Market Efficiency in Indian Cement Industry : An empirical study on Efficient Market Hypothesis

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ABSTRACT *This paper deals with the identification of market efficiency of the Indian Stock Market. An Efficient Market is one in which the market price of a security is an unbiased estimate of its intrinsic value. According to eminent people who have studied the market efficiency, they have defined Efficient Market is one which reflects the complete available information. For the purpose of studying the Indian market efficiency, the present study considers the cement companies which are listed in the Indian Stock Exchanges. The study focuses on the aspect how far the Indian stock market is efficient and reveals the form of efficiency. Efficient Market Hypothesis (EMH) counters the Fundamental Analysis and Technical Analysis. Fundamental Analysts feel that the prices of the shares can be expected with the analysis of certain factors such as Economy, Industry and Company. Technical Analysts believe that the prices of the shares can be predicted as the history repeats. Efficient Market Hypothesis asserts that financial markets are informationally efficient. In consequence of this, one cannot consistently achieve returns in excess of average markets on a risk-adjusted basis, given the information available at the time the investment is made. The present study reveals that the Indian Cement industry is efficient in Weak form. The analytical tool used is Runs test. In all the cases, the observed runs fall in between the calculated runs.*

Test of Market Efficiency

Before the introduction of online trading systems, Indian Stock Market was characteristics as an inefficient market. Indian Stock Market was witnessing brisk and abrupt movements in a single day. Investors have suffered a lot due to inefficiency in the Indian Stock Market. Indian stock market is characterized as

- Lack of transparency
- Lack of automated trading system
- Delay in the settlement of trades
- Lack of protection for investors

Investors use different theories while investing. Fundamental analysts believe that the market prices of companies are dependent on Economic, Industry and Company related aspects. If we able to analyze these factors, we could able to predict the prices of shares. Technical Analysts believe that the market prices of share are dependent on previous market prices and history repeats.

EMH is based on the fundamentals that markets are efficient and prices make an independent movement in these markets. EMH reveals that the price of an individual share is independent of the previous of price; the implication of this is that price of a moment does not affect the price of another moment – this type of movement of prices is called Random Walk of prices and therefore, this hypothesis is called "Random Walk Hypothesis". According to this hypothesis, prices get affected by the demand and supply position. Prices reflect equilibrium position of the demand and supply and these show a wide fluctuation, only on account of disequilibrium in the demand and supply position.

Forms of Market Efficiency

EMH assumes following three forms of efficiency

- Weak form of efficiency
- Semi-strong form of efficiency
- Strong form of efficiency

Objectives of the study

To check the market efficiency of Indian cement industry

Hypothesis

H_o : "Price change in securities is Random"

H_a : "Price change in securities is not Random"

Hypothesis was tested at 20 Percent significance level at which 'Z' value is 1.28

Research methodology

Type of Research : Empirical
Sample Design : Convenience sampling
Sample Size : 9 Cement companies from NSE
Data Source : www.nseindia.com
Type of Data : Secondary
Tools for Analysis : Runs test

Research plan

The research consists of banks weekly closing prices of cement companies from NSE.

Scope of the study:

The study is conducted for a period of one year 2009.

Limitations of the study:

1. The findings are on the basis of Runs test; hence the findings are subject to the limitations of the Runs test, i.e. Non Parametric test
2. Findings are applicable in the situation, which prevailed during the year 2009; hence these should be read in the light of these factors.

Analysis of Data- Runs test

$$\mu = \frac{2n_1n_2}{n_1+n_2}$$

Analysis of Hypothesis

For calculating μ, the formula is
Where n_1 number of + signs and n_2 is number of – signs
For calculating σ , the formula is

$$\sqrt{\frac{2n_1n_2(2n_1n_2-n_1-n_2)}{(n_1+n_2)^2(n_1+n_2-1)}}$$

1. For ACC

Observed Runs =20

+ Signs (n_1) = 24
- Signs (n_2) = 22
μ = 22.956
σ = 3.346
Upper Limit = μ + 1.28 σ
= 22.956 + 1.28 * 3.346 = 27.239
Lower Limit = μ - 1.28 σ
= 22.956 – 1.28 * 3.346 = 18.673
Observed runs are in between Upper Limit and Lower Limit

2. For Ambhuja Cement
Observed Runs = 19
+ Signs (n_1) = 29
- Signs (n_2) = 17
μ = 21.434
σ = 3.119
Upper Limit = 21.434 + 1.28 * 3.119 = 25.926
Lower Limit = 21.434 - 1.28 * 3.119 = 17.350
Observed runs are in between Upper Limit and Lower Limit

3. For Ultratech Cement
Observed Runs = 21
+ Signs (n_1) = 28
- Signs (n_2) = 18
μ = 21.913
σ = 3.591
Upper Limit = 21.913 + 1.28 * 3.591 = 25.997
Lower Limit = 21.913 - 1.28 * 3.591 = 17.828
Observed runs are in between Upper Limit and Lower Limit

4. For India Cements
Observed Runs = 22
+ Signs (n_1) = 20
- Signs (n_2) = 26
μ = 22.608
σ = 3.294
Upper Limit = 22.608 + 1.28 * 3.294 = 27.084
Lower Limit = 22.608 - 1.28 * 3.294 = 18.567
Observed runs are in between Upper Limit and Lower Limit

5. For JK Cements
Observed Runs = 26
+ Signs (n_1) = 25
- Signs (n_2) = 21
μ = 22.826
σ = 3.327
Upper Limit = 22.826 + 1.28 *3.327 = 27.084
Lower Limit = 22.826 - 1.28 * 3.327 = 18.567
Observed runs are in between Upper Limit and Lower Limit

6. For Madras Cements
Observed Runs = 20
+ Signs (n_1) = 25
- Signs (n_2) = 21
μ = 22.826
σ = 3.327
Upper Limit = 22.826 + 1.28 * 3.327 = 27.084
Lower Limit = 22.826 - 1.28 * 3.327 = 18.567
Observed runs are in between Upper Limit and Lower Limit

7. For Shree cements
Observed Runs = 23
+ Signs (n_1) = 30
- Signs (n_2) = 16
μ = 20.869
σ = 3.035
Upper Limit = 20.869 + 1.28 * 3.035 = 24.753
Lower Limit = 20.869 - 1.28 * 3.035 = 16.984
Observed runs are in between Upper Limit and Lower Limit

8. For JK Lakshmi cements
Observed Runs = 21
+ Signs (n_1) = 29
- Signs (n_2) = 17
μ = 21.434
σ = 3.119
Upper Limit = 21.434 + 1.28 * 3.119 = 25.426
Lower Limit = 21.434 - 1.28 * 3.119 = 17.441
Observed runs are in between Upper Limit and Lower Limit

9. For Lanco Cements
Observed Runs = 23
+ Signs (n_1) = 22
- Signs (n_2) = 24
μ = 22.956
σ = 3.346
Upper Limit = 22.956 + 1.28 * 3.346 = 27.239
Lower Limit = 22.956 - 1.28 * 3.346 = 18.673
Observed runs are in between Upper Limit and Lower Limit

Conclusion :
In all the cases, the observed runs fall in between the Upper Limit and Lower Limit. Hence we accept the Null Hypothesis. Therefore, Indian Banking sector is efficient in Weak form, which supports the share prices move independently of each other during the successive days.

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