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Empirical study on efficient market hypotheses- January effect

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ABSTRACT

Efficient Market Hypotheses (EMH) is a theory in Finance developed by Eugene Fama which states that share prices reflect relevant information. EMH proposes the idea that Stocks will always be traded at their fair value. Thus an investor would not be in a position to outperform the market and the only way to earn higher returns would be by purchasing riskier stocks. This model believes that buying and selling stocks are a game of chance not skill. A number of researches have been conducted in the recent past which supports this model. This empirical study was conducted to test the January effect on the stock prices and hence to agree or disagree with the Efficient Market Hypotheses. The analysis asserts that January effect does not exist and market reflects a weak form of efficiency.

Key words: Efficient market hypotheses, stock prices, returns, january effect.

1. Introduction

Efficient Market Hypotheses is a theory in Finance developed by Eugene Fama which states that share prices reflect relevant information. As per the Efficient Market Hypotheses theory equity stocks always trade at their value and their prices are independent of their previous prices. The movement in the prices depends on the equilibrium demand and supply of the stock in the market. Thus it is also called as random walk hypotheses. There are three forms of Market Efficiency:

1. Weak form of Efficiency: In this form the market is efficient when each subsequent movement in price is independent of its previous movement. Prices make a random walk and gets effected only by the demand and supply of the stock in the market.

2. Semi-strong form of Efficiency: In this form of market efficiency, principle of full disclosure and transparency is followed so that any kind of price sensitive information is available in the market as soon as it is generated in the market. All the investors have the relevant information for making their investment.

3. Strong form of Efficiency: This form of efficiency implies that even an insider cannot get the benefit from the insider information.

January Effect is a seasonal anomaly where stock prices movement is considered to be moving in the upward direction giving an opportunity to investors to make money.

2. Review of Literature

Aggarwal Monika (2012) conducted a research on Indian Stock Market Index (Nifty) for a period of 15 years and concluded that the Indian Markets Stock movement is independent and the past changes in the indices will not help the invest to predict the future price movement. Saqib Nisar (2012) conducted a study on 4 major markets of south asia and concluded that that none of them follow the random walk hypothesis and thus these markets are not not the weak form of efficient markets.

Bogdan Dima1and Laura Raisa Milos (2009) tested Efficient Market Hypothesis on Bucharest Stock Exchange and asserted the existence of weak form of market efficiency. Naresh Babu (2013) analysed the applicability of EMH in cement industry by using runs test and concluded that Indian Cement sector is efficient in Weak form which supports the share prices move independently of each other during the successive days. Poshakwale (1996) observed that market efficiency has an influence on the investment strategy of investors hence picking of winners would not make any sense.

Mishra, Das and Pradhan (2009) analysed the efficiency of Indian Stock Market in the light of recent global financial crises. Unit root tests was applied on the sample of the daily stock returns which supported weak form of efficiency. Gupta and Basu (2007) studied that efficient market hypothesis is especially for the investors who wish to hold internationally diversified portfolios. It was a logical extension of fundamental and technical approaches to equity investment decisions (Chander and Mittal, 2007).

3. Objectives of research

To test successive price changes in January is efficient in weak form

3.1 Hypotheses

Ho: Price Change in January is random
H1: Price Change in January is not random

4. Research methodology

This study is based on Secondary data
30 Companies representing Sensex were selected for the purpose of study.
The period of analysis is 5 years from 2010-14.
Closing Prices of these 30 companies for the month of January were taken.
Statistical Tool Used for the analysis is Runs Test.
Runs Test was conducted at 95% significance level to test the hypotheses.
Runs test is used to test whether market is in weak form of efficiency or not, if price movement passes this test, then the market is considered to be efficient in weak form of efficiency. A run is defined as "a sequence of identical occurrences preceded and followed by different occurrences or by none at all."

Formula
Total number of runs: r
Number of positive price changes: n1
Number of negative price changes: n2

Once we have this data, the mean and the standard deviation of the mean, are calculated by using the formulae given below.

At a given level of significance, we calculate the upper and lower limits and check whether the number of runs observed from the test falls within the limits or not. If it is between the limits, we conclude that the prices are random or independent of each other, otherwise not.

$$\mu_r = \frac{2n_1n_2}{(n_1+n_2)} + 1$$

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

4.1 Data Analysis and interpretation

Table 1: Company level

					Confidence Level @95%
Company	Mean	Runs	Std Dev	Lower Limit	Upper limit
Axis	53.92453	47	5.115877	43.89741	63.95165

Bajaj	53.83019	48	5.10667	43.82111	63.83926
Bharti Airtel	53.69811	59	5.093781	43.7143	63.68192
Cipla	52.79245	59	5.005393	42.98188	62.60302
Coal India	42.42529	41	4.412758	33.77628	51.07429
Dr Reddy	53.07547	56	5.033014	43.21076	62.94018
GAIL	53.830189	51	5.1066704	43.821115	63.839263
HDFC	52.79245	54	5.005393	42.98188	62.60302
HDFCBANK	53.92453	54	5.115877	43.89741	63.95165
Heromotors Co	50.81132	52	4.812045	41.37971	60.24293
Hindalco	52.11321	57	4.939102	42.43257	61.79385
HUL	52.11321	61	4.939102	42.43257	61.79385

ICICI Bank	53.83019	45	5.10667	43.82111	63.83926
INFY	53.92453	50	5.115877	43.89741	63.95165
ITC	54	53	5.123243021	43.95844368	64.04155632
Larsen	53.32075	53	5.056952	43.40913	63.23238
Mahindra	53.32075	49	5.056952	43.40913	63.23238
Maruti	53.32075	53	5.056952	43.40913	63.23238
NTPC	52.79245	53	5.005393	42.98188	62.60302
Reliance	53.69811	46	5.093781	43.7143	63.68192
SBI	54	47	5.123243	43.95844	64.04156
SSLT	52.4717	45	4.974089	42.72248	62.22091
Sunpharma	53.9811321	46	5.12140162	43.9431849	64.0190792
Tatamotors	53.32075	55	5.056952	43.40913	63.23238

TataPowers	52.79245	49	5.005393	42.98188	62.60302
Tatasteel	53.32075	57	5.056952	43.40913	63.23238
TCS	53.9245283	50	5.1158774	43.8974086	63.951648
Wipro	53.98113	55	5.121402	43.94318	64.01908
BHEL	53.69811	60	5.093781	43.7143	63.68192
ONGC	53.92453	53	5.115877	43.89741	63.95165

The Observed Runs of all the Companies representing Sensex falls between the upper and the lower limit. Ho hypotheses is thus accepted and H1 is rejected.

5. Conclusion

Since the observed runs falls between the upper and the lower limit, it indicates that the stock prices changes are random and the market (SENSEX) is efficient in the weak form.

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