CHAPTER I
INTRODUCTION

1.1 BACKGROUND OF THE STUDY

According to traditional finance theories, individual investors are rational in their investment decisions. In the efficient markets, individual investors are assumed to be rational, consistent and unbiased. These investors make correct investment decisions without any influence of their psyche and emotions (Hayat et al 2006). However, most of the times, emotions and psyche influence the individual investors, causing them to behave in an irrational way. According to Nofsinger, the field of finance has evolved over the past few decades based on the assumptions that people make rational decisions and that they are unbiased in their predictions about the future. Investors are considered as rational. A rational investor can be defined as one, who always updates his beliefs in a timely and appropriate manner on receiving new information and makes choices that are normatively acceptable (Thaler 2005).

The foundations of the world economy were shaken by the financial crisis of 2008 that originated in the USA and global recession that set in. A vast majority of economists, investment bankers and mutual fund managers was caught unaware by this development and also the follow up events such as bankruptcies and defaults. Even the top rated financial sector companies like Lehman brothers, AIG, Freddie Mac, Fannie Mae and
Wachovia could not able to sustain the onslaught of the economic crisis. This is termed as an ‘anomaly’ by most traditional economic theories.

Theoretical and experimental works of two psychologists, Daniel Kahneman and Amos Tversky, who contributed to the psychology literature in 1970s served as a foundation and gave rise to a new paradigm in the 1980s called ‘Behavioral Finance’, which focuses on ‘how people actually behave in a financial setting’. It is the study of how psychology affects financial decisions, corporations, and the financial markets (Nofsinger 2001). The reasons for the emergence of behavioral finance are the various shortcomings faced by the traditional theories. While some of the psychologists assumed that people only failed to update their beliefs promptly, other models considered scenarios where they were updating their beliefs rationally, but making normatively questionable choices. It requires emphasis that the key objective of the behavioral finance has not been to prove any of the exiting theory obsolete, because if those theories are not able to explain puzzling scenarios successfully to a good extent, they, in all possibility, become invalid. So, what behavioral finance essentially tries to achieve is to supplement the traditional finance theories by merging them with cognitive psychology in an attempt to create a more complete model of human behavior in the process of decision making (Thaler 2005).

Behavioral finance identifies various concepts that make people behave irrationally thus leading to suboptimal decisions. For a smart investor to capture the essence of behavioral finance, all he would have to do is to reflect on his own investment decisions. Investors are susceptible to various behavioral anomalies, which can become the biggest obstacle in their attempt to maximize wealth. The only ways in which investors can avoid behavioral anomalies is by understanding the importance of emotions in trading, and train their mind not to mix emotions with decisions.
To achieve this, investors have to follow the two step process

1. Understand one’s own emotional and psychological weaknesses by studying various identified anomalies or ‘biases’ and determine whether they have committed these mistakes in the past or if there is a tendency to commit this in future;

2. Understand the irrational behavior of others and benefit from their mistakes.

During the past couple of years, the capital markets have been characterized by increasing volatility and fluctuations. Globally integrated capital markets are increasingly exposed to macroeconomic shocks which affect markets on an international scale. From an individual investor’s point of view, the erratic movements of prices of stock have led to increased unpredictability and uncertainty, as market movements cannot always be judged with the help of standard financial measures and tools. Portfolio managers have for a long time relied on efficient markets and rational investor behaviour while making investment decisions. During the past few years, situations like market inefficiency in the form of anomalies and irrational investor behaviour have been observed regularly.

The downturn in the US economy exemplifies a situation, which includes both unpredictability and irrational reactions. The US Federal Reserve head, Greenspan (2001), described a similar market condition and the weakening of the American economy clearly in early 2001. ‘The unpredictable rending of confidence is the major reason that recessions are so difficult to forecast. The financial models never have been successful in capturing a process driven in large part by irrational behaviour of all the market participants.’ (Greenspan2001). Behavioral finance is a part of finance that studies how the behavior of the investor in the financial market is
influenced by psychological factors and the resulting influence on decisions made while buying or selling in the market, thus affecting the prices. The science aims to explain the reasons why it’s reasonable to believe that markets are inefficient. According to Sewell, “Behavioral finance is the study of the influence of psychology on the behaviour of individual investors and the subsequent effect on capital markets.” The science deals with experiments and theories focused on what happens when investors make decisions based on hunches or emotions. Shefrin and Statman (2000) define Behavioral finance as “a rapidly growing area that deals with the influence of psychology on the behavior of financial practitioners”. The tendency of retail investors to be overconfident causes the first bias in investors, and the human interest to eliminate regret prompts the second (Barber & Odean 2001).

1.2 EFFICIENT MARKET HYPOTHESIS

Efficient Market Hypothesis (EMH) asserts that financial markets are informationally efficient. Therefore, one cannot consistently achieve returns in excess of average market returns on a risk-adjusted basis, given the information available at the time the investment is made. What does the EMH state and how does it attempt to explain the behaviour of the global stock market? Most of the credit in regard to the development of EMH goes to the Chicago school faculty member, Professor Eugene Fama. He was the first to convincingly argue that the stock market followed a simple random walk. Were this assumption to hold, the prediction of stock market returns would be rendered into an endeavour destined for failure. Five years later Fama published his landmark work ‘Efficient Capital Markets: A Review of Theory and Empirical Work’, in which he extended and refined the theory underlying the EMH. In this context one must also mention the work of a leading thinker of twentieth century US economist. Paul Samuelson published the first rigorous mathematical proof for the EMH (Samuelson 1965). In its purest
form and in combination with the original work on Modern Portfolio Theory by Professor Harry Markowitz and Samuelson, EMH states that the global stock market is efficient in the sense that market prices rationally and instantaneously reflect all available information regarding a stock’s value. As a result, market participants cannot achieve a risk-adjusted excess return by trading on publicly available information.

One cannot deny that the EMH is based on a very solid and mathematically rigorous footing. However, when testing efficient market hypothesis assumptions and resulting implications empirically, they are unrealistic. For instance, it has proven false to assume that investors possess perfect conditional foresight, a cornerstone assumption of the EMH. In reality, investors make mistakes. Realized volatility is roughly four times the predicted level. This high level cannot be explained within the EMH framework, where volatility only arises due to exogenous events, e.g. news about the fundamentals of a company. Perhaps most importantly, while mathematically elegant to handle, in reality stock markets do not really follow a random walk. This much seems evident even by a precursory glance at a performance chart of the global stock market over the past 40 years.

1.3 EVOLUTION OF BEHAVIOURAL FINANCE

The Modern Portfolio Theory (MPT), Capital Asset Pricing Model (CAPM) and Arbitrage Pricing Theory (APT) are the quantitative models that underpin the rational expectations based theories. There are large amount of research which could not confirm these theories with the available investment data. The behavioral finance has emerged in response to the difficulties faced by the traditional financial theories. In essence, it argues that investment choices are not always made on the basis of full rationality, and it attempts to understand the investment market phenomena by relaxing the two doctrines of the traditional paradigm. One, agents fail to update their beliefs correctly and
second, there is a systematic deviation from the normative process in making the investment choices. Schindler 2007 lists three main cornerstones for research in behavioral finance. First one is ‘limits to arbitrage’—which argues that “it can be difficult for rational traders to undo the dislocations caused by irrational traders” (Barberis & Thaler 2003).

In the investor irrationality and their decision-making process, behavioral finance draws on the experimental evidence of the cognitive psychology and the biases that arise when people form beliefs, preferences and the way in which they make decisions, given their beliefs and preferences thus bringing us to the second cornerstone, which is Psychology (Barberis & Thaler 2003). Research in psychology has shown that individuals exhibit certain biases systematically while formulating their beliefs and preferences, which affect their decisions. The third is Sociology which emphasizes the fact that a considerably huge number of financial decisions are the result of social interaction. These decisions are not made in isolation. This contradicts the implicit assumption that individuals make decisions without external influences.

1.4 HUMAN BEHAVIORAL THEORIES

In order to explain the various irrational investor behaviors in financial markets, behavioral economists draw on the knowledge of human cognitive behavioral theories from psychology, sociology and anthropology. Two major theories that need to be discussed in this perspective are: Prospect Theory and Heuristics.

1.4.1 Prospect Theory

The Prospect theory was originally conceived by Kahneman and Tversky and later developed by Daniel Kahneman, who was awarded the
Nobel Prize for economics for this theory. The theory distinguishes two phases in the choice process: the early phase of framing (or editing) and the subsequent phase of evaluation. Tversky and Kahneman showed how people managed risk and uncertainty. In essence, the theory explains the apparent irregularity in human behaviour when assessing risk under uncertainty. It says that human beings are not consistently risk-averse; rather they are risk-averse in gains but risk-takers in losses. People place much more weight on the outcomes that are perceived more certain than that are considered mere probable, a feature known as the “certainty effect” (Kahneman & Tversky 1979). Choices are also affected by the ‘Framing effect’. Framing refers to the way in which the same problem is worded in different ways and presented to decision makers and the effect deals with how framing can influence the decisions in a way that the classical axioms of rational choice do not hold. It was also demonstrated that there was a systematic reversal of preferences, when the same problem was presented in different ways (Kahneman & Tversky 1981).

The value maximization function in the Prospect Theory is different from that in the Modern Portfolio Theory. In the modern portfolio theory, the wealth maximization is based on the final wealth position whereas the prospect theory takes gains and losses into account. This is on the ground that people may make different choices in situations with identical final wealth levels. An important aspect of the framing process is that people tend to perceive outcomes as gains and losses, rather than as final states of wealth. Gains and losses are defined relative to some neutral reference point and changes are measured against it in relative terms, rather than in absolute terms (Kahneman & Tversky 1979).

When it comes to investments in stocks, the natural reference point is the purchase price of stock. Indeed, most of the empirical studies motivated
by the prospect theory find that the purchase price of stock appears to be one of the reference points used by an investor. However, it is possible that some additional reference points may also affect an investor. For example, the maximum stock prices in the recent history are found to affect investors’ trading decisions. In principle, framing can be broad or narrow. An investor applying a broad framing could analyze gains and losses at the total wealth level. Intermediate and narrow framing, instead, refers to the process whereby an investor defines gains and losses with regard to isolated components of wealth. Intermediate framing may take place on the level of a stock portfolio, whereas the narrow framing is usually defined at the level of individual securities. The vast majority of empirical studies implicitly assume narrow framing.

According to the expected utility theory, individual investors are risk averse. Risk aversion is equivalent to the concavity of the utility function, i.e., the marginal utility of wealth decreases. Every additional unit of income is valued less than the previous equivalent increase in income. Despite the obvious attractiveness of this expected utility theory, it has long been known that the theory has systematically failed to predict human behaviour, at least in certain circumstances. Kahneman and Tversky present in Prospect Theory (1979), the following experimental evidence to illustrate how investors systematically violate the utility theory; When their subjects were asked to choose between a lottery offering a 25% chance of winning 3,000 and a lottery offering a 20% chance of winning 4,000, 65% of their subjects chose the latter (20%; 4,000). On the contrary when the subjects were asked to choose between a 100% chance of winning 3,000 and an 80% chance of winning 4,000 80% chose the former (100%; 3,000). Therefore, according to the prospect theory, the individuals’ preference for the initial choice in the lottery, when it is certain as seen in this example, illustrates what is called the “certainty effect”, a preference for certain outcomes.
Another foundation of the prospect theory is the Value function (Kahneman & Tversky 1979). The value function (Fig.1.1) differs from the utility function in expected utility theory due to a reference point, which is determined by the subjective impression of individuals. According to the conventional expected utility theory, the utility function is concave downwards for all levels of wealth. On the contrary, according to the value function, the slope of the utility function is upward sloping for wealth levels under the reference point and downward sloping for wealth levels after the reference point. The reference point is determined by each individual as a point of comparison. For wealth levels under this reference point, investors are risk seekers, whereas, for wealth levels above this reference point, the value function is downward sloping, in line with conventional theories, and investors are risk averse. Kahneman and Tversky asserted that people are risk lovers for losses.

![Figure 1.1 Kahneman & Tversky’s Value Function](image)

Figure 1.1 Kahneman & Tversky’s Value Function
These two phenomena, the preference for certain outcomes and the preference for risk when faced with losses, discovered by Kahneman and Tversky, may explain some premises of investors’ irrational behaviour. Due to the fact that the reference point in the value function always moves with wealth to stay at the perceived current level of utility, investors will always behave in a risk averse manner even when small amounts of wealth are in question.

1.4.2 Heuristics

Heuristics are simple rules of the thumb which have been proposed to explain how individual investors make investment decisions. Tversky and Kahneman identified the influence of human heuristics on the decision making process. Tversky defined heuristic as a strategy, which can be applied to a variety of problems, that usually, but not always, yields a correct solution. People often use heuristics (or shortcuts) that reduce complex problem solving to more simple judgmental operations (Tversky & Kahneman 1981). Heuristic decision process is the process by which the investors find things out for themselves, usually by trial and error, which again lead to the development of rules of thumb. In other words, it refers to rules of thumb, which human beings use to make decisions in complex and uncertain environments (Brabazon 2000).

People are not capable to process all the information that one is presented with on a daily basis. While accumulating experience through the process of doing something, these experiences give an impression of how something works. This process creates rules of thumb that can then be used when a similar situation is encountered. This phenomenon was called the use of heuristics. This is especially relevant in modern trading, when the number of instruments and the density of information have increased significantly.
Using heuristics allows for speeding up of the decision making compared to rationally processing the presented information. The most attractive aspect of this is the time that can be saved while the main drawback is the dependence on previous experience. Traditional financial models assume the exclusion of heuristics, and assume that all decisions are being based on rational statistical tools (Shefrin 2000).

1.5 PSYCHOLOGICAL FOUNDATIONS FOR BELIEFS AND JUDGMENTS

One of the most important inputs for financial decisions is the expectations people have and their formation. Traditionally, the field of finance assumes that the ‘homo-economicus’ forms its expectations according to the laws of probability and updates its beliefs correctly, if new information arises. However, a wealth of evidence from cognitive and affective psychology indicates otherwise (Rabin 1998 & Kahneman 2002). Often people reduce the complex task of forming expectations and assessing probabilities to simpler judgmental operations (Tversky & Kahneman 1974). These judgmental heuristics are often very useful, but sometimes result in systematic errors (called “biases” or “cognitive illusions”).

When an investor evaluates the probability of an uncertain event (e.g. a good reputation of a specific company) belonging to a particular population (e.g. firms with good performing stock), they often make probability judgments using similarity, or what (Kahneman & Tversky 1972, 1973) call the “representativeness heuristic”. According to this judgmental heuristic, people evaluate the probability of an uncertain event by the degree to which it is similar in essential characteristics to its parent population and reflects the salient features of the process by which it is generated (Kahneman & Tversky 1972). When an event (a good reputation of a specific company) is
highly representative of a class of events (a good performing stock), the belief that people assign to the event originating from that particular class is higher.

Representativeness induces several important biases in investor expectations. It induces people to give too much weight to recent evidence and too little weight to the base rates or prior probabilities (the so-called “base-rate neglect”, Kahneman & Tversky 1972), to make forecasts that are too extreme (Kahneman & Tversky 1973), to underestimate the impact of new evidence that is not representative of a process (called “conservatism”), to judge a joint probability more likely as one of its components (called the “conjunction fallacy”, Tversky & Kahneman 1983), to neglect the information contained in the size of a sample, and to display misconceptions of chance. The latter means that people expect a string of realizations of a completely random process to represent the essential characteristics of that process, even when the sequence is short. As a result, investor’s beliefs are subject to the “gambler’s fallacy”, in which, chance is viewed as a self-correcting process. In cases in which people do not know the underlying data generating process, people often try to infer it from just a few data points. In fact, investors generally believe small samples to be highly representative of the population from which they are drawn (called the “law of small numbers”), and tend to systematically overvalue this small sample evidence. For instance, the investor may think that even a two-year record is plenty of evidence for the investment skill of a fund manager. And, the investor may believe that a stock market analyst is good after four successful predictions in a row, since this is not representative of a bad analyst (Rabin, 1998, Barberis & Thaler, 2003). Another implication of representativeness is that people try to spot trends in random processes (e.g. in stock prices) and expect past price changes to continue, (called the “extrapolation bias”, De Bondt 1993, 1998).
Investors invest a substantial part of their retirement portfolios in the company they work for (Benartzi 2001). In fact, Benartzi reports that about a third of the assets and about a quarter of the discretionary contributions to retirement savings plans are invested in companies they worked. From a diversification perspective, this is a bad strategy. However, Benartzi finds that employees excessively extrapolate the past performance of their company’s stock (and are overconfident about it), making this stock seems more attractive and less risky than it actually is, thereby resulting in high allocations for this stock.

Besides judging probabilities using similarity, people judge the probability of an event with ease with which instances come to mind. This heuristic, called “availability”, is generally employed when people have to judge the plausibility of a particular development (Tversky & Kahneman 1974). Violations of the laws of probability arise, because, not all events are equally retrievable. Availability is higher for recent events, events that are better imaginable, events that are easier to remember, events that are more vivid, events that are more familiar, and events that are more salient (Kahneman 2003). For example, in the financial context, people tend to give too much weight to recent information, and may assign a higher probability to a bad stock market performance if they have recently experienced a large decline in the market price.

When people have to make numerical predictions, they often employ the so-called “anchoring and adjustment heuristic” (Tversky & Kahneman 1974). People make judgments by starting form an initial value (the anchor) that is subsequently adjusted to yield the final judgment. However, in many cases this adjustment is insufficient, causing biases in beliefs. For example, when there has recently been a movement in the price of
a stock that corrected a mispricing, investors may still anchor on this past price trend and expect it to continue (albeit in a weaker form).

Besides these heuristics, there exist other factors which lead to bias in the expectations of the investors. People are generally overconfident (Lichtenstein et al 1982). This manifests itself as, among others, people think that they can predict the future better than they actually can, people overestimating the reliability of their knowledge, people believing they have better abilities than others, people being excessively optimistic about the future, and people believe that they can control the outcomes of completely random events (called the “illusion of control”, Langer, 1975). Moreover, as argued by Barberis & Thaler 2003, overconfidence is often strengthened by the tendency of people; (i) to ascribe success to their own skills while blaming failure on bad luck (called the “self-attribution bias”), and (ii) to the belief that they could predict an event that actually occurred (called the “hindsight bias”). Similarly, most people have unrealistic views of their abilities and tend to engage in wishful thinking (Weinstein 1980).

De Bondt 1998 illustrates the relevance of overconfidence in the financial context. He finds that a group of individual investors investing between $25,000 and $1,025,000 in stocks are overconfident and optimistic about the future performance of the stocks they own, while simultaneously underestimating their risks. Moreover, Odean 1999, Barber & Odean 2000, 2002 show how overconfidence by individual investors results in excessive trading, and Goetzmann & Kumar 2008 find that overconfidence results in investors holding under-diversified portfolios. In addition, Daniel et al 1998 show how overconfidence about the precision of private information (strengthened by a self-attribution bias) affects financial market prices, yielding similar patterns in asset prices as predicted by Barberis et al 1998.
Another well-known psychological finding is that people are perseverant, or ‘sticky’, in their beliefs. It is very difficult to change their opinions and those who are willing to change do so slowly, once they have formed them (Lord et al 1979). For example, once people become convinced that a particular stock is going to perform well, they underweigh evidence that suggest that the stock is actually a bad investment.

Besides these cognitive factors, emotions have a large influence on beliefs as well (Loewenstein et al 2001). For example, satisfied individual investors tend to assign higher probabilities to positive events (Wright & Bower 1992), and people who experience stronger fear make more pessimistic risk estimates (Lerner et al 2003). Similar effects of emotions are found in financial markets prices. For example, Hirshleifer & Shumway 2003 find that positive moods caused by a lot of morning sunshine lead to higher stock returns. Similarly, Edmans et al find that bad moods, caused by losses in important games of international soccer, predict poor returns in the loosing country the next day, especially among small stocks.(Edmans et al 2008)

Individual investors use a variety of practices that cause beliefs to deviate from the rational beliefs of the ‘homo-economicus’. Individual investors form beliefs by the degree to which an event reflects the essential characteristics of a process, by the ease with which instances come to mind, and by anchoring on initial values and adjusting this initial estimate insufficiently. Moreover, individual investors are overconfident, too optimistic, engage in wishful thinking, bias their beliefs towards an equal chance on every possible partition, and allow emotions to influence judgments. These mental shortcuts and mistakes sometimes bias investor’s expectations, which affect financial markets and its participants in a number of ways. Securities sometimes not represent their correct value, and investors who are prone to these biases will take excessive risks of which they are not
aware, will experience unanticipated outcomes, and will engage in unjustified trading (Kahneman & Riepe 1998).

Behaviour is largely determined by willingness of people to take risk; that is, by the risk preferences people have. In contrast with the behaviour of the ‘homo-economicus’, individual investors did not behave in accordance with (subjective) the expected utility theory in many situations (Starmer 2000). Individual investors systematically have preferences that differ from risk neutrality or risk aversion over the whole range of wealth. Moreover, individual investors often value aspect other than the monetary or consumption amount, and they often do not time discount in a consistent manner. Psychological work has provided some intriguing and important insights about these aspects as following four aspects.

First, individual investors care about changes in wealth and care more about these changes than about the absolute value of their wealth. That is, utility depends primarily on profits and losses instead of final wealth positions (Markowitz 1952, Kahneman & Tversky 1979, Tversky & Kahneman 1992). These changes are determined relative to reference points that distinguish gains from losses. For monetary outcomes the status quo generally serves as reference point (see for example Samuelson and Zeckhauser, 1988). However, it also depends on past decisions (Kahneman & Tversky, 1979, Thaler & Johnson 1990), aspirations (Lopes 1987, Tversky & Kahneman 1991), expectations (Tversky & Kahneman 1991), norms (Tversky & Kahneman 1991), social comparisons (Tversky & Kahneman 1991), other available alternatives and outcomes (Mellers 2000) and other possible anchors and context factors.

Second, individual investors treat losses (i.e. negative deviations from reference point) different from gains. They generally care disproportionally more about losses than about gains (that is, losses tend to
loom larger than gains), a finding labelled “loss aversion” (Kahneman & Tversky 1979, 1991, 1992). This loss aversion has proved to be one of the main drivers of decisions.

Third, people are risk averse over gains and risk seeking over losses (Kahneman & Tversky 1979, 1992). A common psychological finding is that individual investors tend to evaluate departures from the reference point with diminishing sensitivity, meaning that an absolute deviation from the reference point that increases from 1% to 2% is perceived as a bigger increase than a change from 30% to 31%.

Fourth, individual investors systematically deviate from weighting consequences by their probability (Kahneman & Tversky 1979). Movements of probability from zero (e.g. from 0.00 to 0.01) are given much more weightage than similar movements in moderate probabilities (e.g. from 0.30 to 0.31), called the “possibility effect”. Similarly, movements of probability from one (e.g. from 1.00 to 0.99) are given much more weight than similar movement in moderate probabilities (e.g. from 0.41 to 0.40), called the “certainty effect”. This behavioral pattern implies an inverse S-shaped relation between probabilities and their decision weights. In addition, extremely small probabilities tend to be ignored (Kahneman & Tversky 1979).

These four behavioral patterns imply that decisions are sensitive to the way alternatives are presented, or ‘framed’, something that has received a lot of empirical support (Kahneman & Tversky 2000, 1986). In general, the difference between two options gets more weight if it is viewed as a difference between two disadvantages than if it is viewed as a difference between two advantages (Tversky & Kahneman 1991). For example, presenting decisions in terms of the number of lives that can be saved results in more cautious choices than presenting the same decisions in terms of lives
that can be lost (Tversky & Kahneman 1981). Moreover, individual investors tend to prefer their current situation and are reluctant to undo or change effects of previous decisions, called the “status-quo bias”. In fact, this bias is commonly observed among the participants in retirement programs. In many of these programs, participants tend to maintain their previous asset allocations, despite large variations in return and hence their portfolio’s risk-return trade-off (Samuelson & Zeckhauser 1988). In addition, many people tend to demand much more in order to give up an object they own than they would be willing to pay for it to acquire (Thaler 1980, Kahneman et al 1990).

Accordingly the behavioural biases have vital impact on individual investor’s investment decisions. So there is a need to study the main causes of forming investment biases among the individual investors. Individual investor’s behaviour will be affected by personality traits, interpretations of information, and responses of sentiments, return and risks (Maital et al 1986).

1.6 BIG FIVE PERSONALITY TRAITS

There have been arguments that broader personality predispositions rather than isolated traits affect people’s strategies in approaching conflict situation and, therefore, more comprehensive measurement of personality should be used to investigate individual’s characteristic mode of conflict handling styles (Robin & Brown 1975). Over the past decades, theory and research in the trait view of personality have slowly converged and a consensus has been reached that the Five-Factor Model often termed as “Big Five” (Goldberg 1990), can be used to describe the most salient aspects of personality. The Big Five is composed of neuroticism, extraversion, openness, agreeableness, and conscientiousness, which are enjoying increasing acceptance and popularity among the personality psychologists.
The personality factors that make up the Big Five are not themselves traits but rather dispositional categories under which a variety of specific traits may be subsumed (Barry & Friedman 1998). According to Barrick & Mount 1991, these five factors include (1) Neuroticism, which is associated with being anxious, depressed, worried, and insecure; (2) Extraversion, which is associated with being sociable, assertive, talkative, and active; (3) Openness, which is associated with being imaginative, curious, original, and open-minded; (4) Agreeableness, which is associated with being courteous, flexible, trusting, cooperative, and tolerant; and (5) Conscientiousness, which is associated with being careful, responsible, and organized. The big five thus captures individual characteristics that are affective, experiential and motivational (Mc Care & Costa 1989) and are more likely to predict individuals’ behavioural intentions in conflict situations.

1.6.1 Psychographic Model used in behavioural Finance

Psychographic models are used to classify individual investors according to certain characteristics, tendencies or behaviours. Psychographic classifications are relevant with regard to individual strategy and risk tolerance. An investor’s background and past experiences can play a vital role in decisions made during the investment process. Investor fitting specific psychographic profiles are more likely to exhibit specific investor biases. Accordingly, an investor or investment advisors can attempt to recognize the relevant behavioural tendencies before investment decisions are made (Michael M Pompian 2006). One such model is developed by Bailard, Biehl and Kaiser called as BB&K Investor model.

1.6.2 BB & K Investor model

Thomas Bailard, David Biehl and Ronald Kaiser developed a model called BB&K Five-Way model (Fig.1.2) which features classification
of investor personalities along two dimension level of confidence and method of action. It introduces an additional dimension of analysis. Thomas Bailard, David Biehl and Ronald Kaiser provided graphical reorientations of their model and this model classified investor personalities along two axes: level of confidence in vertical axis and method of action in horizontal axis. The first sub classification that the model incorporates deals with how confidently an investor approaches life in general including issues unrelated to money. The second element of the BB&K model asks whether investors are methodical, careful and analytical in their approach to life or whether they are emotional, intuitive and impetuous. Thomas Bailard, David Biehl and Ronald Kaiser developed a model called BB&K Five-Way model, which enabled the classification of investor’s personalities.

Figure 1.2 BB&K Five-way model, Source: Thomas Bailard, David Biehl and Ronald Kaiser
1.7  A BRIEF OUTLOOK ABOUT INDIAN CAPITAL MARKET

1.7.1  Indian Capital Market

Effective functioning of the capital market is vital in an economy in order to achieve an efficient transfer of monetary resources from those who save money towards those who need capital. The capital market can significantly influence the quality of investment decisions i.e., the gathering of temporary capitals that are available in the economy and the reallocation of those that are insufficiently or inefficiently used.

Across the world there was a transformation in the financial intermediation from a credit based financial system to a capital market based system which was partly due to a shift in financial policies from financial repression (credit controls and other modes of primary sector promotion) to financial liberalization. This led to an increasing significance of capital markets in the allocation of financial resources.

Since 1980, the Indian capital market has been growing in leaps and bounds and has aroused the interests of the investors. The reason for such a development was an increasing uncertainty caused due to liberalization and globalization policies adopted by the nation. Liberalization and globalization has opened the gates to the following three broad channels for financing the private sector namely;

a)  Domestic capital market

b)  International capital market (American depository receipts and Global depository receipts)

c)  Foreign Institutional investment (FII).
1.7.2 Trends in the Indian Capital Market in the Pre and Post Liberalization period

In India, stock exchanges originated in the latter half of the 19th century. The first organized stock exchange was set up in Mumbai in 1875 by the Native Share and Stock Broker’s Association. Stock exchanges came to be established in various centers such as Chennai, Delhi, Nagpur, Kanpur, Hyderabad and Bangalore. And these stock exchanges were regulated by the Securities Contract (Regulation) Act, 1956.

The Indian stock market in the pre liberalization period was affected by many factors including the pre nationalization effects of Indian banks, regulatory problems, no transparency in the activities of stock market participants, and the open outcry trading system. In this era, stock market was wrongly perceived by the public as a place for the ‘rich men’s club’.

The outcome of the revamping of the capital market on the new issue market is that the total amount of proposed investments through the New Issues Market in the 1980’s increased to Rs. 23,357 crore from Rs. 992 crore in 1970’s and a mere Rs.285 crore in the 1950’s (Refer Table 1.1)

Table 1.1 Capital raised in the New Issues market by Indian companies during the Pre- liberalisation period

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Year</th>
<th>Capital raised (Rs. in crore)</th>
<th>Yearly Average (Rs. in crore)</th>
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<tbody>
<tr>
<td>1</td>
<td>1951-60</td>
<td>285</td>
<td>28.5</td>
</tr>
<tr>
<td>2</td>
<td>1961-70</td>
<td>728</td>
<td>72.8</td>
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<tr>
<td>3</td>
<td>1971-80</td>
<td>992</td>
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<td>4</td>
<td>1981-90</td>
<td>23,357</td>
<td>2335.70</td>
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</table>

Source: Reports on Currency and Finance, 1960-90, Reserve Bank India
The enactment of the Securities Exchange Board of India Act (SEBI) 1992 and establishment of the National Stock Exchange changed the Indian stock market scenario. Both the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE) have fully electronic trading platforms. Bombay stock exchange has an index of SENSEX which has 30 actively traded companies and National Stock Exchange has an index of NIFTY which has 50 actively traded companies. The SENSEX & NIFTY are the growth indicators of the Indian stock market.

During the post liberalization era, the amount of foreign institutional investors’ participation has increased. The following table shows the state of new capital raised from the market by the Indian companies in the post-liberalization period and from the table it is clearly observed that the yearly average during the period 2000-09 was 23338.80 and it is higher than the amount mobilized during the period 1991-99. The yearly average of capital raised during the period 2010-11 is higher than the yearly averages of the past years (Refer Table 1.2).

Table 1.2 Capital raised in the New Issues market by Indian companies during the Post - liberalisation period

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Year</th>
<th>Capital raised (Rs. in Crore)</th>
<th>Yearly Average (Rs. in Crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1991-99</td>
<td>1,06,799</td>
<td>13349.80</td>
</tr>
<tr>
<td>2</td>
<td>2000-09</td>
<td>2,33,388</td>
<td>23338.80</td>
</tr>
<tr>
<td>3</td>
<td>2010-11</td>
<td>64,999.8</td>
<td>32224.90</td>
</tr>
</tbody>
</table>

Source: Handbook on the Indian securities market, 2010, Securities and Exchange Board of India

The total market capitalization of National stock exchange for the year 2010 is Rs.15 lakh crore and the Bombay stock exchange is with Rs.18 lakh crore. The quantum of funds raised by Indian companies through initial
public offers in the primary market during January 2011 to September 2011 was Rs. 6893.8 crore, according to the latest 'Capital Market Review' by market regulator Securities and Exchange Board of India (SEBI). By referring the above data, it is very clear that the stock market in India is performing well even amidst the global turmoil.

The following are the reasons for the growth of Indian capital market:

a) Fast growth of mutual funds
b) Entry of bank subsidiaries for offering the financial services in the market
c) Growth of merchant banking
d) Heavy public issues by companies
e) High degree of transparency and regulatory framework put forth by the SEBI
f) Liberalized policy environment
g) Emerging new financial instruments

1.8 NEED FOR THE STUDY

This study is carried out to understand the behavioural aspects of individual investors in the Indian capital markets. This study tries to identify the big five personality traits across the various investors in the Indian capital market. The behavioural biases of investors which have an impact on their investment decisions need to be analysed. This will benefit both the investors and the corporate world which mobilises funds continuously for business expansion and diversification. For example, the new pension scheme announced by the Government of India, called as National Pension System (NPS), extends
an option to the subscribers to decide how much of their contributions are to be invested in Government bonds, corporate bonds and equities. However, their contributions in equities should not exceed 50% of their investment. Individual investors are very reluctant to open this pension scheme and even the subscribers to this scheme have not shown interest in choosing the equity option available. Therefore, there is a need to understand whether psychological aspects of the individual investors influence their investment decisions.

According to the evidence from the prior empirical studies, most of the individual investors have strong investment biases such as recency and overconfidence. It will have its effect on the entire capital market. For example, the capital market bubble in the 1990s was mainly the result of the behavioural biases of the investment managers (Dass Massa and Patgiri 2008). Generally, investors with behavioural biases lack confidence and competence to make better investment decisions. So they follow the overall market behaviour or the opinion of professional investors for their investment decisions. The investment behavior is affected by the personality traits of the investors and their sentiments. Therefore, it is necessary to study the psychological aspects of the investors.

1.9    RESEARCH PROBLEM

From 2002, Indian stock market experienced a structural bull market. This was followed by an equally abrupt downturn beginning March 2008. The Bombay Sensitive Index (SENSEX) rose by 350% during the period 2002 to March 2008. By January 2009, the index had lost half of its market value compared to its peak in March 2008. The National Stock Exchange index, NIFTY, also lost in the same proportion during this period. Some investors especially those who have invested large sum since 2007 or early 2008 incurred huge losses and were finding it very difficult to recover these losses. Hence, investors are very scared to invest substantial sums in
stocks. But they are continuing their systematic investment plans to protect their investment from volatility. Most of the investors were lured by the record high of the stock market during 2007-2008 periods. There were also many new fund offers from the mutual fund companies during this period. Since stock market was moving up without any major corrections, investors were very overconfident and invested large sums of money in the stock market. A few of the investment analysts predicted a collapse of the stock market but very few investors were ready to book profit. With the sudden fall of the market during 2008, many of the investors lost more than 50% of their life savings. It was worse for those investors who committed their investments in infrastructure, energy stocks or any sectoral theme funds. At this juncture, investors were either withdrawing from equity investments or stopping their systematic investment plans. They moved towards debt instruments where the coupon rate was about 9%. Here also, the investors were committing big mistakes by making wrong asset allocations by way of withdrawing money from stock markets when it was at its bottom. Hence a study is required to investigate the personality traits, behavioural aspects and behavioural biases of individual investors across their demographic profile in the Indian capital market.

Behavioural finance attempts to illustrate why retail investors systematically diverge from such rational behaviour, challenging major assumptions of a number of conventional financial models such as Modern Portfolio Theory (MPT) and Efficient market Hypothesis (EMH). Nofsinger and Ricciardi define behavioural finance as an attempt to explain and increase the understanding of the reasoning patterns of investors, including the psychological processes involved and the degree to which they influence the decision making process. Based on these factors, the following research questions are proposed in the present study.
1. What are the big five personality traits present among the individual investors?

2. What are the behavioural aspects present among the individual investors?

3. What are the behavioural biases present among the individual investors?

4. Do big five personality traits relate to investment biases among the individual investors?

5. Do demographic profile of the individual investors relate to the investment biases?

6. Do behavioural aspect relate to investment biases?

7. Do demographic profile of the individual investors relate to behavioural aspects?

Based on these research questions, the following research objectives are formulated.

1.10 OBJECTIVES OF THE STUDY

1. To investigate the big five personality traits among the individual investors.

2. To examine the behavioural aspects among the individual investors.

3. To investigate the behavioural biases among the individual investors.

4. To identify the relationship between big five personality traits and the investment biases among the individual investors.

5. To examine the relationship between demographics of individual investors and investment biases among the individual investors.
6. To investigate the relationship between behavioural aspects and investment biases among the individual investors.

7. To explore the relationship between demographics of the individual investors and the behavioural aspects among the individual investors.

1.11 OUTLINE OF THE THESIS

Chapter 1 consists of the introduction, background of the study, brief description on Indian capital market, need for the study research questions and the objectives.

Chapter 2 provides an overview of literature on behavioural biases, big five personality traits of individual investor behaviour. The focus is on various behavioural biases of individual investors, effect of big five personality traits and behavioural aspects namely careful, confident, impetuous and anxious.

Chapter 3 provides the detailed framework on research methodology followed in this research work. In this chapter the proposed model, hypotheses, and limitations of the study are given.

Chapter 4 addresses the data analysis, results of the study and findings and critical issues for evaluating the impact of behavioural biases, big five personality traits and behavioural aspects among the individual investors.

Chapter 5 provides the major findings, implications, conclusions and directions for future research.