Revisiting Seasonal Anomalies in Indian Stock Market

Dinesh K
Assistant Professor,
Department of Management Studies, Ballari Institute of Technology & Management,
Ballari (Karnataka), India.

Janet Jyothi D'souza
Associate Professor,
Department of Management Studies, Ballari Institute of Technology & Management,
Ballari (Karnataka), India.

ABSTRACT

The efficiency of the capital market is an important concept measure the random walk theory of the market by stating that investors cannot make abnormal profits by stock trade on the available information. The stock returns and variability in the returns are prominent area of interest of investors, traders, researchers and market regulators. This study explores the very widely tested seasonally anomaly of day of week effect and month of the year effect and weekend effect for the Indian stock market particularly of the stocks listed in BSE-200 over the period of January 2010 to December 2020 by employing the descriptive statistics ad regression analysis. The results provide the empirical evidence of the seasonality in the returns of most popular anomalies and the result evidenced there is more averagely returns on Wednesday in week effect, and also except Tuesday other trading days Monday, Thursday, Friday is having a positive return on the investment made and only Tuesday is having a negative returns. Therefore, it clearly shows the existence of seasonality is evident in Indian stock market.

Keywords: Efficiency, Day of Week Effect, Month of The Year Effect, Weekend Effect.

1. INTRODUCTION

Finance has always been regarded as an outgrowth of economics, a fact that cannot be denied. But ever since its inception it has put focus into areas that were less tapped by economists and has followed a different methodological perspective. Investing decisions and financing decision are strategic decisions that need to keep updating according to the market forces and market dynamics**.** No matter to what deeper we study them or for how long, they remain partially mysterious and at some points in time unpredictable that is directly related to the

fact that they involve a human aspect into them. And as much as the human brain is fascinating to neurologists and the decision making is amazing to psychologists, so will be the investment and financing decisions to finance academics and professionals.

In more recently, numerous studies has been undergone for testing and retesting of market anomalies in stock markets of both developed and emerging stock returns. The study has focused on examining stock market returns during weekend effect in the Indian share markets. From the findings of the studies; we can find that days of all week are not the similar stock returns. Whereas weekend effect is expressed as a state of average daily returns on Monday are different and lower than average daily returns of other days of the week and particularly Friday returns are more significantly different and higher stock returns. French (1980) was pioneer in observing the weekend effect and supported with substantial evidence on market anomalies.

2. LITERATURE REVIEW

Stock market efficiency is measured by various popular and widely tested market anomalies particularly calendar anomalies such as day effect and other tested effect such as day effect and weekend affect proved widely in developed capital markets .This commonly named market anomalies started confirming the results in other markets by researchers and started testing and identifying other seasonal anomalies and become useful tool for various market participants to make benefit by beating the market in short term and long term by identifying the anomalies such Monday effect ,Friday effect and weekend effect became very popularly for short term investors and turn of the month and year end effect became useful strategy for medium to long term interested investors by making abnormal gains in stock market returns. The research work of Aman, Natchimuthu, &Mary (2019) investigated monsoon effect on stock returns on Indian stock exchanges by applying EGARCH model conducted volatility measures on the stock returns. The outcomes validated that reality that the monsoon impact is available in Indian Equity Market. Archana, Safeer, & Kevin (2014) observed presence of stock market anomalies in stock market in India by considering the study period of 5 years BSE INDEX Values from the year from the year January 2008 to December 2012. The statistical apparatuses utilized for the examination is Mean and t-test. The weekend impact was demonstrated in the India financial exchange, turn of week impact and turn of month impact is somewhat obvious. Brooks,

Persand (2001) Explored the presence of "calendar impact" has been the subject. Khanna & Mittal (2016) analyzed the nearness of DOW Anomaly in the BRICS securities exchange,

The result showed Wednesday is causing the highestvariability in BSE and SSE, Dash et al (2011) investigate the monthly returns during the market crash for in between the periods in Indian stock exchanges by applying ANOVA test found that there was no huge contrast in mean month to month returns between various months that is no regular impact. Chhabra et al (2010) examines the market anomalies and shows the Monday effect in India stock returns and other calendar effects are shown partial effect. Keong, Yat, &Ling (2010) this paper examines the nearness of the long stretch of the year impact on stock returns and unpredictability in 11 Asian nations includes India, Japan, Philipines, Hong Kong ,Indonesia, Taiwan, Korea, China ,Malaysia and Singapore observed no significant positive effect for May ,January and April monthly returns and while for Indonesia found to have august negative stock returns.

Sobti (2018)Attempted to take a gander at the steadiness of association fundamentals, for instance, size and value impacts close by ordinary Anomalies, for instance, January, April, November. The study finds s the evidence of both size and value effect in India. Dharani & Natarajan (2011) investigated the examination of risk and return week after week for Nifty Shariah record and in compare with Nifty returns for day and month and quarters effects for sample period of January 2007 to 31st December 2010. Doyle, Chen and Huirong (2009) reported the behavior of day wise seasonal returns in stock returns for monthly and for day wise and found no significant variation for the selected sample period of the study.

Keim (1982) observed stock returns of AMEX market and NYSE stock index returns for month effect .The results showed the evidence of abnormal returns were present in month of January, and there was also negatively returns were present in the returns in month of November.

3. RESEARCH METHODOLOGY

Need for the study

1. The study reveals the volatility of returns on portfolio is used to assess to support investors and investment managers..
2. The need of this study is to find the significant relationship between seasonality keyfactors influence on market with investment.

3. To know when there are abnormality returns associated with time period in a year formonth, in a day for a week.

4. OBJECTIVE OF THE STUDY

The aim of this study will be to verify day of the week effect of Indian stock market bse-200under study.

1) To know the descriptive statistic properties for seasonality in the returns
2) To study the existence of day of the week effect and month of year in Indian stock market returns.
3) To investigate the presence of weekend effect.

5. RESEARCH METHODOLOGY

The study the seasonality in the stock returns of BSE0 200 stocks for examining calendar anomalies the daily closing prices are obtained from the capitaline database for the period January 2010 to December 2020 . The stock returns of BSE-200 are estimated by given formula:

$$R_{t=}(lnP_t - lnP_{t-1}) * 100$$

Here R_t denotes return in the period t, P_t and P_{t-1} are closing prices of the BSE-200 stocks at time intervals of time t and t-1 respectively. The estimate the variation in stock returns ,we have carried descriptive statistics to measure mean, standard deviation and co-efficient of variation for the study objective of day effect ,month effect and weekend effect. The estimate the significance of the stock returns we have applied t-test and regression analysis. To test the proposed hypothesis we have considered the relation between independent variable and dependent variables with benchmark as intercept for measuring market anomalies. For weekend effect study, Friday is considers as benchmark results.

6. HYPOTHESIS

To study seasonal effect anomaly in Indian stock market with reference to BSE-200 listedcompanies, the following Hypothesis were formulated.

Testable Hypotheses

H_1: The stock return of BSE-200 of daily closing price is statistically different from each day.

H_2: The stock return of BSE-200 of closing prices on weekend is statistically different from other days.

H_3: The monthly stock return of BSE-200 of all month is statistically different in a year.

7. DATA ANALYSIS & DISCUSSION

Analysis and Interpretation

Table 1 Descriptive Statistics for BSE-200companies

Day	Mean	Std Dev.	Skewness	Kurtosis
Monday	0.127	13.1352	152.618	25083.3
Tuesday	-0.0002	0.00078	30.7923	4591.91
Wednesday	13.4057	0.07392	140.959	21683
Thursday	0.14456	15.493	157.06	26318.1
Friday	0.13074	12.8384	141.95	22040.8

Source: author's calculation

The above table1 describes the Descriptive Statistics of mean standard deviation, Skewness, and Kurtosis test for the period of January 2009 to December 2019. High mean returns were noticed during Wednesday (13.4) and negative mean return on Tuesday (-0.0002). Standard deviation is high on Thursday (15.49) and least is recorded on Tuesday (0.00078), it is clear from the above table that market is more volatile on Wednesday and less volatile on Tuesday. The result skewness test disclosed that positively skewed and it is noticed more than the average return during Thursday (157.06) and less during Tuesday (30.79). the Kurtosis test shows Leptokurtic results for all trading days and more is on Thursday (26318.1) and is least is on Tuesday (4591).

Table2 Weekend effect on BSE-200 companies

	Coefficients	Standard Error	t stat	P-value
Intercept	0.1307527	0.072977814	1.79168	0.05319
Monday	-0.0001091	0.005389583	-0.0202	0.98385
Tuesday	0.04176594	90.52317489	0.00046	0.99963
Wednesday	-0.0001685	0.005280923	-0.0319	0.97455
Thursday	0.00020894	0.004569442	0.04573	0.96353

Source: author's calculation

The table 2 shows the days of the week effect in daily BSE-200 returns. The results are reported in this table. The benchmark for the analysis is Friday represented by interceptwhich provided a return of 0.13 percent on an average of the sample period. Returns of Monday (-0.00), Tuesday (0.04), Wednesday (-0.00) and Thursday (0.00) are less than Friday returns. The p-value on Monday (0.98), Tuesday (0.99), Wednesday (0.97) and Thursday (0.96) is not significant at 5 percent level which indicates and is significant on Friday (0.053>0.05) therefore we accept our null hypothesis that there is no weekend effect.

Table 3 Regression Results for the day of the week effect on BSE-200 companies returns

variable	coefficient	Std. Error	t-statistic	Prob
Intercept	0.173294	0.08263	2.097144	0.03598
Monday	-0.04629	0.11699	-0.395649	0.69236
Tuesday	-0.0045	0.11662	-0.038577	0.96923
Wednesday	-0.00238	0.11677	-0.020368	0.98375
Thursday	-0.00942	0.11313	-0.083279	0.93363
R-Squared	1.27E-06			
Adjusted R-Squared	-2.8E-05			
Standard Error	15.0186			

Source: author's calculation

The above table 3 represents regression results for BSE-200 companies' closing price. It is clear from the tables that only Friday have positive coefficient (0.173) and other days are negative coefficient and is least on Thursday (-0.0094) which are also consistent with result. T-statistic is positively insignificant on Friday (2.09) and other days are significant on Monday, Tuesday, Wednesday and Thursday least with negative is on Wednesday (-0.02) which is significant. Probability is significant on benchmark that is Friday (0.0359) and others days of week Monday, Tuesday, Wednesday and Thursday are insignificant at 5 percent we could reject the null hypothesis that stock returns for closing prices for all days are similar. Thus, we can further conclude that significant day of the week effect is present in BSE-200 stock returns.

Table 4 Monthly Descriptive Statistics for BSE-200companies

Month	Mean	Std Dev.	Skewness	Kurtosis
January	0.69644	8.47379	25.993	805.1318
February	0.80752	14.4733	28.4671	887.818
March	2.22553	34.5666	21.952	511.3769
April	1.8775	24.594	21.781	541.7296
May	0.95996	15.6162	28.3199	893.7443
June	1.46108	25.0939	23.2136	571.872
July	0.29398	3.90728	18.3351	361.7131
August	0.22426	3.45116	29.0242	941.9295
September	0.59884	10.2294	23.8478	593.3099
October	0.40989	5.825	20.9971	483.6964
November	0.40543	6.5579	27.8733	865.7997
December	0.76137	13.9927	25.0198	677.2615

Source: author's calculation

The above table 4 describes the Descriptive Statistics of mean standard deviation, Skewness, and Kurtosis test for the period of January 2009 to December 2019. High mean returns were noticed during March (2.22) and is least is recorded in month of August (.22426). Standard deviation is high on March (34.56) and least is recorded on October (5.82), it is clear from theabove table that market is more volatile on March. The result skewness test disclosed that positively skewed in all trading Months is a year and it is noticed more than the average return during August (29.02) and less during October (20.99). the Kurtosis test shows Leptokurtic results for all trading Months and more is recorded on August (941.92) and is least is on June (361.71).

Table 5 Month of the year effect on BSE-200 companies

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.99095407	0.441320304	2.2454305	0.0249065
January	0.010067	0.050882113	0.19784957	0.8431934
February	-0.0035655	0.029787678	-0.1196979	0.9047408
March	-0.0016262	0.01247696	-0.1303388	0.8963184
April	-0.0034022	0.017536506	-0.1940054	0.8462017
June	-0.0023707	0.017180386	-0.1379903	0.8902693
July	-0.0158141	0.110600556	-0.1429835	0.8863251
August	-0.0119445	0.125234395	-0.0953769	0.92403
September	-0.0058375	0.042145868	-0.1385061	0.8898617
October	-0.0090562	0.074019221	-0.1223497	0.9026408
November	-0.0104979	0.065749506	-0.1596658	0.8731689
December	-0.0037549	0.030810395	-0.1218707	0.9030201

Source: author's calculation

The table 5 shows calculated results of the month of the year effect in Monthly returns of BSE- 200 returns. The results are reported in this table. The benchmark for the analysis is May month is represented by intercept which provided a return of 0.99 percent coefficient on an average of the sample period and return of January (0.01) is positive and other month of the year is having negative coefficient with least in July (-0.015). The p-value in May (0.02< 0.05) indicates the statistically significant returns from other months in a year. We can reject our null hypothesis that monthly returns for all the months in a year are not significantly different.

8. FINDINGS & DISCUSSION

This study showed the presence of seasonality variations in BSE-200 listed companies' average returns. Some important findings are:

- ✓ The results from the table 1 evidenced there is more averagely returns on Wednesday in day of the week effect, and also except Tuesday other trading days Monday, Thursday, Friday is having a positive return on the investment made and only Tuesday is having a negative return meanly.
- ✓ The table 2 shows the days of the week effect in BSE-200 companies daily returns, standard error, coefficients, t-stat and p-value where the benchmark id Friday. The coefficient is negative on Monday (-0.0001091) and high on Friday (0.13), standard error is more on Tuesday, t-stat is more on Friday (1.79) and less on Monday (-0.02) and p-value on Tuesday (0.99). The p-values of Friday (0.053>0.05) therefore we accept our null hypothesis that there is no weekend effect.
- ✓ From the table 3 Regression Results for the day of the week effect on BSE-200 companies returns for Friday have positive coefficient (0.173) and other days are negative coefficient and is least on Thursday (-0.0094). We could reject the null hypothesis that stock returns for closing prices for all days are similar. Thus, we can further conclude that significant day of the week effect is present in BSE-200 stock returns.
- ✓ For examination of Month of the year effect on BSE-200 companies the sample period and return of January (0.01) is positive and other month of the year is having negative coefficient with least in July (-0.015). The p-value in May (2.245) is high and insignificant and other months are having significant result with least significant value in month April (-0.19). P-value is significant at 5 percent level in month of May (0.024) and other months are insignificant where highest is recorded in month of February (0.904). The p-value in May (0.02< 0.05) indicates the statistically significant returns from other months in a year. We can reject our null hypothesis that monthly returns for all the months in a year are not significantly different.

9. CONCLUSION

From the study it is confirmed that obviously there is some kind of seasonal anomalies are persistent in the Indian stock market as its one of the leading markets in the world. The results evidence for 10 years from 2010 to 2020 for the stock of listed in BSE-200.The result evidenced there is more averagely

returns on Wednesday in day of the week effect, and also except Tuesday other trading days Monday, Thursday, Friday is having a positive return on the investment made and only Tuesday is having a negative returns.For week effect we observe the Friday and Monday significant effect and while for the month of year effect we observe May month having significant and while higher mean returns are notices for the month of March. Therefore, it clearly shows the existence of seasonality is evident in Indian stock market.

REFERENCES

- Aman, Natchimuthu, & Mary. (2019). Calender Anomalies in Indian Stock Market: Mansoon effect. *Academy of Accounting and Financial studies Journal, 23*(2).
- Archana, Safeer, & Kevin. (2014, March). A Study on Anomalies in Indian Stock Market. *International Journal of Business and Administration Research Review, 1*(3), 128-137.
- Brooks, & Persand. (2001). Seasonality in Southeast Asian Stock Market; some new evidence on dat to the weak effect. *Journal of Applied Economics, 8*(3), 155-158.
- Darrat, li, & chung. (2003, june). Seasonal Anomalies a close look at the Johnnesburg stock exchange. *Contemporary Management Research, 9*(3), 155-167.
- Dash, Dutta, & Sabharwal. (2011). Seasonality and Market Chrashes in Indian Stock Markets. *Asian Journal of Financial & Accounting, 3*(1), 175-182.
- Dharani, & Natarajan. (2011, April). Seasonal Anomalies between S&P CNX Nifty Sharaih index S&P CNX Nifty index in India. *Journal of Social and Development Science, 1*(3), 101-108.
- Doyle, Chen, & Huirong. (2009). Wandering Week effect in major stock Markets. *Journal of Banking and Finance, 33*(8), 1388-1399.
- Draper, & Paudyal. (2002). Explaining Monday Returns. *The Journal of Financial Research, 25*(4), 507-520.
- Garg, Bodla, & Chhabra. (2010, December). Seasonal Anomalies in Stock Returns: A study of developed and emerging Markets. *Journal of Management Science, 1*(2), 165-179.
- Keim. (1982, June). Size related Anomalies and Stock Return seasonality. *Journal of Financial economics, 12*(1), 13-32.

- Keong, Yat, & Ling. (2010, July 4). Month of the year effects in Asian countries.
- *African Journal of Business and Management, 4*(7), 1351-1362.
- Khanna. (2014). AN analysis of Day-of-the-week-effect in Indian Stock Market.
- *International Journal of Business Management, 1*(2), 341-355.
- Khanna, & Mittal. (2016). Does day of the week Anomaly Influence BRICS stockMarkets. *Journal of Business, 5*(1), 9-17.
- Kuar. (2004, December). Time varying volatility in the Indian Stock Market. *Indianresearch Journal, 29*(4), 25-42.
- Kumar, & Jawa. (2017, March). Effecient Market Hypothesis and Calender effects.
- *Bussiness Analyst Journals, 37*(2), 145-160.
- Lean, & Tan. (2010). Existence of the Day-of-the-week effect in FTSE Bursa Malaysia. *Journal Pengurusam, 31*(1), 3-11.
- Lean, Smyth, & Wong. (2007). Revisiting Calender Anomalies in Asian stock Markets using a stochastic Dominance. *Journal of Multinational Financial Management, 17*(2), 125-141.
- Neeraj, & Srikanth. (2014, July). Anomalies in Indian Stock Market- an empirical evidence from seasonality effect on BSEIT index. *Journals of ARTS, Science and Commerce, 5*(3), 109-116.
- Pathak. (2013). Stock Market Seasonality: A Study of Indian Stock Market(NSE).
- *Indian Journal of research, 2*(3), 200-202.
- R.Patel, Radadia, & Dhawan. (2012, January). Day of the weak effect of Asian stock market. *Journal of Arts, Science & Commerce, 3*(3(3)), 61-70.
- Ram, & Ramesh. (2014, July-September). An Examination of Seasonality in Indian Stock Market with refeence to NSE. *Sumedha Journal of Management, 3*(3), 1-11.
- Riro, & Kuria. (2003). A study of seasonal effects on average returns on Nairobi Securities exchange. *Research journal of research and accounting, 4*(7), 207-215.
- Sarma. (2004, September). Stock market seasonality in an emerging market. *Indain journal of social commerce, 29*(3), 35-41.
- Sharma, Mittal, & Khurana. (2014). Month of the Year Anomalies in stock

Market; Evidence ifrom India. *international Journal of Applied Econimics and Finance, 1*(1), 1-15.

- Singhal, & Bahure. (2009, March). Weekend Effect of stock returns in the Indian Market. *Great Lakes Herald, 3*(1), 12-23.
- Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance* (19), 425–442.
- Sullivan, R. W. (2001). Dangers of data mining: the case of calendar effects in stock returns. *Journal of Econometrics , 5* (1), 249–286.
- Taufiq Choudhry (2000). Day of the Week Effect in Emerging Asian Stock Markets: Evidence from the GARCH Model. *Applied Financial Economics*, 10, 235 – 242.
- Valentina Zakirova, G. C. (2017). Calendar anomalies in the Russian stock market. *Russian Journal of Economics , 3* (1), 101-108.
- Valentina, Ţ. E. (2015). Intramonthly Anomalies on the Bucharest Stock Exchange. *Procedia Economics and Finance , 32*, 271-27.