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UNDERSTANDING THE INVESTOR BEHAVIOR OF INDIVIDUAL INVESTORS

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ABSTRACT

This study fits under the broad subject of behavioural finance, which examines how psychology affects the conduct of financial professionals and has a knock-on effect on stock markets. Research in behavioral finance has been addressed mostly in developed countries like U.S. However, in Indian context, this area is still at a nascent stage. The Indian stock market has seen turbulent times in the recent past. It has experienced a sharp dip in 2008 from the heights of 2006, followed by a series of ups and downs in the subsequent years, till 2013. This was the period when markets observed sharp swings in sentiments in a very short span of time. Thus, a research based on investor behavior becomes relevant and interesting. This research work is an attempt in this direction. It tries to unveil the influence of behavioral biases in investment decisions with the help of market trends and indicators. Moreover, it also identifies the situations and characteristics that make the Indian investors susceptible to certain biases. The methodology makes use of both primary and secondary data that provide real time and historical insights of investor behavior. The impact of these biases on market indicators like return dispersion, risk premium, volatility and transaction volume is detected with the help of secondary data.

INTRODUCTION

As long as markets themselves are present, investors' irrationality will always be a fact of life. C. Mackay provides what may be the earliest known support for it. A great deal of research has taken place in developed countries like U.S. and China. However, in Indian context, this area is still at a nascent stage and mostly untapped with a few contributions that are largely survey based. One of the probable reasons for this is that, in India there is a constraint on availability of investor specific data on public forums. However, using appropriate market proxies we can model the behavioral biases based on the previous researches of other countries. It is to be noted that, unlike most developed countries, India is a developing country where the majority of the population is young salaried class. Our national culture impacts our beliefs, perception and the understanding of financial markets. The cross cultural differences separate our investment behavior from that of developed countries. It also impacts the entry mode of foreign markets like foreign direct investments (FDI's). Indian stock markets were relatively closed until the liberalization of the financial sector in the 1990's. Post liberalization there was a substantial increase in the capital market activity. The Indian market allowed access to FII's which accelerated the development of the market and its integration into the

global financial system. Since then the Indian markets, driven by rapid economic growth and fast growing information technology sector, rose sharply in 1990's. Thus, with larger number of players in the stock market, the Indian investors are now exposed to a variety of investment avenues than before. This had led to a shift in the investor preference from safer avenues to riskier ones. In recent times we have seen some great swings in the market movements. This involves the subprime crisis of 2008 which had a global impact on almost all the economies. During this time the BSE SENSEX (Bombay Stock Exchange Sensitive Index) touched an all-time high, crossing the 21,000 mark before closing at 20,873 points on 8th January, 2008. It was immediately followed by a major crash of 1408.35 points on 21st January 2008. By 9th March 2009, SENSEX plummeted to a low of 8160 points. It then again reached a new level on 5th November 2010, with 20,893 points. Further, just when the markets were recovering from subprime crises, another calamity approached. It was the Sovereign debt crisis, which made a measurable impact on financial markets. There was a sharp decline in equity prices due to large net sales by FII's and the SENSEX fell by 704 points on 22nd September, 2011. This turbulence in the stock markets has defied all the established pillars in finance. The market sentiments shifted from positive to negative and back again in the shortest time frames. This has made it difficult for the Indian investors to behave rationally. In this context, it becomes extremely relevant to understand the behavior of Indian investors, which can be influenced by various behavioral biases. The comprehension and awareness of these biases separate successful investors from those who are not so successful. As Parikh P states that rational and successful investing is all about restraining and channelizing the emotions of greed and fear and understanding behavioral finance.

INTRODUCTION TO BEHAVIORAL BIASES

Behavioral finance captures the role of behavioral biases in investor decision making. H Shefrin broadly classifies these biases into two types: heuristic driven biases and frame dependent biases.

- *Heuristic driven biases*: H Shefrin recognizes that financial practitioners use rules of thumb or heuristics to process data and make decisions. For instance, people believe that future performance of the stock can be best predicted by past performance. The author categorizes such biases under heuristic theme which includes overconfidence, anchoring and adjustment, reinforcement learning, excessive optimism and pessimism.
- *Frame dependent biases*: The decision process of financial practitioners is also influenced by the way they frame their options. This theme includes biases like narrow framing, mental accounting and the disposition effect.

M Pompian categorizes the behavioral biases into cognitive and emotional biases. The *cognitive* biases include overconfidence, representativeness, anchoring and adjustment, framing, cognitive dissonance, availability, mental accounting, etc. The *emotional* biases include endowment bias, loss aversion, optimism and status quo.

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Heuristic driven biases

Heuristics are introduced by Tversky A and Kahneman D. These are the rules of thumb or mental shortcuts that help people in reaching decisions quickly and easily. These shortcuts, although helpful, can lead to erroneous decisions. Three heuristics given by Tversky A and Kahneman D that are used for decision making under uncertainty are representativeness, availability, and anchoring and adjustment.

Representativeness: It is the tendency of individuals to estimate the likelihood of an eventby comparing it to a previous incident that already exists in their minds. This existing incident is generally what they consider to be the most relevant or typical example of the current event. Dhar R and Kumar A provide the empirical evidence of representativeness bias. They examine the stock price trend for stocks bought by more than 62,000 households at a discount brokerage during a 5-year period. The authors find that investors tend to buy stocks with recent positive abnormal returns. This is consistent with the heuristic that the past price trend is representative of the future price trend. Another instance is presented by Kaestner M who uses the data on current and past earnings for U.S. listed companies for the period of 1983-1999 and suggest that investor overreaction to earnings announcement could be attributed to representativeness bias. The author states that investors initially extrapolate the recent earnings surprise and hence overreact to subsequent earnings surprise.

Availability bias: In this case people evaluate the probability of an outcome based on the familiarity or prevalence of that particular outcome. People prone to availability bias give higher likelihood to the events which they can easily recall as compared to the ones that difficult to remember or comprehend. Kliger D and Kudryavtsev A identify this bias in investors' reaction to analysts' recommendation revisions. They use daily market returns as a proxy for information on outcome availability. They find that stock price reaction to recommendation revisions (up or down) is stronger when accompanied by index returns in the same direction.

Anchoring and Adjustment bias: This bias comes into play when people have to estimate an unknown value or magnitude. Here people start their estimation by guessing some initial value or an "anchor". This anchor is then adjusted and refined to arrive at the final estimate. Campbell S and Sharpe S investigate the presence of anchoring bias in analysts' forecasts of monthly economic releasesfor a period of 1991 to 2006. They find that forecasts of any given release were anchored towards the recent months' realized values of that release, thereby giving rise to predictable surprises. This effect is consistent for each of the key releases.

The aforementioned researches substantiate the importance of the representativeness, availabilityand anchoring bias. Representativeness is based on stereotypes and it causes positive earnings surprises to be followed by more positive surprises and negative surprises by more negative surprises . This bias along with the availability heuristic can create overreactions in investors and stock markets. Finally the influence of anchoring and adjustment bias can make theearnings surprises predictable.

Some of the other equally relevant and widely researched heuristic driven biases are

overconfidence and optimism.

Overconfidence: It is defined as the investors' tendency to overestimate the precision of their own valuation abilities, in the sense that they rely on their own private signals and ignore public signals. Overconfidence is one of the most highly researched biases with abundant empirical findings. Glaser M and Weber M find that overconfident investors trade more in practice and this effect is stronger in retail investors whose trades respond stronger to past returns. Overconfidence is also detected in relation to current trading volume and past returns. Studies show that this bias can be responsible for the positive relationship between current volume and past returns. Barber B, Odean T, Chordia T, Huh S, Subrahmanyam A, Statman M, Thorley S, Vorkink K empirically test the theory of overconfidence. They provide evidence that overconfidence leads to greater trading volume in financial markets. They further relate the high trading volume to poor portfolio performance as with an increase in trading volume the trading costs also inflate.

Most of these researches reveal that overconfidence is an illusion of superior knowledge in investors, which is strengthened by their past successes. This tendency makes them trade more as they become sure of the positive outcome. However increase in trading volume comes with high a trading cost which proves to be detrimental to the portfolio performance.

Optimism: Researchers define optimism as the tendency of individuals to overestimate the probability of a favorable outcome. In financial terms, it is the tendency of investors to overestimate the mean return expectations of a risky investment. Kahneman D explains that this bias plays a significant role whenever people or institutions voluntarily take on considerable risks. These risk-takers often underestimate the odds they face because of which they misread the risks. One category of such risk takers is the optimistic entrepreneurs who often believe they are prudent, even when they are not. Kahneman D also suggests that optimism brings persistence in the face of obstacles. However, this persistence can be costly. In a Canadian study,it is seen that optimistic investors continue to remain invested in losing stocks even when they are informed beforehand about their investments' failure. In yet another research, Solnik B finds the presence of "relative optimism" in domestic investors. The study uses a survey data of four regions, including Europe, U.K., U.S. and Japan, and shows that investors tend to be morebullish about home assets as compared to foreign. However, this optimism confines to equities and does not extend to bonds or currencies.

Optimism (pessimism) is a very influential bias. It is responsible for setting the mood of the financial markets. This bias is driven by past returns that have an impact on return expectations, return tolerance and risk perception of investors. The empirical evidence of thisbias suggests that it is widespread, stubborn and costly. It also creates biasness towards domestic and foreign stocks.

Frame dependent biases

The roots of frame dependence trace back to the study by Kahneman D. This work is taken forward by Shefrin H who mentions several frame dependent biases, the prominent ones amongst those biases are being discussed here. These are loss aversion, narrow framing, mental accounting and the

disposition effect.

Loss aversion: It is introduced by Kahneman D and refers to the tendency of individuals to avoid losses strongly as compared to obtain gains. This is because loss brings regret and impact ismuch greater than that of gains. Several researchers have studied the impact of loss aversion in financial markets. Coval JD and Shumway T analyze the effect of loss aversion bias in terms of risk taking in market makers. They show that in intra-day trading, a loss in the morning leads to higher risk taking behavior in the afternoon. Berkelaar A and Kouwenberg R examine the impact of heterogeneous loss averse investors on asset prices using annual U.S. consumption data for a period of 1889 to 1985. Their study shows that in a good state loss averse investor gradually become less risk averse as wealth rises above their reference point, pushing equity prices up. On the other hand, when wealth drops below the reference point the investors become risk seeking and demand for stock increases drastically.

This eventually leads to forced sell-off and subsequently stock market busts. Hwang S and Satchell SE X investigate lossaversion in financial market using the typical asset allocation model for annual data of U.K. pension funds from 1963 to 2003. Their results reveal that financial markets are more loss aversethan assumed in literature. Further, this bias change depending on market conditions, for instance, investors become more loss averse in bull markets as compared to bear markets. This indicates that the pain of a loss is larger when others are enjoying gains. They also find that investors are more sensitive to changes in loss than in gains.

These studies reveal that there is a differential impact of gains and losses on decision outcome. Further, the pain of loss is described to be greater than pleasure of an equal amount of gain, which makes the investors more sensitive to a change in the loss. These researches also throw light on the risk attitude pattern of individuals. It is seen that people become risk seeker or less risk averse in the prospect experiencing loss of high probability.

Narrow framing: Shefrin H describes narrow framing as the tendency of investors to treat repeated risks as if they were a one-shot deal. Barberis N, Huang M and Santos T elaborate this bias in the context of gambling. They statethat, it is the phenomenon wherein people evaluate each new gamble in isolation, separating it from their other risks. In other words, people will ignore all the previous choices that determine their overall wealth risk and directly derive the utility from their current risk. Liu J and Wang MC document the presence of narrow framing effect in the options trading market. They used the daily trading volume data of Taiwan Futures Exchange for a period of 2001 to 2004. The findings of this study indicate that investors could easily become susceptible to narrow framing when trading in the complex derivatives market. They simplify complicated trading strategies into understandable trading decisions. The study also supports the fact that traders' professionalism, sophistication and experience can reduce this bias to a certain extent.

Mental accounting: Its concept is given by Thaler RH. It is defined as the tendency of individuals to separate their information into manageable mental accounts. Thaler RH explains that

mental accounting is a set of cognitive operations used by individuals to organize, evaluate, and keep track of financial activities. Mental accounting comprises of three components. First component captures how outcomes are perceived and experienced, how decisions are made and subsequently evaluated. Second component involves the assignment of activities to specific accounts. The final component focuses on the frequency with which accounts are evaluated and 'choice bracketing'. Barberis N, Huang M and Santos T study investors' mental accounting using simulated data of equilibrium firm-level stock returns. They find that the investors' system of mental accounting affects asset prices. They track the changes in portfolio performance as the individual's decision frame shifts from stock accounting to portfolio accounting. Their results reveal that when this happens, the mean value of individual stock return falls, the stocks become less volatile and more correlated with each other.

Both narrow framing and mental accounting are cognitive processes that simplify the complex decision making problem for investors. In narrow framing, individuals treat their risks in isolation rather than taking a holistic view. This bias can lead to overestimation of risk and make the investors myopic in their investment outlook. On the other hand, during mental accounting people segregate the information into different mental accounts. They evaluate the performance of each account separately instead of evaluating the performance of their portfolio as a whole. So although, this bias helps the investors in managing complex information, it can create distortion in asset prices.

The disposition effect: Shefrin H, Statman M, Odean T and Weber M. and Camerer C F document the tendency of investors to delay realizing capital losses, while realizing gains prematurely. Weber M. and Camerer C F investigate this bias in an experimental setting. They find that the original purchase price serves as a reference point and the desire to avoid losses relative to this point leads to holding on to losers for too long. They also find the evidence that winners are sold too soon which amplifies the negative influence even further. This bias has a significant impact on market indicators like trading volume. Lakonishok J and Smidt S examine the aggregate market volume data and find that volume movement positively correlate with past price movements which are consistent with the disposition effect. Ferris SP, Haugen RA and Makhija AK also determine the disposition effect with respect to volume. They first calculate the expected normal volume and then consider actual volume relative to the expected price changes. Their results reveal that price declines lead to negative relative volume and vice-versa. Researchers also study this bias with the help of a survey.

The above mentioned empirical evidences on the disposition effect show that this bias can have a detrimental impact on portfolio performance as the investors either don't know when to quit and continue to lose or they quit too early without realizing optimal gains. This bias also influences the trading volume of stocks. Further, regret plays an important factor in the occurrence of this bias.

LITERATURE REVIEW

LITERATURE REVIEW ON SURVEY OF BEHAVIORAL BIASES

This section explores various noteworthy survey based studies in the field of behavioral finance. These are divided into three themes; factors behind the individual investor behavior, effect of demographics on investor behavior, and the role of psychological biases on investor behavior.

Factors behind individual investor behavior

Nagy RA and Obenberger RW use a questionnaire to determine that investor behavior is influenced by factors such as corporate earnings, diversification needs, feeling for firms' products, past performance of stocks and portfolio and stock brokers' recommendation.

Krishnan R and Booker DM analyze the factors influencing the short term decisions of investors using analysts' recommendations to hold or sell a stock. The results indicate that a strong form of analyst recommendation report can help in reducing the propensity to hold on losing stock or sell winners early i.e. the disposition effect

Al-Tamimi H.A.H explores the factors influencing investor behavior in U.A.E. that belongs to five categories self/firm image coincidence, accounting information, neutral information, advocate recommendations, personal financial needs.

Kim KA and Nofsinger JR study the behavioral profile of Japanese investors and find that they were risk takers, frequent traders, make poor trading decisions and buy recent winners.

Chandra A and Kumar R provide evidence that individual investors depend upon heuristics for making investmentdecisions and their behavior is highly influenced by biases like overconfidence, representativeness etc.

Effect of Demographics and trading sophistication on investor behavior

Barber B and Odean T report that men trade more excessively than women due to which their net returns get diminished. They conclude that women are risk averse while men are overconfident as they frequently rearrange their portfolio, which leads to unwarranted mistakes that can create losses.

Malmendier U and Shanthikumar D investigate that small (individual) investors of NYSE get more influenced by optimistic stock recommendations by security analysts as compared to large (institutional) investors. They exert positive pressure on buy and strong buy recommendations and no pressure on hold recommendations.

Fama E and French K employ account-level data from a national brokerage firm in the People's Republic of China to detect the impact of factors like investor sophistication and trading experience. They find that investor sophistication and trading behavior together can reduce behavioral bias like thedisposition effect.

Hon-Snir S, Kudryavtsev A and Cohen G study the effect of several behavioral biases like disposition effect, herding and the availability heuristic on Israeli portfolio managers and find that and female investors are more highly affected by these biases than their male counterparts and past trading experience reduces this effect.

Impact of psychological biases on investor behavior

Lötje T and Menkoff L analyze the risk management behavior of fund managers in Germany and detect the presence of herding in these professionals. On being asked, most of them agreed that discussion of an investment decision with colleagues reduces the pressure of being successful. The authors reason that strong incentives and "sharing-the-blame" effect promotes herding in these professionals.

Bhandari G and Deaves R detect the presence of overconfidence in contribution pension plan members. They judge the level of overconfidence by matching the level of their knowledge with the level of certainty, taking into consideration their respondents' experience and education. They find that this bias can cause individuals to overestimate the level of certainty of their response, even if they have limited knowledge.

Mangot M provides a deeper insight into the mindset of investors. In his book, he provides a set of fifty psychological experiments that help the investors to detect the biases like overconfidence, herding, representativeness and home bias, in themselves as well as others.

Hoffmann AOI, Shefrin H and Pennings JME analyze the systematic differences in the investment objectives and strategies of investors. They employ transaction level and survey based data of Dutch investors to find that speculators have higher aspirations, greater risk seeking ability and greater overconfidence. They also underperform in comparison to those investors who invest for saving and retirement purposes.

Sahi SK and Arora AP conduct in-depth interviews and capture eight biases in Indian investors. These are reliance on experts, overconfidence, self-control bias, categorization tendency, budgeting tendency, socially responsible investing bias, and spouse effect. They also segment investors' biases into four categories, namely: the novice learner, the competent confirmer, the cautious anticipator and the efficient planner.

It can be seen that there have been significant contributions in the field of behavioral finance. Nevertheless, lacunae still exist in the body of knowledge that leads to the necessity of research in this field.

METHODOLOGY

Capturing optimism (pessimism)

The major concern in this investigation is to find an appropriate measure for optimism (pessimism). Going by the definition, excessive optimism is the tendency of representative investor to overestimate mean returns and pessimism is the tendency to underestimate the same. Therefore the assessment of optimism (pessimism) requires two types of estimates of expected returns: first is the objective or rational investor's expected returns that is not prone to optimism (pessimism) and second is the representative investor's expected returns that is prone to optimism (pessimism). Here the rational investor conforms to standard finance theories and tries to maximize expected utility. Such an investor would expect a higher return for taking higher risks. In contrast, the representative investor in the study mimics the behavior of a real lifeindividual investor whose decision making is biased depending upon her sentiment.

According to standard asset pricing theories, equilibrium prices are set by investors holding correct beliefs. Keeping this assumption in mind, the first step is to calculate the objective probability density function (PDF) which depicts the correct beliefs of a rational investor. The second part takes into account a realistic investor who sets the equilibrium prices and is prone to bias. This involves the calculation of a probability density function (PDF) of a representative investor which should reflect the behavioral biases in the investor population. For this purpose, the objective PDF is converted into a representative PDF by incorporating a sentiment measure. This measure is calculated using the pricing kernel approach as suggested by Barone-Adesi G, Mancini L and Shefrin H. The study uses both an empirical pricing kernel and a theoretical pricing kernel approach. The difference between the empirical pricing kernel and the theoretical pricing kernel gives the sentiment measure.

CONCLUSION

After getting an insight on impact of behavioral biases using secondarydata we felt the need to further investigate this research issue using primary data. Therefore, a survey on these biases has been conducted to capture the role of investor specific factors like age, gender, annual income and trading sophistication in influencing the biases. Furthermore, it explores the psychology of respondents by identifying the situations and context in which the investors exhibit the biases. We also attempt to find out the most dominant bias. The results reveal that the behavioral biases of investors are dependent upon their demographics and trading sophistication. Further, age and trading frequency turned out to be the key determinants of behavioral biases. The results are verified with the help of chi square test. In addition to this, the investor profile corresponding to each bias has been developed. It is observed thatoverconfidence and optimism, mostly affects men of all ages (young to old) who trade on an intraday basis in new companies. On the other hand, pessimism prevails in young to middle aged women. Moreover, the pessimistic respondents havea preference for old companies with high growth, derivatives and commodities market, and high grade corporate bonds, but not new companies. Additionally, herd mentality is seen mostly in oldinvestors (51-60 years) and intraday

traders who invest in new companies. These investors have either very low experience (less than one year) or very high experience (greater than 7 years). One of the probable reasons behind this behavior can be the investment objective which is to get a regular income. The old investors look for safer investment avenues that can supplement their pension. We find that these investors would feel extremely disappointed on losing after taking a contrarian position while their friends make profits by following the crowd. The general psychology of these investors is that they don't mind being wrong as long as they have consensus. Thus, they become risk averse, which reduces their anxiety of losing their wealth and they tend to herd. The fourth bias is the disposition effect that affects both genders equally. Trading experience also does not create any difference in this bias. However, variation is observed with age group of investors. This bias mostly prevails in the middle age group (31-40 years) with an annual income of 6-11 lakhs. The middle aged investors are neither a risk taker like young investors, nor risk averse like their older counterparts. Additionally, they have spare money to invest. They consider themselves to be well informed and make cautious decisions. They are sure of themselves and cannot afford to be wrong. So once they take a decision they tend to stick to it even in the face of contradictory evidence. This includes holding a loss making stock for a long duration in the hope that it will become profitable in the future and/or selling the winners in their portfolio early so as to lock in their gains. This induces them to exhibit the disposition effect.

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