

A STUDY ON EFFECT OF F & O EXPIRY ON MARKET VOLATILITY

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Abstract: The F & O market in India witness the expiry of the contracts on every Thursday for the last week of each month. The objective of this study is to investigate the effect of this expiry concept on the market volatility. In this research work we have selected 10 different stocks from 1 January 2017 to 31 December, 2018. The result of this study established that there is a considerable impact of the month end expiry factor on the price volatility in F & O market. Considering the same, investors, hedgers and speculators enter in to contracts based on their calculations, thereby increasing the volatility.

Introduction: The Futures and Options contracts expire on the last Thursday of the month. Generally, the expiry day is volatile. Traders have to be very cautious in handling the positions which are open. There are huge profits to be made or lost. On a real volatile expiry day, it is all edge of the seat thrill and even the most experienced traders feel the tension of the trades suddenly going wrong or there are sudden unexpected gains.

Research Objectives: This research week is undertaken to achieve below mentioned objectives

- To measure the effect of F & O Expiry Date on Stock Price.
- To measure the effect of F & O Expiry on Return of Stocks.
- To measure the effect of F & O Expiry on Risk of Stocks.

Research Hypothesis: Research hypothesis of this project is "There is no significant difference in average daily return on monthly basis from week 1 to week 4 of stock under observation ($\mu_1 = \mu_2 = \mu_3 = \mu_4$)."

Research Methodology:

Research Design

Top 10 stocks from Nifty 50 were identified to analyze the market volatility during the month end on the stocks. For the purpose, past two years' rate are considered on daily basis and the same will be converted into weekly returns with the use of average function. Thereafter various statistical functions i.e. standard deviation, co-variance and ANOVA test be used.

Sampling Design

- Population: stocks in futures and options market traded on the stock exchanges in India
- Sampling Frame: Stock between 1 January 2017 to 31 December 2018
- Sampling method: Convenience Sampling Method
- Sample size: 10 companies listed between selected time period

Data Analysis & Interpretation:

First Level Analysis of Effect of F & O Expiry on Individual Stock Return: One way ANOVA Test for difference in rerun in between week 1 to week 4 of selected 10 stock.

Table 1: ANOVA Test Result for return on 10 stock during different weeks of month

Sr. No.	Stock	F Calculated Value	F Table Value	Interpretation
1	Axis Bank	4.0107	2.7036	Ho Rejected
2	Infosys	2.2051	2.7036	Ho Fail to Reject
3	GAIL	0.6321	2.7036	Ho Fail to Reject
4	Titan	3.7850	2.7036	Ho Rejected
5	TCS	0.3915	2.7036	Ho Fail to Reject
6	Ultratech Cement	2.6247	2.7036	Ho Fail to Reject
7	Bajaj Auto	1.1136	2.7036	Ho Fail to Reject
8	CIPLA	1.0256	2.7036	Ho Fail to Reject
9	EICHER MOTORS	3.3590	2.7036	Ho Rejected

10	LARSEN	1.2483	2.7036	Ho Fail to Reject
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Interpretation: For a selected time period of two year for measuring the effect of F & O Expiry on stock price 3 out of 10 stock return have shown effect of F & O expiry as return of 1 to 4th week is found significant different and null hypothesis rejected as value depicted in above table.

Second Level Analysis of Effect of F & O Expiry on average of Stock Return: Two way ANOVA Test for difference in average rerun in between week 0 to week 5 of selected 10 stock.

Table 2: Summary of two way ANOVA Test

SUMMARY	Count	Sum	Average	Variance
Axis	6	0.346515	0.057752	0.087458
Infosys	6	-0.56209	-0.09368	0.122237
Gail	6	-0.63465	-0.10577	0.054658
Titan	6	1.835791	0.305965	0.148232
TCS	6	-0.1378	-0.02297	0.032119
Ultratech	6	0.496712	0.082785	0.048114
Bajaj Auto	6	0.634971	0.105828	0.100273
Cipla	6	-0.18062	-0.0301	0.022644
Eicher Motors	6	-0.2586	-0.0431	0.093942
Larsen	6	0.891297	0.148549	0.081735
Week 0	10	-0.23506	-0.02351	0.146693
Week 1	10	-0.58959	-0.05896	0.058966
Week 2	10	1.535468	0.153547	0.046665
Week 3	10	-1.13509	-0.11351	0.035535
Week 4	10	1.138435	0.113844	0.04463
Week 5	10	1.717363	0.171736	0.12191

Table 3: Result of two way ANOVA for difference in 0 to 5 week average daily return

Source of Variation	SS	DF	MS	F	F critical
Rows	0.863417	9	0.095935	1.338146	1.77448
Columns	0.730894	5	0.146179	2.038965	1.979639
Error	3.226171	45	0.071693		
Total	4.820483	59			

Interpretation: Null hypothesis is rejected as the table value is lower than the calculated value in both row wise and column wise analysis. Thus, there is significant difference in average daily return on monthly basis from week 0 to week 5 of Rows and Columns ($\mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4$)

Limitations: This research has below mentioned limitations.

1. Last two years daily price movement taken into consideration for measuring the effect of F & O Expiry on stock price and finding and conclusion is totally based on this data only.
2. Difference in daily return on week basis may be due to any other factors which is not taken into consideration in this research.

Findings:

1. Referring to the mean, ratio of the average of weekly data to the number of months for the combined data, covariance, it shows a higher volatility in the fourth week of every month. This shows that there is notable impact of the month end factor on the stocks.
2. As per the ANOVA test results, for the stocks of Infosys, GAIL, TCS, Ultra Tech, Bajaj, Cipla, and Larsen show that here is no significant difference in the average daily return on weekly basis average of these company's stocks. Other stocks have shown the volatility against our hypothesis. Stocks include Axis TITAN and Eicher Motors have shown significant difference
3. On the other hand, the two way ANOVA test applied to all ten sample stocks reflect an impact because of the month end Thursday in its prices

4. The aerial view of the ANOVA study for the average of daily returns on weekly basis reflects that there is a major impact on volatility of the stock market because of the month end criteria.

Conclusion: The investors and the traders may want to focus on the expiry day impact on the stock market considering the average, variance, and standard deviation of the individual and merged stocks, while a conscious importance to the factor of month end while making trading in the stock market as per the analysis of the above Anova test study as the same varies with different stocks.

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