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A STUDY OF THE DAY OF THE WEEK EFFECT IN BANK NIFTY AND NIFTY50

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Abstract

Seasonality and seasonal variations are in any commodity market and India is also privy to it. Seasonality is an anomaly. Day of the week effect is an anomaly, which this paper tries to unravel. Many researchers have investigated the effects of seasonal fluctuations such as, , the day-of-the-week, day-of-the-month, and month-of-the-year effects. Historical evidence suggests that these anomalies are prevalent in the market and if properly studied investors can take advantage of the market and try to beat the Efficient Market Hypothesis (EMH). This paper attempts to understand the effect of day-of-the-week on the Indian stock market.

Keywords: *Seasonality, Seasonal Variations, Month-of-the-Year Effect, Day-of-the-Month Effect, and Day-of-the-Week Effect*

INTRODUCTION

The Indian capital market has been prevalent for more than 2 centuries now. The upliftment of the capital market in India was centred around Mumbai. As compared to many other economical sectors of India the financial market has advanced and matured and now stands as one of the lesders in the stock markets across the world. It was organized long ago by the securities exchanges of Mumbai, Ahmedabad, and Kolkata as early as the 19th century.

"In time series data, the fluctuations or variations that are present at certain intervals within the year, that may be quarterly, monthly, or weekly is known as seasonality". Seasonality can be caused by any other factors such as; vacations, festivals, holidays, weather and other persistent patterns of the time series. These time series patterns if examined correctly can be predicted and taken advantage of by investors. The Efficient Market Hypothesis (EMH) states that no investor can continuously beat the market and the flow of information is constant and everyone has all the information of the market. Thus the EMH states that no investor can outperform the market continuously. Although the seasonality anomalies contradict the Efficient Market Hypothesis (EMH) as it is a way to continuously beat the market.

The roots of seasonality were initially discovered by by Hess P, Gibbons MR,(1981)[1]. Hess P, Gibbons MR,(1981)[2] discovered that the returns on Monday in the US stock market were comparatively low and on Friday they were notably high. Ariel (1987)[3] stated that returns during the first six month were exceptionally different than the next six months. There are several other studies as well that have discovered such market anomalies. In the continuum of Ariel's study Jaffe, J., & Westerfield, R. (1989)[4] found that the evidence of what Ariel had found was accurate but furthermore they discovered the last day of the month effect , he found

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that they were negative at the last day of the month. Jaffe, J. F., Westerfield, R., & Ma, C. (1989)[5] found a link between the Monday effect and the Friday effect and concluded that they were in correlation and on further examination found that if Friday returns were high the Monday effect disappears. Barone, E. (1990)[6] analyzed the Italian stock exchange and concluded that there are seasonal fluctuations in the Indian stock market but they change from time to time.

Stock markets around the world although different from one another govern under the same principles of the capital market and have the same attributes and characteristics. Thus, the Indian stock market is no exception to such anomalous variations, and if regularly monitored these anomalies can be a boon for investors and traders.

SEASONALITY

It is challenging to comprehend market trends due to conjectures spawned by macroeconomic and external environmental elements. Even though we can't see it, the market is strongly characterized by seasonal trends. Seasonal patterns are rooted in annual taxation milestones, pension and bonus payments, the quarterly "earnings season," fund managers' "window-dressing," index-rebalancing periods, potential seasonal psychological effects, industry cycles for production, advertising, and release, and probably a plethora of other factors that are harder to pin down. Since tax rates and schedules are subject to change, it is unrealistic to expect that seasonal patterns and their corresponding seasonal effects will remain constant. Even though the "efficient market hypothesis" appears to contradict itself, these patterns do generally

The term "seasonality" as used in this research refers to a variety of seasonal patterns that appear in the stock market. A seasonal trend is a periodic period of time during which there is a statistically significant likelihood of either a rise or decline in the stock market. Because seasonal investing is based on probabilities and uncertainties, there may be times when it performs worse than more traditional investment strategies. Furthermore, a study of seasonality tends to produce a highly quantitative investment discipline that pays little attention to the typical markers of market health, such as war, recessions, earnings growth, and stock market news on a daily basis. Nevertheless, there is compelling evidence from earlier research that adhering to specific seasonal tendencies has produced outstanding outcomes.

LITERATURE REVIEW

Wachtel, S. B. (1942)[7] were some of the first to notice the stock markets' seasonality. Cross, F. (1973)[8] studied the New York capital market's stock prices and came to the conclusion that the fluctuations in prices on Friday and Monday are not coincidental. Rozeff, M. S., & Kinney Jr, W. R. (1976 discovered that over the course of a fifty-year assessment period, January had continuously demonstrated higher returns than the remainder of the year. In addition, they discovered evidence of seasonality in monthly returns, or the month of the year effect. Gibbons, M. R., & Hess, P. (1981)[9] discovered that over the course of a fifty-year assessment period, January had continuously demonstrated higher returns than the remainder of the year. In addition, they discovered evidence of seasonality in monthly returns, or the month of the year effect. Gultekin, M. N., & Gultekin, N. B. (1983)[10] coinciding with the study of Rozeff, M. S., & Kinney Jr, W. R. additionally, they discovered global data indicating a substantial seasonality in a number of global stock markets. With the exception of April in the UK, January returns had been noticeably higher in most countries. Givoly, D., & Ovadia, A. (1983)[11] in accordance with earlier research and published works. They also identified conclusive evidence of the January effect and greater returns at the conclusion of the fiscal year, indicating that shareholders were active toward the end of the fiscal period to take advantage of tax benefits. Reinganum, M. R. (1983)[12] saw unusually high returns in the early days of January; the data aligns with earlier research and fits with the phenomenon of tax-loss selling. Smirlock, M., & Starks, L. (1986)[13] examined the Dow Jones Industrial Average's day-of-week influence from 1963 to 1983. Monday returns were found to be negative, but Friday returns, which are close to Monday returns, were shown to be positive. Cadsby, C. B., & Ratner, M. (1992)[14] found that nations including Germany, Australia, the United Kingdom, Switzerland, and Canada have a high prevalence of the turn-of-the-month impact. Additionally, they discovered that nations like

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Hong Kong, Japan, Australia, and Canada experience a notable Pre-holiday effect. Raj, M., & Thurston, D. (1994)[15] findings contradict Reinganum, M. R. (1983) that the New Zealand stock market showed no signs of the January or April influence. Mills, T. C., & Andrew Coutts, J. (1995)[16] examined the calendar anomalies in the FT-SE 100, Mid 250, and 350 indices and discovered evidence that validates a large portion of earlier material regarding the presence of the "weekend," "January," "half of the month," and "holiday" effects. Abraham, A., & Ikenberry, D. L. (1994)[17] discovered strong proof of the weekend impact and a relationship between Friday and Monday's returns. Empirical data indicates that eighty percent of the time, if the return on Friday is negative, the return on Monday will likewise be negative. Maberly, E. D. (1995)[18] investigated the historical literature and discovered strong proof of the Monday Effect. Poshakwale, S. (1996)[19] discovered that while seasonal irregularities like the day of the week impact exist in the current stock markets, they are absent from the nascent stock markets. They had evaluated the Bombay Stock Exchange from 1987 to 1994. Brooks, C., & Persand, G. (2001)[20] investigated the impact of the day of the week on the stock markets of several Asian nations and discovered that seasonality occurs in three of the five markets examined. Fountas, S., & Segredakis, K. N. (2002)[21] examined the January impact and seasonality of 18 various stock markets; they discovered that while seasonality is present in a number of nations, there is little evidence to support the theories of the January effect and tax loss selling. Ajayi, R. A., Mehdian, S., & Perry, M. J. (2004)[22] examined the anomalies in the Eastern European Emerging Markets (EEEM) and discovered that their research supported earlier studies' findings that the Monday impact exists. Seyyed, F. J., Abraham, A., & Al-Hajji, M. (2005)[23] discovered strong evidence of seasonality and volatility due to the Ramadan Effect in the Pakistani stock market. They noticed that during the month of Ramadan, there was a notable decrease in trade, which lessens market volatility. Raj, M., & Kumari, D. (2006)[24] examined if seasonal influences existed in the Indian stock markets. They discovered that in India, Monday returns are positive while Tuesday returns are negative, proving that there is no such thing as the positive January impact or the negative Monday effect. Desai, D., Joshi, N. A., Chokshi, A., Dave, D., & Ramchandra, A. (2011)[25], discovered that Indian stock indexes and stocks exhibit a day-of-the-month influence. They discovered that there was a notable positive bias in the final and initial weeks of each month. Desai, D., & Trivedi, A. (2012)[26] discovered that the day-of-the-month anomaly persists, the day-wise returns of the S&P CNX NIFTY 50 exhibit statistical differences, and the anomaly presents a chance to generate excess returns. Prajapati, B. A., Modi, A., & Desai, J. (2013)[27] analyzed the day-of-the-month impact in eleven different stock markets and discovered that it exists in all stock markets globally, demonstrating that certain days of the month have historically produced higher returns. Vachhrajani, H., Desai, D., & Desai, K. J. (2014)[28] discovered that the Indian stock market exhibits seasonality and that the monsoon has a significant impact on it. Returns after the monsoon are nearly twice as high as returns before it.

OBJECTIVES OF THE STUDY

1. To study the seasonal anomalies of day of the week effect in the Indian Stock Market.
2. To understand the anomalies if existent and conclude on how can the investors benefit from such anomalies.

SAMPLE DATA AND SAMPLING FRAME

The daily return data of Bank NIFTY and NIFTY 50 are taken for the period of 1st January 2000 to 25th October 2022. The data was taken from www.nseindia.com the official website of the National Stock Exchange of India.

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HYPOTHESIS

The hypothesis is that the mean daily return of Nifty 50 and Bank NIFTY is the same for all the days of the week.

H_0: Mean daily return of Nifty 50 and Bank NIFTY for all the days of the week is same.
H_1: Mean daily return of Nifty 50 and Bank NIFTY for all the days of the week is not the same.

The hypothesis is tested for the test data in the study.

RESEARCH METHODOLOGY

For the calculation of the percentage return the below method is used.

$$R_{i_t} = \frac{C_{i_t} - C_{i_{t-1}}}{C_{i_{t-1}}} \times 100$$

Here,

- R_{i_t} = The percentage return of period t.
- C_{i_t} = The closing value in period t.
- $C_{i_{t-1}}$ = The closing value of the preceding period t-1.

For the calculation of the average return the below mentioned method and formula is used.

$$A_i = \frac{\sum C_i}{n_i}$$

Here,

- A_i = Average return
- $\sum C_i$ = Sum of all closing values
- n_i = Number of closing values or number of sample

To test whether the Nifty returns are stationary or not, we have used ADF Test which is considered formal test of stationarity. ADF test involves estimating regression equation and carrying out the hypothesis test.

$\Delta yt = \alpha + \beta t + \gamma yt - 1 + \delta 1 \Delta yt - 1 + \delta 2 \Delta yt - 2 + \ldots$

To test the differences between the returns of the dates dummy variable regression model will be used.

$$Y_i = f(X_i, \beta) + e_i$$

Here,

- Y_i = Dependent Variable
- f = Function
- X_i = Independent Variable
- β = Unkown Parameters
- e_i = Error Term

FINDINGS & CONCLUSION

Table I – Bank NIFTY

Day	Coefficients	Standard Error	t Stat	P-value (95%)
Monday	-0.290757707	0.410464558	-0.708362515	0.478749304
Tuesday	-0.213994762	0.41044812	-0.5213686	0.602130398
Wednesday	-0.129409479	0.410454678	-0.315283237	0.752558222
Thursday	-0.223815599	0.410464558	-0.545273871	0.585586635
Friday	-0.186823351	0.410531782	-0.455076461	0.649071668

Table II – NIFTY 50

Day	Coefficients	Standard Error	t Stat	P-value (95%)
Monday	5.454150088	15.38900682	0.354418589	0.723038397
Tuesday	9.884108399	15.38816307	0.642318927	0.520692119
Wednesday	8.602600954	15.38844334	0.559029966	0.576163367
Thursday	5.90928298	15.38886558	0.38399731	0.700994853
Friday	8.183917866	15.39173844	0.531708481	0.594948766

It is observed that Bank NIFTY had negative returns as compared to NIFTY 50 that have positive returns. It is also observed that Bank NIFTY has not given significantly high returns. According to the data taken the day of the week effect does not exist in the Index taken under the study. It is concluded that the advantage of the day of the week effect if any is negligible.

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