CHAPTER 1

INTRODUCTION

“Markets can remain irrational longer than you can remain solvent”

– John Maynard Keynes

1.1 INTRODUCTION

Finance is the science of managing money and financial economics is that branch of economics which studies the interrelationship between financial variables, such as prices and interest rates as opposed to goods and services. It centers on managing risk in the financial markets or in other words considers investments under uncertainty.

A financial market is a place where people trade in financial assets at prices that are determined by the demand and supply forces. Stock market is one kind of financial market where traders buy and sell equities. Participants in a stock market range from small individual investors to large institutional investors.

The stock markets are often considered as the prime indicator of a country’s economic strength and development. Participants in the stock market often move asset prices away from their true value. However, financial economists argue that financial markets are efficient and this led to the emergence of the Efficient Market Hypothesis.

1.2 EFFICIENT MARKET HYPOTHESIS

The Efficient Market Hypothesis (EMH) states that it is impossible to “beat the market” because stock market efficiency causes existing stock prices to reflect all available information.
Traditional finance is mainly characterized by this Efficient Market Hypothesis, which has become widely accepted since the early 1960’s as the ‘theory of random walks’ and as the ‘rational expectations theory’ in mainstream economics literature. The Efficient Market Hypothesis progressed from a state of curiosity, taken seriously by only a few researchers in the economics and finance communities, to that of a dominant paradigm in finance. It is the basis of an emerging revolution in macroeconomics where the principle is still generally referred to as ‘rational expectations’. In the literature of finance, accounting and the economics of uncertainty, the Efficient Market Hypothesis is accepted as a fact of life (Meredith Beechey, David Gruen and James Vickery, 2000).

1.3 PITFALLS OF THE EFFICIENT MARKET HYPOTHESIS

When the term ‘efficient market’ was introduced in the economics literature several years ago, it was defined as a market which ‘adjusts rapidly to new information’ (Fama et al, 1969). However it soon became clear, that while rapid adjustments to new information is an important element of an efficient market, it is not the only one. A more modern definition is that asset prices in an efficient market ‘fully reflect all available information’ (Fama 1991). This implies that the market processes information rationally, in the sense that relevant information is not ignored and systematic errors are not made. As a consequence, prices are always at levels which equal ‘fundamentals’ of a stock. This strong version of the hypothesis could only be literally true if ‘all available information’ were costless to obtain. If information is instead costly and there is a financial incentive to obtain it, the hypothesis cannot be accepted. However at the same time there would not be a financial incentive if the information was already ‘fully reflected’ in asset prices (Grossman and Stiglitz 1980).
The theory also suggests that prices are consistent with fundamentals. This means that there must be a model to arrive at economic fundamentals of asset prices. While there are models in finance literature that helps in determining true value of stocks, it cannot be said that these models fully capture the fundamentals in an empirically convincing way. This is important since empirical tests of market efficiency –especially those that examine asset price returns over extended periods of time are necessarily joint tests of market efficiency and asset-price model as well. Thus when the joint hypothesis is rejected, as it often is, it is logically possible that this is a consequence of deficiencies in the particular asset-price model rather than in the efficient market hypothesis as suggested by Fama (1991).

The traditional efficient market hypothesis in finance which was for a long time used by practitioners to understand the market thus states that prices are perfect indicators of a share’s true value and therefore nobody can make abnormal returns over and above the returns generated by the market. In making this statement the theory assumes that investors are rational. Rationality here means that all participants in the market, process information correctly and make perfect investment choices. The theory also claims three types of efficiency namely, weak form efficiency, semi-strong form efficiency and strong form efficiency. Weak form efficiency means that share prices have been adjusted for all past information and therefore nobody can beat the market by studying past prices. The semi- strong form efficiency means that prices incorporate all publicly available information and the strong form efficiency claims that all private information is also absorbed in prices. Hence profits cannot be made even by insider trading.

1.4 EMERGENCE OF BEHAVIORAL FINANCE

The traditional framework is extremely simple but after many years of research it is clear that the basic concepts about the capital markets across the
world, that is, the cross section of average returns and individual trading behavior cannot be well understood in this framework. Also modern thinkers in the field of finance disclaim the validity of the weak form efficiency and also state that the strong form efficiency is extremely unreal and cannot exist in the real world. Moreover concepts like arbitrage which is the process by which prices come back to their fundamental values are questioned. This is because in real markets where there are many complications and uncertainties prevailing, it is difficult for the smart money makers to offset the mispricing created by the noise traders. The term noise trader refers to an investor who makes trading decisions without using fundamental data. (Fischer Black 1986). This being the case it is also important to understand that the assumptions underlying efficient markets especially the one that investors are rational is highly questionable. The world is not perfect and there are real people in this world who may not be such rational agents at all times.

With all these anomalies prevailing, the finance discipline needs a theory that is more realistic and would help, not only in understanding the markets but also the behavior of market participants so that the anomalies could be better explained. These pitfalls gave rise to a newer concept called ‘Behavioral Finance’ which is also called as ‘open-minded finance’. It is a field which helps in understanding financial markets by using models in which some of the agents are not fully rational. It is a field which takes into consideration psychology of people who form the market. Thus it takes into account, emotions like greed and fear that reigns the market. This field is about recognizing the influence of psychology on one’s own self and on the financial environment at large.

The success of this field lies in the fact that there are a number of papers highlighting that, in a market where both rational and irrational agents participate, irrationality can have a substantial and long-lived impact on
prices. Also several researchers have attempted to find out the psychological factors that affect investment behavior.

1.5 BUILDING BLOCKS OF BEHAVIORAL FINANCE

Based on extensive experimental evidence, the two building blocks of behavioral finance are ‘limits to arbitrage’ and ‘heuristics’ that arise when people form their belief.

1.5.1 Limits to Arbitrage

Arbitrage is the process whereby rational traders undo the mispricing done by noise traders so that prices quickly come back to their fundamental values. However this kind of a process is costly and risky in the real world and therefore mispricing will persist. There are primarily two risks involved in the process of arbitrage. One is the fact that prices may fall further and the other is that it may be difficult for the arbitrageurs to find a substitute at its true value. Cost of exploiting mispricing involves implementation cost like commission, cost of borrowing a stock, cost of finding and learning about mispricing, legal constraints disallowing pension funds and mutual funds to short sell.

1.5.2 Heuristics

The other building block which is the psychology of the investing population also demands considerable attention in understanding the field of behavioral finance and markets. People while forming beliefs tend to get emotional at times. They also follow some thumb rules otherwise called heuristics while taking decisions. This ultimately leads to irrational decisions. Some of the psychological factors that influence investment decisions are overconfidence, representativeness, conservatism, anchoring, mental
accounting and availability bias. These biases are dealt with in greater detail later in chapter five.

An overview of the psychological biases and their impact on investment decisions are as follows:

1.5.2.1 Anchoring

Anchoring is a tendency for individuals to quantitatively judge by subconsciously attaching to some initial figure without knowing whether it is reliable or not. Investors start out with information that leads them to form their initial beliefs and respond too conservatively to new information and do not adjust sufficiently. Thus investors with this bias expect a share to continue to trade in the same range and expect a company’s earnings to remain in a defined range in line with historical trends. Any change or any new information is not taken into consideration by them.

1.5.2.2 Loss aversion

Kahneman and Amos Tversky (1979) studied how people respond to the prospect of a loss. According to them, in a situation where you can choose to take the guaranteed loss or take a chance, most people opt for the latter because they hate to lose. They find that a loss has about two and a half times the impact of a gain of the same magnitude. They call this phenomenon ‘loss aversion’. With loss aversion is associated ‘regret association’, where individuals take chances to avoid feeling the pain of regret resulting from a poor investment decision.

1.5.2.3 Overconfidence

Overconfidence in investments refers to a ‘know it all situation’ where people set overly narrow confidence intervals and are too often surprised by
changes in situations. Investors tend to over estimate their predictive skills and believe they can time the market. There are two main implications to over confidence. The first is that they take bad bets and fail to realize that they have insufficient information. The second is that they trade more frequently than is prudent, which leads to excessive trading volume in the markets and higher transaction costs in terms of brokerage, taxes etc. for individuals.

1.5.2.4 Availability Bias

This is a case where people place undue weight on easily available information without considering the informational content and the significance of the information in relation to the problem or situation on hand. In situations where people decide based on available information and not on appropriate information, the probability of making systematic errors in decision making is very high.

1.5.2.5 Ambiguity Aversion

Ambiguity aversion is fear of the unknown. Individuals prefer the familiar to the unfamiliar. Trading in stock markets is dealing with uncertainties. Therefore in all possibility individuals who are ambiguity averse will miss risky but profit yielding investment opportunities.

1.5.2.6 Frame dependence

In a landmark work on Prospect Theory, a descriptive framework for the way people make choices in the face of risk and uncertainty, Daniel Kahneman and Amos Tversky (1972) provide evidence of frame dependence. The form used to describe a decision problem is called its frame. Proponents of traditional finance assume that framing is transparent. This means that practitioners can see through all the different ways in which profits can be made. However in reality many frames are rather opaque. When a person has
difficulty in seeing through an opaque frame his decisions depend on the frame that he uses. Consequently a difference in form is also a difference in substance. Thus behavior reflects frame dependence which in turn leads to lack of attention to fundamentals underlying a stock.

1.5.2.7 Representativeness

This refers to a tendency of decision makers to make decisions based on stereotypes, that is, to see patterns where none exist. The principle of representativeness was proposed by psychologists Daniel Kahneman and Amos Tversky (1972) and analysed in a series of papers reproduced in the collection edited by Kahneman, Slovic and Tversky (1982). De Bondth and Thaler (1985) argue that investors who rely on representativeness heuristic become overly pessimistic about past losers and overly optimistic about past winners. This instance of heuristic driven bias causes prices to deviate from fundamental value. Past losers are undervalued and past winners are overvalued.

1.5.2.8 Mental Accounting

Mental accounting is an investment bias where the investors rather than considering an overall portfolio return, makes separate accounts with respect to each investment in their mind. Investors treat each account separately in their minds which sometimes leads to a decrease in the overall returns of the portfolio. When an investor makes an investment, a separate account is opened in his mind with respect to that investment and he uses the purchase price of the investment as a reference point in order to make future decisions on holding or disposing the investment.

Behavioral factors undoubtedly play a role in the investment decision-making process of individual investors. This is necessary but not a sufficient
condition for determining whether they play a significant role in the market. More and more empirical evidence is necessary to establish the importance of this field. Although as a field, behavioral finance is flourishing not only in academia where financial issues are studied but also in practice where concepts are being routinely applied, still research in this field is close to where it started. Therefore there is a lot of scope for research in this area. Hence the present study assumes significance. The following section discusses the purpose of the study.

1.6 PURPOSE OF THE STUDY

As already seen much needs to be done in the area of behavioral finance. Especially in the Indian scenario there is very little empirical evidence to conclude whether this field is worthy of pursuit or not.

The field of behavioral finance unlike traditional finance could provide an excellent insight about how markets having both rational as well as irrational agents are functioning. This helps policy makers, the corporate world and all other stakeholders to get a better understanding of their markets and thereby be in an advantageous position as regulators, arbitrageurs or participants.

From an individual investor’s point of view also, this study helps in determining the presence of psychological biases in the process of making optimal investment decisions.

Normally studies in this area either focus on the overall market to bring out anomalies or they analyse only psychological factors that influence decisions of investors. However this study pays attention to the overall stock market in general and the investors in particular while making inferences. This makes the study holistic and complete.
The period taken for the study covers a period of twelve years which showcased terrific ups and downs in the stock market worldwide with India being no exception. Especially in a period of economic slowdown the study assumes greater significance.

With the information technology boom and the advent of internet trading, the number of people who invest in the stock markets have grown in leaps and bounds. In such a situation there is a lot of herd behavior and panic selling that one gets to see. This is not a favorable situation for any economy. So it becomes necessary to educate investors to manage their emotions as much as managing money in the financial markets. Since the study focuses on individual investor behavior it can be a guide for investors to understand what kind of emotions play a prominent role and thereby find out ways to manage it.

Finally, stock markets are the barometers of an economy. A country’s economic well being is judged by how well the stock markets are performing. Thus, this study will probe into the health status of the Indian stock market as a whole and the investing crowd in particular. The following section discusses the research gap which have been identified based on detailed review of literature.

1.7 RESEARCH GAP

1. Studies that present a complete view by focusing on both anomalies in market efficiency as well as on individual investor behavior are rarely found.

2. In a period of economic slowdown, studies relating to stock markets in emerging economies are required in large numbers to draw inferences on the health status of such economies.
3. Index funds are making their presence felt in India. Hence it will be of interest to see the impact of replacements made to a stock index.

4. Understanding the Indian individual investor behavior may further lead to understanding of the market microstructure. This will help in having a balanced approach, where individual investors are also viewed as significant players in the stock market.

1.8 OBJECTIVES OF THE STUDY

This study has been structured into two parts. In an efficient market, events that are information free will not have a long lasting impact on the price and volume traded of a share. If such events lead to a permanent shift in prices it can be construed that markets are trading on noise and not information. Based on past literature it was considered appropriate to take inclusions to an index as an event of study and analyze whether there are any permanent and long lived reactions to it. A stock index basically indicates the direction in which the market moves. Since indices are representative of the shares traded in the market, it is important to review and revise them time and again, for them to be a true indicator of the moods of the market. Thus when a stock is added to the index, it only means that it was actively traded in the recent few months and it does not convey any information about the fundamentals of the stock. Hence it is prudent for the markets not to react to such inclusions.

Two early studies on index inclusions by Harris and Gurel (1986) and Shleifer (1986), document that when a stock is added to the index, its price jumps by an average of 3.5% and much of the rise is permanent. Therefore, firstly an attempt was made to understand based on secondary data as to whether the Indian stock market reacts to information free events like the index inclusions.
Secondly, since markets are made of humans, the need for understanding the psychological biases influencing irrationality in decision making was proposed to be studied. Thus the psychological makeup of people who participate in the market has been analyzed using primary data.

The following are the specific objectives of the study

1. To study the ‘impact of announcement’ regarding inclusion of a company in an index, on its price and volume traded.

2. To study the ‘impact around the effective date of change’ when companies are included in an index, on its price and volume traded.

3. To understand and measure the psychological biases relating to trading behavior in the stock market along with an analysis of the biases for different investor groups based on their demographic profile.

4. To identify the behavioral factors that emerge out of the psychological biases that were measured in objective three.

5. To study those behavioral factors that best discriminate different categories of traders based on their trading frequency.

1.9 RESEARCH HYPOTHESES

Based on the objectives of the study, the following hypothesis have been developed.

Null Hypothesis 1: There is no significant impact of ‘announcement’ regarding inclusion of a company in an index, on its price.
**Null Hypothesis 2:** There is no significant impact of ‘announcement’ regarding inclusion of a company in an index on the volume traded.

**Null Hypothesis 3:** There is no significant impact on price when companies are ‘included’ in an index.

**Null Hypothesis 4:** There is no significant impact on volumes traded when companies are ‘included’ in an index.

**Null Hypothesis 5:** There is no significant difference between males and females with respect to the eight psychological biases.

**Null Hypothesis 6:** There is no significant difference among the different age groups with respect to the eight psychological biases.

**Null Hypothesis 7:** There is no significant difference among respondents with different qualifications with respect to the eight psychological biases.

**Null Hypothesis 8:** There is no significant difference among the various occupational groups with respect to the eight psychological biases.

**Null Hypothesis 9:** There is no significant difference among the different income groups with respect to the eight psychological biases.

**Null Hypothesis 10:** There is no significant difference among the different groups based on investment levels with respect to the eight psychological biases.
**Null Hypothesis 11:** There is no significant difference with respect to the eight psychological biases among the different categories of respondents based on the trading experience.

**Null Hypothesis 12:** There is no significant difference among the different categories of traders based on frequency of trading with respect to the eight psychological biases.

**Research methodology** for the present study is discussed in detail in chapter three.

**1.10 LIMITATIONS OF THE STUDY**

1. It was considered prudent to study the macro market structure first and then move on to analyze investment biases that influence trading behavior. Hence the time period for studying the impact of index inclusions on stock returns and volume traded was restricted to the year 2011, since the second part of the study for measuring individual investor’s psychological biases had to be conducted.

2. Most of the Indian studies on index replacements have been based on NIFTY and the Junior NIFTY. However in this study NIFTY and S&P CNX 500 indices were chosen since both the indices have strikingly different features in terms of size and nature of replacements. Changes to NIFTY are more structured since there is a gap of six weeks between the date of announcement and change. In contrast, changes to S&P CNX 500 are more unstructured. In the light of these differences it seemed interesting to take up these two indices for the study. However during the course of the study it was found that most of the
companies included in S&P CNX 500 could not be taken in the sample as the time gap between the date of announcement and change was very less. All those companies for which the date of change overlapped with the announcement window were eliminated. As a result of this, the sample for S&P CNX 500 considerably reduced in size.

1.11 ARRANGEMENT OF CHAPTERS

Chapter one provides an introduction to the research topic. It briefly describes the limitations of the Efficient Market Hypothesis in understanding the markets and gives an outlook about the field of behavioral finance. It also includes the rationale of the study, along with the objectives, hypotheses and limitations of the study.

Chapter two reviews literature relevant to the field of study. The first section of this chapter reviews the general studies in the field of behavioral finance. The second section looks into studies on market efficiency, mispricing and limits to the process of arbitrage. The third section relates to studies on investor preference and market psychology.

Chapter three describes the methodology used to analyze the secondary data on index inclusions and the primary data obtained on psychological biases through a structured questionnaire.

Chapter four analyses the price and volume effect of inclusions to the NIFTY and S&P CNX 500 indices around the date of announcement and around the date of effective change.

Chapter five along with the profile of the investors, identifies and measures psychological biases of respondents who participated in the survey.
Chapter six presents the behavioral factors that emerge out of the psychological biases and studies those behavioral factors that best discriminate different categories of traders.

Chapter seven presents the summary of the entire research work along with recommendations and suggestions for future research.