the market and consider adjustments to regulations to address potential inefficiencies, which may involve reviewing and updating market structures, trading practices, and disclosure requirements to enhance transparency and maintain fair and efficient market operations.

Reference

[1] Adelegan, O.J. (2003). Capital Market Efficiency And The Effects Of Dividend Announcements On Share Prices In Niger A. African Development Review, 15(3), 218-236.

[2] Audu, A. G., Osamwonyi, O. I. & Enofe, E. E. (2022). Efficient Market Hypothesis In Market Crashes: The 2008 Global Market Meltdown N. Amity Journal Of Management Research, 5(1), 636-650.

[3] Ehiedu, V. C., & Obi, C. K. (2022). Efficient Market Hypothesis (Emh) And The Nigerian Stock Exchange In The Midst Of Global Financial Crises. International Journal Of Academic Management Science Research (Ijamsr), 6(8), 263-273.

[4] Ehiedu, V.C, & Toria, G. (2022). Audit Indicators And Financial Performance Of Manufacturing Firms In Niger A. Linguistics And Culture Review, 6(I), 14-41.

[5] Ejem, C. A., Ogbonna, U. G. & Okpara, G. C. (2020). Efficient Market Hypotheses Controversy And Nigerian Stock Exchange Relations. American International Journal Of Economics And Finance Research, 2(1), 1-13.

[6] Fama, E.F. (196). Random Walks In Stock Market Prices. Selected Papers No. 6. Available From Www.Chicagobooth.Edu.

[7] Malkiel, B. G. (2017). The Efficient Market Hypothesis And Financial Cris S. Rethinking Finance: Perspective On The Crisis (Proceedings Of The Conference On Economic Lessons From The Financial Crisis). Russel Sage Foundation.

[8] Nwidobie, B.M. (2013). Black-Scholes Model, Capm And Expected Return Determination In The Nigerian Capital Mark T. The Nigerian Accountant, 46(3): 27-31.

[9] Nwidobie, B.M. (2014). The Random Walk Theory: An Empirical Test In The Nigerian Capital Mark T. Asian Economic And Financial Review, 4(12), 1840-1848.

[10] Osaze, E. B. (201). Capital Markets – African And Glob L. Published By The Book House Company, Pp. 55–63.

[11] Afees, A.S & Kazeem, B.A (201). The Stock Market And Economic Growth In Nigeria: An Empirical Investigation, Journal Of Economic Theory, 4, 65 – 70.

[12] Agarwal, S. (200). Stock Market Development And Economic Growth: Preliminary Evidence From African Countries. Web Document.

[13] Anyanwu J.C. (199). Stock Market Development And Nigeria's Economic Development. Nigeria Financial Review, P6-13.
Ariyo, A. & Adelegan, O. (2005). Assessing The Impact Of Capital Market Reforms In Nigeria: An Incremental Approach. Paper Presented At 46th Annual Conference Of The Nigeria Economic Society In Lagos In August 2005.

[14] Bolbol, A.; Fatheldin, A.; Omran, M. (2005) Financial Development, Structure, And Economic Growth: The Case Of Egypt, 1974-2002, Research In International Business And Finance, 19, Pp.171–194.

[15] Chinwuba, O. And Amos, O.A (2011). Stimulating Economic Development Through The Capital Market: The Nigerian Experience. Jorind 9(2). Available Online At
Www.Transcampus.Org (Accessed On 20th August, 2012)

[16] Ekineh, S. D. (1996). The Securities And Exchange Commission And Investor Protection In The Capital Mark T. Security Market Journal, Special Edition, Volume Nine, Pp. 1 – 86.

[17] Ekundayo, I.K. (2002). Creating Conducive Environment For Investment In Nigerian Capital International Journal Of Academic Research In Economics And Management Sciences November 2013, Vol. 2, No. 6 Issn: 2226-3624 52 Www.Hrmars.Com/Journals

[18] Market. Paper Presented At Public Enlightenment On Opportunities In The Capital Market For Industrial Development Of Kogi State " Lokoja29th March To April 01, 2002.

[19] Ewah, S.O.E, Esang, A.E. &Bassey J.U. (2009). Appraisal Of Capital Market Efficiency On Economic Growth In Nigeria. International Journal Of Business And Management,4 (12) 219 – 225.

[20] Flavia, B And Peter-Ovidiu, M. (2010). Capital Market And Economic Growth: The Case Of Romania. Annals Of The University Of Petrosani, Economics 10 (2) Harris Rdf (1997). Stock Markets And Development: A Re-Assessment. European Economic Review, 1, 136-139.

[21] Ilaboya, O.J. And Ibrahim, S (2004). Impact Of Stock Market Performance On The Level Of Economic Activities: Evidence From Nigerian Stock Market, Nigerian Journal Of Business Administration, Vol.6 No 1.