A STUDY ON THE EFFICIENCY OF THE INDIAN STOCK MARKET WITH SPECIAL REFERENCE TO THE DAY OF THE WEEK EFFECT.

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ABSTRACT: The denial of the Efficient Market Hypothesis (EMH) is a calendar anomaly. Stock market anomalies are the patterns that more often than not seem to produce abnormal returns because the information is the basis for some of these patterns that is readily available to the public, they pose a challenge to the semi-strong method of the Efficient Market Hypothesis and this suggests that fundamental analysis can be useful for individual investors. Numerous research studies have examined the existence and prediction of stock market anomalies to find empirical proof of asymmetrical yield distribution. The behaviour of seasonal returns is predictable, which could result in effective trading techniques and anomalous returns. The current research paper focuses on the Monday anomaly persists in the stock market specifically focused on the index of National Stock Exchange for the period ranging from 01-07-2022 to 30-06-2023. The analysis of the returns is carried out using Descriptive Statistics and the Pearson Correlation test and Augmented-Dickey Fuller test (ADF) are used to find the presence of Monday anomaly and stationarity of the data respectively.

Keywords: Abnormal returns, Indian Stock Market, Efficient market hypothesis, Monday Anomaly.

1. Introduction

The phrase "Monday effect" refers to a theory of finance that opening of the stock market on Monday is the pattern followed from the Friday of the previous week. The idea states that, if the market has seen upward trend on Friday, it should stay up over the weekend and it will continue to go upward on Monday, whereas the vice-versa is like to happen if the market has seen downward trend on Friday. The impact of Monday is very important for day traders and the other market observers who use it to predict the market movement at the beginning of the trading week *(Harman Arora et.al 2017)* and **Frank Cross reported it for the first time in the year 1973.**

This anomaly has been the subject of academic research and speculation among investors for many years. It's important to note that anomalies in financial markets can change over time and may not persist indefinitely. Several theories and explanations have been proposed to account for the Monday Anomaly:

Weekend News and Events: Some researchers argue that the lower returns on Mondays could be attributed to significant news or events that occur over the weekend. For example, companies may release important information or news during the weekend that affects stock prices when the market opens on Monday.

Investor Sentiment: Behavioral finance theories suggest that investor sentiment may be more negative on Mondays due to a "weekend effect." Investors may have time to ruminate over their investments and become more risk-averse as the new trading week begins.

Liquidity: It is also possible that lower trading volumes on Mondays could contribute to higher volatility and lower returns. This can result from investors being cautious about trading early in the week.

Market Structure: The market's opening procedures and trading mechanisms may differ on Mondays compared to other days, potentially leading to different price movements.

It's important to note that the Monday Anomaly, if it ever existed, has become less pronounced in recent years. With advances in technology, electronic trading, and global markets, information is now more readily available and trading can occur around the clock. This has reduced the significance of any specific day-of-the-week effect.

Investors should be cautious when attempting to exploit any market anomaly, as they may be subject to transaction costs and risks. It's crucial to base investment decisions on sound financial analysis and a diversified portfolio rather than trying to time the market based on historical anomalies.

(Vandana Khanna, 2016) has stated that the Efficient-Market Hypothesis (EMH) in financial economics proclaims that asset prices fairly represent all the information of the stock market. Professor Eugene Fama developed the EMH who believed that equities constantly vary at their fair value. As a result, investors are no longer able to sell their overpriced assets or acquire their cheap ones. Due to expert stock selection expertise and market timing decisions, certain stocks therefore struggle to perform successfully. Consequently, luck may occasionally play a role in stock return gains. The EMH describes several varieties of market efficiency, which demonstrates how fast and precisely the stock market responds to recently made information available.

The stock market, on the other hand, occasionally reports the presence of superfluous returns and these phenomena are termed as calendar anomalies. The documentation of anomalies in literature of finance disrupts a unstable interpretation of market efficiency since equity prices no longer exhibit a random pattern and can be predicted from historical behaviour. As a result, it is simpler for market players to create trading strategies that potentially result in extraordinary profits based on the stock market's historical performance.

In this context, the current study is carried out to examine the Monday effect and stationarity of the data and for this purpose, the closing index of NSE for the time period of 01-07-2022 to 30-06-2023 is considered.

2. Review of Literature

Loughani and Chappel (2001) in their study from 1993 to 1997 observed that trading yields are more in the first trading day among all the days in a trading week. *Hellstrom (2002)* concentrated on the 207 stocks of Sweden for the period 1987 to 1996 and thought that there was a beneficial outcome of Tuesday and an adverse consequence of Friday was existed and *Kan and Bayar (2002)* concentrated on the returns of stock

market of Japan, Italy, Belgium, Hong-Kong, Canada, Austria, Denmark, Germany, USA, UK, Sweden, Spain, the Netherlands and Switzerland and it was found that unpredictability is least on Tuesday for dollar returns and towards the week end for nearby cash returns. ***Bhattacharya et al. (2003)*** have studied the index of BSE 100 for the period 1991 to 2000 and in their study, they found that there is a positive return on Thursday and Friday in the week of the study. ***Mangala and Mittal (2005)*** in their study found that there is a positive Wednesday return and negative Friday return in the study for the period 1997 to 2003 of CNX Nifty Junior. ***Yakob et al. (2005)*** focused on the Day to day shutting returns of Japan, China, Australia, India, Indonesia, South Korea, Taiwan and Hong Kong for a long time from January 2000 to March 2000 and found that the impact of the day of the week exists in securities exchanges of China, Taiwan, Australia and Indonesia. The following researchers in their study focused on the Indian stock market particularly on the BSE Index. ***Sharma and Singh (2006)*** studied on the BSE Sensex from the period 1992 to 2005 and observed that there were negative trading returns on Tuesday and positive trading returns on Wednesday. ***Bahure and Singhal (2009)*** studied on Sensex of Bombay Stock Exchange, BSE 200 and Nifty of S&P for the period 2003 to 2008 and found out there is a positive profit from Friday on all the three indices and ***Vandana Khanna (2016)*** studied the effect of day of the week and weekend effect in returns of stock of SENSEX of BSE in India from 25th September 2014 to 31st December 2015 and found in the review that the most fluctuation is on Monday in the mean returns of the weekly distribution during the period of study.

3. Research Gap

After the extensive literature review, most of the studies focused on the indices of various stock markets of foreign countries and India some of the studies concentrated on the stocks of banks and currencies and no study focused on the index of NSE, by considering this gap the following objectives have been framed to carry on the research.

4. Research Objectives

1. To analyse the Day-wise Market returns of NSE
2. To evaluate the Presence of Monday Anomaly of Stock Prices in the NSE

5. Hypothesis

H0: The mean and variance in the time series of closing returns of NSE is not different.

Ha: The mean and variance in the time series of Closing returns of NSE is different.

6. Research Methodology

The current study is carried out using the secondary data and for the purpose of study, the NSE NIFTY closing Index of every week i.e. from Monday to Friday for one year ranging from 01-07-2022 to 30-06-2023 is taken to study the presence of Monday effect and in the study period there is a total of 247 days which consists of Fifty Mondays, Forty-Eight Tuesdays, Forty-Nine Wednesdays, Forty-Nine Thursdays and Fifty-one Fridays and the data has been collected from various sources like NSE website.

Descriptive statistics and the Pearson Correlation test are used to carry out the analysis and to the presence of the Monday effect as per the theory propounded by Frank Cross in 1973.

$$Daily\ Market\ Returns = \frac{CPD1 - CPD0}{CPD1} * 100$$

CPD1 = Present Day Closing Price

CPD0 = Previous Day Closing Price (Present Day-1)

7. Analysis and Interpretation

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Monday	50	-1.7951	1.4287	.1165	.7785	.606	-.607	.337
Tuesday	48	-1.4932	2.5784	.2146	.7359	.542	.697	.343
Wednesday	49	-1.5280	1.1318	.0648	.6359	.404	-.366	.340
Thursday	49	-1.3150	1.7293	-.0325	.5951	.354	.499	.340
Friday	51	-1.9384	1.7833	.04955	.9088	.826	-.129	.333
Valid N	247							

Descriptive Statistics

The period for study starting from 001-07-2022 to 30-06-2023 has been considered which comprises of the data for 247 market working days, out of which there are Fifty Mondays, Forty-Eight Tuesdays, Forty-Nine Wednesdays, Forty-Nine Thursdays and Fifty-one Fridays. On Mondays, the return of market is maximum at 1.4287% and the return of market is minimum at -1.7951% with a mean return of 0.1165 and a standard deviation is 0.7785. Variance for the Monday is 0.606 and Skewness is -0.607. On Tuesdays, the return of market is maximum at 2.5784% and the return of market is minimum at -1.4932%. The Mean return for Tuesday is 0.2146% and the standard deviation is 0.7359 with a variance of 0.542 and Skewness of 0.697. In the case of Wednesdays, the return is at maximum of 1.1318% and the return is at minimum of 1.5280% with a mean return of .0648%. The standard deviation for the same is 0.6359, the variance is 0.404 and the skewness is 0.366. On Thursdays, the return of market is maximum at1.7293% and the return of market is minimum at-1.3150% with a negative mean return of -0.0325% and a standard deviation is 0.5951. The variance for Thursday is 0.354 and Skewness is 0.499. On Fridays, the return is maximum at 1.7833% and return is minimum at -1.9384% and the average market return is 0.04955%. Friday's standard deviation y is 0.9088 and Variance is 0.826 and Skewness is -0.129.

Correlation			Monday	Friday
Monday	Pearson Correlation		1	0.113
	Sig. (2-tailed)			0.436
	N		50	50
Friday	Pearson Correlation		0.113	1
	Sig. (2-tailed)		0.436	
	N		50	51

The Correlation analysis test has been carried out to find out the existence of Monday Anomaly in the National Stock Exchange during the study period. The Pearson Correlation results show that the correlation between Friday and Monday *r is 0.436*, which reveals that there is a Moderate Positive correlation between Friday and Monday Market returns. ***The study confirms the existence of Monday Anomaly in the National Stock Exchange in the period of study and the theory of Frank Cross is proved in the study period taken.***
Augmented Dickey-Fuller Test

Unit Root Test- Augmented Dickey-Fuller Test for NSE Closing Index Returns			
P Value	Test Statistic of ADF	Significance Level @ 1%	Significance Level @ 5%
0.000679	-8.7101	-3.43	-2.56

The Augmented Dickey-Fuller (ADF) test is conducted to analyse the trend of Market returns in the NSE. The Data shows that the *P* value of NSE Closing returns during the study period is 0.000679 which is lesser than the 0.05 i.e., the Significance value and Hence, the hypothesis which is null has been rejected. The ADF test Statistic value is -8.7101, which is less than the critical value of -3.43 at a 1% Significance level and the critical value of -2.56 at a 5% Significance level. This will further reconfirm and support the rejection of the Null Hypothesis. From the above test, it is confirmed that the mean and variance in the time series of Closing returns of NSE is different and it is confirmed that the time-series data of NSE closing index is non-stationarity.

8. Conclusion

The study has been carried out to analyse the daily returns of the weekdays and to examine the existence of Monday Anomaly in the National Stock Exchange from 01-07-2022 to 30-06-2023. The descriptive statistics, Correlation test and Augmented Dickey-Fuller Tests have been carried out to analyse the data and to test the hypothesis. The results of correlation show that the correlation is positive *(r=0.436)* between the Market returns on Friday and Monday. This confirms that there is an existence of Monday Anomaly in the National Stock Exchange during the study period and the theory propounded by Frank Cross about the

Monday effect is proved. The outcomes of the Augmented Dickey-Fuller (ADF) test show that, the P Value is lesser than the significance value of 0.05. This means that the mean and variance is not same i.e., there is a difference in the time series of NSE Closing Returns and the time series data of the NSE closing index is non-stationary.

Scope for the further study

The present study is carried out using the NSE NIFTY closing Index for one year ranging from 001-07-2022 to 30-06-2023 and only the Monday anomaly is focused in this research. Further study can be carried out using BSE Sensex for different periods and a study can also be carried out in the currency market.

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