Investors' Sentiment, Financial Stress and Stock Market Volatility.

Dr. Mukti Katariya

Assistant Professor, Trinity Institute of Management & Research, Pune.

Abstract:

Extreme volatility has plagued financial markets worldwide since the 2008 Global Crisis. Investors' sentiment has been one of the key determinants of market movements. In this context, studying the role played by emotions like fear, greed and anticipation which shape investment decisions seem important. Behavioral finance is an evolving field that studies how psychological factors affect decision making under uncertainty. This research paper seeks to find the influence of certain identified behavioral biases: overconfidence, representativeness, herding, anchoring, cognitive dissonance, regret aversion, gamblers' fallacy, mental accounting, hindsight bias, loss averseness, risk tolerance, irrational thinking on the decision- making process of individual investors in the Indian stock market.

Recent studies on the behavior of individual investors' have shown that investors do not act in a rational manner. Several behavioral factors influence investment decisions of investors. For the study purpose, 300 investors from Jalgaon district belong from different strata are considered. Questionnaire based on different bias which affect on investment decision; action taken by investors at time market boom and crash is prepared

Keywords: Behavioral bias, investors' decision, risk tolerance, market crash and boom.

I. Introduction:

Much of the economic and financial theories presume that individuals act rationally in the process of decision making, by taking into account all available information. But there is evidence to show repeated patterns of irrationality in the way humans arrive at decisions, choices of stock affected by fear, greed, overconfidence, loss aversion nature of investors. Behavioral finance, a study of the market that draws on psychology, throws light on why people buy or sell stocks and why sometimes do not buy or sell at all. The fact that even the most prominent and well-educated investors were affected by the collapse of the speculative bubble in the 2008 subprime crisis proved that something was fundamentally missing in the traditional models of rational market behavior.

In this study, the aim is to establish the existence of such fundamental issues, driven by various psychological biases in the investment decision-making process.

According to Shefrin (2001), 'Behavioral finance is the study of how psychology affects financial decision making and financial markets.'

This study intended to act as an eye opener to the individual investor in explaining to him the pertinent issues and misperceptions about the stock market which is primarily influenced by our psychological thinking which ends up in more pain than gain. Different theories were developed in stock market which affects investors' decision making process. Basically these developments are classified into three broad categories, viz. traditional finance

theories, modern finance theories and the latest addition is the behavioral finance theories. In this paper an attempt has been made to throw some light in the development of the behavioral finance and will also discuss a few behavioral finance biases and their influence in the investment decision making process. Traditional finance theories do not pay attention on role of behavioral bias in investment decision. It is necessary to study reason of volatility, loss of investors and what affect rationality of investors; extent to which behavioral bias affect on investors' decision and what is remedy to overcome that bias.

Metaphorically speaking, behavioral finance it is an alternative solution to the difficulties faced by the classical theory in explaining certain financial phenomena. Behavioral finance paradigm focusing on the cognitive psychology suggest that the investment decision making process may be analyzed successfully through the following variables : overconfidence, herding complex, overreaction, conservatism, preconceived ideas, excessive optimism, representativeness, irrationality or rational way of thinking and the impact of media channels.

Behavioral Finance: Overview

Human emotional complexity includes the following primary feelings: fear, panic, anxiety, envy, euphoria, greed, satisfaction, ambition or vanity. Behavioral finance is the psychological decision process in recognition and prediction of financial markets (A. Talangi, 2004).Behavioral finance is a relatively new field that seeks to combine behavioral and cognitive psychological theory with conventional economic and finance to provide explanations for why people make irrational financial decisions. Behavioral finance is very popular in stock market across the world for investment decisions.

According to Sewell (2005), behavioral finance is the study of the influence of psychology on the behavior of financial practitioners and the subsequent effect on markets.

Fromlet (2001) proposed the following definition: "behavioral finance closely combines individual behavior and market phenomena and uses knowledge taken from both the psychological field and financial theory".

According to some specialists, such as Shefrin, there are three themes predominate in behavioral finance and economics:

a) Heuristics: Investors often make decisions based on approximate rules of thumb, without relying on a logical reasoning.

b) Framing: The collection of anecdotes and stereotypes that make up the mental emotional filters individuals rely on to understand and respond to events.

c) Market inefficiencies: These particular characteristic includes mis-pricings, non-rational decision making, and return anomalies.

According to Tilson there are some extremely varied Common Mental Mistakes, such as :

a) Overconfidence

b) Projecting the immediate past into the distant future

c) Herd-like behavior (social proof), driven by a desire to be part of the crowd or an assumption that the crowd is omniscient.

d) Misunderstanding randomness which refers to seeing patterns that don't exist

e) Commitment and consistency bias

f) Fear of change, resulting in a strong bias for the status quo

g) "Anchoring" on irrelevant data

h) Excessive aversion to loss

i) Using mental accounting to treat some money (such as gambling winnings or an unexpected bonus) differently than other money

j) Allowing emotional connections to over-ride reason

k) Fear of uncertainty

l) Embracing certainty

m) Overestimating the likelihood of certain events based on very memorable data or experiences

n) Becoming paralyzed by information overload

o) Failing to act due to an abundance of attractive options

p) Fear of making an incorrect decision and feeling stupid (regret aversion)

q) Ignoring important data points and focusing excessively on less important ones; drawing conclusions from a limited sample size

r) Reluctance to admit mistakes

s) After finding out whether or not an event occurred, overestimating the degree to which one would have predicted the correct outcome (hindsight bias)

t) Believing that one's investment success is due to wisdom rather than a rising market, but failures are not one's fault

u) Failing to accurately assess one's investment time horizon

v) A tendency to seek only information that confirms one's opinions or decisions

w) Failing to recognize the large cumulative impact of small amounts over time

x) Forgetting the powerful tendency of regression to the mean

y) Confusing familiarity with knowledge [Shefrin, H., 2002]

Empirical studies show that investors are overconfident in their judgments and due to this seemingly insignificant appearance they make mistakes when perceive information and form their beliefs. Also, investors overreact in certain circumstances or they act under the impulse of some beliefs such as those mentioned above.

Table 1.1 Biases, Effects on Investor, and Consequences

NAME OF BIAS	KEY EFFECTS ON INVESTOR	CONSEQUENCE
Overconfidence	Too many trades, too much risk, failure to diversify	Pay too much brokerage and taxes, chance of high losses
Representativeness	Tendency to associate new event to a known event and make investments based on it	Purchasing overpriced stocks
Herding	Lack of individuality in decision making	Bubbles, and bubble bursts
Anchoring	Tendency to consider logically irrelevant price level as important in the process of decision making	Missed investment opportunities, or bad entry timing into the market
Cognitive Dissonance	Ignore new information that contradicts known beliefs and decisions	Reduced ability to make rational and fair investment decisions
Regret Aversion	Selling winners too soon, holding losers too long	Reduced returns
Gamblers' Fallacy	Taking too much risk after a lucky win	Chance of high losses
Mental Accounting	Low or no diversification	Irrational and negative effects on returns
Hindsight	The tendency to feel that a past event was obvious when it really was not, at onset	Incorrect oversimplification of decision making

(Source: Subash, Master Thesis, 2012, p.27)

II. Statement of the Problem

Behavioral finance discipline has come to an existence as a result of the shortcomings researched out of the efficient market theory. This development has highlighted different anomalies of securities market behavior which are overlooked by the traditional finance theories. But it is to be noted that both efficient market theory and behavioral finance are related to investor behavior and investors' decisions. These disciplines have never tried to show the ways of raising finance in financial market. Rather we can say that if the biases put forwarded by the behavioral finance are given due consideration by the investors while making investment decisions to overcome bias then their decisions would be more efficient and this in turn will build their confidence about investment. This efficiency in investment decisions would also reduce the bubbles and crisis situations in financial market which discourage the new investors to come out and invest. So if such situations are controlled, which is possible by following the behavioral finance principles would definitely bring more investors to the securities market and help to raise finance in the financial market.

III. Research Question:

Behavioral finance argues that financial decision-making is influenced by individual and market psychology. Author addresses the following issues and questions:

1. What are different biases which affect on investors decision making process?
2. What is the reason of stock market volatility?
3. Why do stocks prices appear to under react to bad news?
4. Do investors behave irrationally at time of market crash or boom?
5. How to overcome such biases?
6. What is right strategy at time of market crash and boom?

IV. Objectives & Hypothesis of the Study:

1. To study the concept of behavioral bias and impact on investors decisions.
2. To study irrational behavior of investors at time of market crash and boom period.
3. To suggest ideal strategy of rational investors to be followed at the time of market crash and boom.
4. To suggest remedy to investors to overcome biases.

Hypothesis of the study:

Hypotheses 1: All behavioral biases influence investors at time of taking investment decisions.

Hypotheses 2: Investors rationality differ when stock prices fall or during the market crash.

Hypotheses 3: Investors rationality differ at the time of rising prices or upward trend of market

V. Uniqueness and originality of study

This research is one of the first in rural context of India, though similar studies have been conducted in western countries. Indian investment marketplace is the plethora of investment products available and also there exist huge diversity in terms of social, cultural, linguistic, demographic, geographic and psychographic diversity in a country like India, so it is important to study is diversity contribute toward behavior of investors? An author proposes in-depth assessment of the psychological traits / characteristics of the target investors and to the best of the author's knowledge and information, such a study has never been conducted in Jalgaon district.

VI. Literature Review

Behavioral finance is a branch of finance that studies how the behavior of agents in the financial market are influenced by psychological factors, and, the resulting influence on decisions made while buying or selling of stock, thus affecting the price. This science aims to explain the reasons why it's reasonable to believe that markets are inefficient.

Barber and Odean (2001), they highlight two common mistakes that investors make: (i) excessive trading and (ii) the tendency to disproportionately hold on to losing investments while selling winners. The tendency for human beings to be overconfident causes the first bias in investors, and the human desire to avoid regret prompts the second bias.

Rakesh (2013) focuses on how stock & share prices are affected by gambler's fallacy. The research paper also reveals the degree to which gambler's fallacy exists and it has vital impact on decision of investors in India. The study is limited to only the Bombay Stock Exchange's investors. The researcher has found out that mindset of investors, assumption about continuation or not continuation of trend, friend's advices, estimating the probability of certain events happening like up or down in market prices; this attribute of behavior pattern that forced investors to make biased decisions which ultimately result into volatile stock market.

Dhole (2014) in her paper she studied impact of behavioral finance factors like herding, mental accounting, gambling, overconfidence, cognitive conflict, fear of regret, gambler myth, hindsight etc. on portfolio decision. She also analyze different investment pattern preferred by doctors with respect to risk and return.

Jain (2012) in his study focus on ‘confidence’, ‘herd instincts’, ‘expectations’ of investors. He studies the relationship of heuristic driven biases along with investor level awareness and speculative attitude. The author also focuses on various factors affecting investment decision.

Anli (2013) in his paper throws light on various behavioral key biases and traits that can help an individual take sound financial decision and in turn make him a better trader/investor. The author finds hindsight bias, loss aversion, endowment effect, mental accounting, disposition effect, and anchoring that impact on the decision making process.

Chaudhary (2013), in his paper goes deep into the subject of behavioral finance. With the help of various theories-festinger theory of cognitive dissonance, financial cognitive dissonance, regret theory, prospect theory, the author successfully examines the intended behavior of investors and the consequences that come out of their decisions due to behavior anomalies. The author also suggests strategies to investors in stock, bond and mutual fund to overcome psychological roadblocks.

Dominitz & Manski (2005) The paper throws light on how the behavioral aspects affect expectations of the trader due to which he acts irrationally ultimately resulting into stock market anomalies.

Barberis & Thaler (2003, Chap-18, pp. 1053-1128) focus on two factor that are psychology states the kinds of deviations from full rationality we might expect to see and limits to arbitrage; which argue that it can be difficult for a rational trader to undo dislocation of less rational traders. The chapter extends the discussion to the behavioral finance application, to the aggregate stock market, to average returns, to corporate finance and individual trading behavior.

Gunay, Gokhan, Demirel and Engin (2011) study the interaction of financial behavioral factors with gender and savings. They find that gender has interaction with five of the financial behavior factors, *viz.* overreaction, herding, cognitive bias, irrational thinking, and overconfidence. The level of individual savings has an interaction with four of the financial behavior factors, *viz.* overreaction, herding, cognitive bias, and irrational thinking.

Cavalheiro, Vieira, Cerreta & Pereira (2012), explore the investor mood and its influence on behavior risk tolerance. The level of risk tolerance of an individual has a direct influence in consumption and ultimately on choice of assets. They reveal that the less tolerant individuals look for safer options for their investments. The authors explain the positive correlation between investor’s mood and prices of equity and bill; they opine that with higher asset prices are associated to better mood.

Ritter (2003) focus on two aspects of behavioral finance: (i) cognitive psychology (i.e. how people think) and (ii) the limits to arbitrage (i.e., when markets will be inefficient). In his article he rejects the traditional assumptions of expected utility maximization of rational investors in efficient markets. The article further highlights many empirical patterns like stock market bubbles in Japan, Taiwan and the US.

Statman (2009) focuses on behavioural finance which highlight the point though investors are rational and intelligent, yet emotion attacks to their brain, as a result, sometimes they take wrong decisions about investment. Successful professional traders are also subject to emotion and they minimize their losses by ‘sell disciplines’. The author also cautions that individual investors should never enter a race against faster runners by trading

frequently on every little bit of news or rumours; avoid noise trading; do not chase last year's investment winners. He also focuses on prospect theory, and mental accounting, hindsight error.

Phung (2002), in his article state that emotion and psychology influence investor's decisions, resulting in their unpredictable or irrational behavior.

Shiller (2002) identifies unexplainable anomalies in the market coupled with excessive volatile return reaching all time high or low, which result into investors loses. He also focuses speculative market, how bubble is created and its burst due to behavioral bias.

Hilbert (2012) describes individual and retail investors are influenced by behavioral biases such as overconfidence, herding, and reinforcement bias compared to institutional Investors. Retail investors make trading decisions based on psychological phenomena rather based on rational issues. Paper analyzed that retail and individual traders are buying in advance of price increases and selling in advance of price decreases

Blume and Friend (1978) in his book carried out study on implications of behavioral finance and find that basic measures of risk undertaken by individual investors are price and earning volatility.

Statman (1999) in his paper focuses on 'market efficiency' in the United States. He states that market efficiency is at the centre of the battle of standard finance *versus* behavioral finance *versus* investment professionals. Behavioral finance has shown that value-expressive characteristics matter in both investor choices and asset prices. He develops a behavioral asset-pricing model that includes value-expressive as well as utilitarian characteristics.

Epstein and Garfield (1992) in his book focus on personality types of investors in United States. They were among the first researchers to divide investors into different personality types and explore the relationship between personality and investment returns. They find that when a stock fits an investor's personality, the investor could gain benefits. The book includes common psychological traps as loneliness, poor self-esteem, depression, wishful thinking and self destructiveness, addiction to playing the markets, revenge and internal conflicts. They carried out study for typical investor *versus* 'market guru' or famous investors.

Lihara, Yoshio, Kato and Tokunaga (2001) find that 'herding behavior' influences investors' decision.

Yu-Je, Gao-Liang, Kae-Shuan , Ching-Yaw and Fong-Ping (n.d.) discusses how investment behavior and decision factors affect performances of the Taiwan stock market. Investment behavior and decision factors are significantly correlated to investment performance or the profitability level.

Sahni, D. (July-August). Paper focuses on loss averseness of investors and anchoring bias. The finding of the paper shows that investors are risk lovers when confronted with losses and risk averse in gains. The Indian investors are found to be loss averse, i.e., there is difference in investors' behavior in case of losses and gains. The paper also reveal investors' perception about market trend is influenced by the past performance of a stock market on three consecutive days, which shows that the anchoring theory is relevant in case of Indian investors behavior in stock market.

Yosra Mefteh Rekik and Younes Boujelbene (2013), Authors find out that behavioral bias like herding attitude, representativeness, anchoring, loss aversion, and mental accounting all influence the Tunisian investors' decision

making processes but there is an absence of overconfidence bias in the Tunisian stock market. Tunisian investors seem to be under confident, hesitant and very sensitive to others' reactions and opinions. This study provides that people at certain age, are less subject to psychological biases as they become more experienced.

De Bondt et al., (1985) the article gave evidence to support the hypothesis that cognitive bias (investor's over-reaction) for a long series of bad news could produce predictable mispricing of stocks traded on the NYSE.

Economou, Kostakis and Philippas (2010) examined herd behavior in extreme market conditions using daily data from the Greek, Italian, Portuguese and Spanish stock markets for the years 1998- 2008 i.e. the existence of asymmetric herding behavior associated with market returns, trading volume, and return volatility. Along with this, they also investigated the presence of herd behavior during the global financial crisis of 2008

Nagy and Obenberger (1994) examined factors influencing investor behavior. Their findings suggested that herd behavior and peer pressure play vital role in decision making process.

Statman (1988) observed that people trade for both cognitive and emotional reasons. They trade because they think they have information, when in reality they make nothing but noise and trade only because trading brings them joy and pride. Trading brings pride when decisions made are profitable, but it brings regrets when results are losses. Investors try to avoid the pain of regret by avoiding realization of losses, employing investment advisors as scapegoats and avoiding stocks of companies with low reputations.

Chandra (2011) use univariate and multivariate analysis and found five major factors that affect the investment behavior of individual investor in stock market namely prudence and precautions attitude, conservatism, under confidence, informational asymmetry and financial addition .

Ajmi (2008) used a questionnaire to know determinants of risk tolerance of individual investors and collected responses from 1500 respondents. He concluded that the men are less risk averse than women, less educated investors are less likely to take risk and age factor is also important in risk tolerance and also investors are more risk tolerance than the less wealthy investors.

Soumita (2016), she investigate in her paper the impact of behavioral biases on the investor's financial decision making with special focus on three biases, namely confirmation bias, loss aversion and endowment bias. This paper is useful to investors to understand the common behaviors, identify their reactions while taking decisions for better returns and take corrective measures to not fall into the trap of the behavioral bias

VII. Methodology of the Study:

The study adopts the descriptive and cross sectional research design. Area sampling under random method was used while selecting 300 investors from the 15 talukas of the districts. 20 investors from each taluka place considered for study. Further stratified random sampling method was also used for investors from different talukas. Investors belong to different strata, *viz.* professional, businessman, students, housewives and others in service and they were again stratified on the basis of different strata: *viz*. different age groups, genders, income levels. The survey was conducted with the help of a well structured questionnaire consisting of relevant questions.

Authors of the study used Likert scale as the measure to collect data through questionnaire. For testing the hypotheses Friedman test is used.

VIII. Results and Discussion:

The paper studies whether investors in Jalgaon district affect by behavioral bias or they are rational investors. The paper also studies whether investors show regret aversion bias at time of crash or boom period. i.e. sell their winner in falling market and hold loser at time of boom instead of investing in profitable securities. Level of significance is (0.05) used to test the hypotheses.

Investors' sentiments impact on investment decision and the stock market.

The table 1 show test of significance for behavioral bias which influence investors' decision making process. The Friedman test revealed that all behavioral biases have different influence on investors while taking investment decision (χ^2 (11) = 974.334, P = 0.000).

Insert table 1 here

Different behavioral bias get ranking as per their influence on decision making process: follow the mob has the mean rank of 9.45, risk tolerance has the mean rank of 9.43; mental accounting has the mean rank of 8.49; mood misattribution has the mean rank of 7.52; herd mentality has the mean rank of 6.54; confirmation bias has the mean rank of 6.13; overconfidence has the mean rank of 6.09; anchoring bias has the mean rank of 5.75; fear of regret has the mean rank of 5.22; hindsight bias has the mean rank of 5.08; overreaction bias has the mean rank of 4.45; gambler fallacy has the mean rank of 3.83. Hence, the top five behavioral biases that influence decisions of investors are: (a) follow the mob; (b) risk tolerance; (c) mental accounting; (d) mood misattribution; (e) herd mentality. It also indicate though investors has sound financial knowledge with their investment in right company and right strategy still behavioral bias influence their mind and erode all profit.

Investors' strategy at the time of market crash

Insert table 2 here

The table 2 show test of significance for investor's strategy during market crash. The Friedman test revealed that there is significant differences in the strategy adopted by investors when stock prices fall or market crash (χ^2 (3) = 375.761, P = 0.000)

Sell existing loss making shares has the mean rank of 1.30; buy at low prices has the mean rank of 2.61; hold on to existing loss making shares in hope of a trend reversal has the mean rank of 2.78 and hedge position has the mean rank of 3.30. Hence it can be concluded that most common action followed by investors is to 'hedge position' followed by 'hold on to loss-making shares' when stock prices fall or during the market crash, this show cognitive dissonance and regret aversion among investors. Many studies have revealed that the pain of losing is twice as strong an emotion than the joy of winning so investors do irrational things to avoid making losses. Right strategy is to buy at low prices during market crash.

Investors' strategy at the time of market boom.

Insert table 3 here

The table 3 show test of significance for investor's strategy during market boom. The Friedman test revealed that there is significant differences in the action taken by investors at time price rise or market boom (χ^2 (2) = 241.610, P = 0.000)

Hold stock has the mean rank of 1.99; to book profit by selling stock has the mean rank of 2.60 and buy more shares at high prices has the mean rank of 1.40. Hence, it can be concluded that most common action followed by investors is to 'book profit by selling stock' at the time of market boom, this show regret aversion bias among investors. Rational investors will hold stock instead of selling stock.

IX. Recommendation of the study

While it isn't possible for investors to completely let go of such biases and have the inherent realization that such biases are present, a few things can be kept in mind to ensure rational decision making that maximizes returns and minimizes loss.

1. Awareness: Well-read investors that are aware of the biases present while making investments are in a better position to tackle such biases.
2. Famous investors' strategy: Indian investors should study strategy of Warren Buffett, Benjamin Graham or Philip Fisher while opt for investment to minimize losses and earn more profit. Investors must adopt strategy "to buy a company not its stock", similarly while investing one should look at companies that have stood the test of time, available at fair price & companies which aggressively create larger market for their product.
3. Investment goals: It's important that individuals realize and quantify their investment goals before leaping on to the investment bandwagon. This gives clarity of thought and helps investors avoid behavioral biases.
4. Analyze trends: In boom period investor should hold stock and at time crash sell their loss making securities is best strategy to maximize profit of investors.
5. Track mistakes: Everybody ends up making errors. However, it's important to learn from those mistakes and get back on track keeping in mind the learning so as to avoid the same in the future.
6. Stop loss: Investors should 'always' use stop loss before investing in stock. It protects them from huge losses.
7. Financial analysis: Investors must analyze company on fundamental ground and control behavioral biases at time of investment then invest in company
8. Risk tolerance level: Investors should aware about their risk tolerance level which help them to manage their portfolio

X. Conclusions

From the review of above studies, it can be concluded that there are numerous determinants that influence the individual investor's behavior in stock market. Jalgaon district investors decision affect by follow the mob; risk tolerance; mental accounting; mood misattribution; herd mentality. Panic investors investment turns into great

loss due to presence of behavior anomalies, they use to hedge position at time of market crash and sell winners at time boom show cognitive dissonance and regret aversion bias among investors. Investors should invest in company after careful analysis on fundamental ground and should control bias before investing and invest with right temperament, develop patience to hold stock for 10-20 years.

XI. Future Work:-

a) Research can be carried out with taking into consideration other factors which influence investment decision of investors like economic, environmental, technological, and social.

b) Research can be carried out in the area of importance of fundamental analysis over technical analysis.

c) Research can also be carried out impact of behavioral bias on male and female investors separately.

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Table 1. Test of significance for behavioral bias influence on investment decision

Test Statistics[a]	
N	246
Chi-Square	974.334
df	11
Asymp. Sig.	.000

a. Friedman Test

Table 2. Test of significance for investor's strategy during market crash

Test Statistics[a]	
N	223
Chi-Square	375.761
df	3
Asymp. Sig.	.000

a. Friedman Test

Table 3. Test of significance for investor's strategy during market boom

Test Statistics[a]	
N	269
Chi-Square	241.610
df	2
Asymp. Sig.	.000

a. Friedman Test