

ROLE OF BEHAVIORAL FINANCE IN INVESTMENT DECISION IN SECURITY MARKET

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ABSTRACT

This research work falls under the broad category of behavioral finance that deals with the influence of psychology on the behavior of financial practitioners and its subsequent impact on stock markets. This study is an attempt to investigate the presence and impact of four behavioral biases in the Indian context for the period 2006-2013. These are overconfidence, optimism, the disposition effect and herd behavior. The interest in this field is rapidly gaining pace as it tries to replace some of the ideal assumptions of traditional finance theories like, rational agents and efficient markets. This area proposes a more realistic behavioral agent who is ruled by sentiments and is prone to make biased decisions. It signifies the role of psychological biases and their specific behavioral outcome in decision making. These biases can be heuristic driven, like overconfidence and optimism or frame dependent like the disposition effect and the herd behavior. These biases can prove to be extremely potent in financial markets as they can result in market anomalies like speculative bubbles and busts.

INTRODUCTION

Investors' irrationality is an inevitable reality as long as the markets themselves exist. Perhaps its earliest recorded evidence is given by C. Mackay. In his book *Memoirs of Extraordinary Popular Delusions and the Madness of Crowds*, he mentions three instances that highlight the erratic behavior of crowds. These were the Dutch Tulip bubble (1630's), the South Sea company bubble (1711-1720) and the Mississippi Company bubble (1719-1720). Among these, the Dutch Tulip bubble, popularly known as tulip mania is one of the most cited accounts. During the Dutch Golden Age, a new flower "Tulip" was introduced in the Netherlands. The Dutch people became excited about this exotic variety and started investing their money in it. Gradually investments in tulips became a craze which pushed the prices higher and higher. At the peak of tulip mania, a single bulb sold for more than 10 times the annual income of a skilled worker. The market finally collapsed when people sensed that they have spent a greater part of their income on a flower bulb. They started to dispose of their tulip stocks as quickly as possible and the price plummeted, leading to heavy losses.

Instances like the tulip mania makes us ask a very basic question: are investors really rational? This question has been raised by various researchers in the past and relates to the dilemma that investor behavior does not conform to traditional financial theories. The traditional theories focus on a widely accepted approach of "fully rational agent" where decision making is based

solely on the available data and mathematically proven concepts. This approach was considered the backbone of financial decision making until its predictions did not confirm with actual market conditions. In an ideal scenario where this approach is applicable, the market is informationally efficient, i.e. the security prices would incorporate all the information available in the market. In this case, all the securities would be fairly priced. However, there have been evidences which propagate those ideal conditions can get violated in the real world in the form of market inefficiencies. Behavioral experts argue that investors are led by their sentiments and are prone to make cognitive errors. They may lack self-control, be overconfident about their abilities, miscalibrate information, overreact or exhibit herd behavior. These errors can lead to market inefficiencies and can get projected in the form of anomalies like speculative bubbles, overreaction and underreaction. Some of the recent examples of these inefficiencies are the dot-com bubble of the 1990s and the real estate bubble of 2006. The dot-com bubble referred to the internet boom during the period 1997 to 2000. The madness of crowds during this phase was so preposterous that companies could increase their share prices by adding just an “e-“ prefix or a “.com” suffix to their names. This bubble collapsed in 1999-2001 when many such companies failed. Even the most stable companies like Cisco and Amazon suffered during this collapse. Similar to the dot-com bubble, increase in speculation in the United States housing market gave rise to the real estate bubble in early 2006. The speculative fever resulted in subprime mortgage and credit crisis which led to its burst in 2007, was one of the causes of global financial crisis of 2007-2009. The presence of these anomalies is a proof that the financial decision making process involves more than a calculative rational agent. Thus, the need for understanding such anomalies and shortcomings of human judgment involved with them became the precursor of behavioral finance.

The research on investor behavior dates long back since 1800s. Experts like C. Mackay and Le Bon gave the most influential work on the crowd mentality of individuals. GC Selden wrote *Psychology of the Stock Market*, which linked the market movements with sentiments and attitude of investors. The concepts like bounded rationality cognitive dissonance, availability heuristic representativeness, anchoring and adjustment emerged. In 1979, psychologists Kahneman and Tversky introduced the prospect theory which is considered to be a major breakthrough in this area. Post prospect theory, the research in this area started picking up pace. 1980s and 90s saw behavioral finance emerging as a separate field and the works of significant behavioral experts came into the picture. Behavioral Finance deals with the influence of psychology on the behavior of financial practitioners and its subsequent impact on stock markets. M Statman explains its concept in a more straightforward term by stating that “People in standard finance are rational. People in behavioral finance are normal”. This field tries to replace the rational *homo economicus* with a more realistic behavioral agent who is ruled by sentiments and is prone to make biased decisions. It signifies the role of psychological biases and their specific behavioral outcome in decision making. These biases are broadly categorized into heuristic driven and frame dependent biases. The knowledge about behavioral biases provides a deeper insight into the underlying psychology of market participants. It enlightens us about the fact that because of our psychology, or more aptly our human nature, we are prone to make certain mistakes. These mistakes can prove to be very costly in financial markets and thus they can't be ignored. Stock market crashes are one

of the consequences of such ignorance. This makes behavioral finance an extremely relevant topic in today's times. This field helps the financial practitioners in recognizing their own mistakes along with those of others, understanding the reasons behind these mistakes and avoiding them. It makes the practitioners more aware of the forces that guide them in their decision making, as well as those driving the market. Therefore, as the market environment becomes ever challenging, research in behavioral finance becomes the need of the hour.

TRADITIONAL APPROACH TO INVESTOR BEHAVIOR

Mid eighteenth century is considered to be the onset of the classical period in economics (Pompian, 2011). It is during this time that the concept of utility was introduced which measured the satisfaction of individuals by consuming a good or a service. In 1844, John Stuart Mill introduced the concept of rational economic man or *homo economicus* who tries to maximize his economic well being given the constraints he faces. The three underlying assumptions for this agent are; perfect rationality, perfect self-interest and perfect information. These assumptions became the basis of the traditional financial framework that sought equilibrium solutions by maximizing marginal utilities of individuals subject to situational constraint. The behavior of individuals representing this paradigm is uniform as their main focus is on optimizing their marginal gains. As the noted researcher once quoted that "Standard finance is built on the pillars of the arbitrage principles of Miller and Modigliani, the portfolio principles of Markowitz, the capital asset pricing theory of Sharpe, Lintner and Black, and the option pricing theory of Black, Scholes and Merton." Standard finance theories have been developed to find mathematical explanations to real life financial problems. Their basic assumption is based on rationality of people. This concept is further elucidated by NC Barberis and RH Thaler. According to them rationality has two pronged focus. First, when agents receive new information they update their beliefs correctly according to Bayes' law. Second, given their beliefs, the agents take decisions which would maximize their expected utility. Table 1.1 provides the summary of these classical researches. It starts with the concept of rational economic man or *homo economicus* followed by the standard theory of individual choice, i.e. the expected utility theory. Next, the classical models in asset pricing theories that are Markowitz portfolio model and the capital asset pricing model are elaborated. The discussion concludes with one of the most referred as well as equally criticized theories, the efficient market hypothesis.

Table 1.1: Traditional Financial theories

Author	Year	Finding
John Stuart Mill	1844	Introduced the concept of Economic Man or <i>homo economicus</i> .
Bernoulli	1738, 1954	Expected utility theory
Von Neumann and Morgenstern	1944	
Harry Markowitz	1952	Markowitz portfolio theory
Treynor, Sharpe and Lintner	1962, 1964, 1965	Capital asset pricing model
Jan Mossin	1966	
Eugene Fama	1970	Efficient market hypothesis

The concept of rational economic man or *homo economicus* was first given by JS Mill. It describes humans as rational and self-interested agents who try to maximize their utility using rational assessments. This concept forms the basic assumption of most of the economic theories.

Expected Utility Theory states that the market participants make their decisions under risk by comparing the expected utility values of the available alternatives. Rational investors act to maximize their expected utility that is calculated as weighted sums of utility values multiplied by their respective probabilities. It categorizes the decision makers into risk averse, risk neutral and risk loving individuals. Further, it explains that the utility function for a risk averse investor is concave (figure 1.1a). This implies that, for an increase in expected wealth the utility function of a risk averse person decreases. In other words, for the same amount of utility a risk averse person would like to take lesser risk than a risk loving person. It explains the difference between investors' behavior with respect to their risk tolerance. This theory along with its variants like subjective expected utility theory was the most accepted theory for decades in financial literature in decision making under risk.

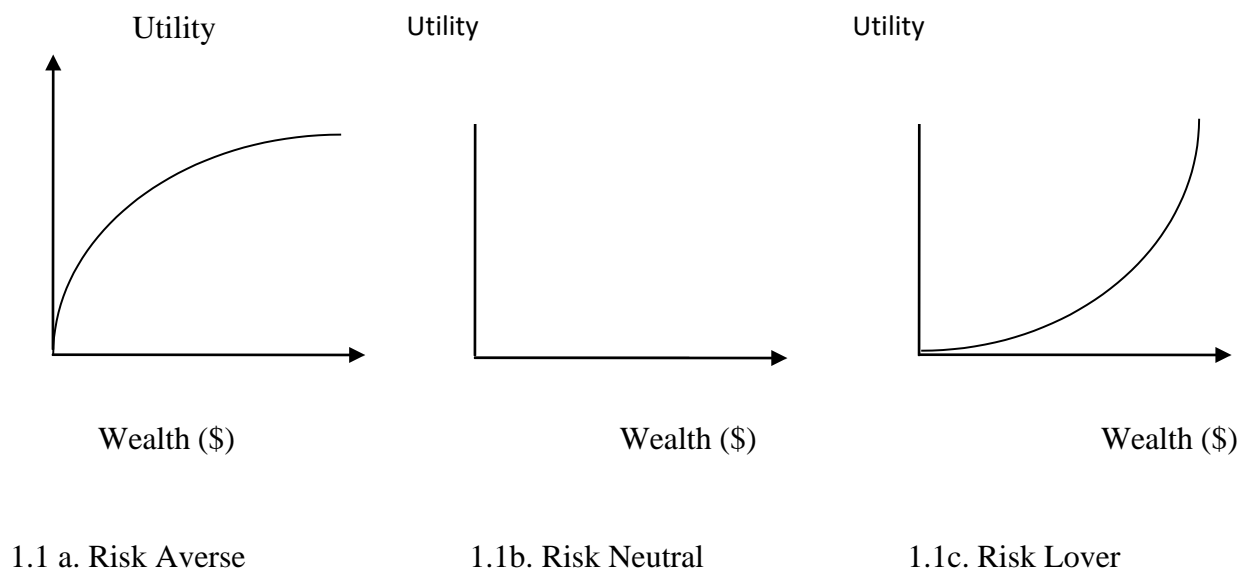


Figure 1.1: Expected utility functions for three risk attitude types

BEHAVIORAL FINANCE APPROACH

The rationality of investors became debatable from the time standard finance theories could not give sufficient explanation for the stock market anomalies. One of the most apparent examples of such an anomaly is the stock market bubble, for instance the dot-com bubble of the 1990s or the recent real estate bubble of 2006. A bubble is created when market participants drive the security prices way above their fair price. During this phase people disregard the fundamental valuation and get attracted to such overpriced securities which strengthen the mispricing even more. However, this “hot market” situation ends when companies fail to achieve their promised targets or the demand declines. Experts like C. Mackay highlight the importance of behavioral biases like herd mentality as the cause of this situation. The existence of such bubbles defies the very core of the “standard finance theories”.

The essence of standard finance theories can be captured into four foundation blocks: 1) investors are rational; 2) markets are efficient; 3) investors should design their portfolio according to the rules of mean variance portfolio 4) Expected returns are a function of risk and risk alone. Behavioral finance offers an alternative for each of these blocks. It states that investors are “normal” not rational, the markets are not efficient even when they are difficult to beat, investors do not design their portfolio on mean-variance theory and the expected returns are measured by more than just risk. We try to examine the traditional foundations and their behavioral counterparts in the subsequent section. We start with the brief history of the discipline itself.

Behavioral finance emerged as a branch of social psychology that captures the human side of decision making. Research in this field started in the eighteenth century with significant works like *Theory of Moral Sentiments* (1759) and *Wealth of Nations* (1776) by Adam Smith. In

these studies Smith suggests the presence of an “invisible hand” or the morality of individuals that guides them in making social, economic and even financial decisions. A Smith emphasizes on the role of sentiments like pride, shame, insecurity and egotism. Another contemporary thinker, highlights the psychological aspects of utility function. J Bentham argues that human concern for happiness makes it impossible for them to make a decision that is entirely devoid of emotions. These researchers stress on the role of psychology on economic behavior, but their consensus was lost over the next century. This work was then reinstated in the twentieth century. G C Selden identifies that the stock price movements on the exchanges are dependent on the mental attitude of investors. The role of sentiment is also observed by J M Keynes as the “animal spirits” of individuals. Keynes along with many other researchers criticized the concept of *homo economicus* and argued that human beings cannot be completely informed of every situation in order to maximize their expected utility. Instead, they advocate the theory of the bounded rationality given by HA Simon. This theory assumes that rationality of individuals is constrained by two factors: information they have at their disposal and the cognitive limitations of their minds. Bounded rationality is a more relaxed version of the standard expected utility theory. It is also more realistic to its traditional counterpart as it incorporates the limitations of the human judgment. The utility function is further explored by JW Pratt. The author compares the utility with respect to local risk aversion and global risk aversion and explains that the decision maker will have a greater local risk aversion if he is globally more risk averse. The author also gives a related utility function where risk is measured as a proportion of total assets.

LITERATURE REVIEW

Overconfidence is probably one of the most researched bias. Several studies consider that this bias is responsible for generating high trading volume of financial markets. These researches suggest that success in past trades makes the investor overconfident of their private knowledge which leads to an increase in trading activity. Some of the relevant works in this area are discussed here.

According to WG Lewellen, overconfident investors have a tendency to trade more. They believe returns to be highly predictable and expect higher returns as compared to relatively less confident people. T Odean defines overconfidence as the investors’ tendency to overestimate the precision of their knowledge about the value of a security.

K Daniel develop a model based on overconfidence of investors who overestimate the precision of their private signals and concludes that the overconfidence leads to negative serial correlation in prices (price reversals).

S Gervias formulate a multi-period market model to estimate overconfidence. They propose that overconfidence is enhanced in those investors who have experienced high returns. As a result, they trade more frequently. Therefore overconfidence leads to increase in trading volume. On the other hand, a loss in the market reduces overconfidence level and subsequently the transaction volume. They assign a positive relationship between volume of transaction and delayed returns of the market.

The theoretical concept on overconfidence is empirically tested by T Odean, B Barber who provide evidence that overconfidence leads to greater trading volume in financial markets. Using the data from individual investors' account held with a large U.S. brokerage firm, they propose that higher trading in turn leads to lower expected utility or poor portfolio performance.

D Hirshleifer investigate the persistence of overconfidence in the financial markets. It is suggested by the fact that overconfident traders trade more aggressively than their rational counterparts in order to exploit the mispricings. They find that there are two factors behind this behavior. These are: the underestimation of risk by the investors and overestimation of the success of their own trading strategies.

G. Törnngren and H. Montgomery; and J Montier the presence of overconfidence in financial professionals like fund managers. G. Törnngren and H. Montgomery state that professionals overestimate their ability to choose better performing stocks. They compare their result with laypeople and find that the professionals are more overconfident than layman investors. J Montier adds to this knowledge by finding that 74 percent of fund managers perceive themselves to be above average in their performance.

CONCLUSION

Behavioral biases affect the clarity in thinking process and consequently lead to suboptimal decisions. Temporary successes can get into our head make us overconfident. The fear of being odd man out and then failing leads to herd behavior. The insecurity of losing a winning spree and/or the hope of gaining on a losing stock can result in disposition effect. Getting overwhelmed by bullish or bearish trends in markets can lead to excessive optimism or pessimism. All these biases make us irrational and we start making blunders. These blunders are so deep that they can impact the entire economy. Some of the examples are subprime crisis and dot com bubble. In Indian context, our stock market has seen turbulent times in the recent past. It has experienced a sharp dip in 2008 from the heights of 2006, followed by a series of ups and downs in the subsequent years, till 2013. This was the period when markets observed sharp swings in sentiments in a very short span of time. Thus, a research based on investor behavior becomes relevant and interesting. The present study is an attempt in this direction. It explores the presence and impact of four behavioral biases in the Indian equity market, namely herding, optimism (pessimism), overconfidence and the disposition effect. These biases have been studied with the help of both primary and secondary data. The secondary data is taken for a period of 2006-2013 and is analyzed first.

The results reveal that herding is not present in Indian Stock market for the period of 2006 to 2013. The results of this study are in contrast to the findings of E Chang and P Lao, H Singh; E Chang detect the presence of herding in emerging economies like South Korea and Taiwan while P Lao and H Singh capture herding in Indian stock market for the period of 1994 to 2003. However, P Lao and H Singh find that the level of herding is lower in Indian stock market as compared to Chinese stock market. They suggest that low level of herding in India may be attributed to the large influence of institutional investors in Indian markets. These investors

are believed to be better informed and more skilled than the individual investors. Therefore, they are less likely to herd. We delve further to explore this bias in bull and bear phases separately. The tests reveal that herd behavior is significant in bull phase, but not in bear phase. This finding is in a partial alignment with P Lao and H Singh who notice that herding is present in greater magnitude in bull phase. There can be several possible explanations for this behavior. P Lao and H Singh reason that positive feedback trading can be a factor behind the herd behavior during the bull phase. It can also be inferred that, during the bear phase, the market consensus might not have led to positive results for the investors due to which they discontinued herd. Another interpretation can be that, investors in bear phase do not panic and so they do not engage in herding in order to avoid their losses. The logic that crowd can never be wrong does not hold in the case of bear phase.

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