Dr.Adarsh and Dr.Asish (June 2023). WEAK FORM EFFICIENCY - TESTING *EFFICIENT MARKET HYPOTHESIS BASED ON ASIAN PAINTS LTD*
***International Journal of Economic Perspectives*,*17*(06) 1-7**
Retrieved from https://ijeponline.com/index.php/journal

WEAK FORM EFFICIENCY - TESTING *EFFICIENT MARKET HYPOTHESIS BASED ON ASIAN PAINTS LTD*

Dr.Adarsh, Assistant Professor,
Post Graduate Department of Economics, Sree Narayana, College, Cherthala, Alappuzha, Kerala.
&
Dr.Asish, Assistant Professor,
Department of Economics with Foreign Trade, VT Bhattathiripad College, Sreekrishnapuram, Mannampatta, Palakkad, Kerala.

Abstract

The market, according to efficient market theory, can be divided into three categories: weak form efficiency, semi-strong efficiency, and strong efficiency. This divide represents the fundamental premise that the "market" is continually changing as a result of information flow. Despite being a cornerstone of modern financial theory, the EMH is very contentious and frequently contested. According to believers, looking for cheap companies or attempting to predict market moves through fundamental or technical research is pointless. The goal of this paper is to analyse the Random Walk Theory, a weak variation of effective market theory, on Asian Paints Ltd on a weekly basis from May14, 2020 to May 14, 2023. The purpose of this research is to put Random Walk Theory, a typical weak variant of efficient market theory, to the test.The Serial Correlation Test was used to investigate the weak version of efficient market theory. Based on the initial difference on the NSE, it is concluded that Asian PaintsLtd does not follow a random walk and that the market is not efficient in its current structure.

Key words: Efficient Market Theory,Random Walk Theory,Serial Correlation,Modern Financial Theory

Introduction

The Efficient Market Hypothesis (EMH) proposes that financial markets are efficient and that asset prices already reflect all relevant information. According to the EMH, it is difficult to continually outperform the market since it incorporates new information rapidly and effectively, making it impossible to foresee future price fluctuations or identify undervalued assets. The EMH is frequently classified into three efficiency levels: weak, semi-strong, and powerful. According to weak form efficiency, all past price and volume

Corresponding author: **Dr.Adarsh and Dr.Asish**
Submitted: 27April 2023, Revised: 09 May2023, Accepted: 18 May 2023, Published: June 2023

information is already reflected in current stock values, implying that historical data cannot be utilised to predict future prices. Semi-strong form efficiency extends this to any publicly available data, such as news and financial accounts. Strong form efficiency includes all public and private information, implying that even insider information cannot provide a price prediction advantage. The Random Walk Theory, a weak variant of the EMH, is tested in the current investigation. According to the Random Walk Theory, stock price changes are unpredictable and follow a random pattern, making it hard to consistently profit by evaluating prior price data.

Need and Significance of the study

It is vital to note that market efficiency varies depending on the stock, time period, and market conditions. The results for one stock may not be applicable to the entire market or other equities. Furthermore, the EMH is a hotly discussed theory, with several objections and competing hypotheses disputing its assumptions.

Nothing can actually beat the company's unbreakability. Even with technical advancements in the process of knowledge sharing, no one can always hold the key that guarantees a profit margin. It is thought that share prices react quickly and fairly to newly disclosed information made accessible to the public, preventing any extra profits from trading on such knowledge from being made.The final level is termed as High efficiency. This is predicated on the concept that no single client can hold the entire market's excess profit share. Share prices represent all facts, public and private, and no one can profit excessively. A market is required to assess strong-form performance, which occurs when investors consistently do not earn excess returns over a long period of time. As a result, an attempt has been made to assess the share price movement of Asian Paints Ltd. The goal of this study is to examine the inefficient type of efficiency.A Serial Correlation Test was performed to examine the Random Walk Theory for Asian Paints Ltd on a monthly basis from May 14, 2020 to May 14, 2023. The Serial Correlation Test is used to determine whether a security's price changes are independent or indicate a trend. If the price fluctuations are independent, the Random Walk Theory is supported.The final level is termed as High efficiency. This is predicated on the concept that no single client can hold the entire market's excess profit share. Share prices represent all facts, public and private, and no one can profit excessively. A

Corresponding author: **Dr.Adarsh and Dr.Asish**

Submitted: 27April 2023, Revised: 09 May2023, Accepted: 18 May 2023, Published: June 2023

market is required to assess strong-form performance, which occurs when investors consistently do not earn excess returns over a long period of time. As a result, an attempt has been made to assess the share price movement of Asian Paints Ltd. The goal of this study is to examine the inefficient type of efficiency.

A Serial Correlation Test was performed to examine the Random Walk Theory for Asian Paints Ltd on a monthly basis from May 14, 2020 to May 14, 2023. The Serial Correlation Test is used to determine whether a security's price changes are independent or indicate a trend. If the price fluctuations are independent, the Random Walk Theory is supported.

Objective of the Study

To test whether successive price changesof Asian Paints Ltd are independent

Hypothesis

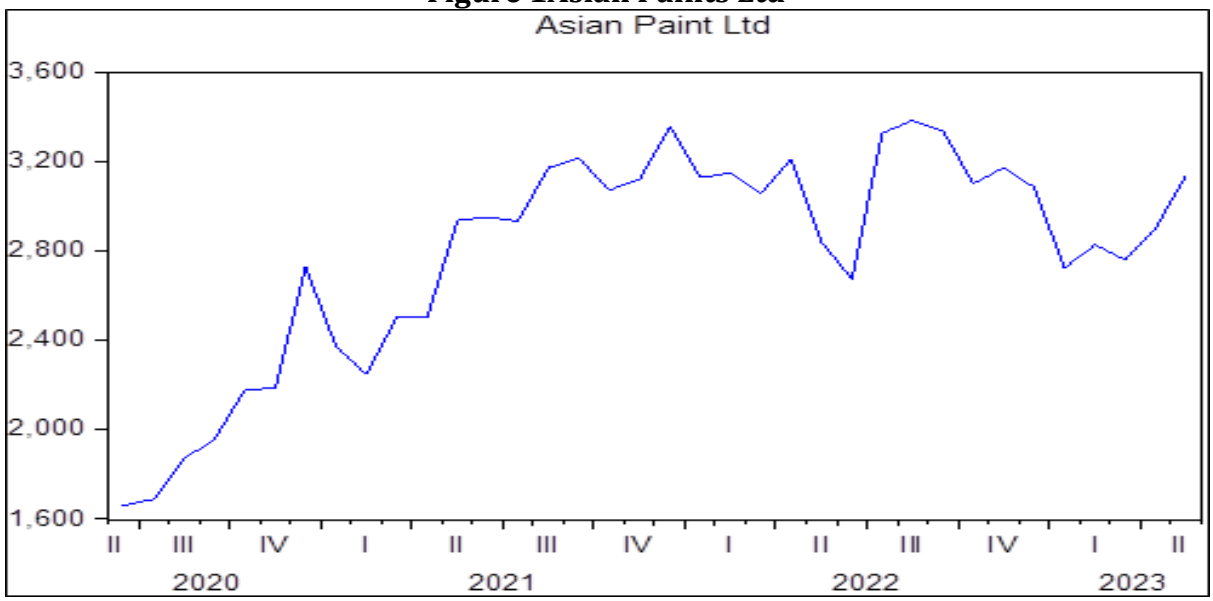
H_o: Null hypothesis- 'Price changeof Asian Paints Ltd is random'.

Research Methodology

The current research is analytical in character. As a result, data for the study were gathered from secondary sources. The judgement sample design is used. Asian Paints Ltd's closing day securities prices were obtained on a monthly basis from May 14, 2020 to May 14, 2023. The data came from stock market quotes and the Serial Correlation Analysis Techniques.

Analysis and Interpretation

Figure 1Asian Paints Ltd



Corresponding author: **Dr.Adarsh and Dr.Asish**

Submitted: 27April 2023, Revised: 09 May2023, Accepted: 18 May 2023, Published: June 2023

Table-1-Asian Paints Ltd - Unit Root

Null Hypothesis: **Asian Paints Ltd has a unit root**
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.447940	0.1366
Test critical values:	1% level	-3.632900	
	5% level	-2.948404	
	10% level	-2.612874	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ASIAN_PAINT_LTD)
Method: Least Squares
Date: 05/17/23 Time: 19:58
Sample (adjusted): 2020M07 2023M05
Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ASIAN_PAINT_LTD(-1)	-0.186196	0.076062	-2.447940	0.0199
C	560.2422	214.7735	2.608526	0.0136

R-squared	0.153681	Mean dependent var	42.19898
Adjusted R-squared	0.128035	S.D. dependent var	232.1663
S.E. of regression	216.7946	Akaike info criterion	13.65122
Sum squared resid	1550997.	Schwarz criterion	13.74010
Log likelihood	-236.8964	Hannan-Quinn criter.	13.68190
F-statistic	5.992408	Durbin-Watson stat	2.289878
Prob(F-statistic)	0.019853		

Source: Secondary data

The unit root of the Asian Paints Ltd was tested with the support of the Augmented Dickey-Fuller test. The ADF test statistic is -2.447940, and the associated p-value is 0.1366. The critical values at the 1%, 5%, and 10% levels are -3.632900, -2.948404, and -2.612874, respectively, showing the null hypothesis is accepted.Since the ADF test statistic (-2.447940) is greater than the critical value at the 10% level (-2.612874), but smaller than the critical values at the 5% and 1% levels, there is insufficient evidence to reject the null hypothesis of a unit root at conventional levels of significance (5% or 1%).In other words, the test results do not provide enough evidence to conclude that Asian Paints Ltd is stationary. However, it is worth noting that the p-value (0.1366) is relatively close to the 10% level, suggesting a weak indication against the presence of a unit root.

Corresponding author: **Dr.Adarsh and Dr.Asish**

Submitted: 27April 2023, Revised: 09 May2023, Accepted: 18 May 2023, Published: June 2023

The estimated equation resulting from the ADF test shows that the coefficient of the lagged Asian Paints Ltd variable (-1) is -0.186196, and it is statistically significant at the 5% level. This suggests a negative relationship between the current and lagged values of Asian Paints Ltd. The coefficient of determination (R-squared) is 0.153681, suggesting that the lagged Asian Paints Ltd variable and the constant term explain about 15.37% of the variation in the differenced Asian Paints Ltd variable.The share price of Asian Paints Ltd has unit root (Non Stationary). To examine the whether the data is stationary at first difference, further analysis was done.

Table-2- Asian Paints Ltd —First Difference- Unit Root

Null Hypothesis: **D(Asian Paints Ltd) has a unit root**
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.711521	0.0000
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(ASIAN_PAINT_LTD,2)
Method: Least Squares
Date: 05/17/23 Time: 20:00
Sample (adjusted): 2020M08 2023M05
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ASIAN_PAINT_LTD(-1))	-1.179902	0.175802	-6.711521	0.0000
C	49.19555	40.89048	1.203105	0.2378

R-squared	0.584656	Mean dependent var	6.121690
Adjusted R-squared	0.571676	S.D. dependent var	359.7985
S.E. of regression	235.4753	Akaike info criterion	13.81811
Sum squared resid	1774356.	Schwarz criterion	13.90790
Log likelihood	-232.9079	Hannan-Quinn criter.	13.84873
F-statistic	45.04452	Durbin-Watson stat	2.028228
Prob(F-statistic)	0.000000		

Source: Secondary data

The unit root of the Asian Paints Ltd based on the first difference was tested with the support of the Augmented Dickey-Fuller test. The ADF test statistic is -6.711521, and the associated p-

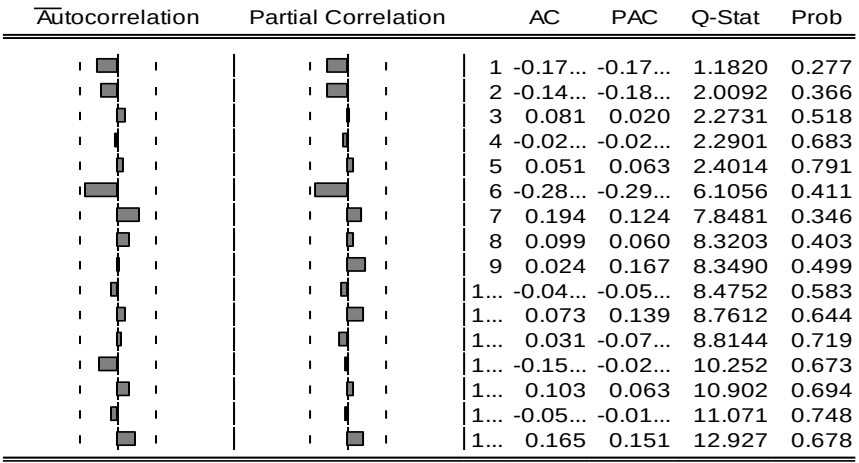
Corresponding author: **Dr.Adarsh and Dr.Asish**
Submitted: 27April 2023, Revised: 09 May2023, Accepted: 18 May 2023, Published: June 2023

value is 0.0000. The critical values at the 1%, 5%, and 10% levels are -3.639407, -2.951125, and -2.614300, respectively, showing the null hypothesis is rejected. Since the ADF test statistic (-6.711521) is significantly smaller than the critical values at all conventional levels of significance (1%, 5%, and 10%), we reject the null hypothesis of a unit root. This suggests that the differenced Asian Paints Ltd variable is stationary.

The estimated equation resulting from the ADF test shows that the coefficient of the lagged differenced Asian Paints Ltd variable (-1) is -1.179902, and it is statistically significant. This indicates a negative relationship between the current and lagged values of the differenced Asian Paints Ltd variable.

The coefficient of determination (R-squared) is 0.584656, indicating that the lagged differenced Asian Paints Ltd variable explains about 58.47% of the variation in the current differenced Asian Paints Ltd variable (D(Asian Paints Ltd, 2)). At this level, it noted that Durbin-Watson stat coefficient is 2.028228, showing No Auto correlation, as the value is near to 2.Hence it is concluding that Asian Paints Ltd based on the first difference on NSE does not follow a random walk and market is not efficient in weak form. This shows that fluctuations in the Asian Paints Ltd independent on the NSE Index. Overall, based on the provided analysis, there is strong evidence to conclude that the differenced Asian Paints Ltd variable is stationary and does not have a unit root. This implies that the series exhibits a stable behaviour over time, which is a desirable property for various econometric and time series analyses.

Figure 2 Asian Paints Ltd -Correlogram



	AC	PAC	Q-Stat	Prob
1	-0.17...	-0.17...	1.1820	0.277
2	-0.14...	-0.18...	2.0092	0.366
3	0.081	0.020	2.2731	0.518
4	-0.02...	-0.02...	2.2901	0.683
5	0.051	0.063	2.4014	0.791
6	-0.28...	-0.29...	6.1056	0.411
7	0.194	0.124	7.8481	0.346
8	0.099	0.060	8.3203	0.403
9	0.024	0.167	8.3490	0.499
1...	-0.04...	-0.05...	8.4752	0.583
1...	0.073	0.139	8.7612	0.644
1...	0.031	-0.07...	8.8144	0.719
1...	-0.15...	-0.02...	10.252	0.673
1...	0.103	0.063	10.902	0.694
1...	-0.05...	-0.01...	11.071	0.748
1...	0.165	0.151	12.927	0.678

Corresponding author: **Dr.Adarsh and Dr.Asish**

Submitted: 27April 2023, Revised: 09 May2023, Accepted: 18 May 2023, Published: June 2023

The correlogram represents the correlations for all pairs of variables. The correlation values of AC is low,showeda weak form.

Conclusion

The analysis's goal was to determine whether or not a market is in a weak state of efficiency. Price movement is deemed to be efficient in weak form if it passes these criteria. The analysis shows that the prices of Asian Paints Ltd's shareis independent of one another, suggesting that the prices of one instant do affect the prices of subsequent moments. Here, a variety of economic factors influence the price of the security. In essence, it is clear that the share prices have not changed in line with the stock market index, which is why investors are unable to make wise decisions despite having access to all available information.

References

Accola, W. L. (1994). Assessing risk and uncertainty in new technology investments, *Accounting Horizons* (September): 19-35,

Bromwich, M. and A.(1991), Bhimani. Strategic investment appraisal. *Management Accounting* (March): 45-48.

Klammer, T (1993). *Managing Strategic and Capital Investment Decisions*. Burr ridge, IL Irwin & IMA.

Corresponding author: **Dr.Adarsh and Dr.Asish**

Submitted: 27April 2023, Revised: 09 May2023, Accepted: 18 May 2023, Published: June 2023