Is it possible to avoid noise traders' effect from stock price: Experience from Indian Market

Samiran Jana[1] and Kishor Chandra Meher[2]

Abstract

Efficient market hypothesis does not acknowledge the effect of noise trader's decisions on stock price. Behavioural science is saying that in an uncertain situation decision making process will go through mental biases. So investors will give more weightage to some irrelevant informations to predict stock prices. It is very difficult to define the mental processes of noise traders and arbitrage will not be always possible. Prices may not come back always to intrinsic value of an instrument. This study has showed that mental biases affect the decision process of both noise and rational traders. Hence it is not possible to eliminate the noise traders effect from price.

Key Words: Efficient Market Hypothesis, Noise traders, Rational traders, Decision making process and biases.

Corresponding Author: Samiran Jana

Section I: Introduction

Efficient market hypothesis (hence forth EMH) (Fama 1970) stands on three assumptions. First, investors are assumed to be rational and value securities rationally. Second, some investors may not be rational but their trades are random and therefore cancel out each other's effect from prices. Third, a group of investors may be irrational in similar way but they met in the market with rational arbitrageurs who eliminate their influence on prices. So EMH does not give any room to irrational investors to influence the final price of a stock. Psychology does not support any of these assumptions. It tells that people in general and investors in particular are not fully rational. Many investors react to irrelevant information in forming their demand for securities. Evidence shows that instead of deviating from rationality randomly most people would like to go with a trend (Haridas 2003) and they wait till its well establishment - Peter (1996). The problem becomes more severe when they follow each others' mistakes by listening to rumors or imitating their neighbors (Shiller 1984). Sophisticated traders buy when noise traders depress prices and sell when noise traders push prices up. Such active contrarian investment strategies push prices towards fundamental value. But if pessimistic (or optimistic) noise traders become more pessimistic (or optimistic) tomorrow and arbitrageur has to liquidate before price recovery then they will book losses, which will limit his arbitrage position. Thus arbitrage does not help always to pin down or up the price levels to its fundamental values (Figlewski 1979, Campbell and Kyle 1993). Therefore like other decision process, investment decisions also pass through some mental biases. These biases are neither quantifiable nor explainable. Studies tell that biases affect both noise and rational traders' decision process. Hence huge deviations in stock price are being observed without any proper reasons. Financial theorists say that these are anomalies while behavioural scientists are saying that these are effect of noise traders. In this juncture present study has tried to find out financial decision process of investors.

[1] Dr. Samiran Jana is Associate Professor in Finance and Accounting area in ITS – Institute of Management, Greater Noida.
[2] Dr. Kishor Chandra Meher is Professor in Finance and Accounting area in ITS – Institute of Management, Greater Noida.

Therefore this study has been organized as follows. Section II reviews the published literature on behavioural finance pertinent to the study. Section III describes the sample and outlines the methodology used. Section IV provides the empirical results and analysis. Finally concluding remarks are given in Section V.

Section II : Review of literature:

EMH will be applicable in any market if the investors are taking decision based on the rational decision making model. The rigid assumptions of the rational model are often unrealistic (Steers and Black1994). Roads (1998) proved that simple problem with few alternative courses of action or complex problems with costless and easy solvable alternatives are fit for rational model. Decisions are categorized into two forms - programmed (repetitive operational problems, well-defined goals, clear information and alternatives, certainty about outcome) and nonprogrammed (novel strategic problems, ill-defined goals, ambiguous information and alternatives, uncertainty about outcomes) (Steers and Black 1994). Stock price decision fits into the nonprogrammed decision for its uncertain outcome. In the case of nonprogrammed decisions, decision makers allow systematic biases and errors to creep into the judgments (Robbins 2004). Therefore biases will also influence investor's decision making processes. Kahneman and Riepe (1998), showed that investors rely on some fixed rules and intuition when making financial decisions, and there are some related cognitive biases and illusions in decision-making, such as overconfidence, optimism, and overreaction to chance events. Hilton (2001) mentioned that overconfidence, confirmation bias, optimism and risk aversion will effect the investor's financial decision. Tourani-Rad and Krikby (2005) showed that investors will be overconfident if they have past success, optimism, confidence in one's ability, investment experience and investment related knowledge. Overconfidence is said to have two main effects on investors' behaviour. They will trade very frequently and book less profits then the average (Barber and Odean 2000). Second, traders those are overconfident will held underdiversified portfolios (Odean 1998, Nofsinger 2002). A well known bias in human-decision making is to seek confirmation, rather than disconfirmation, for hypothesis (Hilton 2001). Shefrin and Statman (1985) interpret another behavior in the stock markets, so called regret. Investors usually keep the stocks whose prices are below their costs, because they want to avoid losses instead of risk. So they are loss averse not risk averse. Wood and Zaichkowsky, (2004) said individuals tend to attribute their success to their personal abilities, while failures to bad luck or the actions of others, which is called self attribution bias. If these biases influence the stock price decision process of investors then it is not possible for a stock to follow even random walk hypothesis (Barber and Odean 2000).

Chaudhuri (1991 a) applied serial correlation and run test on closing price of 93 stocks over the period from January 1988 to April 1990 and saw that 72 stocks have significant correlations, standard normal variate z is significant at 5 per cent level for 63 stocks out of 93. Hence returns of these stocks do not support the random walk hypothesis. Ahmad, Ashraf and Ashraf (2006) used Unit Root Test, Autocorrelation Function, Garch test and Kolmogorov Smirnov test on the return of S&P CNX Niffty and Sensex during 1995 and 2004 and saw that in all cases null hypothesis of random walk has been rejected. Chaudhuri (1991 b) used Kruskal-Wallise test on data of BSE sensitive index between June 1988 and January 1990 and saw that average returns on Monday are negative and highest returns are on Friday. Amanulla and Thiripalraju (2001) saw the week end effect in the 82 companies traded in the Bombay Stock Exchange (BSE). They used daily returns from January 1990 to December 1999. Arumugam (1999) saw that there are significant negative Monday returns in bull phase and significant positive Monday returns in bear phase. Friday returns are positively significant only for the bear phase not for bull phase. These prove that random walk does not

exist at Indian stock price. Possibly the above mentioned biases are affecting the decision making processes of Indian traders.

Section III: Research Design and Methodology

After extensive pretesting with regular traders, a questionnaire was finalized to gather information. The first section of the questionnaire categorized the traders into noise and rational. This section also had found out the following biases:-

1. Confirmation bias
2. Overconfidence bias
3. Self attribution bias
4. loss aversion bias

Questions in part two asked participants to recall number of stocks traded in a year, amount of portfolio and monitoring frequency. Part three included the demographic questions.

Mean, standard deviation and correlation has been used to check the data pattern and interrelationship between these biases and trading activities. Finally the effect of these biases on the trader's decision process has been checked through logit regression model, which is given under (Stock and Watson, 2004):-

$$\text{Probability}\,(Y = 1/ X_1, X_2, \ldots\ldots\ldots, X_7) = F(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\ldots\ldots + \beta_6 X_6)$$

$$= \frac{1}{\left\{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots\ldots\ldots + \beta_6 X_6)}\right\}}$$

Where X_1 = confirmation bias, X_2 = overconfidence bias, X_3 = self attribution bias, X_4 = loss averse bias, X_5 = no of trades in one year, X_6 = amount of investment.

$$Y = \begin{cases} 1 \text{ Noise trader} \\ 0 \text{ rational traders} \end{cases}$$

Sampling

Convenience sampling procedure was used as data was needed from active traders, who are trading personally or asking brokers to trade according to their own decision. Questionnaires were distributed personally, emailed to friends, relatives, colleagues, students of three executive MBA classes and fund managers of mutual funds. Eight of the fund managers were interviewed personally over telephone. Total 136 responses were collected.

Section IV

Respondents were asked to assign degree of importance on the stock picking procedures such as fundamental analysis, technical analysis, advice of financial consultant, information from friends relatives and media, own gut filling and other than these in the stock market, used by them, when they choose stock/stocks for themselves or for their own clients. Five was given for most important and one was for least important parameter. Table 1 shows that last parameter i.e. other than the rest parameters has the lowest mean 1.62 and figure 1 shows that a small number (11.76 percent) of respondents have marked the last parameter as important or most important. This implies that other five parameters are main parameters for searching stock/stocks at stock market. Figure 1 shows that 50 percent respondents use fundamental analysis as important or most important parameter for searching stocks. They are rational

traders but they have also used technical analysis as one of the important or most important usable parameter.

Figure-1

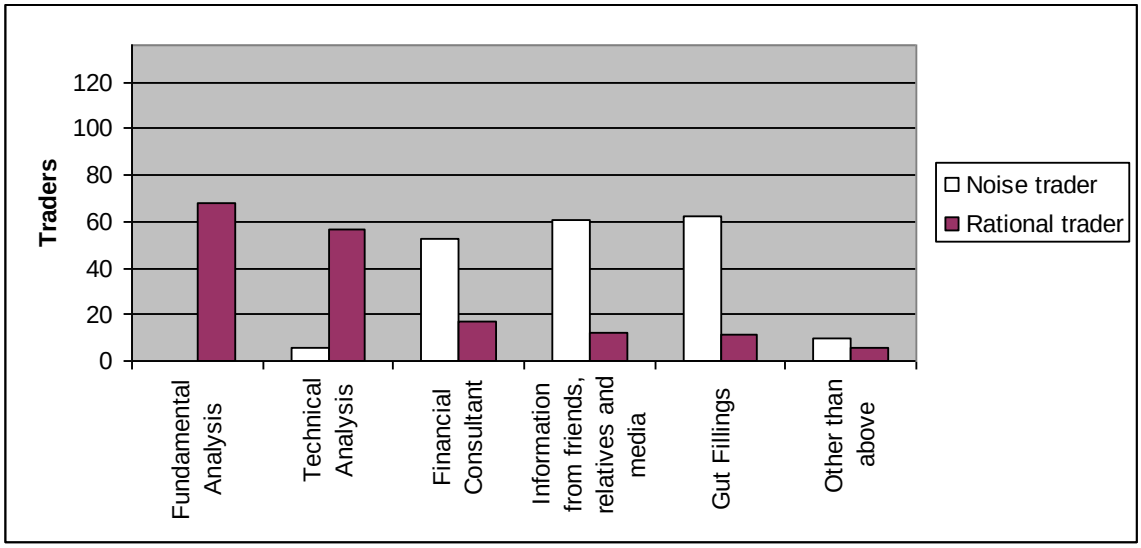

Table 1

Parameters	Fundamental Analysis	Technical Analysis	Financial Consultant	Information from friends relatives and media	Gut filling	Other than above
Mean	3.21	3.14	3.37	3.13	3.04	1.62
Standard Deviation	1.50	1.44	1.38	1.50	1.59	1.33

In case of self attribution bias someone will not blame himself for his failure and will give credit to himself at the time of success. Two questions were asked to gauge the self attribution bias. In first question, respondents were asked to assign importance on factors like their luck, personal stock picking capabilities, wrong guidance by financial consultant, wrong guidance by friends relatives and media, non availability of stock related information and other than these, when they are loosing money at stock market. Table 2 shows that last factor has the lowest mean and figure 2 shows that very few have marked it as important or most important than others. This implies that in case of price loss at stock market investors will blame rest five factors. 79.41 percent and 85.29 percent rational traders have marked personal stock picking capabilities and non availability of stock related information as important and most important factor for loosing money. But figure 2 shows that these fundamentalists have also choose other parameters as important and most important factor for the same purpose. So some of the rational trader's decision making process will also be affected with self attribution bias. A huge amount of noise traders have blamed their own luck (63.24 percent) wrong guidance by financial consultant (77.94 percent), wrong guidance by friends, relatives and media (79.41 percent) for their losses.

Figure 2 also indicates that at the time of profit 80.88 percent noise traders and 63.23 percent rational traders are saying that their own calculation is responsible for this. Percentage is low in the case of rational traders because many of the fund managers and fund analysts are working in a group so they are not ready to take whole credit at all time of profit. Only 27.94 percent rational traders are free from self attribution bias. Loss averseness has been portrayed with their eagerness to take greater risks (possibility of initial losses) in order to earn more return in future. 73.53 percent noise trader and only 2.94 percent rational traders are either agreed or strongly agreed to buy these types of stocks. Nearly four times of noise traders

(77.94 percent) than rational traders (20.59 percent) are saying that they prefer to confirm their decision from knowledgeable people. Therefore both noise and rational trader's decision making will be affected with self attribution bias, loss aversion bias and confirmation bias.
Respondents were asked to tell the performance of their portfolio relative to the stock market over the past year, as past year success can lead to an overestimate of one's abilities. 63.97 percent respondent reported that their portfolio had performed better than the market in the last year, 24.26 percent said their portfolio has performed about the same and 11.77 percent had underperformed the market.

Figure 2

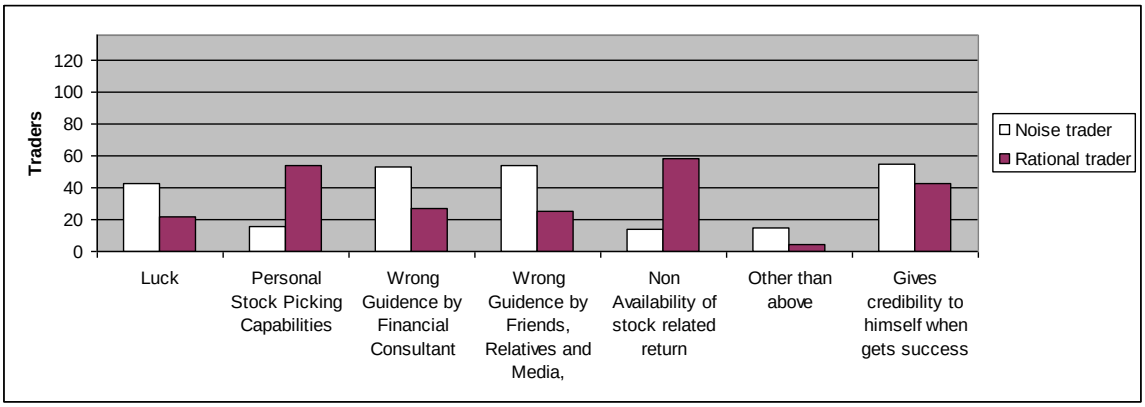

Table 2

Parameters	Your Luck	Personal stock picking capabilities	Wrong guidance by financial consultant	Wrong guidance by friends, relatives, media	Non availability of stock related return	Other than above
Mean	3.16	3.40	3.46	3.54	3.301	1.56
Standard Deviation	1.44	1.45	1.37	1.46	1.497	1.51

Table 3

Expected Portfolio Return	Expected market return						
	0-5%	5-8%	8-10%	11-15%	16-18%	19% and more	Total
0-5%	2 (1.47%)						2
5-8%		5 (3.68%)	3 (2.21%)	2 (1.47%)			10
8-10%		7 (5.15%)	4 (2.94%)	4 (2.94%)			15
11-15%		5 (3.68%)	8 (5.88%)	5 (3.68%)	5 (3.68%)		23
16-18%		5 (3.68%)	10 (7.35%)	6 (4.41%)	7 (5.15%)	2 (1.47%)	30
19 and more		2 (1.47%)	8 (5.88%)	24 (17.65%)	12 (8.82%)	10 (7.35%)	56
Total	2	24	33	41	24	12	136

In order to determine investor's level of optimism regarding their future prospects, participants were asked to indicate their future expectations concerning the performance of their portfolio and the stock market in general. Table3 shows that slight majority of

respondents (62.5 percent) believe that they will outperform the market. There is not very high positive correlation (0.4219) between the past success and future expectation also. So past loss will not be the only reason of pessimistic behaviour.

Investors were also asked to indicate their degree of confidence in their ability to make good financial decision, their level of investment experience and their knowledge in the area of investments, stocks and trading. 40.44 percent respondents have a reasonable amount of confidence in themselves as investors, 54.41 percent having either a great deal or complete confidence in their abilities. More than two third (84.55 percent) respondents think themselves as very experienced and sound understanding of financial market. In addition 50.74 percent of investors rate themselves as very knowledgeable in the area of finance and 5.88 percent thinks that they are below average. Correlation between respondent's knowledge and their experience is very high and positive (0.66001) but very low between knowledge and future expectation (0.1394). This proves that experienced people are knowledgeable but all of them are not optimistic. Taking into consideration investor's knowledge, experience and future expectations it has been seen that 76.47 percent noise traders and 50 percent rational traders are overconfident.
The logit regression result is given under-

$$\Pr(Y=1/X_{1,}X_{2,}X_{3,\ldots\ldots\ldots,}X_6)=F(5.815-1.072X_1+0.986X_2+2.049X_3-3.294X_4+1.305X_5+0.073X_6$$

$$=\frac{1}{\left\{1+e^{-(5.815-1.072X_1+0.986X_2+2.049X_3-3.294X_4+1.305X_5+0.073X_6)}\right\}}$$

Table 5 shows that value of loss averse bias, trades in one year and confirmation bias is statistically significant at 95 percent confidence level. Rests variables are not significant at even 90 percent confidence level also. This also again makes the point stronger that rational traders decision making is influenced by self attribution bias and overconfidence bias. Therefore the unquantifiable and nonexplanable biases effect both noise and rational traders decision process. Hence it will not be possible for rational traders to findout the real price of a stock and hence according to Figlewski 1979, Campbell and Kyle 1993 proper arbitrage will not be possible at Indian stock market. Hence huge deviation in stock price is being observed, which does not have any relationship with company's risk profile.

Table 5

Variables in the Equation

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1	Self attribution bias	2.049	11.622	.031	1	.860	7.757
	Loss Averse bias	-3.294	.818	16.224	1	.000	.037
	No. of trades in one year	1.305	.661	3.906	1	.048	3.689
	Over confidence bias	.986	1.047	.887	1	.346	2.682
	Confirmation bias	-1.072	.510	4.420	1	.036	.342
	Amount of investment	.073	.477	.024	1	.878	1.076
	Constant	5.815	11.791	.243	1	.622	335.449

Section-V Conclusion

This study has successfully outlined a descriptive analysis about the decision process of Indian investors. The decision processes of noise traders will be clearly driven by confirmation bias, overconfidence bias, self attribution bias and loss aversion bias. But most of the Indian rational investors' financial decision process also will be controlled by overconfidence and self attribution bias. For misperception noise traders will trade very frequently. Noise traders will believe that some irrelevant information will be important for their price decision and they will not believe on classical finance theory and the decided price of noise trader will be different from intrinsic value of a stock. So at a certain point of time they will be either bullish or bearish. This has been termed as sentiment or noise traders' effect at the market. The study has proved that rational traders' decision process also will be controlled by biases and hence they will not be able to quantify the sentiment properly. The effect sentiment or noise traders' effect will belong to the stock price. Future research on measurement of sentiment and its relationship with Indian stock prices can provide a complete outlook on this field.

Most of our respondents are active traders of Delhi metropolitan, national capital reason and Mumbai. Hence, results reported from the investigation might not be representative of the decision behavior of average Indian active traders, but still it provides an indication. This study is showing that rational traders are using both fundamental analysis and technical analysis as stock selection tools, which does not support the view of finance theorists. Separate question on the parameters under fundamental analysis may give clearer picture about the fundamentalists.

References

Ahmad, Khan Masood, Ashraf Shahid, Ashraf Shahid, "Testing Weak Form Efficiency for Indian Stock Markets", *Economic and Political Weekly***,** Vol XLI, No. 1, PP 49-56, 2006.

Amanulla, S and Thiripalraju, "Week-end Effect: New Evidence from the Indian Stock Market", *Vikalpa,* Vol 26, No. 2, April-June, PP 33-50, 2001.

Arumugam, S, "Day of the Week Effects in Stock Returns: An Empirical Evidence from Indian Equity Market", *Prajnan, Vol XXVII, No. 2,* PP 171-191, 1999.

Barber, B and T. Odean, "Trading is hazardous to your wealth: the common stock performance of individual investors", *Journal of Finance,* 55, pp. 773-806, 2000.

Chaudhuri, S. K., "Short-run Share Price Behaviour: New Evidence on Weak Form of Market Efficiency", *Vikalpa,* Vol 16, No 4, October – November, PP 17-28, 1991 a.

Chaudhuri, S. K. "Seasonality in Share Returns: Preliminary Evidence on Day-of-the Week Effect", *The chartered Accountant,* November, PP 407-409, 1991 b.

Campbell, J. Y. and Kyle, A., "Smart money, noise trading, and stock price behavior", *Review of Economic Studies,* 60 PP 1-34. 1993.

Fama, E.F. (1970), "Efficient capital markets: A review of theory and empirical work", *Journal of Finance,*Vol. 25, No.2, PP 383-417.

Figlewski, S., "Subjective information and market efficiency in a betting market". *Journal of Political Economy,* 87, PP 75-88, 1979.

Haridas Ajit, "Order in Disorder: The Chaotic Nature of Financial Market", *IIMB Management Review,* PP 19-25, 2003.

Hilton, Denis J., "The psychology of financial decision-making: applications to trading, dealing, and investment analysis", *The Journal of Psychology and Financial Market,* Vol. 2, No. 1, PP 37-53, 2001.

Kahneman, D. and Riepe, M. W., "Aspects of investor Psychology", *Journal of Portfolio Management,* Vol.24, Iss.4, PP 52-65, (1998).

Nofsinger, J. R., *"The Psychology of Investing",* (Prentice Hall, New Jersey), 2002.

Odean, T., "Volume, Volatility, Price, and Profit, When all traders are above average", *Journal of Finance,* 53, PP 1887-1934, 1998.

Peters, Edgar E., *"Chaos and Order in the Capital Markets", 2nd Edition,* John Wiley abd Sons, Inc. 1996.

Roads, D. L., "Selection and evaluation of alternatives in repetitive decision making", *Administrative Science Quarterly*, June PP 196-206, 1998.

Robbins, S. P., *"Decide & Conquer: Making winning decisions and taking control of your life"*, Upper suddle river, NJ: Financial Times / Printice Hall, 2004.

Shefrin, H. and Statman, M., "The disposition to sell winners too early and ride losers too long: Theory and Evidence", *Journal of Finance,* Vol.40,No.3, PP 777-790, 1985.

Shiller, R., "Stock prices and social dynamics", *Brookings Papers on Economic Activity,* 2 PP 457-498, 1984.

Steers, M. Richard and Black, J. Stewart, *"Organization Behavior", 5th Edition,* Harper Collins College Publishers, 1994.

Tourani-Rad, Alireza and Kirkby Stephen, "Investigation of investors' overconfidence, familiarity and socialization", *Accounting and Finance,* 45, PP 283-300, 2005.

Wood, Ryan and Zaichkowsky, Judith Lynne, "Attitude and Trading Behaviour of Stock Market Investors: A Segmentation Approach", *Journal of Behavioural Finance,* Vol 5, No. 3, PP 170-179, 2004.