International Journal of Psychosocial Rehabilitation, Vol. 23, Issue 03, 2019
ISSN: 1475-7192

Overconfidence versus Herd Mentality Bias: An Investment Decision

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Abstract--- *The research is based on the impact of overconfidence bias and herd mentality bias on investment decision making and which one out of this has a significant influence on the investment decision. Primary data was collected with the help of a questionnaire using a random sampling method from a sample of 160 respondents consisting of investors belonging to different income level and working sectors to work on this research. The finding of this research is that herd mentality bias is the one which affects the investment decision the most and the favourable investment avenue is the stock market. The test was done with the help of regression analysis to find out the relationship between both overconfidence and herd mentality with each of the investment avenue and the results were shown in a regression table. This was followed by a Johansen's Co-integration test and descriptive analysis to find out whether both the biases are affecting the investors and which is the one which is affecting the most. From the regression analysis, it was also found out which is the most preferred investment area. From this piece of work, the investors can get a brief idea about their bias levels and how it is affecting their investment choices.*

Keywords--- *Overconfidence Bias, Herd Mentality, Investment Decision, Co-integration.*

I. INTRODUCTION

There has been an increasing trend in the volatility and fluctuations in the global markets in the past few years. The bad performance in the markets has to lead to the fluctuation in the prices of the stocks which cannot be eliminated with the help of traditional theories, stock markets have done extremely well in the past years. But now the stock markets are not performing in a good manner. Even well-educated investors are not able to earn returns above average (Gupta and Gupta, 2016). Their decision does not depend on rationality but other elements like psychology. Investor behaviour often does not reflect logic and rationality.According to (Babajide&Adetiloy, 2012) investors show irrational behaviour due to misinterpretation of situations, judgements and perception. Franco Modigliani and Merton Miller assume that man is rational but that is no more valid according to (Bondt et al., 2013). Emotional responses, mental assumptions due to past preconceived notions and individual personality affect the investment decision process. People face the problem of whether to follow the logical brain or the mind while investing. Individuals try hard to hold on to the stock of the companies where they themselves or their families have worked or they have a mental connect. Sometimes they follow the crowd and make decisions based on what the majority of the people follow. The emotional responses are the behavioural biases. Ignoring this can lead to serious problems so researchers have taken the problem of investor pattern to know what are the reasons behind this irrational behaviour in the investor.

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Received: 12 Mar 2019 | Revised: 29 Mar 2019 | Accepted: 25 Apr 2019

Behavioural finance takes into account the various faulty decisions investors take while making investment decisions taking into account various pre-constructed perceptions. Ultimately the investors face the loss due to attaching emotions in their investment decision making. People take some bad decisions regarding investment in the past and it affects their thinking and in the future, they experience the risk aversion bias and thinks how to surpass it. People get information from different sources and take those into consideration while making investment choices

According to (Spaniol& Bayen,2005) cognitive biases are important aspects of optimising investment choices. (Sanglier et. Al., 1994) show that if different investors share information they have their own assumptions and perception. These assumptions will lead to creating the clash of opinions and behaviours in the investment making choices. So their way of perception and investing pattern will influence the financial markets by their decisions regarding investments. They receive different information and hence that leads to affect the markets and this attributes also affects investors who are thinking to invest in the future as they follow the ongoing pattern and what other investors are currently investing on. (Tversky & Kahneman,1981) finds the evidence of investment decision making under the unpredictability of the markets that show people do not stand by the traditional models of rational behaviour. As they do not go by the rationality models of investment behaviour there are several psychological and behavioural aspects that influence the financial decision making.(Kahneman & Tversky,1979) critics the expected utility theory as a descriptive model and develop prospect theory which states that people take investment decisions taking the loss as the base rather than gains.

So ultimately it can be said that the investors face the issues of losses due to this biases. And so it becomes necessary to answer the question of how the behavioural biases influence the investment decision making of the investors. So our main objective of the research is to examine this psychological biases and how much it influences in the investment decision making of the investors. This will help in the investment decision making of individuals in the society.Investor behaviour often deviates from logic and reason. Emotional processes, mental mistakes, and individual personality traits complicate investment decisions. Thus, investing is more than just analysing numbers and making decisions to buy and sell various assets and securities. A large part of investing involves individual behaviour. Ignoring or failing to grasp this concept can have a detrimental influence on portfolio performance.

Behavioural biases are the most important aspects which influence an investor to invest in the different class of assets. The study established behavioural factors like overconfidence, prospect, heuristics, disposition effect, narrow framing, regret aversion, anchoring, mental accounting, gambles fallacy. These factors influence the investor to make certain investment decisions, not only in the case of trading in the market but also while taking up any sort of investment decisions.The field of behavioural finance has developed in response to the increasing number of stock market anomalies (undervaluation or overvaluation) that could not be explained by traditional asset pricing models. However, an apparent lack of consensus among financial scholars concerning the validity of behavioural finance theory has been noted in the literature. This lack of consensus suggests that behavioural finance as a concept is still open for.

The objective of the paper was to find out the impact of overconfidence bias and herd mentality bias on investment decision making taking into account the various investment avenues that is gold, derivatives, real estate

and stock market, whether there is an impact of both the biases on investors decision, which bias is significantly responsible for an investor while taking investment decisions and which is the most preferable investment avenue in both the biases. The answers to these questions were derived doing different tests that are regression analysis, Johansen's co-integration, descriptive analysis.

One of the most rudimentary assumptions that conventional economics and finance makes is that people are rational "wealth maximisers" who seek to increase their own well-being. According to conventional economics, emotions and other extraneous factors do not influence people when it comes to making economic choices. One of the biggest challenges to our own success can be our own instinctive behavioural biases. It hits all investors and can vary depending upon our investor personality type. These biases can be cognitive, illustrated by a tendency to think and act in a certain way or follow a rule of thumb. Biases can also be emotional: a tendency to act based on feeling rather than facts.The main purpose of the research is proving how an investor’s decision can be changed while taking investment decisions.The study established behavioural factors like overconfidence, prospect, heuristics, disposition effect, narrow framing, regret aversion, anchoring, mental accounting, gambles fallacy.The research is focused as to which of the factors influence an investor significantly is one of the complex things as a part of a research.

II. LITERATURE REVIEW

Many researchers have done several kinds of works regarding behavioural biases in investment decision making and it attracted a lot of importance after the worldwide meltdown of 2008. Simon 1959 gave the classical theory which states that consumer maximises utility and human being, in general, is rational. But it had a serious defect and it could not include some popular problems. It assumes perfect competition and rationality but when perfect competition is removed the rationality factor is not clear. Another assumption that people believe in probability to forecast future is also not right. Research has told that individuals do not process information rationally. In 1979 Tversky and Kahneman gave the prospect theory which proves that people make decisions on the basis of gains and losses and mainly on the gains. So if a person is given 2 choices where one is linked to a possible loss and another one to a possible gain then a person will definitely choose the one related to gain. The prospect theory has stated that losses have an emotional impact than again and so will have an effect on the investment making choices. The behavioural theories make a practical understanding of the human minds on the investment decisions.

Muhammad did his research to look at whether human beings take decisions on the basis of rational or on the basis of emotions. He found that when people take decisions they do not consider in which stock to invest rather they try to find out which will give them fewer losses and many times they take past investment performance to invest in present situations. And so they invest in the stocks which give them fair returns in the past. Hirshleifer et.al. 1998 saw that overconfident investors take decisions by giving more weight age to their own information than the information available in the public domain and hence giving unnecessary weights to some of the stocks.

The purpose of this paper is to systematically review the literature published in the past 33 years on behavioural biases in investment decision-making. The paper highlights the major gaps in the existing studies on behavioural biases. It also aims to raise specific questions for future research.

Much of the existing literature on behavioural biases indicates the limited research in emerging economies in this area. The focus was mainly towards the equity and home bias investments.

The trading volume increases when insiders, market makers put forward overconfident behaviour. This is the most important effect of overconfidence (Odean, 1998). Even recent empirical study states that the volume in trading in the financial markets is created by overconfidence. But it can create orderly trade also if there is no kind of confusion or disturbance. Overconfidence increases expected utility and overconfident people hold not a very much diversified portfolio. Sometimes information is much costly that in situations informed traders perform better than uninformed traders and active traders perform badly than inactive traders.

(Gupta& Gupta,2016) states that regret aversion bias, loss aversion bias and anchoring bias effects one set of investors more than the other. But herding bias affects equally all. Experienced group is more affected by the loss aversion, regret and anchoring compared to the less experienced investor. Investor biases affect badly the investment decisions and can lead to faulty and bad investment decisions. Consumers behaviour in the stock exchanges depends on components like the tenure of investments, other people's strategy, the benchmark returns and fluctuations in stocks (Chang et al, 2009). The profile of the investors also influences investment strategies and help in handling behavioural biases (Longo, 2004). Investors are divided into two groups active and passive. The active people gather money by taking a risky investment decision and passive people through their family legacy (Pompian, 2008)

Barber and Odean (2000) carried out a research to see the performance of the investments held by households and they found out that investors want to invest in the stocks with which they are familiar with and every they change their investment portfolio by 75%. Barber and Odean, 2001 found that overconfidence bias leads to excessive trading and low returns and they also saw different investment pattern relating to the person marital status. The environment also has an impact on the investments of people, when people invest in a cheerful environment they perform well than in an alone environment (Cheng, 2007). Lin (2012) tried to prove that investors perform badly and hence give importance to behavioural biases as they don't have sufficient information as such and does not have much faith on their self-capabilities of decision making. He did research on herding bias, disposition effect and overconfidence and found they have enough influence on the rational decision making of investors. (Jhandir& Elahi,2014) also researched on the influences of behavioural biases on investment making a decision of the investors of stock exchange of Karachi stock exchange.

The gaps which are found are that mostly the research has been done on a quantitative basis rather than a qualitative basis or in other parts of the world. And study can be done on other attributes of behavioural biases as well. So through the paper, it has been tried to build a relationship among different behavioural biases on investment decision making decisions.

III. METHODOLOGY

Data collection is a process through which preparing and gathering of data are done in order to find out result about a factor and how it is affecting other factors in a particular area. It is mainly done to make some valuable decisions and to bring out those decisions in front of general people. The methodology of collecting data can be categorised into two types**.** Primary Data which is a process by which information is collected using a structured

questionnaire and interview. Other methods which are also used are focus group discussions, observations and case studies. Secondary Data is the process we will take into consideration data which has already been collected by researchers for their specific purpose. It can be collected from various sources like company websites, company annual reports, public databases etc. In this research paper, the primary method has been used. Research Designs the plan for the entire research which mainly deals with what questions to study, which part of the population to target and how to do the analysis of the results. The design mainly depends on the standard of questions. The type of research taken up for this process is descriptive. In this type of research, we mainly deal with the type of characteristic of the population. The type of survey used in this research project is random sampling to collect the data. The Population selected for the research consists of different categories of investors with varying income level. The sample size that has been taken is 160. The tool used for collecting the data is a questionnaire. The type of question included the following areas which are Respondent's demographic Characteristics, Overconfidence bias attributes, Herd mentality bias attributes. The objective of the paper was to do a detailed analysis of the influence of overconfidence bias and herd mentality bias on investor's decision of selecting a particular investment avenue and it also focuses on their demographical characteristics. The data processing the research was done with help of different analytical tools like SPSS, Eviews Software and excel. To check the reliability, the data was run through Reliability Analysis and KMO Test under Dimension Reduction-Factor analysis in SPSS. After checking the reliability, regression analysis of the data was done in order to find out the factors which are having a significant level of relationship with the biases under each investment category that is comprising of gold, derivatives, real estate and stock markets. A chart was made in excel in order to do the descriptive analysis of the regressed data. This includes income, profession etc. Further in E-views Software Johansen's co-integration test was done using the mean of both overconfidence and herd mentality bias questions to find out whether both these biases react in the same way. This was done through hypothesis testing.

IV. DATA ANALYSIS AND INTERPRETATION

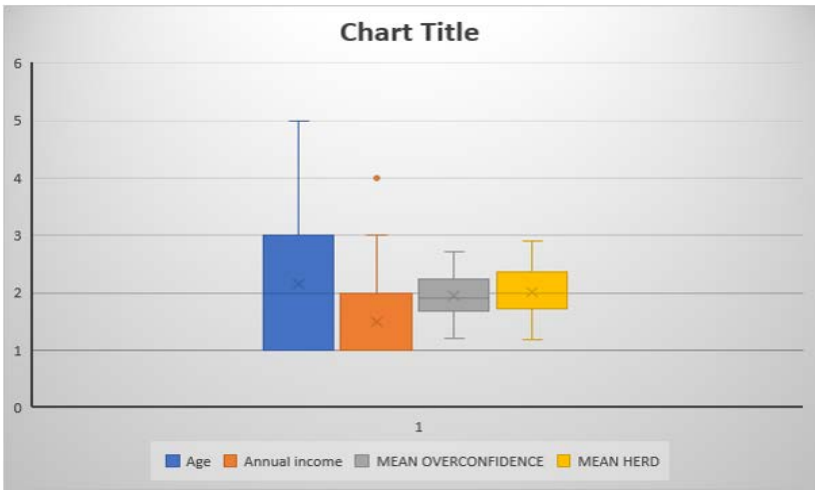


Figure 1: Descriptive Analysis

Source: Author's Own Calculation

Comparing the mean of both overconfidence bias and herd mentality, the respondents have a herd mentality more compared to that of overconfidence bias. The mean of overconfidence bias is 2.2428, whereas the mean for herd mentality is 2.3636. The reason behind the respondents' data showing such a result is the age factor. The respondents are mostly young investors and their income is 6- 10 lakhs on an average. Also, the age group of this respondents is around 23-27 years. Which means these investors didn't want to take any huge risks and would prefer to follow their friends or relatives' opinions rather than to rely on their own analysis. Considering the line of the thought process of the respondents, despite being young, their behaviour is mostly the same towards overconfidence and herd mentality. Both the results show the similar response. Even if we consider the co-integration test results, there were positive results for co-integration of these two biases for the respondents. The behaviour shown by the investors is likelihood with respect to both overconfidence and herd mentality.

ADD Questions descriptions

Table 1: Overconfidence Bias- factors affecting the investment decision

QOB1	Before making an investment, I think [Mostly about the potential gain]
QOB2	Before making an investment, I think [A little about the potential gain]
QOB3	Before making an investment, I think [Mostly about the potential loss]
QOB4	Before making an investment, I think [A little about potential loss]
QOB5	Before making an investment, I think [Both]
QOB6	Before making an investment, I think [Security of Investment (i.e. risk v/s return)]
QOB7	Do you think that the prices of real estate in Bangalore are going to raise [business]
QOB8	Do you think that the prices of real estate in Bangalore are going to raise [to]
QOB9	Did you invest in while the Modi government came into existence as the ruling party
QOB10	Please answer the following questions by putting a tick on your preferred response to measure the level of confidence [i have sufficient knowledge of Indian stock market]
QOB11	Please answer the following questions by putting a tick on your preferred response to measure the level of confidence [I am 4 of my ability to pick better stocks than others]
QOB12	Please answer the following questions by putting a tick on your preferred response to measure the level of confidence [I have full control and responsibility of my portfolio performance]
QOB13	Please answer the following questions by putting a tick on your preferred response to measure the level of confidence [I am 4 that investing in derivative will give me huge profits]

Table 2: Herd Mentality Bias- factors affecting the investment decision

QHM1	You have to know about a company's stock say A. You came to know that some of your relatives and friends are buying it. Would you buy it trusting them? (Yes)
QHM2	You have to know about a company's stock say A. You came to know that some of your relatives and friends are buying it. Would you buy it trusting them? (No)
QHM3	Do you buy stocks by following any online website or experts (Yes)
QHM4	Do you buy stocks by following any online website or experts (No)
QHM5	Suddenly the price of a stock of a company in which you have already invested falls and the analysts suggests you to hold it. So, will you hold it or not? (Yes)
QHM6	Suddenly the price of a stock of a company in which you have already invested falls and the analysts suggests you to hold it. So, will you hold it or not? (No)
QHM7	Suppose if a particular company is going into losses but has high goodwill in the market. So, will you invest in that company following others? (Yes)
QHM8	Suppose if a particular company is going into losses but has high goodwill in the market. So, will you invest in that company following others? (No)
QHM9	Will your investment decision get affected by fluctuations in the stock market? (Yes)
QHM10	Will your investment decision get affected by fluctuations in the stock market? (No)
QHM11	If you hear suggestions from a famous market researcher which is against your own analysis of a particular stock which you are planning to buy. Will you change your decision
QHM12	The current share prices of ICICI Bank are falling so will you sell it off following other investors?
QHM13	Will you put in your time in knowing a specific stock rather than following the already available information of that stock for investing purpose
QHM14	Will you try to know what business the company is carrying before investing in those stocks?

Received: 12 Mar 2019 | Revised: 29 Mar 2019 | Accepted: 25 Apr 2019

	GOLD (4)		DERIVATIVES (6)		REAL ESTATE (4)		STOCK MARKET (3)	
	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value
QOB 1	0.322	0.000	0.079	0.165	0.081	0.226	0.026	0.726
QOB 2	0.003	0.974	-0.000	0.992	-0.011	0.908	0.214	0.067
QOB 3	-0.166	0.049	0.031	0.631	0.250	0.001	0.045	0.602
QOB 4	-0.026	0.798	0.184	0.023	0.028	0.763	-0.076	0.477
QOB 5	0.146	0.129	-0.133	0.077	-0.000	0.994	-0.047	0.634
QOB 6	0.003	0.967	0.245	0.000	0.240	0.004	0.330	0.000
QOB 7	0.342	0.000	0.092	0.108	0.118	0.080	0.172	0.024
QOB 8	0.371	0.000	0.248	0.000	0.182	0.026	0.025	0.781
QOB 9	0.101	0.414	0.069	0.473	0.076	0.501	0.079	0.540
QOB 10	-0.085	0.331	-0.228	0.001	-0.095	0.239	0.022	0.803
QOB 11	-0.109	0.291	0.032	0.691	0.058	0.544	0.130	0.231
QOB 12	0.060	0.546	0.047	0.545	0.012	0.891	0.245	0.018
QOB 13	0.060	0.536	0.242	0.001	0.060	0.500	-0.133	0.189
QOB 13	0.060	0.536	0.242	0.001	0.060	0.500	-0.133	0.189

	GOLD (5)		DERIVATIVES (4)		REAL ESTATE (3)		STOCK MARKET (4)	
	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value
QHM1	0.149	0.191	-0.074	0.425	0.110	0.271	0.037	0.738
QHM2	0.041	0.654	0.142	0.064	0.213	0.009	0.174	0.059
QHM3	0.113	0.397	0.192	0.081	-0.049	0.671	-0.160	0.227
QHM4	0.056	0.648	0.141	0.164	0.131	0.225	-0.091	0.455
QHM5	0.074	0.574	-0.107	0.324	0.052	0.652	0.261	0.048
QHM6	-0.141	0.342	0.068	0.572	-0.033	0.797	0.195	0.187
QHM7	0.163	0.193	0.094	0.357	0.006	0.951	0.129	0.300
QHM8	0.089	0.511	0.017	0.873	0.178	0.136	0.119	0.375
QHM9	0.145	0.135	-0.020	0.797	0.248	0.004	0.170	0.079
QHM10	0.196	0.042	0.114	0.149	-0.163	0.054	0.043	0.650
QHM11	0.341	0.038	0.239	0.075	0.081	0.572	0.178	0.273
QHM12	-0.376	0.032	-0.256	0.075	-0.107	0.485	-0.130	0.451
QHM13	0.382	0.036	-0.099	0.504	0.177	0.267	-0.004	0.978
QHM14	-0.358	0.054	-0.179	0.236	-0.426	0.009	-0.426	0.02083

(NOTE: The above two tables are showing the P-Values and coefficient of the overconfidence bias and herd mentality bias. The factors highlighted in yellow are the most significant factors.)

The test of regression analysis was applied to measure overconfidence and herd mentality bias. The test was done to regress the various investment areas like gold, derivatives, real estate and the stock market with the biases like overconfidence and herd mentality attributes. This was done in order to find out the importance of each attribute or areas of the biases in the investment behaviour of the respondents.

In the table given the regression results of each of the investment avenues available to the respondents in the questionnaire consisting of gold derivatives. Importance of the elements of overconfidence bias and herd mentality bias on the different investment avenues. The interpretation of each investment avenues are as follows:

Gold:

The potential gain and the potential loss are the major points for the investors before investment. Another major thing for the investors is their opinion on the rise of the real estate prices in Bangalore. Both of these factors have a relationship with overconfidence bias. The coefficient for the potential gain with the overconfidence bias is 0.32251 whereas the coefficient for potential loss with the overconfidence bias is -0.16646, which means that the potential gain is positively correlated whereas the potential loss is negatively correlated. Another factor that is the investor opinion on the rising prices of real estate. For this, the positive response has a coefficient of 0. 34269 whereas the negative response has 0. 37109 but both are positively correlated. From the above figures, we can see that the negative response to the rise in real estate prices has the most significant relationship with overconfidence bias. The P-values of potential gain and loss are 0.00002 and 0.04992, which means that the potential gain is more significant because the difference between 0.05 and 0.00002 is too high.

The effect of fluctuations in the stock market on investment decisions and suggestions from a famous market researcher whose views are against the investor's self-analysis of a stock has a link with herd mentality. the decision of the investor to sell off the shares of ICICI Bank which were falling during the period of data collection had a relationship with the herd. The investor's willingness in knowing the details of a particular stock rather than going by the already available information of that stock and also the business that the company is into while the investor’s investment process has an influence on herd mentality bias. The coefficient of an effect of fluctuation in the stock market on investment decision is 0.19632, the coefficient of suggestion of famous market researcher on investment decision is 0.34126 and time invested by the investor rather than following the market is 0.38295. This shows that all these three factors are positively correlated with herd mentality. The other factors that are negatively correlated are the investor's independent decision when the share prices are falling and the willingness of the investor to know about the business of the company is – 0.37649 and -0.35806. The P-values for the above factors are 0.04285, 0.03894, 0.03696 for the positively correlated factors and for the negative they are as 0.03294, 0.05424. So, the factor that is the investor's independent decision when the share price is falling is more significant.

Received: 12 Mar 2019 | Revised: 29 Mar 2019 | Accepted: 25 Apr 2019

Derivatives:

The factors having a relationship with overconfidence bias are little influence of potential loss, both potential loss and gain, security of investment that is risk versus return, an opinion of investors in rising prices of real estate in Bangalore. Some of the other factors which are affecting the confidence level are sufficient knowledge about the Indian Stock Market and investing in Derivatives will give huge profits. The coefficient values of the factor little about potential loss are 0.18412 and also the security of investment that is risk versus return is 0.24541which are positively correlated to overconfidence bias whereas the factor both potential loss and gain is -0.13348 which means it is negatively correlated to overconfidence. Some other factors which are positively related to overconfidence bias are the opinion of investors for the rising in prices of real estate in Bangalore and the confidence level that investing in derivatives will help to mitigate losses and give huge profits. Their respective values are 0.24834 and 0.24247. The factors which are negatively correlated is the confidence level of the investors of having sufficient knowledge of Indian Stock Market and whose value is -0.22842. The P-values of the positively related factors that are thinking little about the potential loss, security of investment that is risk versus return, investors outlook of the prices of real estate are going to rise and investing in derivatives will give huge profit are 0.02356, 0.00066, 0.00043 and 0.00170. The negatively related factors are both potential losses and gain and investors' confidence level on having sufficient knowledge of Indian Stock Market are 0.07712 and 0.00104. This shows that the factor with 0.00043 that is investors outlook of the prices of real estate are going to rise has a significant relationship with overconfidence bias and it is positively correlated as well. From the above data, we also get to know that there is an inverse relationship between overconfidence and the two factors that are both potential loss and gain and investors know about the Indian Stock Market.

The factors which are having a relationship with herd mentality bias our opinion of people to buy the stock of a company in which they have no knowledge trusting friends and relatives, buying the stocks of a company by following any online website or expert, decision to buy a particular stock of a company by hearing suggestions of famous market researcher which is against the investors self-analysis, decision to sell the shares of ICICI bank which were falling during the period of data collection by following other people. The coefficient values of the factors opinion of people to buy the stock of a company in which they have no knowledge trusting friends and relatives, buying the stocks of a company by following any online website or expert, decision to buy a particular stock of a company by hearing suggestions of famous market researcher which is against the investors self-analysis are 0.1421, 0.192168 and 0.239899 respectively. It shows that all these factors have a positive relationship with herd mentality bias. The factor decision to sell the shares of ICICI bank which were falling during the period of data collection by following other people is having a value of -0.25664. This shows that the value has a negative relationship with herd mentality bias. The P values of the factors opinion of people to buy the stock of a company in which they have no knowledge trusting friends and relatives, buying the stocks of a company by following any online website or expert, decision to buy a particular stock of a company by hearing suggestions of famous market researcher which is against the investors self-analysis, decision to sell the shares of ICICI bank which were falling during the period of data collection by following other people are 0.06407, 0.08108, 0.07593 and 0.07532

respectively. So the factor which is having a significant relationship with herd mentality bias is an opinion of people to buy the stock of a company in which they have no knowledge trusting friends and relatives.

Real Estate:

The factors which are having a relationship between overconfidence bias are mostly about the potential loss, security of investment i.e. risk vs return. The other factor which is having a relationship is the respondent's opinion about whether the prices of real estate in Bangalore are going to rise or not. The coefficient values of the factors mostly about the potential loss and security of investment i.e. risk vs return are 0.250039 and 0.240472 respectively. The values of the other two factors i.e. the negative and positive opinion on whether the prices of real estate will rise in Bangalore are 0.118384 and 0.182263 respectively. It shows that all the four factors are positively correlated with overconfidence bias. The P values of the factors mostly about potential loss and security of investments are 0.00159 and 00445. The other two factor which is the opinion of respondents on whether prices of real estate are going to rise in Bangalore or not are having P values of 0.08068 and 0.02662 respectively. It shows that the factor which is having a significant relationship with overconfidence bias is that before making an investment people mostly think about the potential loss.

The factors which are having a relationship with herd mentality bias are respondent's opinion on whether they will buy a company's stock trusting their relatives and friends in which they have no knowledge, influence of fluctuations in stock markets on investment decisions and respondent's willingness to know about the business of the company before buying a stock. The coefficient values of the factors respondent's opinion whether they will buy a stock of a company following their friends and family and the influence of fluctuations in the stock market in investment decisions are 0.21341 and 0.248963 respectively. Both the factors are having a positive correlation with overconfidence bias. The factor willingness to know about the business of the company before buying the stock has a coefficient value of -0.42603. It shows that this factor has a negative relationship with herd mentality bias. The P values of the factors respondent's opinion on whether they will buy a stock of a company trusting their relatives and friends in which they have no knowledge and influence of fluctuations in stock markets on investment decisions are 0.00986 and 0.00409 respectively. The factor willingness to know about the business of the company before buying its stock has a value of 0.00947. It is evident from here that the factor having the significant relationship with herd mentality bias is an influence of stock markets on investment decisions of people and it is also negatively related with herd mentality bias.

Stock Market:

The factors which are having a relationship with overconfidence bias are the security of investment i.e. risk vs return, opinion on whether the prices of real estate will rise in Bangalore and confidence level of respondent’s whether they have full control and responsibility of their respective portfolio performance. The coefficient values of the factor security of investment i.e risk vs return, opinion on whether the real estate prices of Bangalore will rise and confidence level of respondent’s that they have full control and responsibility of their portfolio performance are 0.330856, 0.17237 and 0.245772 respectively. It shows that all the three factors are positively correlated with overconfidence bias. The P values of the factors security of investment i.e. risk vs return, whether the prices of real

estate rise in Bangalore and level of confidence of people on having full control and responsibility on their respective portfolio performance are 0.00058, 0.02484 and 0.01887 respectively. It shows that the security of investments i.e. risk vs return has the most significant relationship with overconfidence bias.

The factors which are having a relationship with herd mentality bias are opinion of respondent's whether they will buy the stock of a company in which they have no knowledge trusting their relatives and friends, decision to hold on a stock whose prices have fallen but analysts have suggested to hold on to it, influence of stock market fluctuations on investment decisions and willingness of respondent's to know about the business of a company before investing in the stock. The coefficient values of the factor opinion of respondents to buy a stock trusting the relatives and friends, the decision to hold on to a stock whose prices have fallen but analysts have suggested to hold on to it, the influence of stock markets fluctuation in investment decision are 0.174638, 0.261862 and 0.170163 respectively. It shows that these factors have a positive correlation with herd mentality bias. The factor willingness of respondents to know about the business of the company before buying the stock has a value of -0.42689. This shows that it has a negative correlation with herd mentality bias. The P values of the factors opinion of respondent's to buy the stock of a company following relatives and friends, decision to hold on to a stock whose prices have fallen but analysts as suggested to hold on the stock, influence of stock market fluctuations on investment decisions and willingness of respondent's to know about the business of the company before investing in the stock are 0.05973, 0.04890, 0.07914 and 0.02083 respectively. It shows that the factor which has a significant relationship with herd mentality bias is a decision to hold on a stock whose prices have fallen but analysts have suggested to hold on to the stock.

Received: 12 Mar 2019 | Revised: 29 Mar 2019 | Accepted: 25 Apr 2019

Johansen's Cointegration

Date: 08/04/18 Time: 17:59
Sample (adjusted): 6 159
Included observations: 154 after adjustments
Trend assumption: Linear deterministic trend
Series: MEAN_HERD MEAN_OVERCONFIDENCE
Lags interval (in first differences): 1 to 4

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.155324	36.62773	15.49471	0.0000
At most 1 *	0.066711	10.63217	3.841466	0.0011

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.155324	25.99555	14.26460	0.0005
At most 1 *	0.066711	10.63217	3.841466	0.0011

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

MEAN_HERD	MEAN_OVERCONFIDENCE
-8.397261	4.079329
-0.646761	2.519273

Unrestricted Adjustment Coefficients (alpha):

D(MEAN_HE...	0.132690	-0.063683
D(MEAN_OV...	0.050430	-0.154561

1 Cointegrating Equation(s): Log likelihood -151.0861

Normalized cointegrating coefficients (standard error in parentheses)

MEAN_HERD	MEAN_OVERCONFIDENCE
1.000000	-0.485793
	(0.05088)

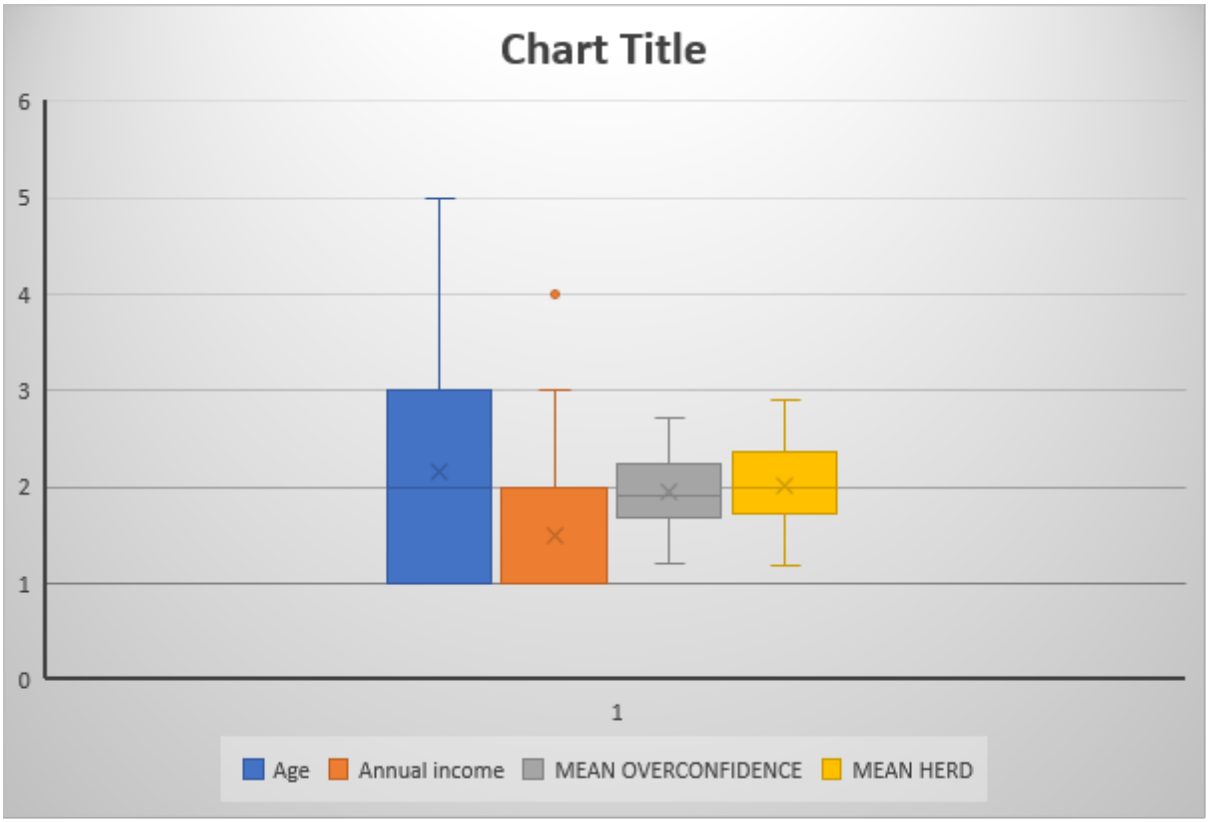
Adjustment coefficients (standard error in parentheses)

D(MEAN_HE...	-1.114234
	(0.27687)
D(MEAN_OV...	-0.423473
	(0.42676)

Received: 12 Mar 2019 | Revised: 29 Mar 2019 | Accepted: 25 Apr 2019

The test was done by taking the mean of herd mentality bias and overconfidence bias. It was done to find out the cointegration between the two biases which are herd mentality bias and overconfidence bias. The respective mean of the variables was used. The null hypothesis taken in this case was that both the biases are reacting in the opposite manner and the alternative hypothesis was that they are reacting in the same manner in case of an investor. The results of the trace test indicate two cointegrating equations at the 0.05 level. This suggests rejection of the hypothesis at the 0.05 level. The rejection of the null hypothesis signifies the acceptance of the alternative hypothesis. This means that both the biases are acting in the same way in each of the questions and the responses were given by the respondents. This is due to the fact that the significance level is above the cut off level which is the p-value of 0.05 which means that the two variables are co integrating with each other. Both herd mentality bias and overconfidence bias is showing a similar kind of behaviour. The biases are behaving in the same manner as the investor's responses. Both herd and overconfidence bias has influence over the investors.

V. DISCUSSION



Comparing the mean of both overconfidence bias and herd mentality, the respondents have a herd mentality more compared to that of overconfidence bias. The mean of overconfidence bias is 2.2428, whereas the mean for herd mentality is 2.3636. The reason behind the respondent's data showing such a result is the age factor. The respondents are mostly young investors and their income is 5- 10 lakhs on an average. Also, the age group of this respondents is around 28-35 years. Which means these investors didn't want to take any huge risks and would prefer to follow their friends or relatives' opinions rather than to rely on their own analysis. Considering the line of the

Received: 12 Mar 2019 | Revised: 29 Mar 2019 | Accepted: 25 Apr 2019

thought process of the respondents, despite being young, their behaviour is mostly the same towards overconfidence and herd mentality. Both the results show the similar response. Even if we consider the cointegration test results, there were positive results for cointegration of these two biases for the respondents. The behaviour shown by the investors is likelihood with respect to both overconfidence and herd mentality.

Looking at the above chart, there are variables on the x-axis and the mean is on the y-axis and the variables are age, annual income, mean of overconfidence and mean of the herd. The mean for both overconfidence and herd mentality is plotted for different age groups and for annual income as well, where the age categories are as follows

1- 18 to 23 years

2- 24 to 27 years

3- 28 to 35 years

4- 36 to 40 years

5- >40 years

Coming to the annual income, the various levels of income are given as follows

1- Below 500000

2- 500000 to 1000000

3- 1000000 to 1500000

4- > 1500000

Taking these into consideration, the mean of overconfidence is 2.2428 for the average age group of 3 i.e. for the age group of 28 to 35 years with an annual income level between 500000 and 1000000. Comparatively the mean of herd mentality is 2.3636 for the given level of age and income of the respondents. So here it is being proved that the investors being young and because of their annual income levels taking into consideration, the mean for herd mentality is more than that of the overconfidence bias. Since they follow the herd, they will not rely on their own analysis for investment. This is the reason why the investors did not show the overconfidence bias more than a herd mentality. Had the investor's age is more than the given category, then their bias would have been more towards overconfidence. Young investors who are not completely aware of the investment decisions, they tend to have a mentality of losing the money, so it's obvious that investors have shown the behaviour more towards herd mentality. The result further demonstrates that the herd mentality has a positive impact on investors decision making than that of overconfidence bias. One of the reasons why investors have shown their tendency towards herd mentality is because of the social pressure. Considering the age factor here, people are very sociable, and they didn’t want themselves to be branded as an outcast. They wanted to be accepted by the group. Also, fear has played an important role in the process as they had the fear of losing money because of lack of experience and age, they would rather follow the people than having a mindset that they will lose money by overconfidence. For investors, influence is stronger when they have the uncertainty of their decisions because of the lack of proper knowledge. Under certain conditions, for an investor, it becomes rational to him to follow the crowd, even if the investors own information

suggests him an alternative. An investor gives a thought of his income level while taking a decision. So, in this chart, the decisions which were reflected have income level as one of the important considerations.

The regression analysis was presented to show the relationship between different investment avenues with the herd mentality bias and overconfidence bias. The analysis was done to find the influence of important variables of both overconfidence bias and herd mentality bias in the investment choices of investors and the correlation between them.

Gold:

In gold firstly the overconfidence bias attributes were considered. It was found that the most important factor which is mainly taken into consideration by the investors before investing into gold is a potential gain that they will derive if they invest in gold as it is the having maximum difference from the P value cut off level. The other factor which is also important is the opinion of people whether the prices of real estate will increase in the future or not. So if prices of real estate increase investors will have more confidence to invest in gold but if prices of real estate decreases then the confidence level of the investors will also decrease and they will not invest in gold as these factors are positively related with each other. But the factor potential loss in investment in gold is negatively related with overconfidence bias which means that they have an inverse relationship with each other. So if the potential loss in the process increases then the investors' overconfidence feature will decrease and they will restrain themselves from investing in gold and taking gold as an investment choice. If the potential loss reduces then the overconfidence bias increases.

In herd mentality bias the factor which is having the most important relationship with gold is respondent's opinion on whether they will sell the shares of ICICI Bank which were falling during the period of data collection due to a particular issue as it is having P value which has the maximum difference from the cut off level. The factors which are also having a relationship with herd mentality bias are influence of stock market fluctuations in investment decision, suggestions from famous market researcher whose views are against the investor’s self-analysis of a stock, investor’s willingness in knowing the details of a particular stock rather than going by the already available information, business that the company is into while the investor's investment process. The factors which are having a positive relationship with herd mentality bias is the influence of stock market fluctuations in the investment decision, suggestions from famous market researcher whose views are against the investor's self-analysis of a stock, investor's willingness in knowing the details of a particular stock rather than going by the already available information. So if there is a fluctuation in the stock market then people will prefer to follow others in the market and invest accordingly and if there is no fluctuation then the investor's will like to go by their own analysis. The factor respondent's opinion on whether they will sell the shares of ICICI Bank which were falling during the period of data collection has a negative relationship with herd mentality which means they have an inverse relationship with each other. So people will not sell the shares of the company following others and hence the herd mentality is less in this case. And also the factor the investor’s willingness to know the business of the company before investing is also negatively related with herd mentality bias. So it shows that as herd mentality increases people’s willingness to know the business of the company in which they are investing decreases and vice versa.

Derivatives:

In derivatives, the factor which is having a significant relationship with overconfidence bias is security that is the risk vs. return component of the stock. So it is evident that the investors think about the security of the investment that is what will be the amount of return that they will get into taking the particular amount of risk and if it is worth or not before taking up the decision to invest in derivatives as this is having the maximum difference between the P value and the cut off level. The other factors which are also having a relationship with overconfidence bias are the opinion of investors in rising prices of real estate in Bangalore, confidence level of having sufficient knowledge about the Indian Stock Market, investing in Derivatives will give huge profits and little about potential loss. So if the prices of real estate are increasing in Bangalore then people will have more confidence to invest in that sector and vice versa. The factors which have a positive correlation are the opinion of investors for the rise in prices of real estate in Bangalore and the confidence level that investing in derivatives will help to mitigate losses and give huge profits. This shows that if this factor increases then the overconfidence bias feature in investors' will decrease and they will not invest in derivatives and rather will select some other investment opportunity. The factors which are having a negative relationship with overconfidence bias are confidence level of the investors of having sufficient knowledge of Indian Stock Market, both potential loss/gain and investor's confidence level in having sufficient knowledge of Indian stock market. This shows that as the factors increases then the overconfidence bias reduces and vice versa. So as the knowledge of investors regarding the stock market reduces then the overconfidence bias increases and the reverse is also true but in case of potential loss/ gain as the investor's both potential loss and gain increases than their confidence level decreases. The reason behind this is that as both of them are increasing in the same manner so the additional profits that the investors are earning are eaten up by the losses which are incurred by the investors, as a result, the overconfidence bias is reducing.

In herd mentality bias the factor which is having a significant relationship with derivatives is buying the stock of a company in which they have no knowledge by trusting friends and relatives as it has a P value which has the maximum difference from the cut off level. It affects people significantly in taking the decision to invest in derivative. So investors mainly follow their friends and relatives and buy the stock without their own self analysis of the stock. There can be several reasons behind this, some of them are that the investor may not have sufficient knowledge about derivatives, they may not have enough time to do research work and as they don't want to blame themselves for the losses so they follow others and even if they do research work they don't have enough confidence on their analysis about the market. Other factors which are also having a relationship with overconfidence bias are buying the stocks of a company by following any online website or expert, decision to buy a particular stock of a company by hearing suggestions of famous market researcher which is against the investors self-analysis, decision to sell the shares of ICICI bank which were falling during the period of data collection by following other people. The factors which are having a positive relationship with herd mentality are opinion of people to buy the stock of a company in which they have no knowledge trusting friends and relatives, buying the stocks of a company by following any online website or expert, decision to buy a particular stock of a company by hearing suggestions of famous market researcher which is against the investors self-analysis. So it is evident that if the factors increase then the herd mentality bias increases. The factor decision to sell the shares of ICICI bank which were falling during the

Received: 12 Mar 2019 | Revised: 29 Mar 2019 | Accepted: 25 Apr 2019

period of data collection by following others is having a negative relationship with herd mentality bias. So as the herd mentality bias increases then investor's preference to buy the shares following others decreases and also vice versa. The reason behind this can be that investors who are rational and having enough information that the prices of the shares will increase in future, they are holding it now to sell it off later and earn huge profits from it and if the other is true then investor's preference to sell the shares increases following others. So it might be that they have information that it will fall more and hence they want to sell it off now to avoid more losses in future.

Real Estate:

The factor which is having a significant relationship with overconfidence bias is thinking about the potential loss before investing in real estate. The P value of the factor is having the maximum difference from the cut off level. So people mostly think of the potential loss that they will face in taking up real estate as the investment choice under overconfidence bias. The other factors which are having a relationship are the security of investment i.e. risk vs. return, respondent's opinion about whether the prices of real estate in Bangalore are going to rise or not. All the factors have a positive relationship with overconfidence bias under real estate. So if the factor increases then overconfidence bias of the investors will also increase. And their a preference in buying the shares will also increase.

The influence of fluctuations in stock markets has a significant relationship with herd mentality bias under real estate as it has the maximum difference from the cut off value of. So if there is a fluctuation in the stock market it will highly affect the investor's decision in taking real estate as an investment choice under herd mentality bias. The other factors which are having a relationship with herd mentality bias are respondent's opinion whether they will buy a stock of a company following their friends and family and respondent's willingness to know about the business of the company before buying a stock. They all are positively related so if this factors increases then the herd mentality bias will also increase.

Stock market:

The factor which is having a significant relationship with overconfidence bias under stock market is people mostly think about the security of the investment that is the risk vs. return component attached to the investment avenue. It is the most important factor as it is having the maximum difference from the P value cut off level. The other factors which are also having a relationship are the opinion of respondent's whether prices of real estate are going to rise in Bangalore or not and confidence level of people having full control and responsibility of their portfolio performance. All the factors are positively correlated with each other. So if the factors say people having full control over their portfolio performance increases then their confidence level for investing in the stock market will also increase and the reverse is also true. It is also similar for other factors as well which is the opinion of respondent's regarding an increase in stock prices of real estate in Bangalore. So if prices of real estate in Bangalore increase then people's confidence to invest in stock markets will increase and if this decreases then their confidence to invest in stock markets will decrease.

In herd mentality, the factor which is having a significant relationship with investment in stock market is the opinion of people regarding willingness to know about the business of the company in which they are thinking to

invest as it is having the maximum difference from the p-value cut off level. Other factors which are also having a relationship with herd mentality in the stock market are the opinion of people buying the stock of the company trusting relatives and friends, hold the stock of a company whose share prices are falling by following the analyst's suggestion, influence on investment decision by stock market fluctuations. All the three factors have a positive relationship with herd mentality bias under the stock market. So if people's preference to buy the stock of a company following others increases then the herd mentality factor will also increase as they themselves will not do any analysis and only follow other people. But the factor opinion of people regarding willingness to know about the business of the company in which they are thinking to invest is negatively relatively with herd mentality. So if the people are willing to know about the company in which they are planning to invest increases then their herd behaviour will reduce and if they are not willing to know then they will follow others and buy the stock of the company which other people are buying and hence the herd mentality feature will increase in this case.

In order to find out the most preferable investment avenue for the investor, we compared the R-square values of all the investment avenues that are gold, derivatives, real estate and the stock market. It was derived that stock market is the most preferred investment avenue under both the biases.

Johansen's Cointegration

Johansen's cointegration shows rejection of the null hypothesis at the cut off level of the P value. The rejection of the null hypothesis means acceptance of the alternative hypothesis. The null hypothesis was that both the two bias herd mentality and overconfidence are not having an influence on the respondent's decision to invest. And the alternative hypothesis is that both are having an effect on an investor's decision to invest. So it is proved that both are having an influence on investors to take investment decisions in various investment avenues available in front of them which are gold, derivative, real estate and the stock market. So both of the biases are showing similar kind of behaviour on the respondent's or the investors and hence both are affecting their investment decision in a positive or negative way. The test was done by taking the mean of both overconfidence and herd mentality.

VI. CONCLUSION

The objective of the paper was to find out the impact of overconfidence bias and herd mentality bias on investment decision making taking into account the various investment avenues that is gold, derivatives, real estate and stock market, whether there is an impact of both the biases on investors decision, which bias is significantly responsible for an investor while taking investment decisions and which is the most preferable investment avenue in both the biases. The answers to these questions were derived doing different tests that are regression analysis, Johansen's cointegration, descriptive analysis.

The final output of the regression analysis is that there are various factors under both herd mentality bias and overconfidence bias which is affecting investors in taking up their investment decisions regarding gold, derivatives, real estate and the stock market. Some of the common factors under overconfidence which are affecting the various investment avenues are the potential loss and gain, security of the investment that is risk vs. return, investors opinion on increase in real estate prices in Bangalore, confidence level of having sufficient knowledge about the market and some of the common factors under herd mentality which are affecting the various investment avenues are

fluctuations in stock market, following famous market researchers, selling the shares of ICICI Bank as the prices were falling during the period of data collection. From the Johansen's cointegration, it was analysed that both the biases are having an impact on the investors while taking investment decisions. From the descriptive analysis that has been done, it was proved that herd mentality is having the maximum impact on investors than overconfidence bias. From the regression analysis, it was found out the r-square values of all the four investment avenues under both the biases. So according to the analysis it was found out that investors are having high overconfidence bias as well as herd mentality bias while they are investing in stock markets. From this, it can be concluded that the stock market is the most preferred avenue for investment.

The unique findings of the paper shows that some of the factors under overconfidence bias in derivative that is confidence level of the investors of having sufficient knowledge of Indian Stock Market, both potential loss/gain and investor's confidence level in having sufficient knowledge of Indian stock market, increases then the overconfidence bias reduces and vice versa. So as the knowledge of investors regarding the stock market reduces then the overconfidence bias increases and the reverse is also true instead it should have been the other way round if the market has more of rational investors. The factor decision to sell the shares of ICICI bank which were falling during the period of data collection by following others is having a negative relationship with herd mentality bias. So as the herd mentality bias increases then investor’s preference to buy the shares following others decreases and also vice versa. And if the other is true the investor’s preference to sell the shares increases following others which means that people have information about the share price movements or the investors who have invested in that particular stock are rational investors because they are not showing a flock of the sheep movement. The most important unique finding was that investors are preferring stock market over others.

The future research can be based upon the finding that why investors are preferring more of the stock market over other investment choices. Adding to this a future research can be conducted on why there is an inverse relationship between some of the factors in derivative that is confidence level of the investors of having sufficient knowledge of Indian Stock Market, both potential loss/gain and investor's confidence level in having sufficient knowledge of Indian stock market and overconfidence bias. This study was restricted only in India but can be done for other countries as well and it focused on only two biases that are overconfidence and herd mentality bias but it can also be done for biases taking into consideration other methods of analysis, research can be based on secondary data as well. While conducting this research the limitations faced were finding out investors for data collection, less cooperation from the respondents, time constraints.

ACKNOWLEDGEMENT

The satiation and euphoria that accompany the successful completion of this research would be incomplete without the mention of the people who made it possible. We thank the research team of Accendere Knowledge Management Services, CL Educate Ltd. for their unflinching guidance, continuous encouragement and support to successfully complete this research work.

REFERENCES

[1] Ahmed, Shahid (2006), Day-of-the-Week Effect on Trading and Non-Trading Stock Market Returns in India Babajide, A. A., & Adetiloye, K. A. (2012). Investors' Behavioural Biases and the Security Market: An Empirical Study of the Nigerian Security Market. Accounting and Finance Research, 1(1), 219-229.
[2] Barber, B. M., & Odean, T. (2000). Trading is hazardous to your wealth: The common stock investment performance of individual investors. The Journal of Finance, 55(2), 773-806.
[3] Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. The quarterly journal of economics, 116(1), 261-292.
[4] Chang, Y. Y., Faff, R., & Hwang, C. Y. (2009). Does investor sentiment impact global equity markets? In Milan EFMA meetings.
[5] Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1998). Investor psychology and security market under-and overreactions. the Journal of Finance, 53(6), 1839-1885.
[6] De Bondt, W., Mayoral, R. M., & Vallelado, E. (2013). Behavioural decision-making in finance: An overview and assessment of selected research. Spanish Journal of Finance and Accounting/Revista Española de Financiación y Contabilidad, 42(157), 99-118.
[7] Gupta, Y., & Ahmed, S. (2016). The Impact of Psychological Factors on Investment Decision Making of Investors: An Empirical Analysis.
[8] Jhandir, S. U., & Elahi, M. A. (2014). Behavioural Biases in Investment Decision Making and Moderating Role of Investor's Type.
[9] Kahneman, D., & Tversky, A. (1979). On the interpretation of intuitive probability: A reply to Jonathan Cohen. Cognition, 7(4), 409-411.
[10] Lim, S. S., Vos, T., Flaxman, A. D., Danaei, G., Shibuya, K., Adair-Rohani, H., ... & Aryee, M. (2012). A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *The Lancet*, *380*(9859), 2224-2260.
[11] Muhammad, N. M. N., & Abdullah, M. (2009). Investment decision-making style Are Malaysian investors rational decision makers. *Interdisciplinary Journal of Contemporary Research in Business*, *1*(3), 96-108.
[12] Odean, T. (1998). Are investors reluctant to realize their losses?. The Journal of finance, 53(5), 1775-1798.
[13] Odean, T. (1999). Do investors trade too much?. *American economic review*, *89*(5), 1279-1298.
[14] Pompian, M. M. (2008). Using behavioural investor types to build better relationships with your clients. *Journal of Financial Planning*, *21*(10).
[15] Pompian, M. M. (2008). Using behavioural investor types to build better relationships with your clients. Journal of Financial Planning, 21(10).
[16] Sanglier, M., Romain, M., & Flament, F. (1994). A behavioural approach to the dynamics of financial markets. Decision support systems, 12(4-5), 405-413.
[17] Simon, H. A. (1959). Theories of decision-making in economics and behavioural science. The American economic review, 49(3), 253-283.
[18] Simon, H. A. (1979). Rational decision making in business organizations. *The American economic review*, *69*(4), 493-513.
[19] Spaniol, J., & Bayen, U. J. (2005). Ageing and conditional probability judgments: a global matching approach. Psychology and Aging, 20(1), 165.
[20] Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. Science, 211(4481), 453-458.

Received: 12 Mar 2019 | Revised: 29 Mar 2019 | Accepted: 25 Apr 2019