

MBA FINANCE

Are Indian Stock Markets Driven more by Sentiment or Fundamentals?

A Case Study Based on Relationship
Between Investor Sentiment and Stock
Market Volatility in Indian Markets

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Abstract

The aim of the research paper is to examine the relationship between investor sentiment and stock market volatility in the context of Indian stock market. There is much research into the relationship between the two but very rarely taking India as a case, being the tenth largest economy of the world. Moreover, there has been scant research done on impact of political and economic events on investor sentiment and the stock markets. There is very little research determining if the events do make an impact on the sentiment of investor.

The research is based on taking four events into consideration over a period of five years (2008-2012) for investors. Simultaneously, the stock market volatility has also been studied for the same period of time of the BSE-Sensex (Bombay Stock Exchange- Sensitive Index). The events are Global Recession of 2008, Mumbai Terror Attack in 2008, the major Indian IT company Satyam Computer Systems scam and the fluctuations in Global oil prices after the Middle East crisis.

The data of volatility, sentiments and average daily returns have been collected from various sources like BSE for the same period. To find the impact of each situation on the average daily returns, investor sentiments and volatility, SPSS was incorporated. Adding to this, a survey was also carried out through questionnaires distributed to investors to find the sentiments during that period and currently. To strengthen the research, various financial journals and literature on the subject were reviewed.

The research found while the Satyam scam had an impact on the average daily returns, it didn't have a significant impact on the stock market volatility. Interestingly it showed that it had a very significant impact on the investors. For oil prices, research showed that the Egyptian turmoil didn't have a significant impact on the average daily returns but it had a significant impact on the volatility as well as the investor sentiment which has been vindicated by the survey. Also, the Global Recession had very significant impact on all the factors viz. the daily returns, volatility and the sentiment. On Terror Attacks, the research showed that while there was not a significant impact on the stock market volatility but impact on the daily returns and investor sentiment was substantial.

Chapter 1: Introduction

1.1 Introduction

Financial professionals know very well the fact investors psychology impacts the financial markets. The investor's mood and its influence on the market movements is regularly discussed in various financial periodicals, on television, internet and radio. As pointed out by Daniel Kahneman in a speech titled "Psychology and Market" at North-Western University in 2000: "If you listen to financial analysts on the radio or on TV, you quickly learn that the market has a psychology. Indeed, it has character. It has thoughts, beliefs, moods, and sometimes stormy emotions."

"Are Indian Stock Markets driven more by Sentiments than Fundamentals ". This inquisitiveness led the researcher to take up the research. This research project is the quest to find an answer to this question which perhaps affects & intrigues every probable investor or trader in the Indian Stock Market. More importantly, this project examines the impact of various important events which have occurred in the last five years that might have had an impact on the investor sentiments and the volatility of the stock market and whether both these aspects are related to each other.

1.2 Investor Sentiment and Stock Market Volatility

While some researchers may refer to investor sentiment as a propensity to trade on noise rather than information, the same term is used colloquially to refer to investor optimism or pessimism. On the other hand, Volatility is a symptom of a highly liquid stock market. Pricing of securities depends on volatility of each asset. Volatility is the variability of the asset price changes over a particular period of time and it's very tough to predict it consistently and correctly. In financial markets volatility presents a strange paradox to the market participants, academicians and policy makers. Without volatility superior returns cannot be earned, since a risk free security offers poor returns. But if it is high, it will lead to losses for the market participants and represents costs to the overall economy. An increase in stock market volatility brings a large stock price change of advances or declines. Investors may interpret a raise in stock

market volatility as an increase in the risk of equity investment and consequently they shift their funds to less risky assets.

To many among the general public, the term volatility is simply synonymous with risk: in their view high volatility is to be deplored, because it means that security values are not dependable and the capital markets are not functioning as well as they should. Merton Miller (1991) the winner of the 1990 Nobel Prize in economics - writes in his book *Financial Innovation and Market Volatility* "By volatility public seems to mean days when large market movements, particularly down moves, occur. These precipitous market wide price drops cannot always be traced to a specific news event. Nor should this lack of smoking gun be seen as in any way anomalous in market for assets like common stock whose value depends on subjective judgment about cash flow and resale prices in highly uncertain future. The public takes a more deterministic view of stock prices; if the market crashes, there must be a specific reason".

1.3 Efficient Market Hypothesis

This is an investment theory which states that it is impossible to predict the market because the stock market efficiency causes existing share prices to always incorporate and reflect all relevant information. According to the hypothesis, the stocks always trade at their fair value on stock exchanges, making it impossible for investors to either purchase undervalued stocks or sell stocks for inflated prices. Thus it would be impossible to outperform the overall market through expert stock selection and/or market timing and the only way to gain returns is by purchasing riskier investments.

The Efficient Market Hypothesis claimed the rationale that fundamentals determine the market trends and that the market has 100% informational efficiency. This Hypothesis however came under severe criticism after the Wall Street Crisis of 1987. Investors & Analysts also suggested that actually there are certain Cognitive Biases that affect the stock prices. This school of thought, known as "Behavioral Finance", seemed even more authentic at times when the context was India. History is replete with instances when a high impact News elicited a knee jerk reaction from the

investors leading to a slew of purchasing or selling decisions thereby affecting stock prices in an unexpected manner. However there were also instances where market fundamentals seemed to totally override any sort of emotional or sentimental wave.

1.4 The Indian Stock Market

With over 20 million shareholders and over 10,000 listed companies on all the stock exchanges, India has the third largest investor base in the world after United States of America and Japan. The Indian stock markets are serviced by 9400 stock brokers approximately. Foreign brokers account for 29 of these. Any market that has experienced this sort of growth has an equally substantial demand for highly efficient settlement procedures. In India 99.9% of the trades, according to the National Securities Depository, are settled in dematerialized form in a T+2 rolling settlement the capital market is one environment.

Indian stock markets, in the recent years, have sharply risen on the back of improving macroeconomic fundamentals and large inflow of foreign money. Large foreign investments have brought greater transparency and liquidity into the Indian market. India entered the International Financial Markets to mobilize resource towards the end of the 1970s around the time of the launch of Fourth Five Year Plan. The Indian Stock Markets are in a way the engines which drive the vehicle of our democracy by pumping in the much needed capital. Their behavior and trends have intrigued many a scholar, many an analyst and many an investor. As time evolved, scholars and intellectuals propounded various theories and came up with different propositions with respect to the Stock Markets.

While the US remains the largest of the financial markets; the euro zone has emerged as a financial powerhouse indeed. The euro zone, U.K. and U.S. account for some 80% of all cross border capital flows. In contrast, Japan is strikingly isolated; its capital flows are smaller than China although china's stock of financial assets is only one –quarter of the size of Japan's. The underlying force for integration is that people want freedom to make economic decisions and to access different forms of finance,

risk management techniques and investment and portfolio diversification opportunities. In a country like India where the stock market is undergoing significant transformation with the liberalization measures, there are also concerns regarding its exposure to risk in case of global/regional crises i.e. need to know how far contagion can affect the Indian stock market in a more and more globally integrated environment. The degree of financial openness is an empirical question which needs to be resolved and if policy makers are to know the structure of their economies and implement policies that will be effective in achieving their aims. The Indian capital market has been experiencing a process of structural transformation in that the operations in the Indian capital market are being conducted on the standard equivalent to those in the international developed markets.

The Indian Capital Markets are mainly affected by two E's –

1. Earnings/Price Ratio – It is an important factor affecting the stock price of a company. It gives us a fair idea of company's share price when it is compared to its earnings. The stock becomes undervalued if the price of the share is much lower than the earnings of a company. But if this is the case, then it has the potential to rise in the near future. The stock becomes overvalued if the price is much higher than the actual earning of the company.

2. Emotions/ Sentiments - They are a huge part of investing. Was it the case that only earnings drove the Indian Sensex to a high of 21,000 points in January 2008 and a low of 8700 points in October 2008? Not really. Emotions played a big part in both the rise and fall of the Sensex. When we get positive news about a company, it increases the buying interest in the market. On the other hand, when there is a negative press release, it ruins the prospect of a stock to increase in value.

Stock Price Factors

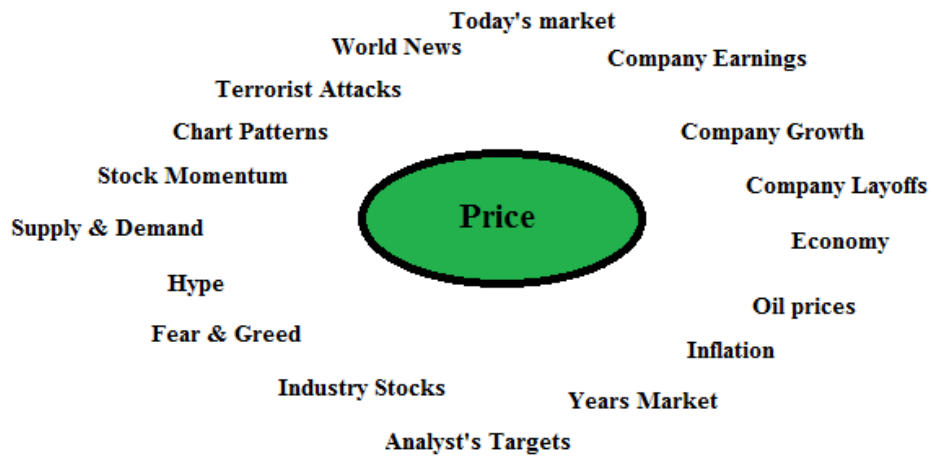


Figure 1.1 2 Factors Influencing Stock Prices

It has been noted that investors show sensitivity to reference points. When a certain stock price falls because of some disappointing news, many investors are averse to selling it at a loss. Here the reference point is the original cost of purchase. Investors have a tendency to hold on to their losses. But some investors wait in anticipation that the stock price would return to their purchase price before they decide to sell it without rationally evaluating the situation. It can be said in other words that the investors generally “hate to lose”.

1.5 Objectives of This Research

In order to understand the main research question, the researcher will conduct fundamental research which will address the following objectives.

1. To ascertain the attitudes and sentiments of the investors in India in the current scenario as well as in the recent past

2. To examine if there is any relationship between the important events and investor sentiments
3. To examine and ascertain the relationship between various important events and stock market volatility.
4. To examine the relationship between investor sentiment and the stock market volatility in India taking the important events into consideration.

1.6 Research Structure

The layout of this dissertation begins with chapter one, the introduction which is here. This outlines the background of the research, approach to the research question, the research objectives and the overall flow of the dissertation.

Chapter two examines the academic literature in the area of investor sentiment and stock market volatility. It also throws light on the various literatures available on Behavioral Finance as this subject area under which the research has been taken up. A review of literature was undertaken with over seven main headings starting from Investor sentiment and the world to importance of behavioral finance to impact of terrorism on investor sentiments to studies on some of investor proxies and moods.

Chapter three talks about the research methodology which provides details of the research approach followed, the data collection method used, the type of analysis being performed and the population used.

Chapter four, this is the section where the data analysis is done and the findings of this research are highlighted and discussed.

Chapter five is the conclusion section. This is where conclusions are made based on the findings from chapter four. Also summations are based on literature review. Recommendations are also made in this section.

Chapter six is the self-reflective learning section which reflects on the learning that has occurred during the research process. This section will include reference to specific events which served process for learning out of this dissertation.

Resources such as the questionnaire used and various other sources are included in the Appendix.

1.7 Recipients of the research

A number of studies have been done in other countries but there has been no comprehensive study concerning Investor sentiment in India. Moreover, the study of this nature should be conducted at periodical intervals, the reason being that the investors' attitudes do change from time to time.

No studies have been carried out for the Indian stock markets in context of major political event such as a terrorist attack. Though there have been studies carried out on the impact of macro-economic events on the stock market substantially (Bennet et al., 2011), major economic events such as worldwide fluctuations in the oil prices and domestic financial scams and their impact on the stock market has not been extensively studied in the recent past.

The intended audiences of this research are the investors (both institutional and retail) of India, the Foreign Institutional Investors (FIIs) who are keen to invest in India, and the various stock broker companies in India and around the world. This research can be of interest to various professionals and students who want to pursue their carrier in the area of Behavioral Finance. It aims to focus on the area of behavioral finance which is an interesting and burgeoning subject in the contemporary world.

1.8 Scope and Limitations to the research

To demonstrate overall feel of the present mood and the past impact on the sentiments, the researcher has carried out a survey on the investors in India with the help of two investment banks. It's about how they feel about the socio-economic events and how it affects their sentiments. The events range from terrorism to rise in

oil price to the global recession which took place in 2008 and had engulfed major European countries out of which a few of are still struggling to come out.

There were many practical issues concerning this research which needed to be addressed before commencing. Firstly, in relation to the primary quantitative research, due to confidentiality procedures of the two investment banks in India, it was not possible to obtain the contact information of the investors. Moreover a few investors have not even written up their names. The population size was 90. A larger size would have been better however given the restrictions due to confidentiality and the ease of access this was not possible.

Chapter 2: Literature Review:

2.1 Literature Review

Casual observation suggests that the content of news about the stock market could be linked to investor psychology and sociology. However, it is unclear whether the financial news media induces, amplifies, or simply reflects investors' interpretations of stock market performance (Tetlock, 2007).

2.2 Investor sentiment and the World

Defining Investor Sentiment: Investor sentiment can be defined as the feeling or tone of a market (i.e. crowd psychology). It is shown by the activity and price movement of securities. While some researchers may refer to investor sentiment as a propensity to trade on noise rather than information, the same term is used colloquially to refer to investor optimism or pessimism. The term sentiment also has connotations with emotions, so the media may refer to it as investor fear or risk-aversion. For example, rising prices would indicate a bullish market sentiment. A bearish market sentiment would be indicated by falling prices. Although they do not find a statistically or economically significant effect of “bullish” messages on returns, Antweiler and Frank (2004) do find evidence of relationships between message activity and trading volume and message activity and return volatility. Similarly, Coval and Shumway (2001) establish that the ambient noise level in a futures pit is linked to volume, volatility, and depth—but not returns.

Malcolm Baker (2007) studied that, the question is no longer, as it were a few decades ago, whether investor sentiment affects stock prices, but rather how to measure investor sentiment and quantify its effects. In particular, stocks of low capitalization, younger, unprofitable, high volatility, non-dividend paying, growth companies, or stocks of firms in financial distress, are likely to be disproportionately sensitive to broad waves of investor sentiment. The question whether investor sentiment has an impact on stock prices is of foremost importance because investor sentiment can lead

to market bubbles followed by massive devaluations, Brown and Cliff (2004) explained.

Finter, Niessen-Ruenzi, Ruenzi, in 2011, proposed that the real estate bubble crash in 2008, which happened to take place in the United States and had a grip on the whole world later on, underlines the severe consequence of investor sentiment on asset prices. Most of the papers on sentiment focus on the U.S. stock market and rely on the notion that it is mainly retail investors who are affected by sentiment waves and who cause stock prices to drift away from their fundamental values (Kumar and Lee (2006)). These papers implicitly take into account that institutional investors are more rational in their trading behavior whereas retail investors are responsible for the impact of sentiment on markets. Therefore, it is important to test the robustness of findings from the U.S. market for other markets that are characterized, for example, by a different demographics and composition of the investor population. This is the gap which is prevalent in the various researches done till date on this subject.

There have been a very few researches done on the Indian Stock market related to the same issue of the investor sentiments and the resulting effect on volatility. Also, to check the various effects of various events which might or might not affect both, there have been very few of the evidences put forward concerning the Indian market. A different composition and demographic would change the whole scenario of the relationship between the investor sentiments and stock market volatility. This would in-turn give a better understanding and scope for further researches and analysis on the researches done in the future. Thus, this project will be an attempt to fill the gap mentioned above.

2.3 The Impact of investor sentiment

The impact of investor sentiment on the returns of equities has been empirically tested. Many studies suggest that sentiment does influence asset prices (Lee, Shleifer, and Thaler, 1991; Lee et al., 2002; Brown and Cliff, 2005; Baker and Wurgler, 2007; Ho and Hung, 2009; Baker, Wurgler, and Yuan, 2009). These studies find a positive contemporaneous relationship between investor sentiment and stock market returns.

Furthermore, the research also studies how stock market volatility is impacted by investor sentiment (Brown, 1999; Lee et al., 2002). The results of these studies show that investor sentiment and stock market volatility are correlated.

An exogenous shock in investor sentiment can lead to a chain of events, and the shock itself could in principle be observed at any or every part of this chain. It will show up in investor beliefs, which will be surveyed. These beliefs might then translate to observable patterns of securities trades, which are recorded.

2.4 Classical Finance and Investor Sentiment

In classical finance, there is typically no room for the presence of investor sentiment. Such theories have mostly ignored or assumed away investor sentiment, arguing that in the highly competitive financial market, suboptimal trading behaviors such as paying attention to signals unrelated to fundamental value will be quickly eliminated.

In short, classical finance revolves around two basic premises, that when taken together implies the lack of prolonged arbitrage opportunities

a) Financial markets are information efficient.

b) Market participants are rational

First, the cornerstone of modern financial economics, the Efficient Markets Hypothesis, maintains that asset prices should reflect all available information about the fundamental value of the underlying security. Assuming no frictions, the price of a security should equal its fundamental value, defined as the discounted sum of future cash flows. Mathematically, this means that the price P_t of a particular stock or portfolio equals the expected forecast

(P^*_{t+1}) times of subsequent cash flows and investment risks, conditional on all information available at the current time period. This can be stated concisely as:

$$P_t = E_t [P^*_{t+1} | I_t] \dots \dots \dots (1)$$

Hence, the Efficient Markets Hypothesis says price equals the optimal forecast of it. This implies that any surprising movements in the stock market must originate with new information about the fundamental value P^*_{t+1} (Fama 1965). From this, it then follows that fundamental value is comprised of a predictable component and an unpredictable component:

$$P^*_{t+1} = P_t + ut \dots \dots \dots (2)$$

Here, ut represents the forecast error and must be uncorrelated with any information available at time t ; otherwise it would not be taking into account all available information (Shiller 2003). Since the price P_t is also information, P_t and ut must also be uncorrelated with each other.

2.5 Arguments against Classical Finance Theory

Consistent with the market efficiency paradigm is the presumption that individuals behave rationally and fully take into account all available information in the decision-making process. Therefore, when there is new information about a security, rational investors will quickly respond, leaving no room for excess risk-adjusted returns based on the information signal. Through motivations of self-interest and the forces of arbitrage, modern finance has traditionally assumed that irrational investors will be quickly eliminated from the market, along with risk-free profit opportunities.

In real life financial markets however, there are limits to arbitrage. Trading costs, including transaction costs, information costs, and financing costs may prevent rational arbitrageurs from taking advantage of market mispricing. Since real life financial markets are far from perfect, these frictions may make it difficult to find and take advantage of a perfectly substitutable asset (Shleifer 2000).

However, even after taking into account fundamental risk and transaction costs, standard financial theories still have a hard time explaining prolonged mispricing and unexploited arbitrage opportunities. For example, financial puzzles such as the closed-end fund discount and IPO under pricing are empirical observations that provide evidence that markets may not always be informationally efficient. To explain these

anomalies, one approach has been to appeal to behavioral explanations that relax the strict rationality requirement of standard theories.

Baker and Wurgler, (2007) highlight that it has been increasingly difficult to explain some financial events by traditional theory of finance. Such events include investors subject to emotions who not always value asset prices as the net present value of its discounted future cash flows. In this context sentiment can be defined as beliefs about future cash flows and investment risks that are not rationally justifiable taking into account the information available to the investor. Stock price volatility during crashes defies the explanatory power of traditional financial models. The traditional models, in which the investors without emotions force capital market prices to equal the rational present value of expected future cash flows, have a substantial difficulty explaining stock market volatility. Researchers in finance have thus been working on to supplement the traditional models which can't justify the crashes. Shiller (1987) demonstrated that most investors interpreted the crash as the outcome of other investors' psychology rather than fundamental financial variables such as earnings or interest rates.

Moreover market efficiency, in the sense that market prices reflect fundamental market characteristics and that excess returns on the average are levelled out in the long run, has been challenged by behavioral finance. There have been a number of studies pointing to market anomalies that cannot be explained with the help of standard financial theory, such as abnormal price movements in connection with IPOs, mergers, stock splits and spin-offs. Throughout the 1980s and 1990s statistical anomalies have continued to appear which suggests that the existing standard finance models are, if not wrong, probably incomplete. Investors have been shown not to react to new information but to be overconfident and to change their choices when given superficial changes in the presentation of investment information (Olsen, 1998).

During the past few years there has, for example, been a media interest in technology stocks. Most of the time, as we know in retrospect, there was a positive bias in media assessments, which might have lead investors in making incorrect investment decisions. So, these anomalies suggest that the principles which underlie concerning rational behaviour are from the efficient market hypothesis and thus are not entirely

correct and it is needed to be looked at including other models of human behaviour as have been studied in other forms of social sciences (Shiller, 1998).

2.6 Behavioral Finance

In particular, behavioral finance has been an increasingly fruitful branch of research that, in short, takes account of deviations from perfect rationality and explores the ways this may affect market outcomes, asset prices, and even the behavior of other investors. With regards to investor sentiment, behavioral finance offers models that are much more flexible about investor behavior

Barberis and Thaler, in their paper “A Survey of Behavioral Finance” in 2003, explained that the traditional finance paradigm, seeks to understand financial markets using models in which agents are “rational”. Rationality means two things. First, when they receive new information, agents update their beliefs correctly, in the manner described by Bayes’ law¹. Second, given their beliefs, agents make choices that are normatively acceptable, in the sense that they are consistent with Savage’s notion of Subjective Expected Utility (SEU)².

They further go on and say that the traditional framework is appealingly simple, and it would be very satisfying if its predictions were confirmed in the data. Unfortunately, after years of effort, it has become clear that basic facts about the aggregate stock

¹ **Bayes' Theorem**, published posthumously in the eighteenth century by Reverend Thomas Bayes, says that you can use conditional probability to make predictions in reverse. Mathematically, Bayes' theorem gives the relationship between the probabilities of A and B , $P(A)$ and $P(B)$, and the conditional probabilities of A given B and B given A , $P(A|B)$ and $P(B|A)$.

² **Subjective expected utility** is a method in decision theory in the presence of risk, promoted by L. J. Savage in 1954 following previous work by Ramsey and von Neumann. The theory of subjective expected utility combines two subjective concepts: first, a personal utility function, and second a personal probability distribution (based on Bayesian probability theory).

market, the cross-section of average returns and individual trading behavior are not easily understood in this framework.

According to them, Behavioral Finance is a new approach to financial markets that has emerged, at least in part, in response to the difficulties faced by the traditional paradigm. In broad terms, it argues that some financial phenomena can be better understood using models in which some agents are not fully rational

More specifically, it analyzes what happens when we relax one, or both, of the two tenets that underlie individual rationality. In some behavioral finance models, agents fail to update their beliefs correctly. In other models, agents apply Bayes' law properly but make choices that are normatively questionable, in that they are incompatible with SEU. It is important to note that most models of asset pricing use the Rational Expectations Equilibrium framework (REE), which assumes not only individual rationality but also consistent beliefs (Sargent, 1993). Consistent beliefs means that agents' beliefs are correct: the subjective distribution they use to forecast future realizations of unknown variables is indeed the distribution that those realizations are drawn from. This requires not only that agents process new information correctly, but that they have enough information about the structure of the economy to be able to figure out the correct distribution for the variables of interest.

Behavioral finance departs from REE³ by relaxing the assumption of individual rationality. An alternative departure is to retain individual rationality but to relax the consistent beliefs assumption: while investors apply Bayes' law correctly, they lack the information required to know the actual distribution variables are drawn from. This line of research is sometimes referred to as the literature on bounded rationality, or on structural uncertainty. For example, a model in which investors do not know the growth rate of an asset's cash flows but learn it as best as they can from available data, would fall into this class.

In particular, behavioral finance has been an increasingly fruitful branch of research that, in short, takes account of deviations from perfect rationality and explores the ways this may affect market outcomes, asset prices, and even the behavior of other

³ **Rational expectations (RE)** is a collection of assumptions regarding the manner in which economic agents exploit available information to form their expectations. In its stronger forms, RE operates as a coordination device that permits the construction of a "representative agent" having "representative expectations".

investors. With regards to investor sentiment, behavioral finance offers models that are much more flexible about investor behavior and in doing so, can explain financial anomalies such as limited arbitrage.

2.7 Studies taken up on the Subject of Behavioral Finance

The validation for behavioral finance was started with studies examining correlation between macroeconomic variables and stock prices. The process by which the stock prices move or adjust to the spread of new information has also been studied extensively. And the results of these studies have showed stock prices reflect more than fundamental variables. As early as 1971, Niederhoffer highlighted the weak stock market reaction to events which were considered important (Election, War, Change of foreign leadership, Change of governments..., etc.) while the very strong asset price variation still remained unexplained. In relatively recent times Cutler, Poterba and Simmons (1991) examined stock price changes in relation to the arrival of new information about the macroeconomic performance. They further established that macroeconomic variables explained approximately a third of the variance in stock returns. They also showed that the information about change of governments or considerable changes in financial policies explains some but not all of the variation in the stock returns. These findings related to the findings of Shiller (2000) who established that volatility of stock prices were well above what is predicted by changes in the economic indicators. Niederhoffer (1971) highlighted the short-window reaction of the stock market to the world events. In his work, Niederhoffer relates the world events to subsequent movements in the S&P 500. World events are chosen from the New York Times based on the magnitude of the headlines. He found out that the world events exert a discernible influence on the movement of the S & P 500. More specifically, returns following world events tend to be larger in absolute value than returns on other days.

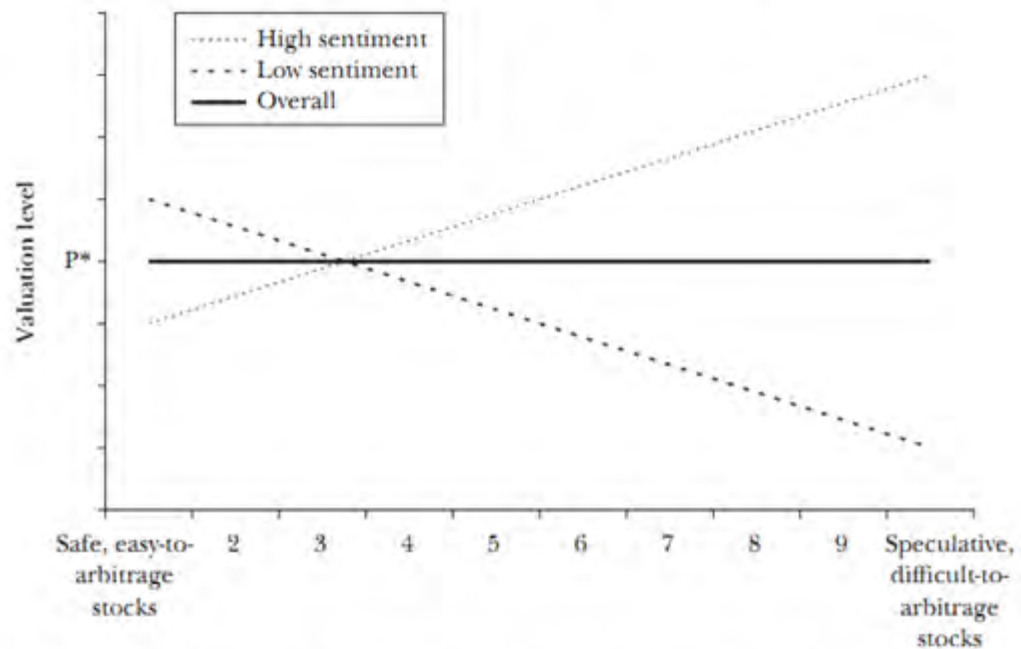
Kim and Mei (1994) examine the movements in the Hong Kong stock market and their relation to political events. Using an event-study approach they show that political developments have a significant impact on stock prices.

Diamonte, Liew, and Stevens (1996) and Erb, Harvey, and Viskanta (1996) study the long-term relationship between the political risk and the stock market returns. Diamonte et al. (1996) showed that a change in the political environment has a larger impact on returns in emerging markets than in developed markets. Indian markets still being an emerging markets on the global scene have always been prone to the political risks. Over that, all the macro-economic happenings have somewhat had an effect on any of the markets all around the world. Erb et al. (1996) showed that the country-risk measures (consisting both the political and economic risk measures) are correlated with future equity returns. Both of these studies that look at some measure of the political scenario and its relation to the stock market over a long period of time.

Most finance experts and economics recognized that the market has mood swings considered behavioral finance as an alternative. The link between asset valuation and investor sentiment became the subject of considerable deliberation among the finance experts.

THE SENTIMENT SEESAW

Theoretical Effects of Investor Sentiment on Different Types of Stocks



Note: Stocks that are speculative and difficult to value and arbitrage will have higher relative valuations when sentiment is high.

Figure 2.1 2: *The Sentiment Seesaw* by M Baker & J Wurgler (2006)

The sentiment seesaw by M Baker summarizes this perspective into a simple, unified view of the effects of sentiment on stocks.

The x-axis (horizontal axis) orders stocks according to how difficult they are to value and arbitrage. Bond-like stocks, such as regulated utilities, are toward the left; stocks of companies that are newer, smaller, more volatile, distressed, or extreme growth are toward the right.

The y-axis (vertical axis) measures prices, with P^* denoting fundamental values, which, of course, can vary over time. The lines then illustrate the basic hypotheses about how stock valuations are affected by swings in sentiment.

High sentiment should be associated with high stock valuations, particularly for the stocks that are hardest to value and to arbitrage. Low sentiment works in the reverse direction. In the absence of sentiment, stocks are, on average, assumed to be correctly

priced at P^* . An empirical question that arises in the drawing of Figure is where to locate the crossing point of this seesaw.

One case is that no crossing point exists: the upward-sloping high-sentiment line lies entirely above the no sentiment P^* line, which in turn lies entirely above the downward-sloping low sentiment line. That is, when sentiment increases, all stocks' prices go up, but some more than others. In this case, the aggregate effects of sentiment will be strong, because aggregate stock indexes are simply averages of the underlying stocks.

The figure above reflects the more complex case where the prices of particularly safe, easy-to-arbitrage stocks actually are inversely related to sentiment. This outcome could occur if sentiment fluctuations induce substantial changes in the demand for speculative securities, for example engendering “flights to quality” within the stock market.

Such episodes may, controlling for any changes in fundamentals, reduce the prices of speculative stocks and at the same time increase the prices of bond-like stocks. In this case, the effect of sentiment on aggregate returns will be muted because stocks are not all moving in the same direction.

Behavioral theory thus delivers clear cross-sectional predictions about the effects of sentiment—but the aggregate predictions are somewhat less clear, which may help to explain why the 1980s studies did not always reach strong statistical conclusions.

The stocks become underpriced or overpriced at periods of high or low sentiment, which leads to predictable subsequent returns (Baker and Wurgler, 2006; Qiu and Welch, 2006).

There was a study carried out by Peter (1970) to identify those factors which motivate or guide the investment decisions of the retail stock investors. The study identified

factors such as income from dividends, rapid growth, purposeful investment as a protective outlet of savings and investment management.

Shanmugam (1990) studied a group of 90 investors to examine the factors affecting investment decisions. This study would focus the analysis on the investment objective and the extent of awareness on the factors affecting the same. This particular study found out that the investors were high risk takers. The investors possessed adequate knowledge of government regulations, monetary and fiscal policy. Warren et al. (1996) developed lifestyle and demographic profiles of investors based on the value and types of investment holding. Krishnan and Booker (2002) analyzed the factors influencing the decisions of investors who basically used analysts' recommendations to arrive at a short-term decision to hold or to sell a stock.

Sachithanatham et al. (2007) studied the relationship between the capital market reforms and amount of money invested by the investors. It was found that the educative reforms and attractive reforms were statistically significant but they had negative influence over money invested by the investors at the Indian Capital Market.

Bennet et al. (2011) carried out a study and found that most of the investors expect the stock prices to go up to a degree greater than most of their investments. If the market has gone down, they think it would rebound. If the market is up, they think it would go further. In either case, they make investment decision on account of the assumption that the stock market would give better returns.

There is budding literature exploring the stock pricing impact of several behavioural biases. A strand of this literature has documented a variety of exogenous factors that capture mood (and therefore investor sentiment) as being correlated with stock returns. These exogenous factors could be a part of what rick and Lowenstein (2007) describe as incidental emotion influences on risky decision making. As mood indicators previous researches have utilized various of variables such as sunshine (Saunders 1993; Hirshleifer and Shumway 2003), sleep patterns (Kamstra *et al.* 2000), temperature (Cao and Wei, 2005), daylight (Kamstra et al, 2003), lunar phases (Yuan et al, 2006) and international soccer results (Edmans *et al.* 2007).

2.8 Terrorist activities and Investor Sentiments

A question arises whether one can consider terrorist activity as a mood proxy. Edmans *et al.* (2007) argue that the chosen mood indicators must be able to satisfy three criteria to rationalise its link with the stock returns. First, the selected variable must be able to drive the mood in a substantial and unambiguous manner, so that its effect has vigour which would be enough to be reflected in asset prices. Second, the variable must affect the mood of a large chunk of the population so it is likely to influence investors. Thirdly, the effect must be correlated across the majority of individuals within a country.

Terrorist events, that are by default unforeseen exogenous to the stock market shocks, seem the ideal candidate as a proxy for investor sentiment or mood as one may call it satisfying all three criteria. In fact it is rather hard to think of other (social) events causing so pronounced and highly correlated mood swings within a country's population.

Under the null hypothesis of Market Efficiency terrorist activity should not affect stock returns. The alternative, that terrorist incidents significantly affect stock returns, would be compatible with models of investor sentiment. Moreover if investor sentiment was affected by terrorism one could impose further structure on the potential effects. First, on trading days that terrorist incidents have occurred risk-adjusted returns should be significantly lower. Second, the (absolute) impact on stock returns should be an increasing function of the degree of the event's severity. The negative impact on returns is expected since terrorist activity is assumed to induce a deterioration of sentiment.

The dependence of the effect on severity captures the extent that the population is affected and also whether it is correlated across individuals. It can be seen clearly as the severity of a terrorist attack increase so does the likelihood that's it affects, and in the same direction, a higher proportion of the population.

2.9 Impact of Oil Prices

Changes in the price of crude oil are often considered an important factor for understanding fluctuations in stock prices. In the long-term, the influence of oil price on stock prices prevail, as oil price effect transmits to macroeconomic indicators that influence liquidity of these markets.

This suggests that the effect of oil price changes transmit to fundamental macroeconomic indicators, which in turn affect the long-term equilibrium linkage between these markets. Conditions that reflect change in observable factors that affect an economy. Second, there are speculative factors that operate entirely within a market over short periods.

These two sets of conditions sometimes work together, and sometimes opposite. Thus, a given market can be speculatively strong, but fundamentally weak. On theoretical grounds, oil-price shocks affect stock market returns or prices through their effect on expected earnings (Jones et al., 2004).

One rationale of using oil price change as a measure for change in key macroeconomic indicators is that value of stock prices in theory equals discounted expectation of future cash flows (dividends), which in turn are affected by macroeconomic events that possibly can be influenced by oil shocks. Since oil price increase, it raises the production cost in industrial oil consuming countries. Due to increase Oil price it is expected to raise the cost of imported capital goods, therefore it may adversely affecting the prospects of higher profits for firms traded in Indian stock markets.

On the demand side, oil price increases drive up the general level of prices, which translates into lower real disposable income, and consequently reduces demand. Besides the direct impact on general price levels, oil prices also have secondary effects on wage levels, which in combination with high general prices result in increased inflation. Inflationary pressures are usually controlled by central banks through increase in interest rates. Given the higher interest rates, bond investments will become more attractive than stock investments, which will result in lower stock prices.

Finally, increasing import prices trigger a deterioration of the terms of trade and therefore impose welfare losses. Oil-exporting countries, on the other hand, benefit from higher export revenues, which could be diminished by a decline in a global oil demand (Bhar and Nikolova 2009).

Liberalization and integration of international markets economies (Chittedi 2010, 2011), characterized with increased level of capital flows and international investments in emerging have made global investors more vulnerable to oil price impact on emerging stock markets. Therefore, understanding the level of susceptibility of stock prices in emerging economies to movement in global oil prices is very important. However, Huang, Masulis, and Stoll (1996), found no negative relationship between stock returns and changes in the price of oil futures. Many of these studies determined the relations between oil prices and stock prices, and they have featured only developed countries, and the situations in developing countries have not been discussed.

2.10 Volatility

Stock prices are changed everyday depending upon the market. Buyers and sellers cause the prices to change as they decide how valuable each stock is. Financial markets exhibit dramatic movements, and stock prices may appear too volatile to be justified by changes in fundamentals. Such observable facts been under scrutiny over the years and are still being studied vigorously (LeRoy and Porter, 1981; Shiller, 1981).

Basically, share prices change because of supply and demand. If more individuals want to buy a stock, than sell it, the price moves up. Conversely, if more people want to sell a stock, there would be more supply (sellers) than demand (buyers); the price would start to go down. Volatility in the stock returns is an integral part of stock market with the alternating bull and bear phases. In the bullish market, the share prices soar high and in the bearish market share prices fall down and these ups and

downs determine the return and volatility of the stock market. Volatility is a symptom of a highly liquid stock market.

An increase in stock market volatility brings a large stock price change of advances or declines. Investors interpret a raise in stock market volatility as an increase in risk of equity investment and consequently they shift their funds to less risky assets. Changes in local or global economic or/and political environment influence the share price movements and show the state of stock market to the general public.

Pandian and Jeyanthi (2009) in their article emphasized the fact that the earthquake in Gujarat in 2001, rising interest rates and inflation, the proposal to increase the tax on distribution of dividends by companies and by MFs from 10 per cent to 20 per cent did not speak well of the corporate sector. Moreover, scams have over and over again proved the vulnerability of the regulatory network and the system of the finance and capital markets over the years.

One can see below some of the important sentiment proxies, and previous work done on few of them, such as-:

Investor Mood. Some papers have creatively tried to connect stock prices to exogenous changes in human emotions. Kamstra, Kramer, and Levi (2003) find that market returns are on average lower through the fall and winter, which they attribute to the onset of seasonal affective disorder, a depressive disorder associated with declining hours of daylight. They report patterns from different latitudes and both hemispheres which also appear consistent with this interpretation.

Retail Investor Trades. The inexperienced retail or individual investor is more likely than the professional to be subject to sentiment. Greenwood and Nagel (2006) find that younger investors were more likely than older investors to buy stocks at the peak of the Internet bubble. More generally, Barber, Odean, and Zhu (2006) find in micro-level trading data that retail investors buy and sell stocks in concert retail investors buy and sell stocks in concert, which is consistent with systematic sentiment. Kumar and Lee suggest constructing sentiment measures for retail investors based on whether such investors are buying or selling.

Trading Volume. Trading volume, or more generally liquidity, can be viewed as an investor sentiment index. For instance, Baker and Stein (2004) note that if short-

selling is costlier than opening and closing long positions (as it is, in practice), irrational investors are more likely to trade, and thus add liquidity, when they are optimistic and betting on rising stocks rather than when they are pessimistic and betting on falling stocks. Market turnover, the ratio of trading volume to the number of shares listed, is a simple proxy for this concept.

Option Implied Volatility. Options prices rise when the value of the underlying asset has greater expected volatility and options pricing models such as the *Black–Scholes formula*⁴ can be inverted to yield implied volatility as a function of options prices. The Market *Volatility Index* (“*VIX*”)⁵, which measures the implied volatility of options on the Standard and Poor’s 100 stock index, is often called the “investor fear gauge” by practitioners.

Insider Trading. Corporate executives have better information about the true value of their firms than outside investors. Thus, legalities aside, executives’ personal portfolio decisions may also reveal their views about the mispricing of their firm. If sentiment leads to correlated mispricing across firms, insider trading patterns may contain a systematic sentiment component.

IPO Volume: The underlying demand for initial public offerings is often said to be extremely sensitive to investor sentiment. Investment bankers speak of “windows of opportunity” for an initial public offering that capriciously open and close. Such caprice could explain why IPO volume displays wild fluctuations, with a rate of over 100 issues per month in some periods and zero issues per month in others.

Trading volume: High market liquidity, or trading volume, has been argued to be a symptom for over-valuation (Baker, Stein 2004). In a market with short-sale constraints, retail investors are more likely to participate if they are optimistic. This increases trading volume, so that liquidity should increase when traders are optimistic

⁴ A model of price variation over time of financial instruments such as stocks that can, among other things, be used to determine the price of a European call option. The model assumes that the price of heavily traded assets follow a geometric Brownian motion with constant drift and volatility. When applied to a stock option, the model incorporates the constant price variation of the stock, the time value of money, the option's strike price and the time to the option's expiry.

⁵ **Volatility Index (VIX)** is a key measure of market expectations of near term volatility. As we understand, volatility implies the ability to change. Thus when the markets are highly volatile, market tends to move steeply up or down and during this time volatility index tends to rise. Volatility index declines when the markets become less volatile

and betting on rising stocks rather than when they are pessimistic and betting on falling stocks.

Dividend premium: In general, dividend-paying stocks have a predictable income stream which investors perceive as a salient characteristic for safety (Baker, Wurgler 2006). When dividends are at a premium, firms are more likely to pay them, and less so when they are at a discount (Fama, French 2001). Thus, on the margin, firms appear to cater to prevailing sentiment for or against “safety” when deciding whether to pay dividends.

Terrorism has already been discussed above as a proxy. Other than this, the macro-economic events also have been discussed above in detail are optimal candidates as proxies.

2.11 Conclusion on Literature Review

Previous papers which have been mentioned above in the review have identified different sentiment proxies and performed empirical studies to determine the influence on the aggregate market returns and its ability to predict future returns. Presently there are a number of methods to proxy market sentiment. Surveys are regularly conducted in many countries to see how investors foresee the direction of, the overall economy and the stock markets. For example, in the US, investors’ surveys are regularly conducted by many organizations like American Association of Individual Investors (AAII), Investors Intelligence (II), University of Michigan’s Consumer Confidence Index Survey to, name a few. Fisher and Statman (2003) find that increase in the consumer confidence index is associated with an increase in the bullishness of individual investors. Qui and Welch (2006) find consumer confidence index to be useful predictor of excess returns on small stocks. There are still very few studies done on emerging markets like India, most of which have been also mentioned above in the previous sections like Bennet et al., (2011, 2012) , Loomba, (2012) , Kaur (2004), which are the most prominent. By performing this research, the researcher aims to provide a comprehensive study taking most of the literature available on Indian Investor sentiment and the stock market volatility.

Chapter 3: Research Methods and Methodology

3.1 Introduction

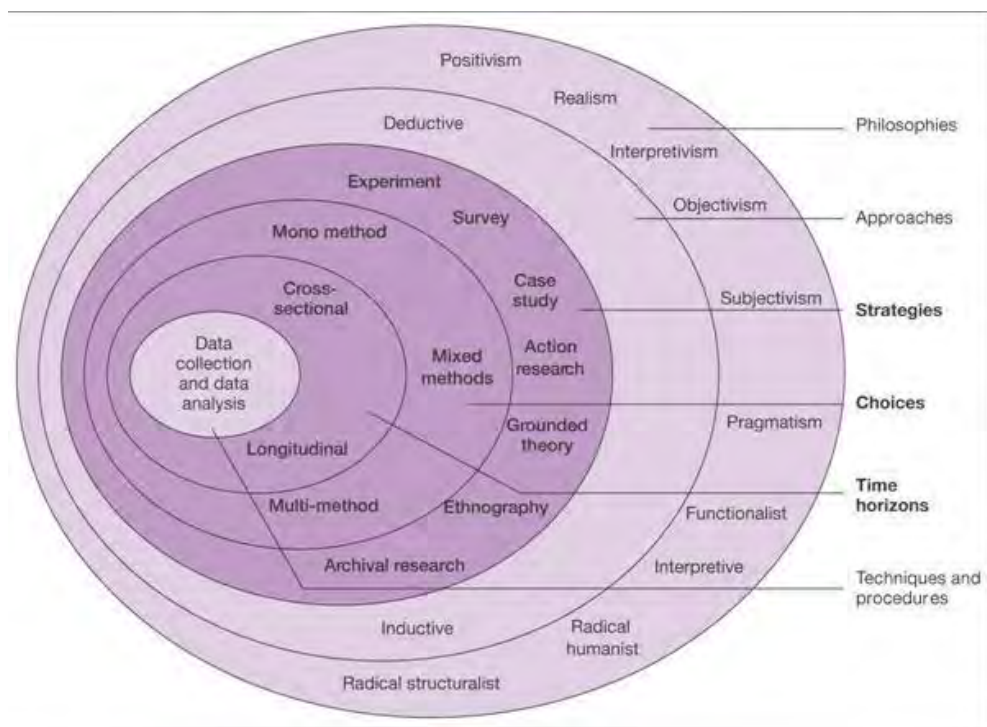
The foremost step in conducting any Masters level dissertation is to identify a clear and firm research methodology to follow so as to ensure that the research gathered is suitable to address the main research objectives. Blumberg et al (2009) has identified nine criteria which together make up “desirable, decision oriented research” which are:

1. The purpose of the research should be clearly defined and common concepts.
2. The research procedure used should be described in sufficient detail to permit another researcher to repeat the research for further advancement, keeping the continuity of what has already been attained.
3. The procedural design of the research should be carefully planned to yield results that are as objective as possible.
4. The researcher should report with complete frankness, flaws in procedural design and estimate their effects upon the findings.
5. The analysis of data should be sufficiently adequate to reveal its significance and the methods of analysis used should be appropriate. The validity and reliability of the data should be checked carefully.
6. Findings should be clear and unambiguous.
7. Conclusions should be confined to those justified by the data of the research and limited to those for which the data provide an adequate basis.
8. Research design clearly described and carefully planned
9. Greater confidence in research is warranted if the researcher is experienced, has a good reputation in research and is a person of integrity.

The research will follow Blumberg’s methodology in order to ensure that a suitable standard of research is attained.

Kothari (2009) stated that the qualities of a good research can be obtained by “developing a systematic approach” in a coherently “logical flow”. He also stated that a good research is “empirical” which means that it should be related basically to one or more aspects of a real situation. Apart from this a good research should also be “replicable” so that the results are verified by replacing the study and thereby building a sound basis for decisions.

Although Blumberg’s methodology will be used to ensure methodical conventionalism and intellectual soundness of the design, the appropriate research methodology to follow can be taken up by considering in turn each layer of the Saunders et al (2009) ‘research onion’ as shown in the figure below.



3.1 3 The Research Onion, Mark Saunders, Philip Lewis and Adrian Thornhill, 2003

3.2 The Research Philosophy

According to Saunders et al (2009) the research philosophy or epistemology adopted by the researcher contains important assumptions about the process in which the researcher looks at the world. These assumptions will in turn influence the research strategy chosen and the methods chosen as a part of the research strategy. In other words, research philosophy plays a vital role in shaping the entire research. The philosophy adopted will depend upon the researcher's "particular view of the relationship between knowledge and the process by which it is developed" (Saunders et al. 2009).

The foremost step in determining which research philosophy is most suitable to explain the research objectives is to consider the two most distinguished research philosophies, Positivism and interpretivism. "Positivism is the position that advocates the application of the methods of the natural sciences to the study of social reality and beyond" (Bryman and Bell, 2011). This often involves manipulation of reality with variations in only a single independent variable so as to identify regularities in, and to form relationships between, some of the constituent elements of the social world. With positivism, existing theory is used to develop hypothesis. Then the research tests the hypotheses which in turn lead to development of further theories. Positivism states that only confirmed knowledge can be viewed as knowledge and is concerned with facts rather than impressions. The researcher is seen as external or independent of the collection of data and therefore can do little to affect the data. The assumption is that the researcher can therefore maintain "an objective stance" (Saunders et al. 2009).

Interpretivism on the other hand is the name given to the opposing philosophy to positivism. It views the subject matter of social sciences, that is, people and institutions, as fundamentally different from the subject matter of the natural sciences. It is far more subjective and focuses on exploring the complexity of the social phenomena with a view to gaining interpretive understanding. According to Blumberg et al (2008), interpretivists argue that "simple fundamental laws are insufficient to understand the whole complexity of social phenomena". They contend that only through the subjective interpretation of and intervention in reality can that reality be fully understood. In rather direct contrast to positivism, interpretivist stance calls on

the researcher to adopt a sympathetic stance. Here, the researcher is “value bound, the researcher is part of what is being researched and cannot be separated and so will be subjective”. (Saunders et al. 2009)

As neither objectivity of positivism nor the subjectivity of interpretivism could be considered an apt philosophy to follow in order to reflect the research objectives, the researcher was obliged to consider the third option which is realism. The philosophy of realism lies somewhere between positivism and interpretivism. Blumberg et al. (2008), highlight the fact that realism is a research philosophy sharing principles of both, positivism and interpretivism. Like positivism, it takes in the existence of a reality independent of human beliefs and behavior, at the same time it understands that understanding people and their behavior requires agreement of the subjectivity inherent to humans. There are two forms of realism, direct realism and critical realism. Saunders et al (2009) stated that direct realism points out to what we experience through our senses portrays the world accurately whereas critical realists argue that as researchers, we will only be able to understand what is going on on the social world if we understand the social structures that have given rise to phenomena that we are trying to understand. The researcher’s research into understanding investor sentiment is in line with direct realism as it only reasons the phenomena and does not recommend any change.

The researcher has therefore chosen Direct Realism to be the best suited research philosophy to apply as given its nature, it enables scientific data and tries to examine its validity.

3.3 The Approach Layer

In order to determine which research approach is the most appropriate to follow, the tried to get a clear understanding of the two different reasoning approaches which are deduction and induction.

According to Cooper and Schindler (2008), with an inductive approach there is no strength of relationship between theory and research, reasons and conclusions. In induction therefore the researcher usually draws conclusions from one or more facts or pieces of evidence. The conclusion explains the facts and facts support the conclusion. However, they state that the conclusion is only hypothesis and “an inferential jump beyond the evidence presented”. Lincoln and Dengin (2006) state this approach is concerned to an important observation or a solo case study to the wider theories and generations. This approach is also known as bottom-up approach.

This approach seems to be more subjective and intends to delve deep into the human psyche. Although, this research is based on behavioral finance but this approach will not be suitable one to follow for this research as this research is based on a science and the conclusion is based on a logic which can be proved scientifically. Also the observations are made in a quantitative way.

Deductive theory, on the other hand, represents the most common view of the type of relationship between theory and research. According to Fisher (2004), deduction is when a conclusion is drawn that follows in logic from the premise that is stated, i.e. it does not depend on observations or experience and it simply is a matter of logic. Saunders et al (2009) elaborate the thinking further by highlighting the fact that deductive approach has its foundations in scientific research and includes the development of hypothesis from theory as the first as the first step. Data is then collected so as to confirm or reject the hypothesis. Fisher (2004) calls it a top down approach. According to Saunders et al. (2009), deduction possesses several important characteristics. First, there is the search to explain causal relationships between variables. In order to pursue the principle of scientific rigour, deduction dictates that the researcher should be independent of what is being observed. An additional important characteristic of deduction is that concepts need to be operationalised in a way that enables facts to be measured quantitatively.

Robson (2002) as cited by Saunders et al. (2009) lists five sequential stages through which deductive research will progress:

1. deducing a hypothesis from the theory;

2. expressing the hypothesis in operational terms which propose a relationship between two specific concepts or variables;
3. testing this operational hypothesis;
4. examining the specific outcome of the inquiry;
5. if necessary, modifying the theory in the light of the findings.

This approach is appropriate for the research at hand as there are hypothesis deduced and checked and the approach is more rigid and scientific in its entirety. Also the researcher needs to explain the causal relationship between the two variables which are Investor sentiment and stock market volatility. Thus the research will follow the deductive approach.

3.4 Research Strategy

Saunders et al (2009) defined research strategy as “the general plan of how the researcher will go about answering the research questions”. On a similar note, Bryman (2008) identified research strategy as “a general orientation to the conduct of research”. According to Remenyi et al (2003), research strategy provides the overall direction of the research including the process by which the research is conducted. Saunders et al (2009) highlighted that appropriate research strategy has to be selected based on research questions and objectives, the extent of existing knowledge on the subject area to be researched, the amount of time and resources available, and the philosophical underpinnings of the researcher. Taking a different view, Yin (2003)

proposed that a particular research strategy has to be selected based on three conditions; the type of research question, the extent of control an investigator has over the actual behavioral events, and the degree of focus on contemporary or historical events (see diagram). There are different strategies which have distinctive characteristics based on the above criteria. Both Yin (2003) and Saunders et al (2009) have acknowledged that though various research strategies exist, there are large overlaps among them and thus important considerations would be to select the most advantageous strategy for a particular research study. Some of the common strategies used in business and management are experiment, survey, case study, action research, grounded theory and various others.

Some of the options provided above such as Action Research and Experimentation could be discounted upfront as not being suitable to appropriately address the research question. Other options such as Case study and Survey needed further consideration due to some similarities in both methods as the use of multiple sources of data to validate a scientific statement and form an opinion on a particular area of research.

The researcher came to the conclusion that a case study strategy would be the most suitable strategy to adopt for the research. Robson (2002) as cited by Saunders et al. (2009) defines a case study as “a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidences”. The technical characteristics of Yin’s (2003) definition included; a case study deals with technically distinctive situation, relies on multiple sources of evidence, and benefits from prior development of theoretical prepositions to guide data collection and analysis.

Strategy	Form of Research Question	Requires Control over event	Focus on contemporary events
Experiment	How, why	Yes	Yes
Survey	Who , What, Where, How many, How much	No	Yes
Archival analysis	Who , What, Where, How many, How much	No	Yes/ No
History	How, Why	No	No
Case study	How, Why	No	Yes

3.1 4 The Table for Research Strategy, Yin 2003

Saunders et al. (2009) notes that a Case study strategy is often used as an explanatory research and the data collection techniques are likely to be numerous and used in combination. Questionnaires although mainly thought of as part of a survey strategy, may also be used in case study strategy. The researcher here intends to use different data collection techniques, namely questionnaires along with historical data which has been recorded earlier.

3.5 The Choices Layer

The research design which would be followed for the research is the ‘Multiple-methods’ approach as after considering all the methods available (i.e. mono method

and multiple method and its variants), it has been the researcher's opinion that this would provide a more detailed and comprehensive interpretation of the primary data which the researcher would collect and analyze. This signifies that more than one data collection technique has been used and it is restricted exclusively to the quantitative method. To state it more precisely, the researcher has chosen a "multi-method quantitative study".

The researcher has chosen the "multi-method quantitative study" as it uses different data collection methods which are exclusively confined in the quantitative area. The quantitative data collection technique will be used in which the data from the stock markets would be collected and again to get a feel of the investor sentiment, a quantitative survey questionnaire will be used, that would be another data collection.

The researcher is aware of the advantages and disadvantages of the quantitative technique used. Using questionnaires (in context of a survey strategy as a part of a case study) is understandably simple to administer, the use of fixed response can decrease the variation in responses which results in understanding and analysis of the data obtained being more straightforward. At the same time, the researcher is also mindful that if the options in a fixed response are too limited and rigid, there is a apprehension that it might result in the questions being 'dominant' and the results therefore being not up to the mark and inaccurate. Also there could be a possibility that the researcher is not available to the participants when they are completing the survey which may lead to the participant misinterpreting the questions or/and motives behind the survey.

The researcher was cautious of the drawbacks of the methods throughout the process and felt that the positive aspects of the process outweighed the negative aspects throughout the research.

3.6 Time Horizons Layer

An important criterion in considering which research methodology should be followed is to consider the time-horizon that will be used. The two options for the time horizon are cross-sectional and longitudinal. Saunders et al. (2009) defines cross-sectional research being a “snap-shot of one point in time” whereas longitudinal research being a research which has been undertaken over a period of time and allows the researcher to check the developments and the changes over this period.

The time horizon for this dissertation will be cross-sectional rather than longitudinal as the objective of this dissertation is to discover investor sentiments of Indian investors at a single point in time, although at different junctures pertaining to different events in history and relate them to the stock market volatilities at those junctures.

3.7 Data Collection and Data Analysis

There are two main types of data, primary data and secondary data. The primary data is the fresh information which is collected by the researcher and the secondary data is the research information that already exists in the form of publications or other electronic media which is collected by the researcher. According to Kothari (2009) primary data is original information collected for the first time. On the other hand secondary data is in information which has been collected previously and that has been put through the statistical process. The latter is typically data that has been obtained by means of literature studies. For the purpose of this dissertation the researcher will use a combination of both primary and secondary data to address the research objectives.

3.7.1 Secondary data collection

The secondary data that has been used for this research has been sourced from various academic journals on EBESCO, college library databases. The main searches used were “Stock Market Volatility”, “Behavioral Finance” and “Investor Sentiments”. The data for SENSEX during that period was sourced from the official website of the Bombay Stock Exchange (BSE). Data collected for stock market volatility, the average daily returns and investor sentiment is majorly from sources like Securities Exchange Board of India bulletins (SEBI) and BSE announcements. The sentiment data is sourced from the Boston Analytics Consumer Sentiment Index of India.

3.7.2 Primary Quantitative Data Collection

The primary quantitative data used in this research was gathered through a survey questionnaire. According to Saunders et al (2009) the questionnaire is one of the most widely used data collection techniques within the survey strategy (which the researcher is using as part of a case study) because each person is asked to respond to the same set of questions. Therefore, it provides an efficient way of collecting responses from a large sample. For the purpose of this research the researcher administered the questionnaire personally and was completed by the respondents independently. The respondents were mainly customers (stock-market investors) of two investment banks in India.

The nature of survey questions was firstly to determine a little background information about the current sentiment of investors in India as well as their sentiments during each of the events when they took place. The survey also asks the investors about their future outlook according to their perception of present situation.

According to Saunders et al (2009), the validity and reliability of the data you collect and the response rate you achieve depend largely on the design of your questions, the structure of your questionnaire.

While designing questionnaire, the researcher first needed to consider the research objectives and what the questionnaire was aiming to determine. A review of relevant academic literature also proved very useful in determining questions which needed to be addressed. The questionnaire was the put into place and designed. The questionnaire was a simple one with specific questions which would concern an investor's psyche exclusively. The questions asked about the respondents' perception of current, past and future investment scenario in India as a whole and how some of the major events already mentioned previously affected their investment decisions. All the questions asked were forced choice questions, no open-ended questions were used. This approach was taken to limit the variance in responses and thereby enable better comparison of the responses. However, there were various types of forced questions used in the aim of ensuring the respondents had enough alternatives to choose from and had also considered all possible responses.

3.8 Data Analysis

The researcher used the SPSS tool analyze the findings and the data. The data as mentioned previously has been taken from various sources, collected and then worked upon using the SPSS tool.

3.8.1 Population and Sample

For the investor sentiments, when determining the most appropriate mode of administration for the survey, the researcher also needed to consider that the research population would only be consisting of investors who invest in stock market (retail as well as institutional). The research population for the quantitative analysis of investor sentiments consisted of customers of two leading investment banks in India. There were 90 respondents who took the survey.

This population was chosen in order to provide a basis for this case study and to get a better understanding of the current and previous sentiment of the investors relating to

the different events at which they took their investment decisions. There is no discrepancy between the two banks as they perform the same functions for their customers who just have a DEMAT Account⁶ in these banks. Thus, as a result the populations of investors are same in each of these banks and so this prevents the final results being skewed toward any particular subset of the population.

The sampling frame used is as follows;

Element: Stock market Investors

Unit: Stock market investors who have been investing in shares and securities since 2008

Extent: Investors in two leading investment banks in India.

Time: May 2013

3.8.2 Ethical issues in data collection

Udo Schüklenk (2005) states that Ethics aims to achieve two fundamental objectives: to tell us how we ought to act in a given situation, and to provide us with strong reasons for doing so.

According to Eriksson et al. (2008), research ethics cover the ways in which a research is conducted, reported and are concerned with the whole research process, starting from the relationship between the researcher and the research objective and ending with writing and publishing the report. Although ethical behaviour should be maintained throughout the entire research process, the need for ethical behaviour is

⁶A DEMAT account is an account which is electronically maintained by the Banks or are provided by Broker agencies in India where you can keep money for transactions in Shares, Mutual Funds, purchase of Gold etc. It has to be tagged with your Savings account from where the money will be paid if you purchase a share etc and receive money when you sell a share etc.

perhaps the most essential throughout the whole research process. As far as the dissertation is concerned, ethics will refer to the practices which are followed to ensure that participants in the study were treated in a manner which entrusted respect, privacy and data confidentiality.

In designing the questionnaire for this research, no personal data was requested and the respondents were only asked to provide the names that too optionally. This according to Eriksson et al (2008) is good practice in an ethical research. Also while designing the questionnaire questions; the researcher was mindful of not using sensitive questions like asking about the investors' income and the amount they invest in shares and securities or their share holdings.

Chapter 4: Data Analysis and Findings

4.1 An Overview

Seasoned investors know that the stock market can be highly volatile. At its extreme, the market's roller coaster-like climbs and dips can create fortunes or result in destitution. But what causes the market to go up or down? A combination of events and factors are typically the cause, but an isolated, large event can also be the culprit.

Global Events

Major events throughout the world can have an impact on stock prices and market fluctuations. Events such as wars, changes in gas and oil prices and political unrest influence investor confidence, which will have an impact on what they do with their money. Changes in the value of foreign currency will also affect foreign markets.

Human Nature

How humans naturally react to rumour and gossip can have an impact on the stock market. If a rumour spread that a company is experiencing financial difficulty or facing a product recall, investors will quickly unload the company's stock. If a company's stock is suddenly hyped by a so-called stock expert, investors will flock to it, and the price will soar.

Market Scandals

Traders tend to frown upon corruption in the stock market. Mutual fund scandals that have occurred in the past few years and corporate corruption such as Enron are two such examples. If people cannot trust the stock market, why would they invest their

hard-earned money in it? In these situations it is harder for the market to go up because there is a lower demand for stocks.

Trends

Investors and analysts study trends of companies and industries to anticipate how stock prices will move. If they detect a pattern that indicates a particular industry is about to experience a period of growth, they will invest heavily in that industry's companies, which will impact stock prices.

In addition to events surrounding a specific industry or company, investors may carefully watch various economic indicators — general trends that signal changes in the economy. Signs that the economy is healthy—and perhaps that most companies are making money—include a rising Gross Domestic Product (GDP), low inflation, low interest rates, low unemployment rates, which means that the government is taking in more money than it is spending.

When interest rates rise, for example, individuals, businesses and the government must pay more to borrow money. That means a business may put off plans to take a loan for a new project, thus needing fewer workers and buying less materials and services from other businesses. For individual consumers, their car or house payment could go up and interest rates on their credit cards rise, making it more expensive to buy on credit.

When economic indicators point to a healthy and growing economy, companies are making money, the future looks good, and people have more money to invest. When this happens, stock prices on the whole generally rise, which is called a bull market. In contrast, when the economy is shrinking, businesses are not making as much money, people are losing jobs and therefore have less money left over after buying necessities, stock prices on the whole generally fall. This is known as a bear market.

4.2 Analysis of Quantitative Data

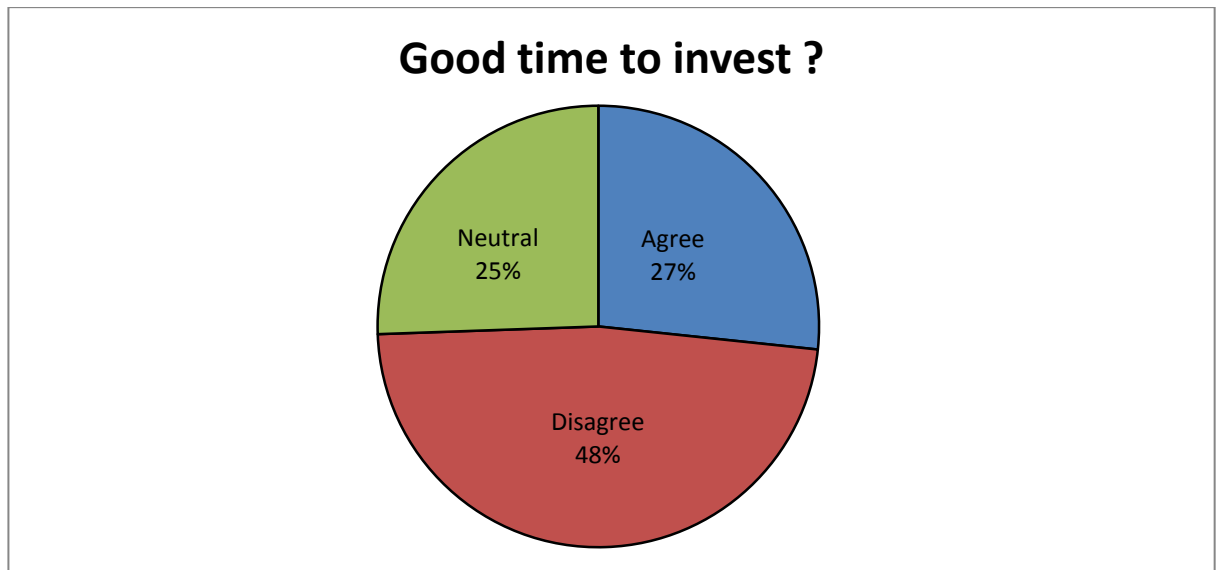
The results of the findings from the questionnaire will be discussed in this section. Out of a huge number of investors, investors from two investment banks were chosen. Each of these investors was asked to complete a questionnaire for the purpose of this research. The population size was 150 and the data being analyzed is based on a 60% response rate (90 responses received). Before moving forward, we need to keep in mind the research question pertaining this questionnaire survey, it was -“What are the attitudes and sentiments of the investors in India in the current scenario as well as in recent past?”

4.2.1 Questionnaire for Sentiment of Investors and Further Details

Research objective 1: To ascertain the attitudes and sentiments of the investors in India in the current scenario as well as in the recent past

Participants in this survey were asked some general questions to build a picture about their current sentiment as investors and their decisions on major political and economic events which took place in India over the last 5 years. The participating investors, as mentioned previously, were chosen from two main investment banks of the country. The participants were asked questions about their current feeling about the market and how they perceived the current government’s economic policies in India. Also questions about the current sentiment about the stock market were asked. They are as follows

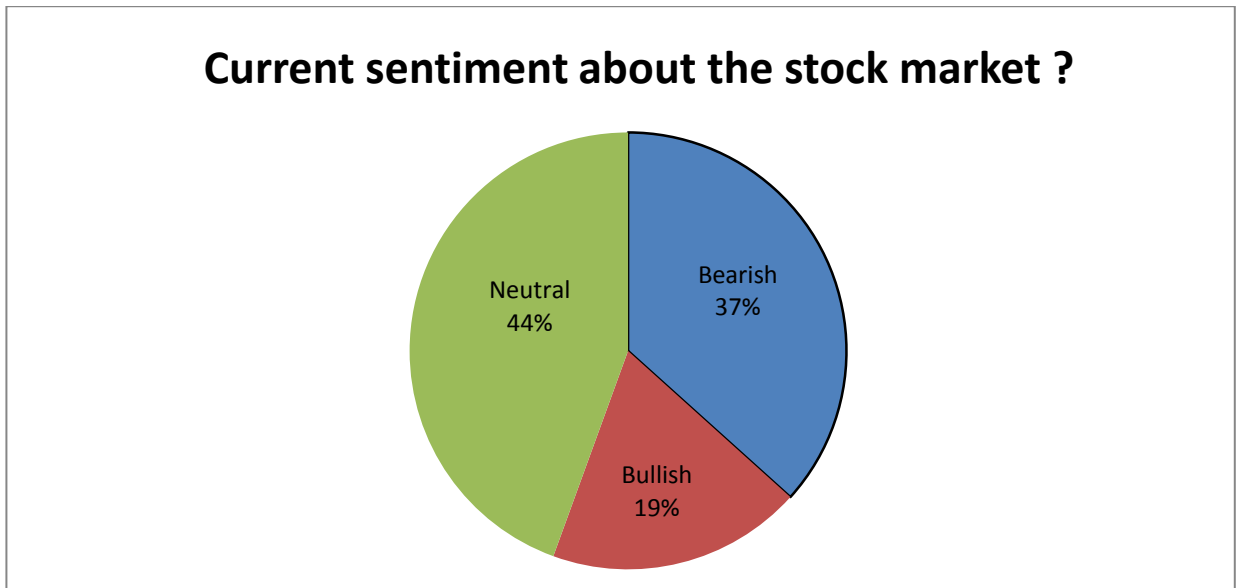
1) *How do you agree or disagree with this statement “Now is a good time to invest in the stock market”*



4.1 22 Agree or Disagree? “Now is a good time to invest”.

The participants were asked if now is a good time to invest in the stock market is. A majority of them (48%) disagreed and indicating that now was not a conducive time to invest in the stock market. Of the 90 investors surveyed 27% said yes now is a good time to invest in the stocks. However, 25% of the participants wanted to remain neutral on their investment decisions on the current scenario.

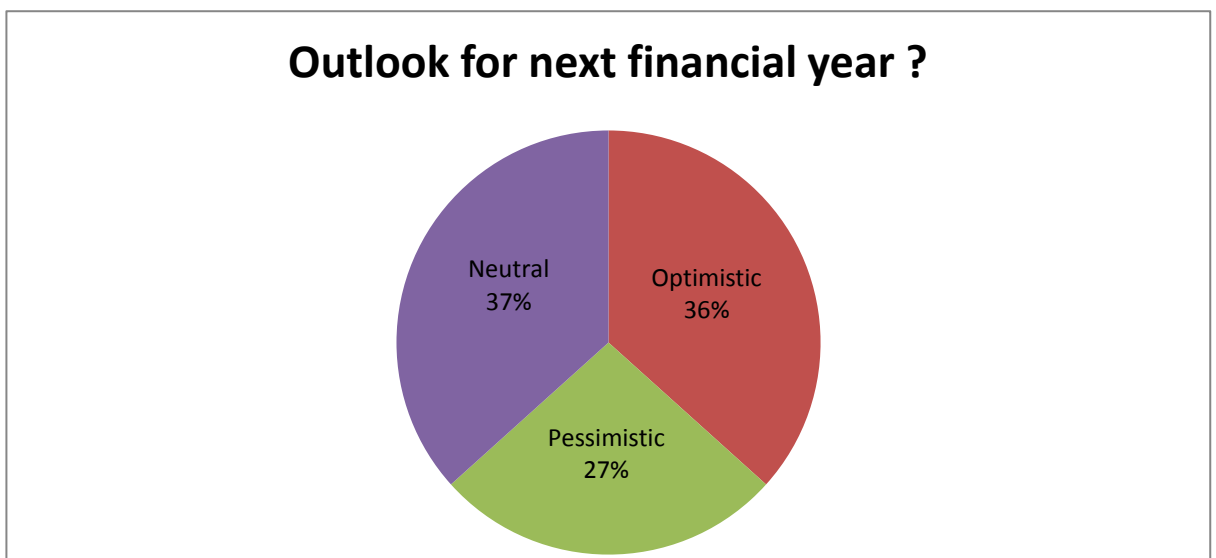
2) *What is your current sentiment about the stock market?*



4.1 23 *Current sentiment about the stock market?*

On asking whether currently if the market is bullish or bearish, most of the investors (44%) thought that they had a neutral view for the market. Moreover, about 37% investors suggested that the market is on a bear-run at the moment. Only 19% investors had a notion that the stock markets are bullish.

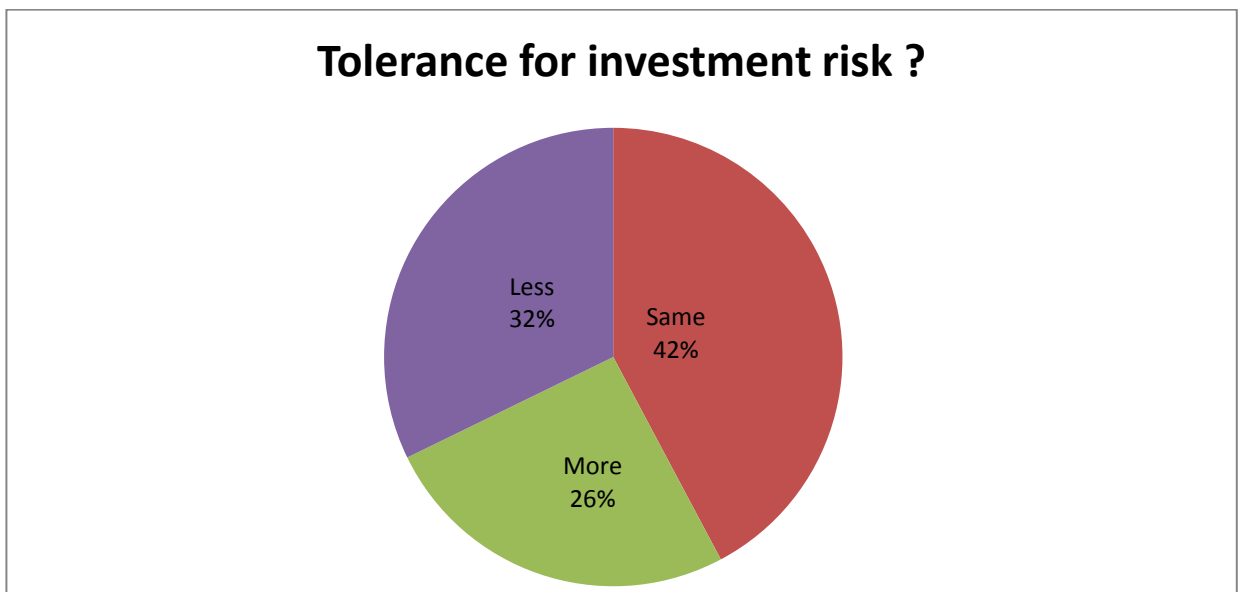
3) Looking ahead to the next financial year, what is your outlook for investing conditions in the Indian Stock Market?



4.1 24: Outlook for the next financial year.

The participants were then asked about the future outlook of the stock markets for the next financial year. The results were demonstrated the optimistic outlook of all Indian investors contrary to what the situation is currently as the previous two questions implied. Only 27% respondents were pessimistic about the investing conditions in the next financial year. Most of the respondents were either neutral (37%) or optimistic (36%) about the next years conditions for investing in stock market.

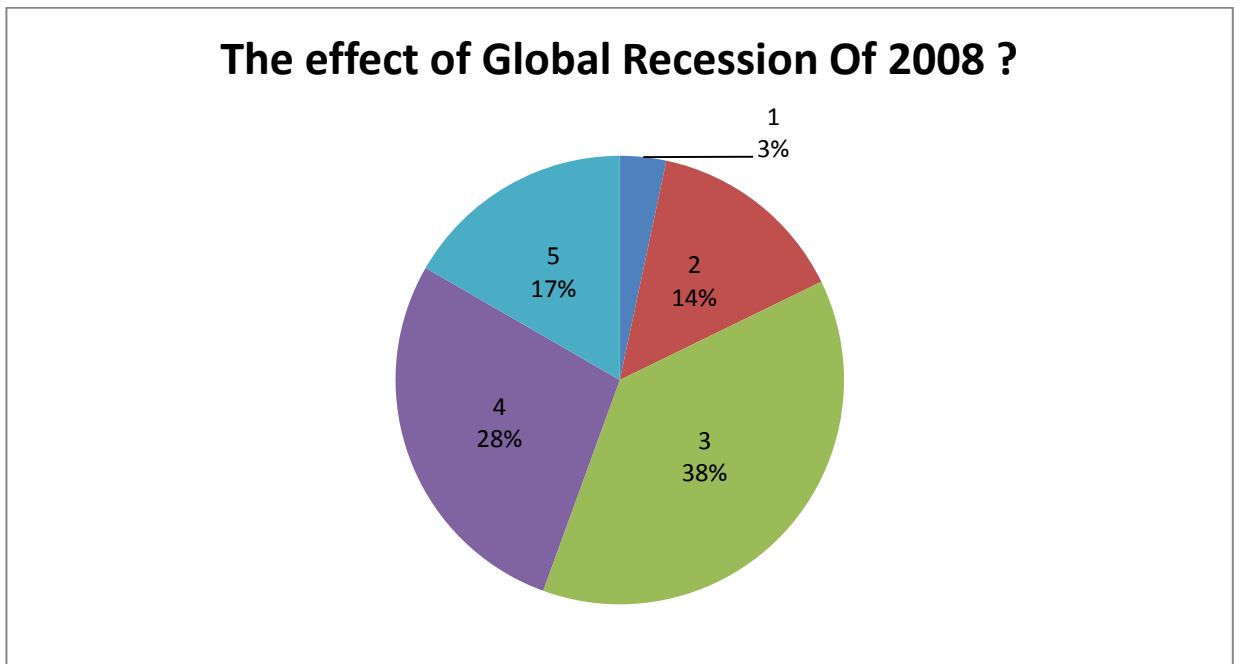
4) How have you changed your tolerance for investment risk over the last 1 year?



4.1 25; Tolerance for Investment risk?

About 42% of investors indicated the researcher that their tolerance for taking risks in the stock markets remains the same over the last year though most already thought that the market at the moment is bearish and it's not a right time to invest. 26% even thought that their level of taking risks in investment has increased and 32% thought that it has decreased. The 32% inferred that seeing the current situation they would take less risk.

5) How would you rate the effect that the global recession of 2008 had on your stock market sentiment? (rate- 1 being “not at all” and 5 being “greatly”)

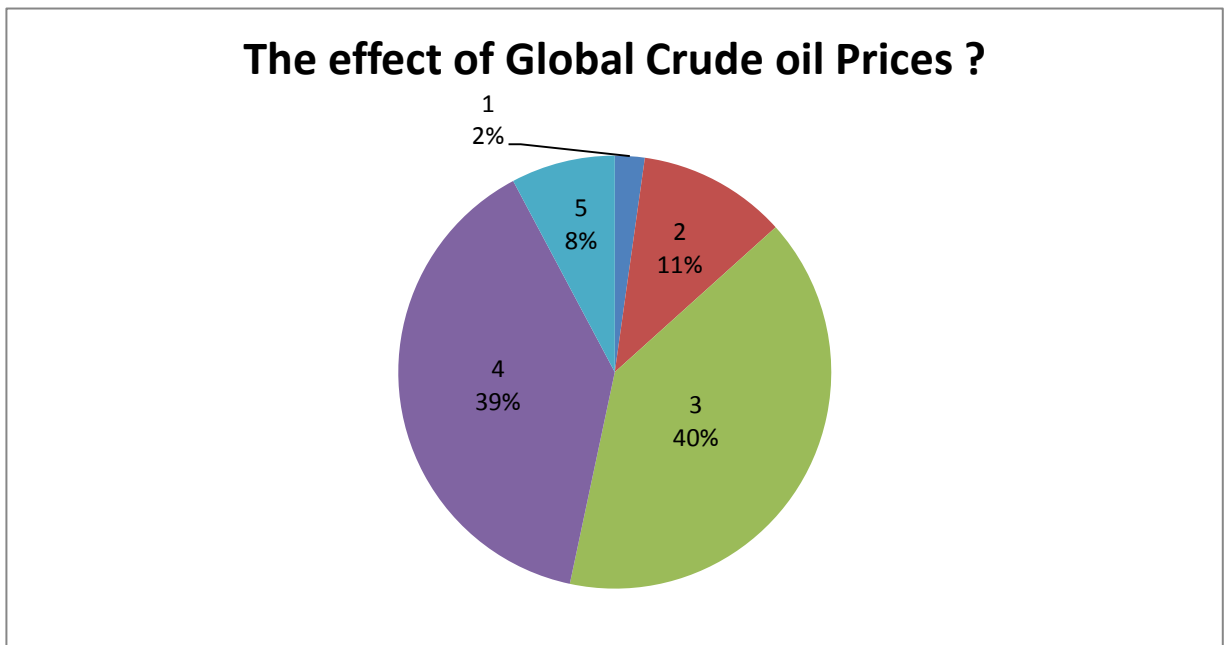


4.1 26: Impact of the Global recession of 2008.

Figure 4.5 shows how the investors rated the effect of the recession of 2008 had on their market sentiments then (“5” being “greatly” and “1” being “not at all”). The researcher found out that majority of investors thought that the recession had somewhat affected their investment decisions. Those who felt that it had greatly affected their investment decisions were only 17% but if the portion “4” (28%) and “5” are added it turns out that 42% of the investors actually had an effect on their investment decisions. Only 3% of the investors thought that the global recession which took place in 2008 had not at all affected their decisions to invest in the stock market. Moreover, 38% (“3”) of the respondents inferred that it had done neither to their investing decisions.

6) *How would you rate the effect that the increase in crude oil prices globally had on your stock market sentiment? (Rate- 1 being “not at all” and 5 being “greatly”)*

The figure 4.6 below shows the results when the respondents were asked whether the fluctuation in the global crude oil prices changed their mind on investing in the stock market. The results were more or less similar to the previous question where about 45% of the respondents indicated that it had a considerable effect on their investment decisions of which

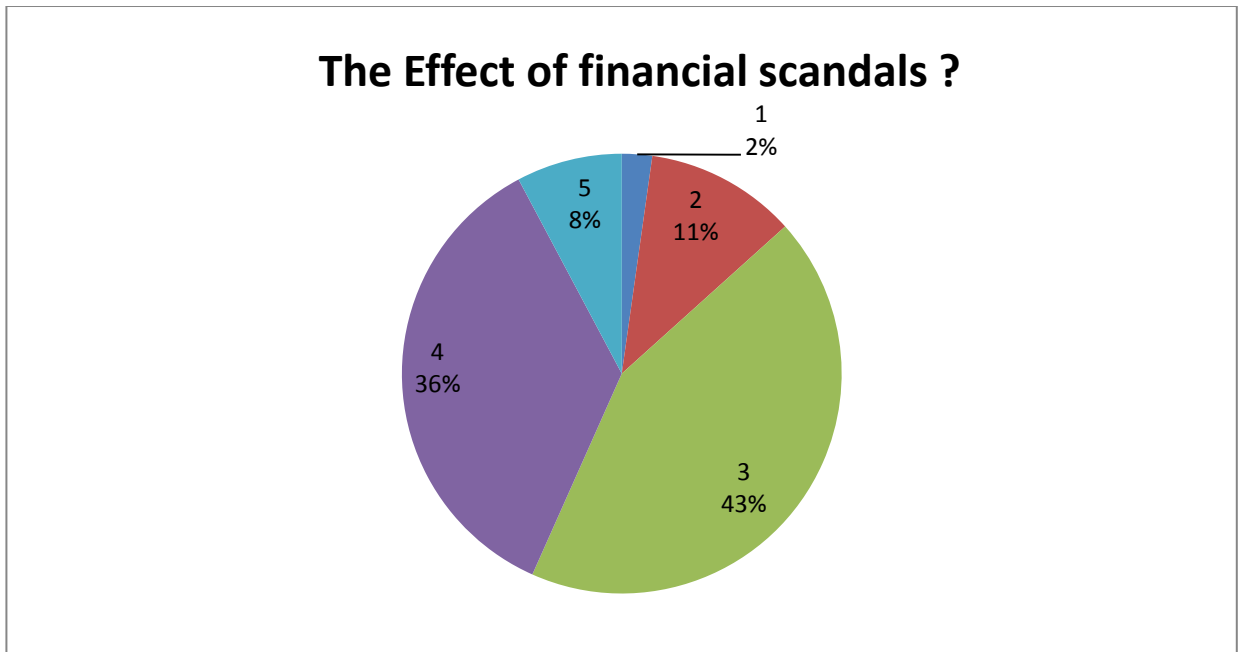


4.1 27: *The Impact of global crude oil prices*

only 8% investors said that it had effected their investment decisions greatly. Another large

Of the investors indicated the oil prices affected them slightly but the greatly. Moreover, only 13% of investors who responded to this questionnaire thought that this event did not affect them much.

7) How would you rate the effect that recent scams (Satyam, 2g, 3g) had on your stock market sentiment? (rate- 1 being “not at all” and 5 being “greatly”)

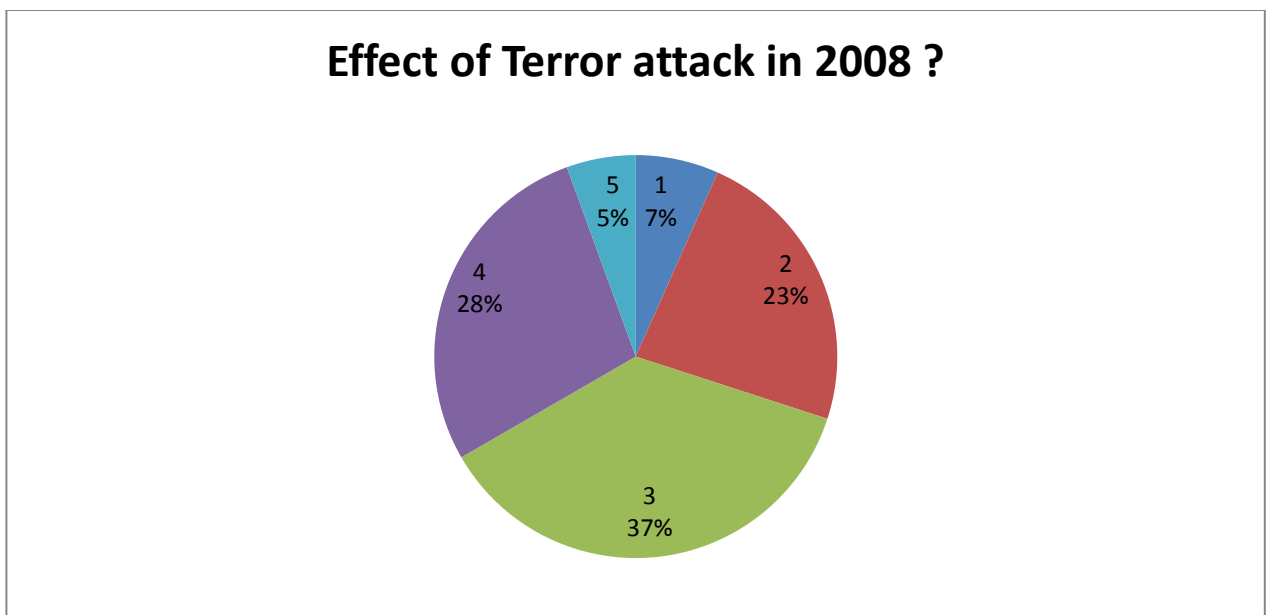


4.1 28: The impact of financial Scandal.

The next question which was asked by the researcher was about how much financial scandal had an effect on an investor’s psyche. About 44% of the respondents inferred that the financial scams had a considerable effect on their investing decisions. Here also a majority (43%) sought to be in the “middle path” and indicated that the various scams effected their decisions mildly. Only about 14% of the investors said that the scams had no or very minimal effect on their investment decisions. Figure 4.7 above shows the result

8) *How would you rate the effect that Mumbai terror attacks of 2008 had on your stock market sentiment? (Rate- 1 being “not at all” and 5 being “greatly”)*

The next question put up by the researcher was whether the Mumbai terror attacks (in which about 180 people lost their lives including various foreign tourists) had an effect on their investment decisions or not. The results for this question were uniformly distributed. Where about

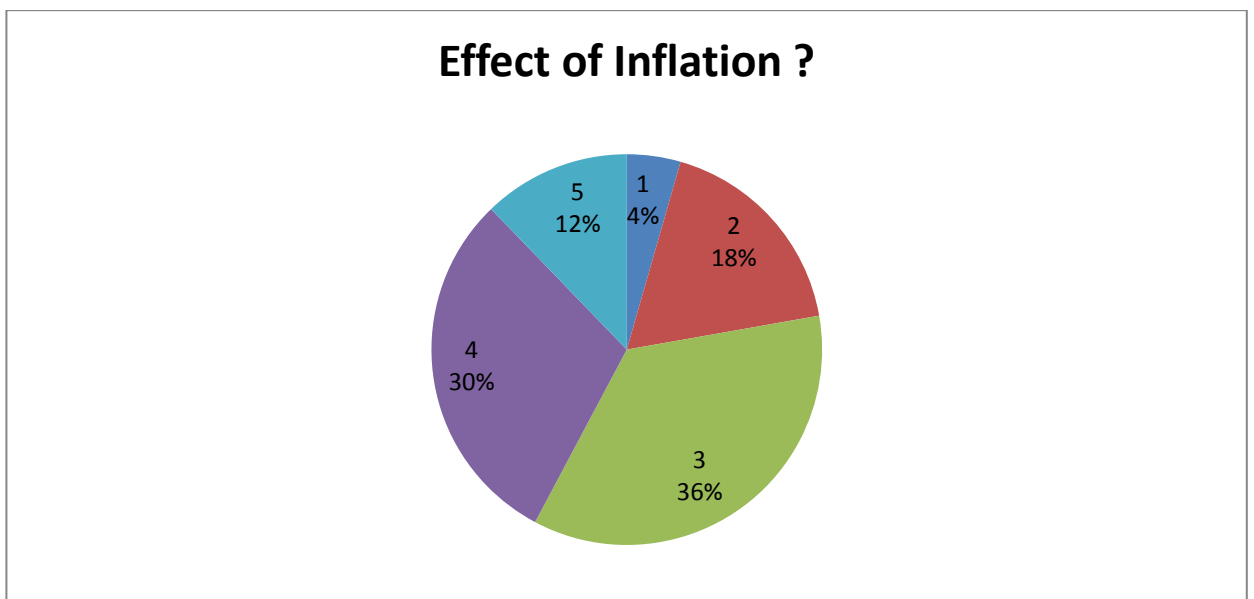


4.1 29: *The effect of 2008 Terror Attack*

33% of the respondents implied that it did affect greatly, 30% indicated that did not affect their investment activities much. For the rest 37% of the respondents, the terror attack had a mild effect on their investment decisions.

9) *How would you rate the effect that the ever increasing inflation has had on your stock market sentiment? (Rate- 1 being “not at all” and 5 being “greatly”)*

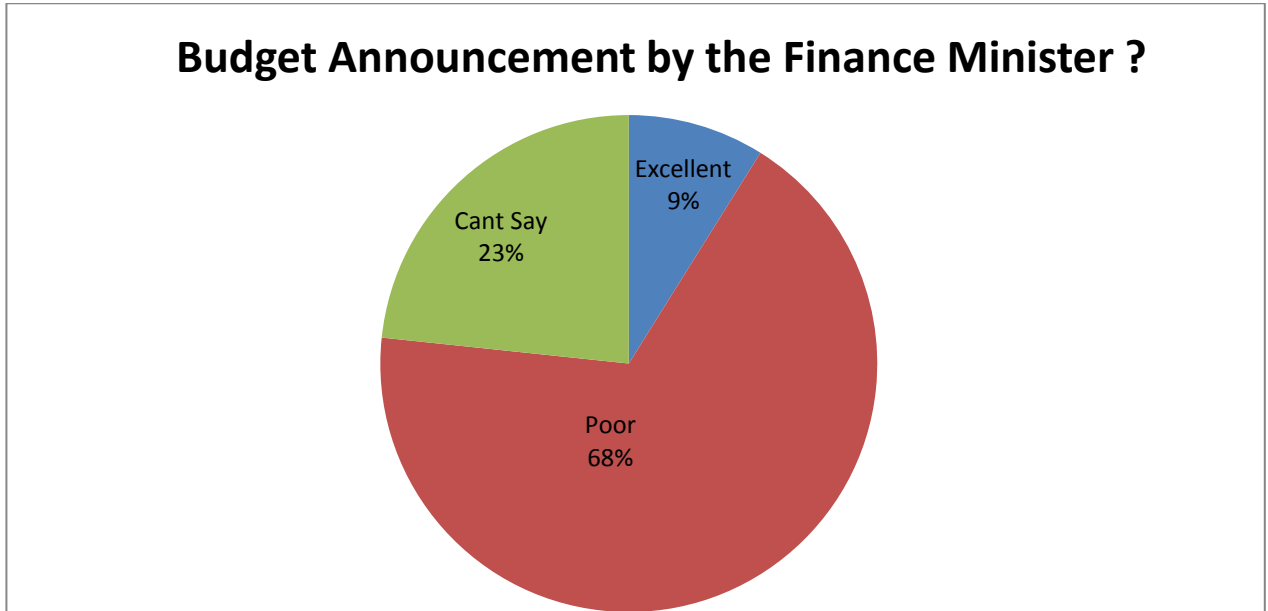
Figure 4.9 below shows the results of the question asked to the participants about whether rising rate of inflation in India has influenced their decisions about investing in stock markets. The majority (42%) of the participating investors believed that inflation did change their



4.1 30: *The Impact of Inflation.*

mindset on decisions related to investing in securities as opposed to 22% of the respondents who indicated that it didn't at all change their investing decisions. A substantial 36% of investors said that it affected their decisions somewhat.

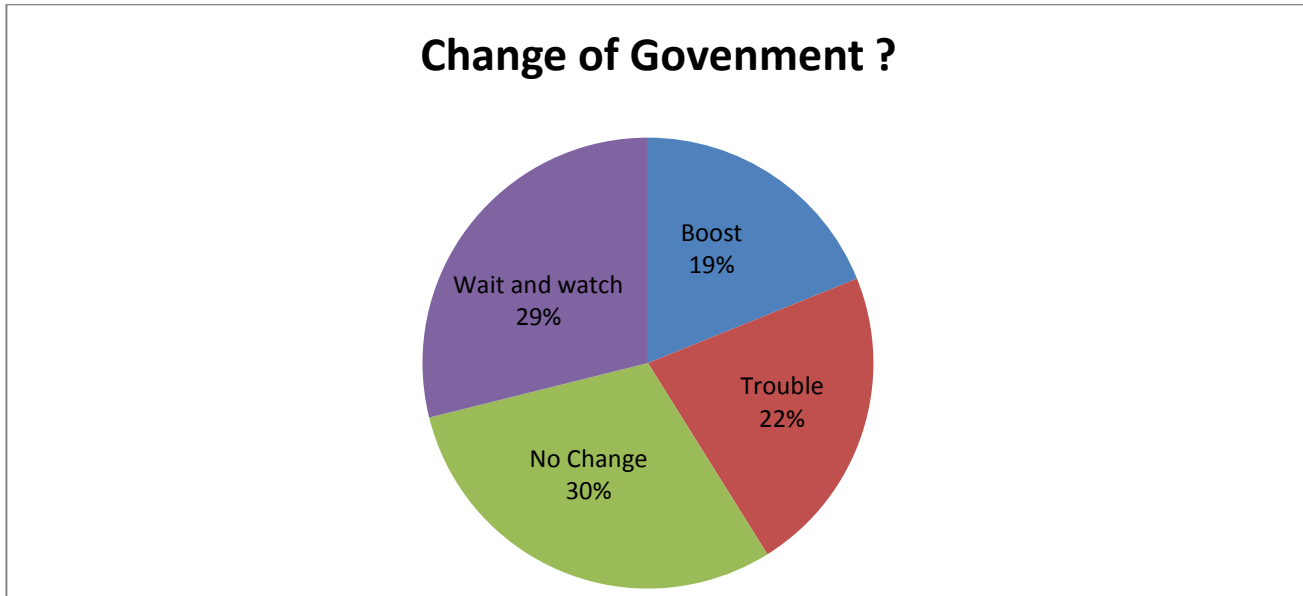
10) *How was this year's budget announcement by Pranab Mukherjee from an investor's point of view?*



4.1 31: *The impact of Budget Announcement by the government (Finance Minister) on the Investors.*

The researcher then asked the respondents about the economic and financial policies of the government for the current financial year. A whopping 68% of the participants believed that the policies of the government for the year very poor and only 9% indicated that they were excellent. Another 23% couldn't come to a conclusion about the economic policies of the government. It is interesting that the government that has been ruling since 2004 has surprisingly been given a poor rating by the investors on their economic policies.

11) *How would it affect your investment decisions if there is a change of government in the next year's elections (If BJP comes to power)?*



4.1 32: Impact of Government Change.

The next and last question in the questionnaire was whether a change in government (elections are due in India in 2014) would give the economy of the country a boost or put it into trouble. Interestingly only 19% of the respondents thought that a change in leadership at the centre would give the economy a boost which is less than investors who thought that a new government would put the economy into trouble. However, 30% of the respondents felt that there would be no change in the economy due to a change in government but at the same time 29% chose to keep a close look on the situation and economic policies of the new government if a change of leadership takes place.

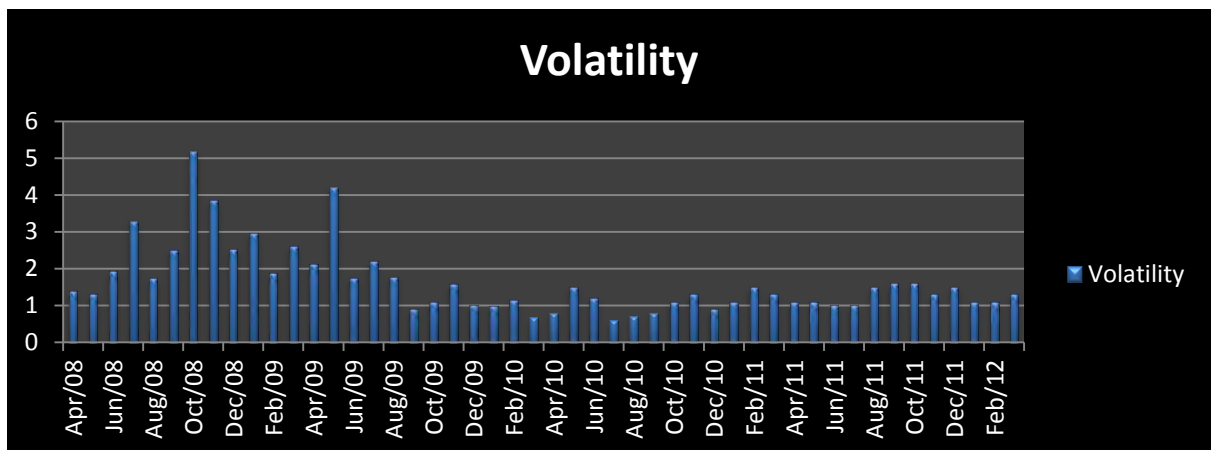
4.3 Analysis of Secondary Quantitative data

The period of four years (2008 to 2011) has been very eventful for the Indian stock Market. It is evident that October 2008, when the US mortgage crises were unveiled, was by far the worst month for investors. The researcher obtained the data from the annual reports of the Securities Exchange Board of India (SEBI) where in the Stock market Volatilities of each of the years was provided, the relevant data is provided in Appendix-1.

Volatility is measured by the standard deviation of logarithmic returns during a certain period. During 2008-09, stock markets all over the world witnessed extreme volatility. The domestic stock market also could not remain unaffected from the global volatile trend. The annualised volatility of BSE Sensex soared to 43.6% in 2008-09 from 30.6 % in 2007-08.

4.3.1 Volatility of BSE-Sensex from 2008-2012

While the returns were most negative, volatility was the highest in 2008 for both Sensex and Nifty. And, the return and volatility was also highest in year of 2009 but it is less than 2008. But the year 2010 the returns and volatility was less as compared to all the four years. So it is observed that when volatility was higher the market was falling. Conversely, market was less volatile while rising. These is because investors asymmetrical response to negative and positive news. The chart in figure 4.12 shows the volatility from 2008 through 2012.



4.1 33: Graph depicting the volatility of Bombay Stock Exchange from 2008-2012

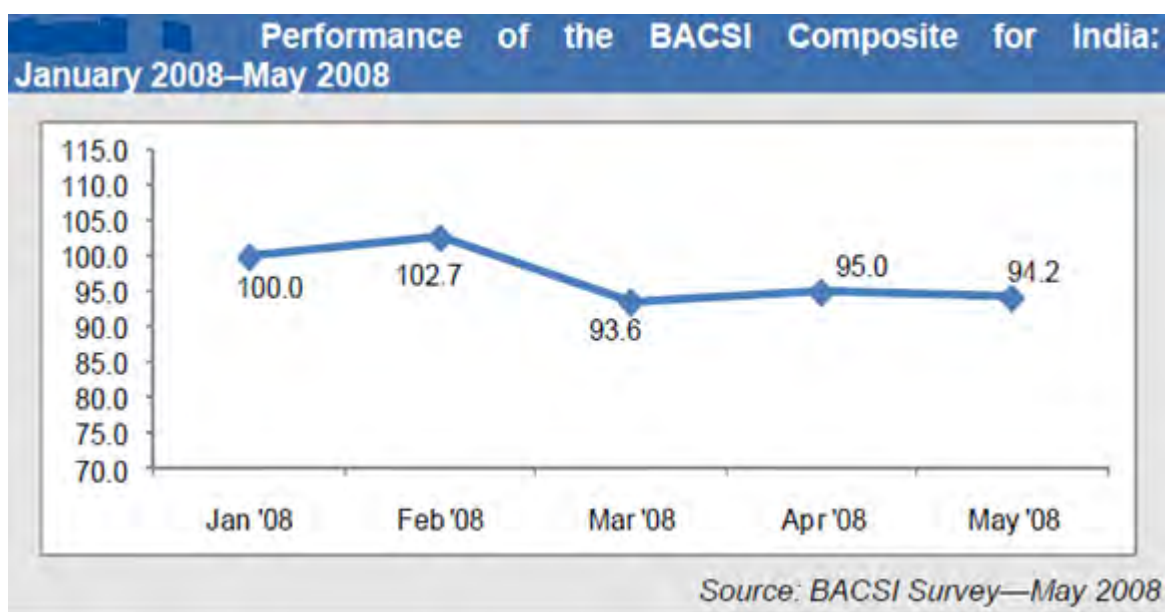
The year 2008’s volatility can be attributed to the global recession which had gripped the whole world by the end of that year. Emerging markets such as India were also hit hard during the year owing to the aftershock from the US and the European markets.

4.3.2 OVERVIEW OF BACSI

The burgeoning Indian economy driven by increased exports as well as expanded domestic consumption by an ever growing middle class has created strong growth opportunities for domestic and international businesses and investors. In order to make effective decisions pertaining to future economic conditions, policymakers, businesses, and investors, need an accurate and reliable assessment of consumer sentiment.

The Boston Analytics Consumer Sentiment Index (BACSI) for India is designed to indicate the level of consumer sentiment over time. Drawing inspiration from consumer sentiment indices in the developed and emerging world—including the University of Michigan’s Consumer Sentiment Survey and the Conference Board’s Consumer Confidence Survey—the BACSI has been carefully designed to reflect the features and conditions of the Indian economy.

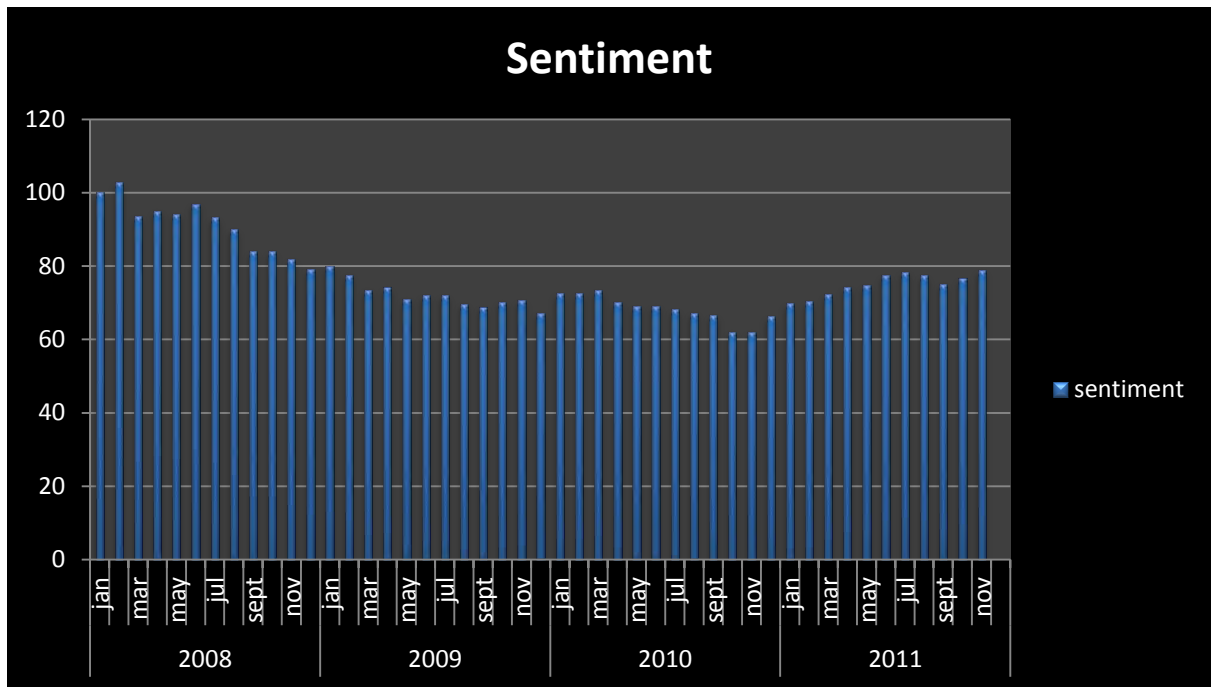
The monthly BACSI is intended to be the most frequently released consumer sentiment index by an independent research organization in India. As an example the researcher has provided here an example of the BACSI for January to May 2008 in the figure below.



4.1 34: Consumer index of India

Figure 4.12 above depicts the performance of the BACSI for India between January 2008 and May 2008. For the month of May, the BACSI stood at 94.2, dropping by 0.8 % from April's levels.

As shown in the figure, consumer sentiment at a nationwide level has fallen. The fall in the BACSI reflects an inclination to save more and spend less and is attributable primarily to increasing inflationary concerns. The persistent decline in the BACSI portends a decrease in aggregate demand on the part of consumers and a possible slowdown in the overall economy.



4.1 35: Graph depicting investor sentiments during the period 2008-2011

Research Objective 2 & 3:

To examine and ascertain the relationship between various important events and stock market volatility

And

To examine if there is any relationship between the important events and investor sentiments

Impact due to Fluctuations Oil Prices

→ T-Test

[DataSet1]

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 op_b_r	.0267	9	.27226	.09075
op_a_r	-.067	9	.3279	.1093
Pair 2 op_b_v	.928889	9	.3003100	.1001033
op_a_v	1.311111	9	.2666667	.0888889
Pair 3 op_b_SI	66.711111	9	2.9293534	.9764511
op_a_SI	75.200000	9	2.6391286	.8797095

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 op_b_r & op_a_r	9	.195	.616
Pair 2 op_b_v & op_a_v	9	.451	.223
Pair 3 op_b_SI & op_a_SI	9	-.601	.087

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 op_b_r - op_a_r	.09333	.38324	.12775	-.20125	.38792	.731	8	.486
Pair 2 op_b_v - op_a_v	-.3822222	.2983613	.0994538	-.6115630	-.1528815	-3.843	8	.005
Pair 3 op_b_SI - op_a_SI	-8.4888889	4.9830825	1.6610275	-12.3192252	-4.6585526	-5.111	8	.001

4.1 36: Result of T-Test on oil Prices

The SPSS test was conducted on the sentiment, volatility and average returns taking into consideration the period when the political crisis in the Middle East was brewing. Here the researcher is highlighting the event when Egypt went into turmoil which led to the fall of the dictatorship in Egypt. This indeed affected the oil prices all over the

world as people of the other Middle East countries tried to rise against dictatorship in other Middle-Eastern countries like Syria.

From the results obtained we find that in India the average daily returns were not significantly affected as the value is above 0.05.

However, volatility as well as the investor sentiment was significantly impacted. This can be seen from the results that the difference between volatility before and after the crisis is significant at 95% confidence level and the investor sentiment was also significantly different before and after the event and the significance is at 99% confidence level.

The oil prices in India have not affected the average daily returns much as is evident from the results above

Hypothesis 1: No significant impact on the average daily returns due to the Middle-East crisis.

Alternate hypothesis 1: significant impact on the average daily returns due to the Middle-East crisis.

So according to the results of the paired sample T-test we can see that there is not a significant impact of the crisis on the average daily returns as the value is greater than 0.05, so we **accept the null hypothesis 1** which says that there was no significant impact of the Middle-East crisis on the average daily returns and we reject the alternate hypothesis.

Hypothesis 2: no significant impact on the stock market volatility due to the Middle-East crisis.

Alternate hypothesis 2: significant impact on the stock market volatility due to the Middle-East crisis.

According to the results of the test conducted, we can see that there is a significant impact of the oil prices on the stock market volatility as the value is less than 0.05, this indicates a confidence level of 95% so we reject the null hypothesis and **accept**

the alternate hypothesis 2 which says that there was a significant impact of the Egyptian revolution on the volatility of the stock market.

Hypothesis 3: no significant impact on investor sentiments due to the Middle-East crisis.

Alternate hypothesis 3: significant impact on investor sentiments due to the Egyptian revolution

Here as we can see from the results of the test that there is a significant impact of the oil prices on the sentiment of the investor as the value is less than 0.01 which indicates a confidence level of 99% so we reject the null hypothesis and **accept the alternate hypothesis 3** which says that there was a strong impact of the Egyptian revolution on the sentiments of investors.

Impact Due to Global Recession

➔ T-Test

[DataSet1]

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 gr_b_r	-.248889	9	.4866838	.1622279
gr_a_r	.242222	9	.5012928	.1670976
Pair 2 gr_b_v	2.3011	9	.75406	.25135
gr_a_v	2.607778	9	.8519944	.2839981
Pair 3 gr_b_SI	94.389	9	5.4473	1.8158
gr_a_SI	75.677778	9	4.0183261	1.3394420

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 gr_b_r & gr_a_r	9	.005	.989
Pair 2 gr_b_v & gr_a_v	9	.799	.010
Pair 3 gr_b_SI & gr_a_SI	9	.680	.044

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 gr_b_r - gr_a_r	-.4911111	.6968580	.2322860	-1.0267636	.0445414	-2.114	8	.048
Pair 2 gr_b_v - gr_a_v	-.3066667	.5181699	.1727233	-.7049673	.0916339	-1.775	8	.013
Pair 3 gr_b_SI - gr_a_SI	18.7111111	4.0038870	1.3346290	15.6334511	21.7887711	14.020	8	.000

4.1 37: Result of T-Test on impact due to Global recession

Hypothesis 4: no significant impact of global recession on average daily returns

Alternate hypothesis 4: significant impact of global recession on average daily returns

From the results of the test conducted, we can see that the global recession did not have a significant impact on the average daily returns. The confidence level of the results is 95% as the value is just less than 0.05

So here we reject the null hypothesis and accept the alternate hypothesis 4 which says that there is a significant impact on the average daily return due to the global recession.

Hypothesis 5: no significant impact of global recession on the stock market volatility.

Alternate hypothesis 5: significant impact of global recession on the stock market volatility.

From the results of the tests conducted we can see that the stock market volatility has had a significant impact due to the global recession, the significance level being around 95%

So here also, the null hypothesis is rejected and the **alternate hypothesis 5** which says that there was a significant impact on the stock market volatility due to the recession is accepted.

Hypothesis 6: no significant impact of global recession on the investor sentiment.

Alternate hypothesis 6: significant impact of global recession on the investor sentiment.

From the results of the paired sample T-test we can see that there has been a very significant impact on the sentiments of the investors due to the global recession as the value is zero which means that the confidence level is 99%. So here again we reject the null hypothesis and accept **the alternate hypothesis 6** which says that there was a significant impact on the sentiments of the investors due to the global recession.

Impact due to terror attack

After the terror attack, market reopened for trading on Nov 27, and Sensex opened at 1.5% or 137 points down before regaining some of its customary defiance to terror and close 0.7% higher. Overseas investors pulled out a record \$13.5 Billion from Indian Stocks in 2008 as of November 25 causing Benchmark BSE sensitive Index, to slump 56%. Taj Mahal Hotel saw a sharp dip of nearly 17% in share price to Rs. 40.20 marking a new 52 week low. Decline was accompanied by an abnormal rise in volumes. East India Hotels, after opening weakly, share price dipped to a low of Rs.83 before recovery to close at Rs. 97.75. Volumes in share did not show any abnormal variation on BSE.

➔ T-Test

[DataSet1]

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 ta_b_r	-.330000	9	.6046693	.2015564
ta_a_r	.278889	9	.4578058	.1526019
Pair 2 ta_b_v	2.5500	9	1.22045	.40682
ta_a_v	2.374444	9	.7508181	.2502727
Pair 3 ta_b_SI	92.611	9	5.9727	1.9909
ta_a_SI	74.322222	9	3.7432532	1.2477511

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 ta_b_r & ta_a_r	9	.066	.866
Pair 2 ta_b_v & ta_a_v	9	.183	.637
Pair 3 ta_b_SI & ta_a_SI	9	.706	.034

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 ta_b_r - ta_a_r	-.6088889	.7339013	.2446338	-1.1730154	-.0447624	-2.489	8	.038
Pair 2 ta_b_v - ta_a_v	.1755556	1.3105639	.4368546	-.8318330	1.1829442	.402	8	.698
Pair 3 ta_b_SI - ta_a_SI	18.2888889	4.2568898	1.4189633	15.0167537	21.5610241	12.889	8	.000

4.1 38: Result of T-Test on Impact due to Terror Attack

There was a feeling of insecurity among the investors as well as the non investors. Investor sentiment was very highly impacted due to the terror attack. While on one hand the volatility of the stock market did not suffer much of an impact due to the terror attacks the paired sample T-test shows it very clearly that the sentiment of

investor had a significant difference before the attack and after it. The results show a difference between the returns before the attack and after it at a confidence level of around 95% while that of investor sentiment at a confidence level of 99%. Investor sentiments during that period dropped as the returns kept declining day-in-day-out; again this can be seen from the results of the paired sample T-test which shows that there is a significant difference in the investor sentiment before and after the debacle. The test shows a significance level of 99%. This period was the same when the global recession was at its peak. The stock prices of the company were on a declining spree due to the recession and the fiasco only added to the woes of the investors and the share prices dropped from as high as Rupees 544 to a mere Rupees 11.50 on the 10th of January 2009 three days after the news of the fraud spread around the world. The returns also had a steep fall and the traders went on a selling spree which further decreased the price of the share.

Hypothesis 7: no significant impact on average daily returns due to Mumbai terror attacks.

Alternate hypothesis 7: significant impact on average daily returns due to Mumbai terror attacks

We can see from the results that there was a significant impact on the return and the confidence level is of 95% as the value is less than 0.05 so we reject the null hypothesis and **accept the alternate hypothesis 7** which says that there was a significant impact on the average daily returns due to the terror attack in Mumbai.

Hypothesis 8: no significant impact on stock market volatility due to Mumbai terror attacks

Alternate hypothesis 8: significant impact on stock market volatility due to Mumbai terror attacks

The results of the test conducted clearly show that there is no significant impact on the stock market volatility as the value is greater than 0.05 so we **accept the null hypothesis 8** which saying that there is no significant impact on the stock market volatility due to the terror attack and we reject the alternate hypothesis.

Hypothesis 9: no significant impact on investor sentiment due to Mumbai terror attacks

Alternate hypothesis 9: significant impact on investor sentiment due to Mumbai terror attacks

From the results of the paired sample T-test, it can be clearly seen from the results that there has been a significant impact on the sentiment of the investors after the terror attack in Mumbai so we reject the null hypothesis and **accept the alternate hypothesis 9** which says that the sentiments of the investors were significantly impacted due to the terror attack.

Impact due to Financial Scandal:

The **Satyam Computer Services scandal** was publicly announced on 7 January 2009, when Chairman Ramalinga Raju confessed that Satyam's accounts had been falsified. Satyam Computer Services founder chairman B. Ramalinga Raju resigned from the IT major's board after admitting a fraud to the tune of Rs 5,040 crore (Euro 6.2 billion) in the balance sheet of the company. In a notification to the stock exchanges, the Hyderabad-based IT firm confirmed Ramalinga Raju and Managing Director Rama Raju had resigned and that the Securities and Exchanges Board of India (SEBI) had been informed.

Analysts in India have termed the Satyam scandal India's own Enron scandal. Some social commentators see it more as a part of a broader problem relating to India's caste-based, family-owned corporate environment.

Satyam Scandal:

→ T-Test

[DataSet1]

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	S_Befor_r	-.310833	12	.5550669	.1602340
	S_after_R	.230833	12	.4661732	.1345726
Pair 2	s_befor_v	2.690000	12	1.1091028	.3201704
	s_aftr_v	1.758333	12	.8948320	.2583157
Pair 3	s_befor_SI	91.208	12	7.4657	2.1552
	s_aftr_SI	71.600000	12	2.7085723	.7818975

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	S_Befor_r & S_after_R	12	.003	.992
Pair 2	s_befor_v & s_aftr_v	12	-.378	.226
Pair 3	s_befor_SI & s_aftr_SI	12	.575	.050

Paired Samples Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	S_Befor_r - S_after_R	-.5416667	.7236754	.2089071	-1.0014681	-.0818653	-2.593	11	.025
Pair 2	s_befor_v - s_aftr_v	.9316667	1.6676594	.4814118	-.1279136	1.9912469	1.935	11	.079
Pair 3	s_befor_SI - s_aftr_SI	19.6083333	6.3100869	1.8215652	15.5990954	23.6175713	10.765	11	.000

4.1 39: Result of a T-Test on Impact due to a Financial Scandal

As we can see from the results of the SPSS tests performed on the data collected for the Satyam debacle which took place in January 2009, there is a significant amount of difference between the average daily returns before the scandal and after that which proves that the debacle had a significant impact on the average daily returns and the sentiments of the investors. We can see this from the results of the Paired sample T-test performed on the data; the difference between average daily returns is significant

at a confidence level of 95%. But no significant change in the volatility of the stock prices was found which again can be seen from the test as the volatility before the fiasco and after that are not significantly different.

Investor sentiments during that period dropped as the returns kept declining day-in-day-out; again this can be seen from the results of the paired sample T-test which shows that there is a significant difference in the investor sentiment before and after the debacle. The test shows a significance level of 99%. This period was the same when the global recession was at its peak. The stock prices of the company were on a declining spree due to the recession and the fiasco only added to the woes of the investors and the share prices dropped from as high as Rupees 544 to a mere Rupees 11.50 on the 10th of January 2009 three days after the news of the fraud spread around the world. The returns also had a steep fall and the traders went on a selling spree which further decreased the price of the share.

As we can see, although stock market volatility wasn't impacted much, but investor sentiments were at an all time low during this period as the returns were always negative till Mahindra took over.

Hypothesis 10: no significant impact on the average daily returns due to the Satyam fiasco

Alternate hypothesis 10: significant impact on the average daily returns due to the Satyam fiasco

So according to the results the Satyam fiasco had a significant impact on the average daily returns as the value is less than 0.05 which indicates a confidence level of 95% which means that we reject the null hypothesis and **accept the alternate hypothesis 10.**

Hypothesis 11: no significant impact on the stock market volatility due to the Satyam fiasco

Alternate hypothesis 11: significant impact on the stock market volatility due to the fiasco

Here going by the results the **null hypothesis 11 is accepted** which says that there is no significant impact of the Satyam scam on the volatility of the stock market, as the results of the test conducted show that the value is greater than 0.05.

Hypothesis 12: no significant impact on the investor sentiments due to the Satyam fiasco

Alternate hypothesis 12: significant impact on the investor sentiments due to the Satyam fiasco

According to the results of the test conducted there has been a significant impact on the sentiments of the investors as the value is 0.000. This also indicates a confidence level of 99% so we reject the null hypothesis and **accept the alternate hypothesis 12** which says that there has been a significant impact of the Satyam fiasco on the investor sentiments.

Research Objective 4:

RESULTS FOR PEARSONS CORRELATION

Correlation between average daily return and investor sentiment

➔ Correlations

[DataSet1]

		return	sentiment
return	Pearson Correlation	1	-.306 [*]
	Sig. (2-tailed)		.036
	N	47	47
sentiment	Pearson Correlation	-.306 [*]	1
	Sig. (2-tailed)	.036	
	N	47	47

*. Correlation is significant at the 0.05 level (2-tailed).

4.1 40: Correlation between average return and investor sentiment

Hypothesis A: no correlation between the average daily returns and the investor sentiments.

Alternate hypothesis A: there exists a correlation between average daily returns and investor sentiment.

From the results of the Pearson's correlation we can see that there is a correlation between the average daily returns and the investor sentiments as the value of significance is less than 0.05, so we reject the null hypothesis and **accept the alternate hypothesis A** which says that there exists a correlation between the average daily returns and the investors sentiment.

Correlation between stock market volatility and average daily returns

→ Correlations

[DataSet1]

Correlations

		volatiity	return
volatiity	Pearson Correlation	1	-.218
	Sig. (2-tailed)		.142
	N	47	47
return	Pearson Correlation	-.218	1
	Sig. (2-tailed)	.142	
	N	47	47

4.1 41: Result of Correlation between stock market volatility and Average Return

Hypothesis B: no correlation between the volatility and returns during the period.

Alternate hypothesis B: there exists a correlation between the volatility and the returns.

From the Pearson's correlation test, it can be concluded that there is no correlation between the volatility and the average daily returns as the significance value is more than 0.05. So we **accept the null hypothesis B** saying that there doesn't exist a correlation between the average daily returns and the volatility of the stock market. We reject the alternate hypothesis.

Correlation between the stock market volatility and investor sentiment

→ Correlations

[DataSet1]

		volatiity	sentiment
volatiity	Pearson Correlation	1	.487**
	Sig. (2-tailed)		.001
	N	47	47
sentiment	Pearson Correlation	.487**	1
	Sig. (2-tailed)	.001	
	N	47	47

** . Correlation is significant at the 0.01 level (2-tailed).

4.1 42: *Result of correlation Between Stock market Volatility and Investor Sentiments*

Hypothesis C: no correlation between the volatility of the stock market and the investor sentiment.

Alternate hypothesis C: there exists a correlation between the volatility of the stock market and the sentiment of the investors.

From the results of the person's correlation we can see that there exists a strong positive correlation between the two as the value of significance is 0.001.

We reject the null hypothesis and **accept the alternate hypothesis C** which says that there is a strong positive correlation between the volatility and the investor sentiments.

Chapter 5: Conclusion

5.1 Introduction

The overall aim of this research was to determine whether Indian stock markets driven more by sentiments than fundamentals and thus establish the relationship between the Investor Sentiments and the Stock Market Volatility in context of the Indian Stock Markets. The subject of behavioral finance and its aspects are widely known however the researcher wanted demonstrate the benefits of this area of finance in relation to the Indian context which is a huge emerging market. Very few researchers have actually done a comprehensive research on this subject taking India into consideration.

In this chapter, the researcher will discuss the conclusions which could be drawn out in relation to the research objectives and the research question. As each research objective branches out of the overall research question, they were necessary for obtaining a deeper knowledge of the topic at disposal in order to better address the overall research question. The researcher will draw from the quantitative analysis gathered all through the research and will reference the literature review wherever applicable. Each research objective will be taken up separately. The recommendations will not be required in this research.

5.2.1 Conclusion on Objective 1: To ascertain the attitudes and sentiments of the investors in India in the current scenario as well as in the recent past.

The first objective was to ascertain the attitudes and sentiments of the investors in India concerning the current times and in the recent past. E. Bennet, M.Selvam, N.Vivek and Eva E Shalin together conducted a study in 2011 which investigated some characteristics of the investor sentiment such as “herd behavior” (similarity in thinking among individuals) and optimism. They found out the macro-economic factors such as interest-rate, rate of inflation influenced investors attitude towards investing in India. The researcher used characteristics similar to these when conducting his research in an attempt to add to Bennet et al’s research which was carried out quantitatively as well. Firstly, the researcher found that 48%, a majority of

the investors believed that now is not a good time to put money in the stock market. Moreover, most of the investors (44%) thought that the market was neutral, neither bullish nor bearish. But to vindicate the previous questions results, 37 % investors also thought that the market at the moment was bearish however despite all this the investors chose to be optimistic with over 36% opting for it. Another 37% did not expect to be too optimistic nor pessimistic towards the markets. A majority of the investors, about 68% did not believe that they must decrease their tolerance to risk. Out of this, 26% even thought that they should take more risks in the market in the present situation.

The majority of respondents (45%) thought that the global recession in 2008 which was triggered from the U.S. affected their investment decisions to a great extent. This is evident from the fact that the BSE-Sensex was most volatile during that period in all of the five years. Most of the investors (47%) also thought that the fluctuations in crude oil prices due to crisis in the Middle East also played a major role in their investment related decisions. Financial scandals were also other major criteria which affected the stock market investors, 44% of the respondents thought so. Interestingly, about 37%, a major chunk of the respondents believed that the terrorist attacks did not affect their investment decisions as greatly as the global recession, oil prices or the financial scandals did. 42% of the investors predictably thought that inflation did affect the stock market and their decision to invest in it.

A huge majority (68%) of the investors thought that the financial and economic policies proposed by the Indian Government were really poor. However, the same investors were divided on the fact that if the government changed in the next year's elections and the opposition came into power, would it be for the better or worse. 29% of the respondents sought to wait and watch and 30% believed that there would be no change in the economy at all if the opposition came into power.

5.2.2 Conclusion to objective 2 and 3: To examine if there is any relationship between the important events and Investor Sentiment and to examine if there is any relationship between the important events and the Stock Market Volatility.

The researcher had selected four major events to examine this aspect of behavior of the investors. All the events were examined using the secondary data from the Bombay Stock Exchange (BSE).

The results of a paired T-test⁷ for each event showed that:

The fluctuations in the oil prices considerably impacted the investor sentiment but it did not have any impact on the average daily returns.

The global recession of 2008, as shown in the results of the paired sample T-test, had a very significant impact on the investor sentiment in India. This result confirms what the researcher found out through the survey questionnaire. However, again the average returns were not affected. The Mumbai terror attack on 26th November, 2008 on the other hand had a very significant impact on the average daily returns. It also had a considerable effect on the investor sentiment according to the result.

Impact on Stock and For-ex Market

With the volatility in portfolio flows having been large during 2007 and 2008, the impact of global financial turmoil has been felt particularly in the equity market. Indian stock prices have been severely affected by foreign institutional investors'

⁷ The test statistic in the t-test is known as the t-statistic. The t-test can be used to determine whether the population means differ. The t-test is one of a number of hypothesis tests. A t-test is used to determine if there is a significant difference between the mean or average scores of two groups or variables.

(FIIs') withdrawals. FIIs had invested over Rs 1,000,00 million (€ 12 billion) between January 2006 and January 2008, driving the Sensex 20,000 over the period. But from January, 2008 to January 2009, FIIs pulled out from the equity market partly as a flight to safety and partly to meet their redemption obligations at home. These withdrawals drove the Sensex down from over 20,000 to less than 9,000 in a year. It has seriously crippled the liquidity in the stock market. The stock prices have tanked to more than 70 per cent from their peaks in January 2008 and some have even lost to around 90 per cent of their value. This has left with no safe haven for the investors both, retail or institutional. The primary market got derailed and secondary market is in the deep abyss. Equity values are now at very low levels and many established companies are unable to complete their rights issues even after fixing offer prices below related market quotations at the time of announcement. Subsequently, market rates went down below issue prices and shareholders are considering purchases from the cheaper open market or deferring fresh investments. This situation naturally has upset the plans of corporations to raise resources in various forms for their ambitious projects involving heavy outlays.

In India, there was serious concern about the likely impact on the economy of the heavy foreign exchange outflows in the wake of sustained selling by FIIs on the bourses and withdrawal of funds will put additional pressure on dollar demand. The availability of dollars was affected by the difficulties faced by Indian firms in raising funds abroad. This, in turn, put pressure on the domestic financial system for additional credit. Though the initial impact of the financial crisis was limited to the stock market and the foreign exchange market, it is spreading to the rest of the financial system, and all of these are bound to affect the real sector. Some slowdown in real growth was inevitable. Dollar purchases by FIIs and Indian corporations, to meet their obligations abroad, have also driven the rupee down to its lowest value in many years. Within the country also there has been a flight to safety. Investors have shifted from stocks and mutual funds to bank deposits, and from private to public sector banks. Highly leveraged mutual funds and non-banking finance companies (NBFCs) were the worst affected.

For the financial scandal which specifically involved a domestic IT company named Satyam Computer Services Ltd., the results showed that this fiasco had a significant

impact on the investor sentiment during that period. It also affected the average returns considerably.

According to the results obtained the researcher found out that there was a significant impact on the stock market volatility at two events out of the four which were studied and tested. The fluctuations in the oil prices and the global recession had a substantial effect on the stock market volatility. On the other hand, the terror attacks in Mumbai and the Satyam Scandal did not affect the stock markets much.

5.2.3 Research Objective 4: To examine the relationship between investor sentiment and the stock market volatility in India taking the important events into consideration.

For this objective the researcher applied the Pearson's correlation test using SPSS. The results obtained indicated that there is a strong relationship between the stock market volatility and the investor sentiment. However, the results indicated that there was no significant correlation between the average daily returns and stock market volatility, though there was a correlation with the investor sentiment.

For the average daily returns' relationship with stock market volatility, the researcher must highlight the fact that there have been studies done before, for example Mestel et al. (2003) (who concluded that both variables had a very weak relationship) did one for the Austrian stock markets, however there needs to be more research done on this aspect.

5.3 Conclusion on the research question

Are Indian Stock Markets driven more by Sentiment or Fundamentals?

Taking all the data and results obtained into consideration, the researcher feels that investor sentiment is a very important aspect of Indian stock markets or share or a security. The research shows that in India, investor sentiment drives the stock markets as there is a strong relationship between the sentiment and the stock market volatility.

The researcher also found out that major events; political or macro-economic, do play a major role when it comes to the sentiments of the investors in India. At the same time, interestingly enough, the stock market volatility was not affected by some of the events two of which is evident from the results obtained from testing two of the major events. Moreover the researcher believes that more researches should be done on this subject for other emerging markets which could be beneficial to the financial experts as well as academicians.

The researcher believes that this dissertation will provide a good understanding of the Indian investors and the stock market behavior to the various financial experts and academicians all around the world as it is known that Indian market is one of the fastest growing amongst all other emerging markets.

The researcher recommends that a wider study should be conducted on the investors, increasing population and the sample size to get a more accurate and diversified view.

Chapter 6: Self Reflection on Own Learning & Performance

6.1 Introduction

The main purpose of this final chapter is to outline the approach to learning which I undertook during this research, to identify and highlight the skills I developed and to record a reflection of my personal development during the course of the whole MBA program which has reached its concluding point with the compilation of this dissertation. In order to accomplish this, I will first define my personality type and learning style and then document the skills identified and acquired by myself during the whole learning process. Consequently, I will then outline my future development and progression plan.

6.2 My personality Type

Though there are so many theories around which link the personality to the learning style, I personally believe that the personality of a person depends on how they learn and assimilate. Before I commence any important task, my first response is always to plan and organize how the task will be undertaken. Though I act when coaxed to, I like to do things in a logical and sequential way rather than a systematic way from the start to the end no matter how difficult is the initial part or how easy the final part is. I don't like to do the easier part first and then the difficult part. Apart from this I am someone who has a clear set of logical standards and tend to follow the same.

Personally, for me integrity, honesty and inner harmony are very essential and then comes family, excitement and friendships in order of importance. Family, I believe, also is pretty much important as it acts as a support system for him. I stand for honesty and integrity personally as well as professionally as they are the two most important aspects in professional and personal life. I am not much of a 'by the book' person who would like to be bound by rules.

Professionally, competition, intellect and quality stimulate me. I believe in independence and team-work and would love it if his colleagues and compatriots believe in the same. As already mentioned above, integrity and honesty are the two ethical pillars which a person should incorporate in his personal and professional life, and would like to be remembered as an honest person who always was game for attaining knowledge and growth as a human being.

6.3 Learning Styles

According to Mumford (1995), learning has at least two meanings;

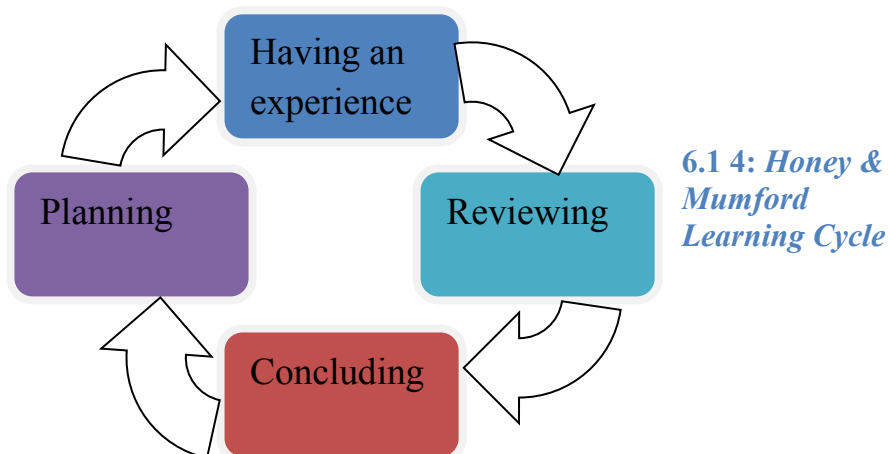
- the process by which we acquire knowledge, skills or insight

- The end result of the process – achieved knowledge, skills or insight.

Mumford states that learning can be achieved either through formal structures such as training and education or through experiences we have in and around work. He continues that education and training are inputs designed by educators and trainers but importantly, they are not the same thing as learning in terms of the second definition, i.e. achieved learning. Learning has happened when people can demonstrate that they know something that they didn't know before (insights and realizations as well as facts) and/or when they can do something they couldn't do before (skills) (Mumford 1995).

The way in which we learn can be illustrated through Honey & Mumford's learning cycle below, which takes the view that since we learn mostly by doing things and then thinking about how we have done them; the learning sequence can be set out as a learning cycle. (Mumford 1995).

Figure 6.1: Honey & Mumford Learning Cycle



- **Having an Experience:** There are two different ways to have an experience, one is to let the experience come to you (reactive) and the other is to seek it out deliberately (proactive). The opportunities to learn are greatly increased if the normal everyday things that happen to us are supplemented by extra experiences we create. (Honey 2006)
- **Reviewing the Experience:** If you learn from an experience, it is vital to review what happened during it.
- **Concluding from an Experience:** Concluding involves scanning the raw material from the review for conclusions, ‘answers’ or lessons learned.
- **Planning the next steps:** Planning involves translating some of the conclusions into a form in which they can be auctioned.

According to Honey (2006), as each stage of the cycle feeds into the next, you can start from any point in the cycle. In the case of my dissertation, my learning cycle began with planning the dissertation. The first step for me was to plan the work that was required for the dissertation. After having affirmed myself of the research topic and the objectives at hand, I first began the task by planning how to go about researching the objective, how and where I would source my primary and secondary information, the timeline required for achieving the work and the individual tasks that were needed in order to achieve the particular objectives. Having done the planning, I then started researching and writing the dissertation side by side. This way I experienced researching as well as writing the dissertation. Writing the dissertation involves a lot of aspects like creating tables, drawing various diagrams, charts, graphs using Microsoft Excel etc. The continuous reflection of my work during the dissertation helped me to refine my efforts, which culminated in a more focussed research and analysis. I learnt how to formulate the questions in a survey questionnaire, to distribute them, be patient, wait and get the responses. Further, another difficult task which I overcame was to analyse the primary data (questionnaire) and secondary data using SPSS and formulate the results. I also referred to various journals and articles online as well as in the library for the research. The EBESCO host was a very helpful resource to collect and analyse the secondary data. Consequently, this self reflection has enabled me to reflect on and conclude from the experience and learning gained through the completion of the dissertation. Using this, I can put whatever I have learnt to good use in my career. The approach followed for completing my dissertation echoes the overall approach which I followed during the course of my MBA.

6.3 Skills acquired during the learning process

During my MBA program, I developed a number of skills such as research skills and the data analysis skills which before now I did not have extensive experience of. Being from India, the program gave me international exposure and I also learnt about the different cultures from all around the world. Apart from this, my stream being finance, I gained extensive financial and business management knowledge from the

course. The dissertation being of my own stream i.e. finance, I enhanced my knowledge about the subject adding up to what was previously taught in different modules of the program.

There were a number of times during the research work where I doubted my ability to be able to complete such a task to a Masters level, however after some initial concerns, I stuck with it and took the tasks front on and broke the whole work into smaller parts. But slowly and steadily, I tackled each part one by one sequentially starting from the primary research then secondary research and then the analysis and so on.

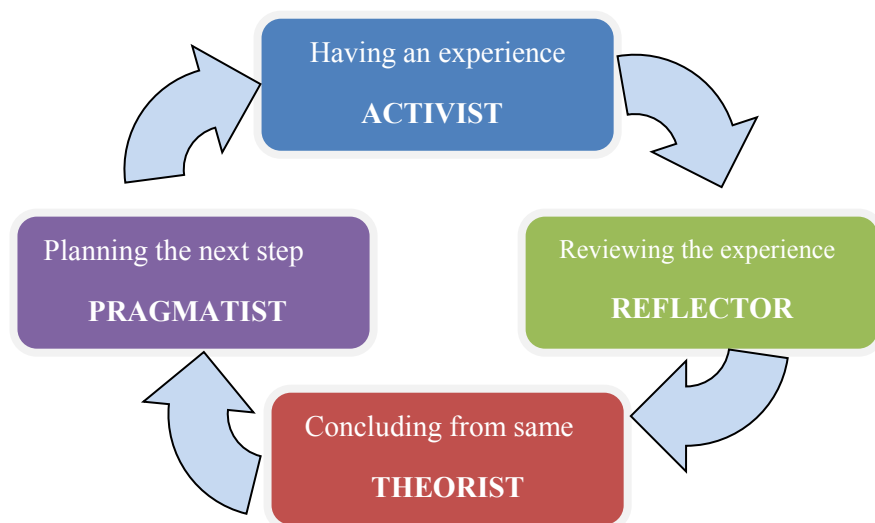
I thus was better able to comprehend the task at hand. As being an engineer at the Bachelors level my analytical skills were up to the mark already. What I learnt during the dissertation was how to collect the information, assimilate it, process it and then draw conclusions from it and then from the conclusions make further decisions if required. Also, I learnt how to respond to pressure situations where in the time to respond is limited for a relatively bigger task as I had limited time to complete the work.

Other skills developed include the ability to critically review the literature, which I learnt not only during the dissertation but all through the MBA program. This experience has allowed me to gain more confidence in my abilities and will be beneficial in my professional career.

According to Honey & Mumford (1992), the four stages of learning; experiencing, reviewing, concluding and planning are mutually supportive and no one stage is fully effective as a learning procedure on its own. Although each stage plays an equally important part in the total learning process, the time spent on each may vary considerably as most people develop a preference for certain stages over others. By identifying my individual learning style, I would be able to pin point my preference for learning and also the stage in the learning cycle where I might need more improvements in order to become an effective learner.

6.4 My Learning Style Preference

The term 'Learning Styles' is used as a description of the attitudes and behaviours that determine an individual's preferred way of learning,(Honey & Mumford 2000). The four learning styles are Activists, Reflectors, Theorists and Pragmatists. Each style connects with a stage in the continuous learning cycle as illustrated in figure below.



6.1 5 The Honey and Mumford Learning Styles cycle

I completed the learning styles questionnaire by Honey and Mumford (2006) and found out that my learning style is a combination of Pragmatist and Activist. This Learning style is indeed complementary to my personality type

The figure below outlines some of the main characteristics of “Pragmatists” and “Activists” which I identify with. On reflection of the learning I did during this dissertation, I would agree with the analysis that I tend to favour a particular type of learning. The ‘Activist’ in me likes to be involved in new experiences and is enthusiastic about new ideas and the ‘Pragmatic’ is keen to try things out and apply concepts which can be applied in daily life, which are in a way practical.

Figure 6.3 Characteristics of Pragmatist and an Activist

Pragmatists like	Activists like
to try out techniques with feedback	new opportunities, experiences and problems
techniques with obvious advantages	games , practical activities, teamwork, roleplay
a model which can be copied e.g. a film	project work
opportunities to implement their learning	Creative situations
Working with a credible expert	

6.1 6: Pragmatists and Activists

To become a more effective learner, I will strive to develop the other learning styles, Theorist and Reflector. The reason for taking up MBA was to provide me with the opportunity to develop myself personally as well to attain the managerial skills

besides enhancing my technical skills. Talking about the reflection of the learning process of the MBA, I became more involved into analysing a given task or a problem first, developed an interest in producing reports and analyses. I also learned somewhat to use the skills and knowledge I gained into practical situations. This would be more of a 'Theorist' style rather than a 'Pragmatist' which before the MBA would not have been much in me. However, this experience has indeed helped me to enhance my learning style and motivate me to develop further and become a more effective learner. There were instances where I encountered hindrances in furthering up my work in the dissertation. This might have been due to the lack of the other two learning styles.

To further develop my learning style, I need to look at the areas where I had scored less in the Honey & Mumford Questionnaire and work on those areas. Incorporating and using these learning styles would be my priority if given a fresh task.

6.5 Conclusion

For my career and the professional life, this dissertation in particular and the MBA in general has been a real learning experience. Being an engineer, the conceptual mind was already there and now after the doing the dissertation I am able to analyse the information with more focus and formulate theories based on the data analysed, present the theories in a better way to an audience and back them up with rational and relevant facts. The biggest problem I faced during the work on the dissertation was to accumulate the relevant secondary information for the literature review. But I finally overcame this by enduring through it with patience. This is an example of how the dissertation process made me learn the skills.

The MBA program has made me look at situations in a more rational way by applying various theories and capable of succeeding in areas which I would have considered in the past to be a weakness. The program has also enhanced my problem solving techniques besides improving my communication skills. I am sure these skills acquired and enhanced will be of a great help to me to further my professional life.

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Appendices

Appendix -1

Secondary Data: The stock market volatility of each year was obtained from the Annual Reports and Bulletins of The Securities Exchange Board of India (SEBI), based on which the charts and graphs were drawn. They are as provided below. The sources for SEBI were Bombay Stock Exchange.

Table 2.18: Average Daily Volatility of Benchmark Indices					
(Per cent)					
2008-09	BSE Sensex	S&P CNX Nifty	BSE 100	BSE Small-Cap	BSE 500
1	2	3	4	5	6
Apr-08	1.40	1.28	1.30	1.05	1.20
May-08	1.31	1.21	1.30	1.11	1.22
Jun-08	1.93	1.91	1.96	1.82	1.89
Jul-08	3.30	2.97	3.24	2.10	3.02
Aug-08	1.73	1.61	1.68	1.04	1.57
Sep-08	2.50	2.32	2.36	1.87	2.23
Oct-08	5.19	5.03	5.07	3.94	4.82
Nov-08	3.85	3.83	3.60	2.05	3.33
Dec-08	2.53	2.46	2.40	1.71	2.24
Jan-09	2.97	2.73	2.84	2.15	2.69
Feb-09	1.88	1.81	1.77	1.10	1.64
Mar-09	2.61	2.34	2.45	1.37	2.26

Note : Volatility is measured in terms of standard deviation and is computed from the returns based on closing values of indices as on the last date of the month.

Figure 1: Volatility for 2008-09

2009-10	BSE Sensex	S&P CNX Nifty	BSE 100	BSE Small Cap	BSE 500
1	2	3	4	5	6
Apr-09	2.12	2.18	2.16	2.68	2.16
May-09	4.20	4.15	3.96	3.04	3.79
Jun-09	1.75	1.92	1.89	2.45	1.95
Jul-09	2.21	2.22	2.21	2.29	2.18
Aug-09	1.78	1.78	1.78	1.68	1.73
Sep-09	0.90	0.92	0.88	0.99	0.86
Oct-09	1.08	1.08	1.10	1.42	1.12
Nov-09	1.57	1.58	1.57	1.68	1.55
Dec-09	1.01	1.05	0.98	0.85	0.93
Jan-10	0.98	1.03	1.10	1.64	1.14
Feb-10	1.15	1.18	1.16	1.31	1.14
Mar-10	0.68	0.70	0.67	0.82	0.65

Note: Volatility is measured in terms of standard deviation and is computed from the logarithmic returns based on closing values of indices as on the last date of the month.

Figure 2 : Volatility for 2009-10

Month	BSE Sensex	S&P CNX Nifty	BSE 100	BSE Small Cap	BSE 500	S&P CNX 500
1	2	3	4	5	6	7
Apr-10	0.8	0.8	0.8	0.7	0.8	1.2
May-10	1.5	1.6	1.5	1.6	1.5	1.9
Jun-10	1.2	1.2	1.1	0.9	1.0	1.3
Jul-10	0.6	0.6	0.6	0.4	0.5	0.8
Aug-10	0.7	0.7	0.6	0.7	0.6	1.1
Sep-10	0.8	0.8	0.7	0.8	0.7	1.1
Oct-10	1.1	1.1	1.0	0.9	0.9	1.1
Nov-10	1.3	1.3	1.3	1.5	1.3	1.9
Dec-10	0.9	0.9	1.0	1.4	1.1	1.9
Jan-11	1.1	1.2	1.1	1.2	1.1	1.9
Feb-11	1.5	1.5	1.5	1.7	1.5	2.0
Mar-11	1.3	1.3	1.2	1.1	1.1	1.5

Figure 3: Volatility for 2010-11

Month	BSE Sensex	S&P CNX Nifty	BSE 100	BSE Small Cap	S&P CNX 500
1	2	3	4	5	6
Apr-11	1.1	1.0	1.0	1.2	0.9
May-11	1.1	1.1	1.1	0.9	1.1
Jun-11	1.0	1.0	0.9	1.0	0.9
Jul-11	1.0	1.0	0.9	0.7	0.9
Aug-11	1.5	1.5	1.5	1.6	1.4
Sep-11	1.6	1.6	1.5	1.2	1.4
Nov-11	1.6	1.6	1.5	0.8	1.4
Nov-11	1.3	1.3	1.3	1.1	1.2
Dec-11	1.5	1.5	1.5	1.1	1.4
Jan-12	1.1	1.1	1.1	1.0	1.1
Feb-12	1.1	1.1	1.2	1.5	1.3
Mar-12	1.3	1.3	1.3	1.0	1.3

Source: BSE and NSE

Figure 4: Volatility for 2011-12

Appendix-2

Tools used in Data Analysis: For checking whether there exists a relation between the investor sentiments and the stock market volatility I have used the software SPSS.

SPSS is a computer program used for survey authoring and deployment (**IBM SPSS Data Collection**), data mining (**IBM SPSS Modeler**), text analytics, statistical analysis, and collaboration and deployment (batch and automated scoring services). It is used by market researchers, health researchers, survey companies, government, education researchers, marketing organizations and others. The original SPSS manual (Nie, Bent & Hull, 1970) has been described as one of "sociology's most influential books". In addition to statistical analysis, data management (case selection, file reshaping, creating derived data) and data documentation (a metadata dictionary is stored in the data file) are features of the base software.

PAIRED SAMPLE T- TEST:

The paired t test provides an hypothesis test of the difference between population means for a pair of random samples whose differences are approximately normally distributed. Please note that a pair of samples, each of which are not from normal a distribution, often yields differences that are normally distributed.

The test statistic is calculated as:

$$t = \frac{\bar{d}}{\sqrt{s^2 / n}}$$

Where \bar{d} is the mean difference, s^2 is the sample variance, n is the sample size and t is a Student t quantile with $n-1$ degrees of freedom.

THE PEARSON'S CORRELATION:

The most familiar measure of dependence between two quantities is the Pearson product-moment correlation coefficient, or "Pearson's correlation." It is obtained by dividing the covariance of the two variables by the product of their standard deviations. Karl Pearson developed the coefficient from a similar but slightly different idea by Francis Galton.

Where E is the expected value operator, cov means covariance and, $corr$ a widely used alternative notation for Pearson's correlation.

The Pearson correlation is defined only if both of the standard deviations are finite and both of them are nonzero. It is a corollary of the Cauchy–Schwarz inequality that the correlation cannot exceed 1 in absolute value. The correlation coefficient is symmetric: $corr(X,Y) = corr(Y,X)$.

The Pearson correlation is +1 in the case of a perfect positive (increasing) linear relationship (correlation), -1 in the case of a perfect decreasing (negative) linear relationship (**autocorrelation**), and some value between -1 and 1 in all other cases, indicating the degree of linear dependence between the variables. As it approaches zero there is less of a relationship (closer to uncorrelated). The closer the coefficient is to either -1 or 1, the stronger the correlation between the variables.

If the variables are independent, Pearson's correlation coefficient is 0, but the converse is not true because the correlation coefficient detects only linear dependencies between two variables. For example, suppose the random variable X is symmetrically distributed about zero, and $Y = X^2$. Then Y is completely determined by X , so that X and Y are perfectly dependent, but their correlation is zero; they are uncorrelated. However, in the special case when X and Y are jointly normal, non existing correlation is equivalent to independence.

If we have a series of n measurements of X and Y written as x_i and y_i where $i = 1, 2, \dots, n$, then the sample correlation coefficient can be used to estimate the population Pearson correlation r between X and Y .

Appendix 3

The Survey Questionnaire for Investors

Survey Questionnaire Form

This survey questionnaire is for a thesis on research work for a master's program. The research is focused on "**The Examination of Relationship between Investor Sentiments and Stock Market Volatility in the Indian Stock Market**". The Survey is designed to get first hand information in order to understand the trends of the investors in the country in relation to various events in recent history like terrorism, recession, oil prices etc.

Name (optional):

Please tick (✓) the appropriate option:

1) How do you Agree or Disagree with this statement –
“Now is a good time to invest in the stock market”

Agree Disagree Neutral

2) What is your current sentiment about the stock market?

Bullish Neutral Bearish

3) Looking ahead to the next financial year, what is your outlook for investing conditions in the Indian Stock Market?

Optimistic Neutral Pessimistic

4) How have you changed your tolerance for investment risk over the last 1 year?

More Same Less

5) How would you rate the effect that the global recession of 2008 had on your stock market sentiment? (rate- 1 being “not at all” and 5 being “greatly”)

1 2 3 4 5

6) How would you rate the effect that the increase in crude oil prices globally had on your stock market sentiment? (rate- 1 being “not at all” and 5 being “greatly”)

1 2 3 4 5

7) How would you rate the effect that recent scams (Satyam, 2g, 3g) had on your stock market sentiment? (rate- 1 being “not at all” and 5 being “greatly”)

1 2 3 4 5

8) How would you rate the effect that Mumbai terror attacks of 2008 had on your stock market sentiment? (rate- 1 being “not at all” and 5 being “ greatly”)

1 2 3 4 5

9) How would you rate the effect that the ever increasing inflation has had on your stock market sentiment? (rate- 1 being “not at all” and 5 being “ greatly”)

1 2 3 4 5

10) How was this year’s budget announcement by Pranab Mukherjee from an investor’s point of view?

Excellent Poor can’t say

11) How would it affect your investment decisions if there is a change of government in the next year’s elections (If BJP comes to power)?

- Economy will get a boost and I will invest more.
- Economy will be in trouble and I will not be keen to invest.
- It would not change my decisions
- I will wait and watch

Thank you

The questionnaire analysis from Microsoft Excel:

Question	2	3	4	5	6	7	8	9	10	11	
1	Agree	Bullish	Optimistic	More	1	1	1	1	1	Excellent	Bo
2	Disagree	Bearish	Pessimistic	Less	3	2	3	3	4	Poor	No Ch

3	Disagree	Bearish	Neutral	More	4	4	3	4	3	Poor	No CH
4	Disagree	Bearish	Neutral	Less	2	2	3	4	3	Poor	Tr
5	Disagree	Neutral	Pessimistic	Same	3	3	3	4	3	Poor	No CH
6	Disagree	Bearish	Neutral	Less	2	3	4	2	3	Poor	Tr
7	Agreee	Neutral	Neutral	Less	4	3	3	3	3	Poor	No CH
8	Disagree	Neutral	Pessimistic	Same	3	3	4	3	3	Poor	Wa wa
9	Agreee	Bearish	Optimistic	More	4	4	4	5	3	Poor	Wa wa
10	Disagree	Neutral	Optimistic	More	3	3	3	4	4	Can't say	Bo
11	Disagree	Bearish	Optimistic	More	4	4	4	4	4	Poor	Wa wa
12	Neutral	Neutral	Neutral	Same	3	3	3	3	3	Can't say	No CH
13	Neutral	Neutral	Neutral	Same	1	2	2	2	2	Can't say	No CH
14	Agreee	Bearish	Optimistic	Same	3	3	3	2	2	Poor	Tr
15	Neutral	Bearish	Pessimistic	Less	2	3	2	4	3	Can't say	No CH
16	Neutral	Neutral	Neutral	Less	4	2	3	3	4	Poor	Wa wa
17	Disagree	Bearish	Pessimistic	Less	3	2	2	2	2	Poor	Tr
18	Disagree	Neutral	Optimistic	Same	2	3	2	3	4	Poor	Wa wa
19	Neutral	Bearish	Pessimistic	More	4	4	4	4	4	Poor	Wa wa
20	Neutral	Neutral	Neutral	Same	3	3	3	3	3	Can't say	No CH
21	Agreee	Neutral	Neutral	Less	3	3	3	3	3	Poor	Wa wa
22	Neutral	Bearish	Pessimistic	More	5	5	4	4	5	Poor	Tr
23	Agreee	Bearish	Pessimistic	Same	4	4	4	3	5	Can't say	Wa wa
24	Agreee	Neutral	Neutral	Less	5	5	5	5	5	Can't say	Tr
25	Neutral	Neutral	Pessimistic	More	4	4	4	4	5	Poor	Tr

26	Disagree	Bearish	Pessimistic	More	4	4	4	4	5	Poor	Wa
27	Agreee	Bearish	Pessimistic	Less	3	3	4	3	5	Poor	Tr
28	Disagree	Neutral	Neutral	Same	3	3	3	3	3	Poor	Tr
29	Agreee	Bearish	Neutral	Same	5	5	4	4	5	Poor	Wa
30	Agreee	Bearish	Pessimistic	More	4	5	5	3	5	Poor	Wa
31	Agreee	Bullish	Neutral	Same	5	3	3	2	1	Poor	Wa
32	Neutral	Bearish	Neutral	Less	5	4	3	2	4	Poor	Wa
33	Disagree	Bearish	Optimistic	Same	3	4	3	3	2	Poor	Tr
34	Agreee	Neutral	Optimistic	More	3	2	3	1	3	Can't say	Wa
35	Agreee	Bullish	Optimistic	More	2	4	2	4	3	Can't say	No
36	Neutral	Neutral	Optimistic	More	3	4	4	3	2	Poor	No
37	Neutral	Bullish	Optimistic	Same	3	4	3	3	4	Poor	No
38	Disagree	Neutral	Neutral	Same	3	4	3	3	2	Can't say	Wa
39	Agreee	Bullish	Optimistic	More	3	3	3	2	3	Poor	No
40	Disagree	Neutral	Optimistic	Less	4	4	3	3	2	Can't say	No
41	Disagree	Neutral	Optimistic	Less	4	4	3	3	2	Can't say	No
42	Neutral	Bearish	Neutral	Same	5	4	3	2	2	Poor	No
43	Neutral	Neutral	Neutral	Same	3	4	3	4	3	Poor	Bo
44	Agreee	Bullish	Optimistic	More	4	4	3	2	1	Can't say	Bo
45	Neutral	Neutral	Neutral	Same	3	4	2	3	3	Excellent	No
46	Disagree	Bullish	Optimistic	Same	2	3	5	4	5	Can't say	Bo
47	Agreee	Bullish	Optimistic	More	4	5	4	2	3	Excellent	Wa
48	Agreee	Bearish	Neutral	More	4	3	4	1	4	Poor	No

49	Neutral	Bullish	Optimistic	Less	3	1	3	3	3	Can't say	CH Wa
50	Neutral	Bullish	Optimistic	Same	5	3	3	2	4	Poor	Tr
51	Agreee	Bullish	Optimistic	More	3	4	3	2	4	Poor	Bo
52	Disagree	Neutral	Optimistic	More	4	3	5	3	5	Poor	Wa wa
53	Disagree	Bearish	Pessimistic	Same	4	4	3	4	1	Poor	Bo
54	Agreee	Neutral	Optimistic	Same	5	3	4	2	3	Can't say	Wa wa
55	Agreee	Bullish	Optimistic	Same	5	4	4	4	4	Poor	No CH
56	Disagree	Neutral	Optimistic	Less	4	5	4	5	5	Poor	Wa wa
57	Neutral	Bearish	Optimistic	More	5	3	3	3	4	Excellent	Bo
58	Agreee	Bullish	Optimistic	More	3	3	3	3	4	Excellent	Wa wa
59	Disagree	Neutral	Neutral	Same	3	3	2	3	4	Poor	No CH
60	Disagree	Neutral	Optimistic	Less	4	4	3	4	4	Can't say	Wa wa
61	Disagree	Neutral	Neutral	Less	5	5	4	4	4	Poor	Wa wa
62	Neutral	Neutral	Optimistic	Same	4	4	3	3	4	Can't say	No CH
63	Agreee	Bullish	Optimistic	Same	5	4	4	4	4	Can't say	No CH
64	Disagree	Neutral	Neutral	Less	3	4	3	1	3	Poor	Bo
65	Disagree	Bearish	Pessimistic	Less	2	3	4	2	3	Poor	Bo
66	Agreee	Bullish	Optimistic	More	4	2	1	4	4	Excellent	Tr
67	Disagree	Neutral	Pessimistic	Less	3	3	5	1	4	Poor	Wa wa
68	Disagree	Bearish	Neutral	Less	3	3	5	1	4	Can't say	Wa wa
69	Neutral	Neutral	Optimistic	Less	3	4	4	2	3	Can't say	Wa wa
70	Disagree	Bearish	Pessimistic	Less	5	4	2	2	3	Poor	Bo
71	Disagree	Neutral	Neutral	Less	3	2	3	4	2	Poor	Tr

72	Disagree	Bearish	Neutral	Same	3	4	3	3	4	Poor	Tr
73	Neutral	Bearish	Neutral	Less	2	4	4	4	4	Poor	No CH
74	Disagree	Bearish	Neutral	Same	3	3	3	4	3	Excellent	No CH
75	Disagree	Bearish	Neutral	Less	4	4	5	5	4	Poor	Bo
76	Neutral	Neutral	Pessimistic	Same	4	3	4	2	3	Poor	Bo
77	Disagree	Bearish	Neutral	Same	3	4	3	4	3	Poor	Tr
78	Agreee	Neutral	Pessimistic	Same	1	3	3	3	3	Excellent	Tr
79	Disagree	Neutral	Pessimistic	Same	3	3	4	3	2	Poor	Tr
80	Disagree	Bearish	Neutral	Less	2	4	2	4	2	Poor	No CH
81	Disagree	Neutral	Pessimistic	Same	4	3	4	5	2	Poor	Bo
82	Disagree	Bearish	Neutral	Less	2	3	4	3	4	Poor	Bo
83	Disagree	Bearish	Neutral	Less	5	3	4	3	2	Poor	Bo
84	Neutral	Neutral	Pessimistic	More	3	3	4	2	3	Poor	No CH
85	Disagree	Bullish	Neutral	Same	5	4	2	2	3	Poor	Bo
86	Disagree	Bullish	Optimistic	Same	3	2	4	3	2	Poor	No CH
87	Neutral	Neutral	Pessimistic	Same	4	3	4	3	4	Poor	Tr
88	Disagree	Neutral	Pessimistic	Same	2	2	3	2	3	Poor	No CH
89	Disagree	Neutral	Pessimistic	Same	2	3	4	3	2	Poor	Tr
90	Disagree	Neutral	Optimistic	Same	2	4	4	2	3	Poor	Tr

	Question 1		Question 2			Question 3			Question 4	
Agree	24		Bearish	33		Optimistic	33		Same	3
Disagree	43		Bullish	17		Pessimistic	24		More	2
Neutral	23		Neutral	40		Neutral	33		Less	2
Total	90			90			90			9

Question 5			Question 6		
1	3	3.333333333	1	2	
2	13	14.44444444	2	10	
3	34	37.77777778	3	36	
4	25	27.77777778	4	35	
5	15	16.66666667	5	7	
	90			90	

Question 7		Question 8		Question 9		Question 10	
1	2	1	6	1	4	Excellent	8
2	10	2	21	2	16	Poor	61
3	39	3	33	3	32	Can't Say	21
4	32	4	25	4	27		
5	7	5	5	5	11		
	90		90		90		

Question 11	
Boost	17
Trouble	20
No Change	27
Wait and watch	26

