

To study the impact of Investor's Perception and Behavior on Volatility in Indian Stock Market

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Abstract:

This paper focuses on the study of the impact of investor's perception and behaviour on volatility in Indian Stock Market. For conducting this study three biases are used as proxy for judging investor's perception and behaviour. These are Overconfidence, Disposition Effect and Herding. The final sample size collected were 612 investors who actively participate in the Indian stock market. The survey was conducted by online mode. The results indicate that Herding and Overconfidence bias has positive impact on Volatility in Indian Stock Market. On the contrary, disposition bias does not have a statistically significant impact on Volatility in Indian Stock Market. Thus, the paper concludes that there is association between investor's perception or behaviour and volatility in Indian Stock Market.

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INTRODUCTION

Indian Stock Market attracts more investors as compared to other developing stock markets. In India, individual investors are becoming more professional in choosing their investment avenues or making decisions. The number of demat accounts has gone drastic change and continue increasing day by day. It is very crucial that investors behave rationally, but it is not always possible because decisions are made from psychological point of view in many situations imputed to awareness level, education, availability of information etc. Psychological factors have major influence on decision making. (Thaler, 2002) opined that the correlation between investor and its motivation at the time of investment decision making is influenced by psychological factors partially or completely. Investors invest in stock market for better and positive rate of return with minimum risk. But financial markets are full of dramatic movements and volatility in stock prices cannot be

justified by change in fundamentals. Volatility is an important statistical risk measure that calculates the market risk of a single instrument or portfolio of instruments. Volatility in statistical terms is measured as standard deviation of random variables. Thus, stock return volatility is the standard deviation of daily stock return around the mean values. The present study is based on behavioural concept to know the strength of variables and its impact on volatility in Indian Stock Market. This chapter begins with defining the objective of the study and then followed by step-wise description of the data. Three biases used as proxy for judging investor's perception and behaviour are Over- Confidence, Disposition Effect and Herding. However, to the highest degree of the researcher's knowledge there is no survey instrument present that collectively analyzes the impact of the aforesaid biases on volatility in Indian Stock Market. Therefore, based on previous literature review, few statements are

developed under each bias to know their perception regarding the bias and its impact on volatility.

Literature Review

Most investors suffered during this crisis due to the behavioral attitudes (Adam, 2010). The investor behavior in the stock market relies upon numerous elements like investment capacity, benchmark performance, behavior of other investors, presence of volatility in the stock market (Chang et al, 2000). Some investors invest with planning, but all invest with a motive of high return. Behavioral Finance offers alternatives for making investment decisions, which has become quite useful in the capital market. (Lin and Zhang, 2012) recommended that investors commit behavioral biases due to absence of technical expertise and confidence on their abilities in making better decisions about investments. The investors often do not make rational decisions and affected by the behavioral biases such as fear, heuristics, and cognitive dissonance, greed, anchoring and mental accounting (Chandra, A.,2008).The behavioral

biases (overconfidence, herding, over thinking, cognitive and hindsight) impact have positive effect on the investment decision and to reduce these biases, the investors need to be educated and trained (Chhapra et.al.,2018).The author found that the overconfidence and disposition effect influence the investment decision (Vinay H., 2015).Hence the present study is attempted to consider the impact of herding, overconfidence and disposition bias with volatility in Indian Stock Market.

Variables used for studying the investor's perception and behavior towards volatility in Indian Stock Market

To study this objective following variables are used for showing the relationship between investor's perception or behavior and volatility. Here Volatility is the dependent variable and other three biases that is Overconfidence, Herding and Disposition effect are independent variables which are measured as set questions framed under each bias.

Table A. Detailed descriptions of the variables for analyzing the Investor's Perception and Behavior towards Volatility in Indian Stock Market

Research Variable	Statements	Reference
Over- Confidence	B12-B20	Le Phuoc Luong and Doan Thi Thu Ha,2011
Disposition Effect	B21- B25	J. M Prosad, 2014
Herding	B8- B11	Le Phuoc Luong and Doan Thi Thu Ha, 2011 and J. M Prosad, 2014
Volatility	B1-B7	Mahender Yadav, 2013

Source : Compiled from Literature, Refer : Appendix for statements

Hypotheses for studying the investor's perception and behavior towards volatility in Indian Stock Market:

H01: There is no association between investor's perception or behavior and volatility in Indian Stock Market.

Research Methodology

The objective of the study was achieved by using the quantitative approach. The present study uses

primary data collected through framed questionnaire to analysis the impact of Overconfidence, Herding and Disposition effect on Volatility in Indian Stock Market. A pool of 25 statements is framed under each bias for studying the impact of investor's perception and behavior on volatility in Indian Stock Market. These statements are developed based on previous literature. The five point Likert scale is used to collect investor's perception on the set statements ranging from strongly disagree to strongly agree scale. Questionnaire is divided into

two parts. First part covers sensitive question like demographic, income, trading frequency etc. second part includes statements question based on Likert scale. The present study used convenience sampling method for collecting the data. The target respondents for the present study are individual investors. A total of around 700 individuals were approached for data collection. Out of 700 responses, 612 responses found fit for data analysis and other responses are incomplete or not fit for analysis leading the final sample size to be 612. The survey was conducted by online mode. For the achievement of the objective, the data is represented with the help of graph, tables etc. The present study of research used Descriptive Statistics as the summary statistics of all the variables that are Overconfidence, Herding, Disposition Effect and Volatility. To find the impact of aforesaid biases on volatility in Indian Stock Market, Correlation and Multiple regressions are used as statistical tool in the

present research. With the help of all the aforesaid techniques the impact of investor's perception and behavior on volatility in Indian Stock Market is analyzed. The present study used Cronbach's alpha to measure the reliability of the statements in the questionnaire. It helps us to know the variation in the values of various variables that is attributed to random errors. The general rule of reliability is that the coefficient greater than or equal to 0.5 is considered acceptable (Nunnally, 1978). The overall Cronbach's alpha for the present study is 0.89 which shows that there is very high internal consistency among the twenty-five statements in the questionnaire. The scale is representable and consistent. To know the content validity, the researcher took views from six experts, three professors and three researcher scholars to examine it (Devellis, 1991). Accordingly, the changes are made on the first draft by eliminating, rewording, adding some of the items.

Table 1 Cronbach's Alpha Test for factors used in questionnaire

Reliability Statistics		
Factors	Variables	Cronbach's Alpha
Overall Cronbach's alpha		0.89
Volatility	B1-B7	0.87
Herding	B8- B11	0.87
Overconfidence	B12-B20	0.88
Disposition Effect	B21- B25	0.70

Source: Computed by SPSS

Interpretation

The above table presents that Cronbach's Alpha indexes of all the factors are greater than .07. These indexes show that items included in the factors: Volatility, Herding, Overconfidence, and Disposition Effect are reliable enough to follow further analysis that is Regression.

Demographic Analysis

The demographic analysis of questionnaire shows the data composition of investor's sample. Demographic profile consists of age, education, income, investor's motive etc. Frequency distribution is used to analyze the data. The present study gives guidelines to investors, brokers etc. for taking better decision. The data analysis and discussion on the impact of investor's perception and behavior on volatility in Indian Stock Market has been presented by following tables.

Table 2 Demographic Profile of the Respondents

Demographic Profile	No. of respondents	Sample Proportions
1. Gender	612	100.00
Male	384	62.75
Female	228	37.25
2. Age	612	100.00
18-25	80	13.07
25-35	345	56.37
35-50	177	28.92
Above 50	10	1.63
3. Marital Status:	612	100.00
Single	175	28.59
Married	432	70.59
Other	5	0.82
4. Education level	612	100.00
Up to 12 th	16	2.61
Graduation	204	33.33
PG	290	47.39
Doctorate	87	14.22
Any other	15	2.45
5. Occupation	612	100.00
Government Services	106	17.32
Private Services	254	41.50
Agriculture	18	2.94
Business	165	26.96
Any Other	69	11.27
6. Annual Income	612	100.00
Less than 5 lac	196	32.03
5lac- 10lac	241	39.38
10lac- 15 lac	109	17.81
Above 15 lac	66	10.78
7. Types of investing securities	612	100.00
Stocks or mutual funds of new companies with high growth.	171	27.94
Stocks or mutual funds of old companies with high growth.	352	57.52
Derivatives and commodities market	14	2.29
High grade corporate bonds.	6	0.98
Debt and Liquid funds from AMC's	15	2.45
Others (Please specify)	54	8.82
8. Trading Experience	612	100.00

0-5 yrs	437	71.41
5-10 yrs	118	19.28
10-15 yrs	47	7.68
Above 20 yrs	10	1.63
9. Trading Motive	612	100.00
Safety of the Principle	40	6.54
Generate Income	280	45.75
Tax Benefits	84	13.73
Growth	202	33.01
Any Other	6	0.98
10. Trading frequency	612	100.00
Intraday	61	9.97
0-3 months	211	34.48
3-12 months	86	14.05
12-36 months	168	27.45
36 months or more	86	14.05

Source: Primary data

Interpretation

From the above table 2, it is inferred that the summary statistics of 612 respondents. Investor's Perception and behavior changes with age because understanding of things increases with age. Thus, age is the major factor to study the investor's perception and behavior. The table 7.2 shows that 56.37 percent of the respondents fall in the age group of 25-35 years (with 13.07 percent in the age group 18-25 years, 28.92 percent in the age group 35-50 years and 1.63 percent in above 50 years). The balance of male and female sample contains 62.75 percent male and 37.25 percent female. Investor's Perception and behavior are also influenced by education of the person as educated person is more knowledgeable and can take better decisions. 47.39 percent of respondents are post-graduate (with 2.61 percent are 12th pass, 33.33 percentage of respondents are graduate, 14.22 percentage of respondents are doctorate). Occupation plays an important role in analyzing the impact of investor's perception and behavior on volatility. 41.50 percent respondents are catering private sectors followed by 26.96 percent respondents who were doing their own business, rest were involved in other areas mentioned above. Income influences the investment

decisions. 39.38 percent respondents earn between 5lac to 10lac, 32.03 earns less than 5 lac, 17.81 percent respondents earns between 10 lac to 15 lac and 10.78 percent respondents earns above 15 lac. The investor invests in the stock market with some objective. It is seen that 45.75 percent of respondents invest to generate income followed by 33.01 percent of respondents with objective of growth in income. 13.73 invests in order to get tax benefits followed by 6.54 percent of investors, who invest with the motive of safety of principle. Further, the trading experience and trading frequency plays a major role in rational decision making. Majorly the investors with 71.41 percent invests in the market were having less than 5 years of experience and trading frequency of three months (with 34.48 percent). It is to be seen that the present survey is based on the perception and behavior of individual investors. Thus, due to the time constraints other types of investors are not taken into consideration.

Descriptive Statistics of Herding, Overconfidence, Disposition Effect and Volatility variables

A descriptive Statistics displays the summary statistics for a series that summarizes features of collection of information through mean, median,

mode, dispersion etc. Table 3 provides summary statistics of behavioral biases comprises of Volatility, Herding, Overconfidence and Disposition Effect of 612 numbers of investors with mean and standard deviation Where Herding, Overconfidence and Disposition Effect are independent variables and Volatility is dependent variable.

Table 3 Descriptive Statistics of Herding, Overconfidence, Disposition Effect and Volatility variables

Behavioural Bias	Number of Observations	Mean	Standard Deviation	Kurtosis	Skewness
Volatility	612	3.687628	2.234457	1.944307	-1.420
Herding	612	2.885272	2.008183	-0.73383	0.25966
Overconfidence	612	3.100824	1.697056	0.177393	-0.5099
Disposition	612	3.19341	1.838478	0.206536	0.52547

Source: Data: Prowess, Calculations: SPSS

Interpretation

From the above table 3 it is interpreted that the values of Kurtosis ranging between (1.94 to -0.73). It was highest for volatility (Mean =3.68, SD =2.34), and the lowest for Herding (Mean =2.88, SD = 2.00). Additionally, the highest skewness value (-0.25) was for herding, and the lowest for volatility. As all the skewness and kurtosis values are between ± 3.5 , we can predict that the all variables fulfill the requirement of normality (Hair et al, 198).

Correlation Analysis Result of Volatility, Herding, Overconfidence and Disposition Effect

Correlation refers to the degree to which a pair of variables is linearly related. It is used as an indication of a predictive relationship between variables that can be exploited. In order to find the correlation between the variables, linear Karl Pearson correlations were calculated. The results are presented in Table 4.

Table 4 Pearson Correlation

	Volatility	Herding	Overconfidence	Disposition
Volatility	1			
Herding	.315**	1		
Overconfidence	.260**	.202**	1	
Disposition	.246**	.374**	.330**	1

Source: Data: Prowess, Calculations: SPSS

**Correlation is significant at the 0.01 level (2-tailed).

Interpretation

From the above table 4, it can be predicted that the herding bias is moderately and significantly correlated with volatility with $r = .315^{**}$. While overconfidence and disposition biases are having significantly small correlation with volatility as lies between .1 to .3 As the values of correlations are lower than 0.80, there is unlikely to be any statistical issue of multi co- linearity (Hair et. al., 1998).

Multiple Regressions of dependent and independent variables

Multiple regression analysis was used to examine the impact of the three independent variables (i.e. herding, overconfidence and disposition effect) on dependent variable volatility for explaining the relationship between dependent and independent variables. The results are presented in Table 5.

Table 5 Model Summary^b of the entire variable

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.380 ^a	.144	.140	.72980	2.181

Source: Data: Prowess, Calculations: SPSS

a. Predictors: (Constant), Disposition, Overconfidence, Herding

b. Dependent Variable: volatility

Residual	310.507	583	.533		
Total	362.878	586			

Interpretation

The above table 5 shows the multiple linear regression summaries of all the variables and over all model fit statistics. It is noted that the adjusted R square of our model is 140 with the R square .144. This means that the linear regression explains 14% of the variance in the data. It means that Herding, Overconfidence and Disposition biases explains 14% variance in Volatility variable. The Durbin- Watson d= 2.181, which is between the two critical values of $1.5 < d < 2.5$. Therefore, we can assume that there is no first order linear auto- correlation in our multiple linear regression data. It means that all the variables are not auto-correlated.

Source: Data: Prowess, Calculations: SPSS

a. Dependent variable: volatility

b. Predictors: (constant), Disposition, Overconfidence, Herding

Interpretation

The above table 6 shows the output result of F-test. The linear regression's F- test has the null hypothesis that the model explains zero variance in the dependent variable (in other words R square =0). The F- test is highly significant; thus we can assume that the model explains a significant amount of variance in volatility.

Table 6 ANOVA^a of the entire variable

Model	Sum of Squares	Degree of freedom	Mean Square	F	Sig.
Regression	52.371	3	17.457	32.777	.000 ^b

Table 7 Multiple Regression Result for dependent variable volatility

Model	Unstandardized Coefficients		Standardized Coefficients	t-value	Significance
	B	Std. Error	Beta		
(Constant)	2.192	0.165		13.272	0.000
Herding	0.207	0.036	0.239	5.752	0.000
Overconfidence	0.179	0.042	0.174	4.257	0.000
Disposition	0.108	0.047	0.099	2.307	0.021

Source: Data: Prowess, Calculations: SPSS

Dependent Variable: Volatility

Interpretation

The above table 7 exhibits the multiple linear regression estimates including the intercept and the significance levels. If we force all variables into the multiple linear regressions, we find that only disposition bias is insignificant predictor. We also see that herding has a higher impact than overconfidence by comparing the standardized coefficient ($\beta = .239$ versus $\beta = .174$). The results indicate that Herding and Overconfidence has positive impact on Volatility. Thus, we can infer there is association between investor's perception or behavior and volatility in Indian Stock Market. Hence we reject null hypothesis.

Conclusion

The study examines the impact of investor's perception and behavior (Overconfidence, Herding and Disposition Effect) on volatility in Indian Stock Market. Overall, the results from regression analysis predicted that few behavioral biases have a positive effect on volatility. The results indicate that Herding and Overconfidence has positive impact on Volatility. Thus, it can be concluded that the investors are affected by behavioral biases and so is their decision which leads to the variations in terms of volatility. Hence, the present study rejects the null hypothesis that there is no association between investor's perception or behavior and volatility in Indian Stock Market and concludes that there is association between investor's perception or behavior and volatility in Indian Stock Market.

Future Direction

- The study focused only few types of biases such as overconfidence, herding bias and disposition effect and its impact volatility at S&P CNX Nifty 50. The future study can consider other reviewed behavior biases from past studies like anchoring, fear, greed etc. and its impact on volume return, volume and volatility then the findings would have been totally new and different.

- For more convincing outcomes a large number of sample sizes in the primary objective can be inferred for future study in Indian stock market.
- The present study was based on a descriptive research design. Thus, a similar study can be conducted by considering other research designs on the same topic which may generate new and different findings.

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Appendix

B. Detailed descriptions of the statement used under variables for analyzing the Investor's Perception and Behavior towards Volatility in Indian Stock Market

	Volatility
1	While taking investment decision investor consider the trading volume.
2	Future prices are determined by trading volume and stock return volatility
3	Volatility is caused by the arrival of new information.
4	Investor takes into the consideration the relationship between trading volume and stock return while investment decision making
5	Every interesting financial decision revolves around volatility in the capital market and thus create challenging environment.
6	It is important to know the relationship between trading volume and stock return volatility for taking decision as per the movement of market.
7	Investors have some expectations from investment decision and desire to fill up the gap between expectations and actual returns from the securities.
	Herding Biases
8	You invest on recommendation of your friends and colleagues.
9	Other investors' decision of buying and selling stocks has impact on individual investment decision.
10	You usually react quickly to the changes of other investors decisions and follow their reactions to the stock market.
11	Other investors' decisions of the stock volume have impact on your investment decisions.
	Overconfidence

12	You believe that your skills and knowledge of stock market can help you to outperform the market.
13	You think market trend is often consistent with your perception.
14	You are more confident about your investing decisions over others opinions.
15	You can predict future share price better than the other.
16	You can anticipate the market returns at the stock exchange.
17	You have sufficient knowledge of Indian stock market.
18	You are confident of your ability to pick better stocks than others
19	You take full control and responsibility of your portfolio performance
20	Your past investment successes are attributed to your own skills and understanding.
	Disposition Effect
21	You prefer to hold looser stocks and sell profit making stock soon to look profit.
22	You feel bad about holding losing stock then selling winning stock to soon.
23	Your past investment successes make you invest more in stocks
24	You prefer to sell stocks as soon as their price starts increasing.
25	You prefer to keep holding on to stocks even if their past performance is not very encouraging.