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Introduction

1.1 Traditional Finance

Finance is one of the important streams of econometrics which deals with various important decisions making which change whole company as well financial markets. Corporate finance one of its major applications tries to explain the financial decisions and the behavioral decision that emerge from interaction of managers and investors.

There are lots of financial theories prevailing in the books of finance. Finance cannot stand alone without its markets, and capital markets are one of the important arms of financial markets. Capital market consists of primary and secondary markets around the world. One cannot benefit from capital market without investing in the capital markets. The world of investing can be a cold, chaotic and confusing place. In this introduction I will try to point out some of the financial theories that are useful to explain behavior of the market.

1.2 Important Financial Theories

Each concept depending upon its relevance with this thesis has been explained with sufficient brief. No matter what your situation is, all of these concepts are important to understand because they help to clarify the inner workings of the mysterious market.

1.2.1 Risk Return Trade off

The first and important concept of financial markets is risk/return trade off. The risk/return tradeoff could easily be called the "higher the risk, higher the return." Deciding what amount of risk you can take while remaining comfortable with your investments is very important.

In the investing world, the dictionary definition of risk is the chance that an investment's actual return will be different than expected. Technically, this is
measured in statistics by standard deviation. Practically, risk means you have the possibility of losing some or even all of your original investment.¹

Low risks are associated with low potential returns. High risks are associated with high potential returns. The risk return trade-off is an effort to achieve a balance between the desire for the lowest possible risk and the highest possible return. The risk return trade-off theory is aptly demonstrated graphically in the chart below. A higher standard deviation means a higher risk and therefore a higher possible return.

Common misconception is that higher risk equals greater return. The risk return trade-off tells us that the higher risk gives us the possibility of higher returns. There are no guarantees. Just as risk means higher potential returns, it also means higher potential losses. On the lower end of the risk scale is a measure called the risk-free rate of return. It is represented by the return on 10 year Government of India Securities because their chance of default (i.e. not being able to repay principal and interest) is next to nothing. This risk free rate is used as a reference for equity markets whereas the overnight repo rate is used as a reference for debt markets. If the risk-free rate is currently 6 per cent, this means, with virtually no risk, we can earn 6 per cent per year on our money. When the capital markets provide average 13 per cent return per year, than who is interested in 6 per cent return per year? The return on index funds is not 13 per cent

¹www.investopedia.com
Every year, but rather -5 per cent one year, 25 per cent the next year, and so on. An investor still faces substantially greater risk and volatility to get an overall return that is higher than a predictable government security. We call this additional return, the risk premium, which in this case is 7 per cent (13 per cent - 6 per cent).

A common misconception is that higher risk equals greater return. The risk/return tradeoff tells us that the higher risk gives us the possibility of higher returns. There are no guarantees. Just as risk means higher potential returns, it also means higher potential losses.

On the lower end of the scale, the risk-free rate of return is represented by the return on U.S. Government Securities because their chance of default is next to nothing. If the risk-free rate is currently 6%, this means, with virtually no risk, we can earn 6% per year on our money. When financial markets provides average 12% return per year than no body interested in 6% return per year. The return from financial markets, from index funds is not 12% every year, but rather -5% one year, 25% the next year, and so on. An investor still faces substantially greater risk and volatility to get an overall return that is higher than a predictable government security. We call this additional return the risk premium, which in this case is 6% (12% - 6%). Determining what risk level is most appropriate for you isn't an easy question to answer. Risk tolerance differs from person to person. Your decision will depend on your goals, income and personal situation, among other factors.

1.2.2 Diversification

Diversification is a risk-management technique that mixes a wide variety of investments within a portfolio in order to minimize the impact that any one security will have on the overall performance of the portfolio.

Diversification essentially lowers the risk of your portfolio. There are three main practices that ensure the best diversification:

- **Spreading of portfolio among multiple investment vehicles** such as cash, stocks, bonds, mutual funds, and perhaps even some real estate. Alternately you could invest only in mutual funds but of varied types. For example and
Individual can invest 30 per cent in equity schemes, 40 per cent in debt/income schemes and 30 per cent in money market schemes. One can also invest in commodity funds although as and when permitted by SEBI

- **Differs the risk in securities.** If an investor is interested in investing in equity funds, then consider large cap as well as small cap funds. And if their interest for debt funds, than one can consider both long term and short term debt. It would be wise to pick investments with varied risk levels; this will ensure that large losses are offset by other areas²

- **Diverge securities by industry.** This will minimize the impact of specific risks of certain industries

Diversification is the most important component in helping you reach your long-range financial goals while minimizing your risk. At the same time, diversification is not an ironclad guarantee against loss. No matter how much diversification you employ, investing involves taking on some sort of risk³.

² http://letslearnfinance.net/risk-and-return-asset-capm-2/
³ http://www.assetmanagement.hsbc.com/in
1.2.3 Rupee cost averaging

The hardest task for any professional investor is to timing the market. Trying to time the market is a very tricky strategy. Buying at the absolute low and selling at the peak is nearly impossible in practice. This is why investment professionals preach rupee cost averaging (RCA).

RCA is the process of buying fixed amounts into a security/stock/mutual fund at fixed points in time regardless of the prevailing price. This means to buy more units of the security at lower prices, and fewer units at higher prices. The cost per unit/share over time therefore averages out. This reduces the risk of investing a large amount in a single security/mutual fund at the wrong time.

1.2.4 Asset allocation

Asset allocation is an investment portfolio technique that aims to balance risk and create diversification by dividing assets among major categories such as bonds, stocks, real estate, and cash. Each asset class has different levels of return and risk, so each will behave differently over time. At the same time that one asset is increasing in value, another may be decreasing or not increasing as much.

The underlying principle of asset allocation is that the older a person gets, the less risk he or she should face. After you retire you may have to depend on your savings as your only source of income. It follows that you should invest more conservatively at this time since asset preservation is crucial.

Determining the proper mix of investments in portfolio is extremely important. Deciding what percentage of portfolio should have stocks, mutual funds, and low risk instruments like bonds and treasuries isn't simple, particularly for those reaching retirement age. Therefore one must change asset allocation over time to move more towards safer asset classes (bonds, treasuries) as one gets older.

1.2.5 Random Walk Theory

Random walk theory gained popularity in 1973 when Burton Malkiel wrote "A Random Walk Down Wall Street", a book that is now regarded as an investment
classic. Random walk is a stock market theory that states that the past movement or direction of the price of a stock or overall market cannot be used to predict its future movement. The theory states that stock price fluctuations are independent of each other and have the same probability distribution, but that over a period of time, prices maintain an upward trend.

In short, random walk says that stocks take a random and unpredictable path. The chance of a stock's future price going up is the same as it going down. A follower of random walk believes it is impossible to outperform the market without assuming additional risk. In his book, Malkiel preaches that both technical analysis and fundamental analysis are largely a waste of time and are still unproven in outperforming the markets.

Malkiel constantly states that a long-term buy-and-hold strategy is the best and that individuals should not attempt to time the markets. Attempts based on technical, fundamental, or any other analysis are futile.

### 1.2.6 Efficient Market Hypothesis

A generation ago, the efficient market hypothesis was widely accepted by academic financial economists; for example Eugene Fama’s (1970) influential survey article, “Efficient Capital Markets.” It was generally believed that securities markets were extremely efficient in reflecting information about individual stocks and about the stock market as a whole.

Clarke at all in their research paper sited that “The efficient markets hypothesis (EMH),” known as the Random Walk Theory, is the proposition that current stock prices fully reflect available information about the value of the firm, and there is no way to earn excess profits, (more than the market overall), by using this information. Many investors try to identify securities that are undervalued and overvalued through some forecasting and valuation techniques. So this will pose an edge to investor to get substantial profits. The EMH asserts that none of these techniques are effective (i.e., the advantage gained does not exceed the transaction and research costs incurred), and therefore no one can predictably outperform the market.
The efficient markets hypothesis (EMH) suggests that profiting from predicting price movements is very difficult and unlikely. The main engine behind price changes is the arrival of new information. A market is said to be “efficient” if prices adjust quickly and, on average, without bias, to new information. As a result, the current prices of securities reflect all available information at any given point in time.

Clarke et al mentioned that EMH existed due to the intense competition among investors to earn profit from any new information. The ability to identify over- and underpriced stocks is very valuable (it would allow investors to buy some stocks for less than their “true” value and sell others for more than they were worth). Consequently, many people spend a significant amount of time and resources in an effort to detect "mispriced" stocks.

Naturally, as more and more analysts compete against each other in their effort to take advantage of over- and under-valued securities, the likelihood of being able to find and exploit such mis-priced securities becomes smaller and smaller. In equilibrium, only a relatively small number of analysts will be able to profit from the detection of mis-priced securities, mostly by chance. For the vast majority of investors, the information analysis payoff would likely not outweigh the transaction costs.⁴

The most crucial implication of the EMH can be put in the form of a slogan: Trust market prices! At any point in time, prices of securities in efficient markets reflect all

⁴ Russell Phillip, turkey violet M., “The efficient market hypothesis: A survey”
known information available to investors. There is no room for fooling investors, and as a result, all investments in efficient markets are fairly priced, i.e. on average investors get exactly what they pay for. Fair pricing of all securities does not mean that they will all perform similarly, or that even the likelihood of rising or falling in price is the same for all securities. According to capital markets theory, the expected return from a security is primarily a function of its risk. The price of the security reflects the present value of its expected future cash flows, which incorporates many factors such as volatility, liquidity, and risk of bankruptcy.

However, while prices are rationally based, changes in prices are expected to be random and unpredictable, because new information, by its very nature, is unpredictable. Therefore stock prices are said to follow a random walk.

Consequently, financial researchers distinguish among three versions of the Efficient Markets Hypothesis, depending on what is meant by the term “all available information”.

1.2.6.1 Weak Form Efficiency

The weak form of the efficient markets hypothesis asserts that the current price fully incorporates information contained in the past history of prices only. That is, nobody can detect mis-priced securities and “beat” the market by analyzing past prices. The weak form of the hypothesis got its name for a reason – security prices are arguably the most public as well as the most easily available pieces of information. Thus, one should not be able to profit from using something that “everybody else knows”. On the other hand, many financial analysts attempt to generate profits by studying exactly what this hypothesis asserts is of no value - past stock price series and trading volume data.

The empirical evidence for this forms of market efficiency, and therefore against the value of technical analysis, is pretty strong and quite consistent. After taking into account transaction costs of analyzing and of trading securities it is very difficult to make money on publicly available information such as the past sequence of stock prices.
1.2.6.2 Semi-strong Form Efficiency

The semi-strong-form of market efficiency hypothesis suggests that the current price fully incorporates all publicly available information. Public information includes not only past prices, but also data reported in a company’s financial statements (annual reports, income statements, filings for the Security and Exchange Commission, etc.), earnings and dividend announcements, announced merger plans, the financial situation of company’s competitors, expectations regarding macroeconomic factors (such as inflation, unemployment), etc. In fact, the public information does not even have to be of a strictly financial nature. For example, for the analysis of pharmaceutical companies, the relevant public information may include the current (published) state of research in pain-relieving drugs. The assertion behind semi-strong market efficiency is still that one should not be able to profit using something that “everybody else knows” (the information is public).

Nevertheless, this assumption is far stronger than that of weak-form efficiency. Semi strong efficiency of markets requires the existence of market analysts who are not only financial economists able to comprehend implications of vast financial information, but also macroeconomists, experts adept at understanding processes in product and input markets. Arguably, acquisition of such skills must take a lot of time and effort. In addition, the “public” information may be relatively difficult to gather and costly to process. It may not be sufficient to gain the information from, say, major newspapers and company-produced publications. One may have to follow wire reports, professional publications and databases, local papers, research journals etc. in order to gather all information necessary to effectively analyze securities.

As we will see later, financial researchers have found empirical evidence that is overwhelming consistent with the semi-strong form of the EMH.

1.2.6.3 Strong Form Efficiency

The strong form of market efficiency hypothesis states that the current price fully incorporates all existing information, both public and private (sometimes called inside information). The main difference between the semi-strong and strong efficiency
hypotheses is that in the latter case, nobody should be able to systematically generate profits even if trading on information not publicly known at the time. In other words, the strong form of EMH states that a company’s management (insiders) are not be able to systematically gain from inside information by buying company’s shares ten minutes after they decided (but did not publicly announce) to pursue what they perceive to be a very profitable acquisition. Similarly, the members of the company’s research department are not able to profit from the information about the new revolutionary discovery they completed half an hour ago. The rationale for strong-form market efficiency is that the market anticipates, in an unbiased manner, future developments and therefore the stock price may have incorporated the information and evaluated in a much more objective and informative way than the insiders. Not surprisingly, though, empirical research in finance has found evidence that is inconsistent with the strong form of the EMH.

Evidence in favor of the efficient markets hypothesis

Since its introduction into the financial economics literature over almost 40 years ago, the efficient markets hypothesis has been examined extensively in numerous studies. The vast majority of this research indicates that stock markets are indeed efficient. In this section, we briefly discuss the evidence regarding the weak form, semi-strong form, and strong-form versions of the efficient markets hypothesis, the weak form of market efficiency

The random walk hypothesis implies that successive price movements should be independent. A number of studies have attempted to test this hypothesis by examining the correlation between the current return on a security and the return on the same security over a previous period. A positive serial correlation indicates that higher than average returns are likely to be followed by higher than average returns (i.e., a tendency for continuation), while a negative serial correlation indicates that higher than average returns are followed, on average, by lower than average returns (i.e., a tendency toward reversal). If the random walk hypothesis were true, we would expect zero correlation.
Consistent with this theory, Fama (1965) found that the serial correlation coefficients for a sample of 30 Dow Jones Industrial stocks, even though statistically significant, were too small to cover transaction costs of trading. Subsequent studies have mostly found similar results, across other time periods and other countries.\(^5\)

Another strand of literature tests the weak form of market efficiency by examining the gains from technical analysis. While many early studies found technical analysis to be useless, recent evidence (e.g., by Brock, Lakonishok, and LeBaron (1992) finds evidence to the contrary.\(^6\) They find that relatively simple technical trading rules would have been successful in predicting changes in the Dow Jones Industrial Average. However, subsequent research has found that the gains from these strategies are insufficient to cover their transaction costs. Consequently, the findings are consistent with weak-form market efficiency.

**1.2.6.4 The Semi-strong Form of efficiency and application**

The semi-strong form of the EMH is perhaps the most controversial, and thus, has attracted the most attention. If a market is semi-strong form efficient, all publicly available information is reflected in the stock price. It implies that investors should not be able to profit consistently by trading on publicly available information.

Many people suggest that mutual fund managers are skilled investors who are able to beat the market consistently. Unfortunately, the empirical evidence does not support this view. In one of the first studies of its kind, Michael Jensen found that over the period 1955 to 1964 mutual funds achieved a risk-adjusted performance of approximately zero percent per year.\(^7\) In other words, mutual fund managers exhibited no special stock picking ability. Furthermore, this return fell to \(-0.9\)% per year after taking into consideration commissions and expenses. More recently Burton Malkiel compared the performance of managed general portfolio funds to the performance of S&P 500 Index.

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During 1984-1994, the S&P 500 gained 281.65%, while the equity funds on average appreciated only by 214.80%. Multiple studies have demonstrated that mutual funds, on average, do not exceed the return of the market index. This has been demonstrated in both large markets and smaller, supposedly “less-efficient” markets. Equally important to investors is whether or not they can identify some managers or mutual funds that can consistently beat the index. The findings show that a mutual fund’s performance over the past 1, 3, 5 or 10 years is not predictive of its future performance.

There are some perverse findings. In July 1999, the Wall Street Journal reported a study comparing the performance of managed equity funds based on the fees they charge shareholders. One would expect that the higher fees would be charged by funds performing more substantial market research. The results showed that, when taking the fees into consideration, on average the low-fee funds tended to slightly outperform the high-fee funds. William Sharpe states: “The key issue is that past performance is a thin reed for how to predict future performance. Expense ratios and turnover are generally better predictors.”

Many research studies have examined announcements similar to the one above, to determine whether the market reacts as predicted. Many types of events have been studied, including mergers and acquisitions, seasoned equity offerings, spin-offs, dividend announcements, etc. The evidence generally indicates that the market reacts quickly to these various corporate announcements - often in a matter of minutes. Thus, investors cannot expect to earn superior returns by trading on the announcement date. In a widely cited study, Eugene Fama, Lawrence Fisher, Michael Jensen, and Richard Roll (hereafter FFJR) examined the stock price reaction around stock splits.8

Conventional wisdom had long held that stock splits were good news for investors, because they were generally followed by dividend increases. FFJR found that stock splits were preceded, on average, by periods of strong performance, most likely

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because firms tend to split in good times. However, following the split, they observed no evidence of abnormal stock price performance. That is, investors would not be able to profit by purchasing the stock on the split date. This evidence is consistent with the efficient markets hypothesis.

1.2.6.5 The Strong Form of efficiency and insider trading

Empirical tests of the strong-form version of the efficient markets hypothesis have typically focused on the profitability of insider trading. If the strong-form efficiency hypothesis is correct, then insiders should not be able to profit by trading on their private information. Jaffe (1974) finds considerable evidence that insider trades are profitable.9 A more recent paper by Rozeff and Zaman (1988) finds that insider profits, after deducting an assumed 2 percent transactions cost, are 3% per year10. Thus, it does not appear to be consistent with the strong-form of the EMH.

Efficient Market hypothesis is considered as base theory to explain stock market and its movement. This theory faces opposition from behaviorist experts which will be focused under behavioral finance section.

1.2.7 CAPM – Capital Asset Pricing Model

CAPM is also considered as the second most influential theory of capital markets. The capital asset pricing model (CAPM) of William Sharpe (1964) and John Lintner (1965) marks the birth of asset pricing theory (resulting in a Nobel Prize for Sharpe in 1990). The CAPM is still widely used in applications, like cost of capital for firms and evaluating the performance of managed portfolios. The CAPM is offers influential and automatically fair predictions about how to measure risk and the relation between expected return and risk.

The CAPM’s empirical problems may reflect theoretical failings, the result of many simplifying assumptions. But they may also be caused by difficulties in implementing valid tests of the model.

For example, the CAPM says that the risk of a stock should be measured relative to a comprehensive “market portfolio” that in principle can include not just traded financial assets, but also consumer durables, real estate and human capital. The general idea behind CAPM is that investors need to be compensated in two ways: time value of money and risk. The time value of money is represented by the risk-free (rf) rate in the formula and compensates the investors for placing money in any investment over a period of time.

The other half of the formula represents risk and calculates the amount of compensation the investor needs for taking on additional risk. This is calculated by taking a risk measure (beta) that compares the returns of the asset to the market over a period of time and to the market premium (Rm-rf). The CAPM says that the expected

return of a security or a portfolio equals the rate on a risk-free security plus a risk premium. If this expected return does not meet or beat the required return, then the investment should not be undertaken. The security market line plots the results of the CAPM for all different risks (betas). As said above, the CAPM takes into account the non-diversifiable market risks or beta (β) in addition the expected return of a risk-free asset. While CAPM is accepted academically, there is empirical evidence suggesting that the model is not as profound as it may have first appeared to be. Read on to learn why there seems to be a few problems with the CAPM.
His model starts with the idea that individual investment contains two types of risk:

1. **Systematic Risk** - These are market risks that cannot be diversified away. Interest rates, recessions and wars are examples of systematic risks.

2. **Unsystematic Risk** - Also known as "specific risk," this risk is specific to individual stocks and can be diversified away as the investor increases the number of stocks in his or her portfolio. In more technical terms, it represents the component of a stock’s return that is not correlated with general market moves.

Modern portfolio theory shows that specific risk can be removed through diversification. The trouble is that diversification still doesn't solve the problem of systematic risk; even a portfolio of all the shares in the stock market can't eliminate that risk. Therefore, when calculating a deserved return, systematic risk is what plagues investors most. CAPM, therefore, evolved as a way to measure this systematic risk.¹²

A complete understanding of financing and investment patterns requires a correct understanding of the priorities and environment of investors and managers. The mainstream research in corporate finance is imaging rationality of these two sets of agents. Both stakeholders are supposed to enlarge unbiased forecasts about future events. These forecasts are used to take decision that serves their own benefits. This conveys that that manager is assuming that capital markets are efficient, and prices rationally reflecting public information about fundamental values. Similarly, investors are thinking that managers will take steps for the interest of their company.

1.3 Behavioral Finance

1.3.1 Introduction – Behavioral Finance

The above discussed theories Capital asset pricing model (CAPM) and the efficient market hypothesis (EMH) consider people are rational and are fully aware about stock’s movement. The EMH contend that competition between investors drives prices to their “correct” value. The EMH does not consider that all investors are rational, but it considers markets are rational. These finding is contradicted by the proponents of behavioral finance. A stream that has evolved during seventies are assuming inefficient markets and contradicting basic CAPM equation. The growing field of behavioral finance studies the moods of market with the simple thought that investors are not rational as traditional theory has assumed, but their psychology affect their decisions.

Behavioral finance look to cognitive psychology to account for the irrational and illogical behaviors that modern finance did not answer. Normal financial theory presumes that the participants of financial market are “rational”. Though, there are many instances where emotion and psychology influence investor’s decisions, and forced them to behave in unpredictable or irrational ways. Behavioral finance studies psychological theory with conventional economics and finance and provides explanations about why people make irrational financial decisions. While behavioral finance studies the moods of investors, corporate behavioral finance focusing on managerial actions and traits as well investor’s speculations for their decisions.

1.3.2 History

In 1896, (le Bon 1896 Gustave le Bon) researched for social psychology and study of people’s mind. Selden (1912) studied psychology of stock market and establish interesting relationship between volatility of prices and degrees of mental attitude of investment and trading activities. Psychologist Leon Festinger (Festinger, Riecken and Schachter 1956) presented an important concept known as cognitive dissonance which states that if two conditions are inconsistent then cognitive dissonance will create. As dissonance is not attractive people will change their beliefs. Pratt (1964)
wrote about utility functions, risk aversion and risk in proportion of total assets. Behavioral finance is relatively new as a subject of study. Although the Journal of Finance published the first formal paper in behavioral finance in 1972\textsuperscript{13}, financial economists did not begin to apply the concepts pioneered by Slovic and other psychologists working in behavioral decision making until the early 1980s. Even then, it took more than a decade for the behavioral approach to gain traction. The first published work in behavioral finance by economists was Shefrin and Statman\textsuperscript{14}. Shefrin and Statman\textsuperscript{15} (1985) and DeBondt and Thaler\textsuperscript{16}, these two papers set the stage for two main streams in the behavioral finance literature, one pertaining to irrationality in investor behavior and the other to inefficiency in asset pricing. These authors had initiated research in the field of behavioral finance some other contributors are there who provided theoretical and empirical evidences.

### 1.3.2.1 Important Contributors

Cognitive psychologists Daniel Kahneman and Amos Tversky are considered the fathers of behavioral economics/finance. Since their initial collaborations in the late 1960s, this duo has published about 200 works, most of which relate to psychological concepts with implications for behavioral finance. In 2002, Kahneman received the Nobel Memorial Prize in Economic Sciences for his contributions to the study of rationality in economics.

Kahneman and Tversky have focused much of their research on the cognitive biases and heuristics (i.e. approaches to problem solving) that cause people to engage in unanticipated irrational behavior. Their most popular and notable works include writings about prospect theory and loss aversion - topics that I will examine later.

While Kahneman and Tversky provided the early psychological theories that would be the foundation for behavioral finance, this field would not have evolved if it weren't for economist Richard Thaler.


During his studies, Thaler became more and more aware of the shortcomings in conventional economic theories as they relate to people's behaviors. After reading a draft version of Kahneman and Tversky's work on prospect theory, Thaler realized that, unlike conventional economic theory, psychological theory could account for the irrationality in behaviors.

Thaler went on to collaborate with Kahneman and Tversky, blending economics and finance with psychology to present concepts, such as mental accounting, the endowment effect and other biases.

1.3.3 Key Concepts of Behavioral Finance

Behavioral finance had its roots back in 1912 when Selden wrote Psychology of the Stock Market\textsuperscript{17}. He based the book `upon the belief that the movements of prices on the exchanges are dependent to a very considerable degree on the mental attitude of the investing and trading public'.

1.3.3.1 Key concept I – Cognitive Dissonance Theory

Later, in 1956 the US psychologist Leon Festinger introduced a new concept in social psychology: the theory of cognitive dissonance (Festinger, Riecken and Schachter 1956)\textsuperscript{18}. According to cognitive dissonance theory, there is a tendency for individuals to seek consistency among their cognitions (i.e., beliefs, opinions). When there is an inconsistency between attitudes or behaviors (dissonance), it is most likely that the attitude will change to accommodate the behavior.\textsuperscript{19} Dissonance theory applies to all situations involving attitude formation and change. It is especially relevant to decision-making and problem-solving.

1.3.3.1 Key concept II – Different types of heuristic

Cognitive psychologists Daniel Kahneman and Amos Tversky are considered the fathers of behavioral finance. In introduced the heuristic\textsuperscript{20}: a crude rule of thumb for making judgments about probabilities, statistics, future outcomes, etc. They propose


\textsuperscript{19} http://tip.psychology.org/festinge.html

\textsuperscript{20} The rule-of-thumb strategies shorten decision-making time and allow people to function without constantly stopping to think about the next course of action.
that a person evaluates the frequency of classes or the probability of events by availability, i.e. by the ease with which relevant instances come to his/her mind.’ This two brilliant psychologist also developed two kinds of heuristics in 1974 that are employed when making judgments under uncertainty21.

Representativeness heuristic - People tend to judge the probability of an event by finding a ‘comparable known’ event and assuming that the probabilities will be similar. When people are asked to judge the probability that an object or event A familiar to class or process B, probabilities are evaluated by the degree to which A is representative of B, that is, by the degree to which A resembles B.

Availability heuristics - Availability is a cognitive heuristic in which a decision maker relies upon knowledge that is readily and easily available rather than searches for other alternatives or procedures.

1.3.3.2 Key concept III – Anchoring

It is one of the key concepts in behavioral finance. Similar to how a house should be built upon a good, solid foundation, our ideas and opinions should also be based on relevant and correct facts in order to be considered valid. The concept of anchoring draws on the tendency to attach or "anchor" our thoughts to a reference point - even though it may have no logical relevance to the decision at hand22. In numerical prediction, when a relevant value (an anchor) is available, people make estimates by starting from an initial value (the anchor) that is adjusted to yield the final answer.

Anchoring can also be a source of frustration in the financial world, as investors base their decisions on irrelevant figures and statistics. For example, some investors invest in the stocks of companies that have fallen considerably in a very short amount of time. In this case, the investor is anchoring on a recent "high" that the stock has achieved and consequently believes that the drop in price provides an opportunity to buy the stock at a discount.23

22 Albert Phung, An Introduction to Behavioral Finance‖, www.investopedia.com
23 Albert Phung, An Introduction to Behavioral Finance‖, www.investopedia.com
1.3.3.4 **Key concept IV – Expected Utility theory Prospect Theory**

Expected Utility Theory states that the decision maker chooses between risky or uncertain prospects by comparing their expected utility values, i.e., the weighted sums obtained by adding the utility values of outcomes (gains or losses) of actions (alternatives) multiplied by their respective probabilities. The alternative which has the maximum utility is selected. Expected utility theory does not allow for influences on choice due to characteristics of the context of the decisions.

1.3.3.5 **Key concept V – Prospect Theory**

Against the expected utility theory, Kahneman and Tversky developed an alternative model, which they called prospect theory\(^{24}\), where decision makers prefer to simplify their choices cognitively whenever possible, satisfying rather than maximizing. This theory also contends that people value gains and losses differently, and, as such, will base decisions on perceived gains rather than perceived losses. It allows one to describe how people make choices in situations where they have to decide between alternatives that involve risk.

![Figure 1.5 Prospect Theory](http://cbs-neuroeconomics.wikispaces.com/Prospect+Theory)

(Reference: http://cbs-neuroeconomics.wikispaces.com/Prospect+Theory)

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According to Prospect theory if a person were given two equal choices, one expressed in terms of possible gains and the other in possible losses, people would choose the gains - even when they achieve the same economic end result. According to prospect theory, losses have more emotional impact than an equivalent amount of gains. For example, in a traditional way of thinking, the amount of utility gained from receiving Rs.500 should be equal to a situation in which you gained Rs.1000 and then lost Rs.500. In both situations, the end result is a net gain of Rs500.

In which they found that people underweight outcomes that are merely probable in comparison with outcomes that are obtained with certainty; also that people generally discard components that are shared by all prospects under consideration.

Under prospect theory, value is assigned to gains and losses rather than to final assets; also probabilities are replaced by decision weights. The value function is defined on deviations from a reference point and is normally concave for gains (implying risk aversion), commonly convex for losses (risk seeking) and is generally steeper for losses than for gains (loss aversion).

1.3.3.5.1 Financial Relevance of the prospect theory

The prospect theory can be used to explain quite a few illogical financial behaviors. For example, there are people who do not wish to put their money in the bank to earn interest or who refuse to work overtime because they don't want to pay more taxes. Although these people would benefit financially from the additional after-tax income, prospect theory suggests that the benefit (or utility gained) from the extra money is not enough to overcome the feelings of loss incurred by paying taxes.

1.3.3.6 Key Concept VI - Mental Accounting

Mental accounting refers to the tendency for people to separate their money into separate accounts based on a variety of subjective criteria, like the source of the money and intent for each account. According to the theory, individuals assign different functions to each asset group, which has an often irrational and detrimental effect on their consumption decisions and other behaviors. Although many people use mental accounting, they may not realize how illogical this line of thinking really is.
For example, people often have a special "money jar" or fund set aside for a vacation or a new home, while still carrying substantial credit card debt. In this example, money in the special fund is being treated differently from the money that the same person is using to pay down his or her debt, despite the fact that diverting funds from debt repayment increases interest payments and reduces the person's net worth. Simply put, it's illogical (and detrimental) to have savings in a jar earning little to no interest while carrying credit-card debt accruing at 20% annually.

1.3.3.7 Key Concept VII – Framing

In another important paper Tversky and Kahneman (1981) introduced framing. They showed that the psychological principles that govern the perception of decision problems and the evaluation of probabilities and outcomes produce predictable shifts of preference when the same problem is framed in different ways. In simpler terms, a person has, through their lifetime, built a series of mental emotional filters. They use these filters to make sense of the world. The choices they then make are influenced by their frame or emotional filters.

Framing is influenced by the background of a context choice and the way in which the question is worded. When one seeks to explain an event, the understanding often depends on the frame referred to.

Amos Tversky and Daniel Kahneman have shown that framing can affect the outcome (i.e. the choices one makes) of choice problems, to the extent that several of the classic axioms of rational choice do not hold. This led to the development of prospect theory as an alternative to rational choice theory.

1.3.3.8 Key Concept VIII - Status quo Bias

People tend not to change an established behavior unless the incentive to change is compelling. It should be distinguished from rational preference for the status quo per se due to, for example, information effects, which cannot explain all experimental results. The finding has been observed in many fields, including political science and economics.

Later with such kind of behavioral traits in 1990, Kahneman, Knetsch and Thaler reported several experiments that demonstrate that loss aversion and the endowment effect persist even in market settings with opportunities to learn and conclude that they are fundamental characteristics of preferences.\textsuperscript{26}

1.3.3.9 Key Concept IX - Loss aversion and Endowment effect

In prospect theory, loss aversion refers to people's tendency to strongly prefer avoiding losses to acquiring gains. Some studies suggest that losses are twice as powerful, psychologically, as gains. Loss aversion was first convincingly demonstrated by Amos Tversky and Daniel Kahneman. In behavioral economics, the endowment effect (also known as divestiture aversion) is a hypothesis that people value a good or service more once their property right to it has been established. In other words, people place a higher value on objects they own than objects that they do not. In one experiment, people demanded a higher price for a coffee mug that had been given to them but put a lower price on one they did not yet own. This hypothesis underlies consumer theory and indifference curves. This endowment effect was first theorized by Richard Thaler.

1.3.3.10 Key Concept X - Herd Behavior

It is the habit tendency Banerjee (1992) for individuals to mimic the actions (rational or irrational) of a larger group. Individually, however, most people would not necessarily make the same choice. When an individual are aware about that particular idea or action is incorrect but still he/she is following in the assumption that group knows better than him/her. This is especially prevalent in situations in which an individual has very little experience.

These all concepts provide empirical frame work for behavioral finance, now I will focus on some basic and underlying theories of behavioral Finance.

1.3.4 Underlying theories of behavioral Finance

Above psychological key concepts provide good frame work and structure for behavioral finance to stand. But its existence is only credited to the two biggest theories. One of the theory known as cognitive psychology and other but most important is ‘limits to arbitrage’.

1.3.4.1 Cognitive Psychology

Cognitive psychology refers to how people think. There is a huge psychology literature documenting that people make systematic errors in the way that they think: they are overconfident, they put too much weight on recent experience, etc. Their preferences may also create distortions. Behavioral finance uses this body of knowledge, and applied in aggregate stock market, investors behaviors and answers many of unresolved questions.

1.3.4.2 Cognitive Psychology and its Application - Investor Behavior

Behavioral finance can explain certain investor behavior in certain situation. Barberis and Thaler present how psychology influences the behavior of individual investors. There two trends noticeable around the world. First is increased numbers of individual are participating in equities as the cost of this has fallen and second is increased contribution in retirement planning for their own financial net worth. This investor behavior is explained by behavioral traits. First is improper diversification. Individual investors’ portfolio is not properly diversified. Benartzi and Thaler (2001)\(^27\) assumes that ambiguity about stocks to purchase and their aspiration for familiar stocks lead those ‘home biases. French and Poterba (1991)\(^28\) mentioned that in USA, Japan and in Taiwan people wanted to concentrate more on the domestic equity. Some research found that some individual have home bias within countries. In Finland, Grinblatt and Keloharju (2001) investor gave more priorities to the nearby firms, which uses their


native languages in their financial reports and whose CEO is also of share their background.

Haziness about securities and familiarity of home based equity provides explanation for improper diversification. Since individual invest heavily in familiar scripts portfolio becomes undiversified. The other reason for such improper diversification is excessive trading. Barber and Odean (2000) find that the average return to the investors after considering brokerage and other tax is below average for the one who traded heavily. Odean (1999) also finds that the average gross return of stocks is considerably lesser than for less frequent trading.

1.3.4.3 Limits to Arbitrages
The field of behavioral finance witnessed number of theoretical papers showing that in an economy where rational and irrational traders interact, irrationality can have a substantial and long-lived impact on prices. These papers, known as the literature on “limits to arbitrage”, are one of the major successes of behavioral finance. Form one of the two buildings blocks of behavioral finance. Limits to arbitrage refer to predicting in what circumstances arbitrage (trading based on knowledge that the price of an asset is different than its fundamental value) forces will be effective, and when they won't be.

In the traditional framework security’s price equals its “fundamental value”. The hypothesis that actual prices reflect fundamental values is the Efficient Markets Hypothesis (EMH). Behavioral finance argues that some features of asset prices are most plausibly interpreted as deviations from fundamental value, and that these deviations are brought about by the presence of traders who are not fully rational. An objection to this view goes back to Friedman (1953) is that rational traders will quickly undo any dislocations caused by irrational traders. To illustrate the argument, suppose that the fundamental value of a share of Reliance Industries’ is INR 900. Imagine that a group of irrational traders becomes excessively pessimistic about Reliance’s future prospects and through its selling, pushes the price to INR 850. Defenders of the EMH argue that rational traders, sensing an attractive opportunity, will buy the security at its bargain price and at the same time, hedge their bet by shorting a “substitute” security, such as Gail Limited, that has similar cash flows to
Reliance Industries in future. The buying pressure on Reliance Industries’ shares will then bring their price back to fundamental value. Friedman’s provided two assertions. First, as soon as there is a deviation from fundamental value – in short, a mispricing – an attractive investment opportunity is created. Second, rational traders will immediately snap up the opportunity, thereby correcting the mispricing.

Behavioral finance disputes that even when an asset is wildly mispriced, strategies designed to correct the mispricing can be both risky and costly, rendering them unattractive. As a result, the mispricing can remain unchallenged. Irrational traders are often known as “noise traders”, rational traders are typically referred to as “arbitrageurs”. An arbitrage is an investment strategy that offers risk less profits at no cost. The rational trader in Friedman’s paper has a belief that a mispriced asset immediately creates an opportunity for risk less profits.

Behavioral finance criticizes this argument. It says that strategies that rational traders adopt are often very risky. The idea that when a mispricing occurs, strategies designed to correct it can be both risky and costly, thereby allowing the mispricing to survive. Here we discuss some of the risks and costs that have been identified. In our discussion, we return to the example of Reliance Industry, whose fundamental value is INR 900, but which has been pushed down to INR 850 by pessimistic noise traders.

**Fundamental risk.** The most obvious risk an arbitrageur faces if he buys Reliance Industries’ stock at INR 850, a piece of bad news about Reliance’s make stock to fall further, leading to losses. The problem is that substitute securities are rarely perfect, and often highly imperfect, making it impossible to remove all the fundamental risk. Shorting Gail India, protects the arbitrageur from adverse news about the Oil industry as a whole, but still leaves him vulnerable to news that is specific to Reliance.

**Noise trader risk** - Noise trader risk, an idea introduced by De Long et al. (1990a) and studied further by Shleifer and Vishny (1997)\(^\text{29}\), shows that mispricing will certainly worsen in short time period only. Noise trader risk matters because it can

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force arbitrageurs to liquidate their positions early, bringing them potentially steep losses.

**Implementation costs** - This cost includes transaction costs such as commissions, taxes which make it less attractive to exploit a mispricing. Since shorting is often essential to the arbitrage process, we also include short-sale constraints like higher charges for borrowing of stock that is not owned.

Now for a while assume that the mispriced security does not have a close substitute. By definition then, the arbitrageur is exposed to fundamental risk. In this case, there are two conditions which make arbitrage to be limited.

(I) That arbitrageurs are risk averse and

(II) The fundamental risk is systematic, in that it cannot be diversified by taking many such positions.

Condition (I) ensures that the mispricing will not be wiped out by a single arbitrageur taking a large position in the mispriced security. Condition (ii) ensures that the mispricing will not be wiped out by a large number of investors each adding a small position in the mispriced security to their current holdings. The presence of noise trader risk and implementation costs limit arbitrage further.

Even if a perfect substitute does exist, arbitrage can still be limited. The existence of the substitute security immunizes the arbitrageur from fundamental risk.

Limits to the arbitrage have applied at many places in the capital market. One of its biggest applications is aggregate of stock markets, which is out of scope of this study. The other application where is widely applied is Behavioral Corporate Finance. This application will be taken in detail in the next topic.

1.3.5 **Contradiction with Traditional Finance**

As discussed earlier that behavioral finance contradicts with the very popular traditional mechanism, i.e. Efficient Market Hypothesis. This contradiction is presented in terms of anomalies of that violate the normal theories of traditional finance.
Firstly weak form of efficiency has contradicted in research literature and in Indian context. In a paper written by Poshakwale Sunil (1996) “Evidence of day weak form efficiency in Indian stock market” he mentioned that stock prices are random is basic to the efficient market hypothesis and capital asset pricing models. This study has presented evidence concentrating on the weak form efficiency and on the day of week effect in the Bombay Stock Exchange under the consideration that variance is time dependent. The results of their test and serial correlation coefficients tests indicate nonrandom nature of the series and, therefore, violation of weak form efficiency in the BSE.

In other study by Gupta Rakesh and Basu Parikshit (2007) on the research paper “Weak Form Efficiency in Indian Stock Markets” examines the weak form efficiency in two of the Indian stock exchanges which represent the majority of the equity market in India. The results of their tests find that these markets are not weak form efficient. These results support the common notion that the equity markets in the emerging economies are not efficient and to some degree can also explain the less optimal allocation of portfolios into these markets.

1.3.5.1 Evidence against the Efficient Market Hypothesis

The EMH became controversial especially after the detection of certain anomalies in the capital markets. Some of the main anomalies that have been identified are as follows: In the normal traditional finance some pattern or movement occurs regularly which violated traditional theories. These theories provide big contribution for the formation of behavioral finance. These so-called anomalies, and their continued existence, directly violate modern financial and economic theories, which assume rational and logical behavior.

1.3.5.2 January Returns - The January effect is named after the phenomenon in which the average monthly return for small firms is consistently higher in January than any other month of the year. This contradicts with the efficient market hypothesis, which predicts that stocks should move at a "random walk".

1.3.5.3 Winner’s Curse - (Thaler 1988) It is a tendency for the winning bid in an auction setting to exceed the intrinsic value of the item purchased, suggest that this is not the case. Rational-based theories assume that all participants involved in the bidding process will have access to all relevant information and will all come to the
same valuation. Any differences in the pricing would suggest that some other factor not directly tied to the asset is affecting the bidding.

1.3.5.4 **Equity Premium Puzzle** - According to the capital asset pricing model (CAPM), higher the risk higher the returns for stocks. Studies have shown that over a 70-year period, stocks yield average returns that exceed government bond returns by 6-7%. Stock real returns are 10%, whereas bond real returns are 3%. However, academics believe that an equity premium of 6% is extremely large and would imply that stocks are considerably risky to hold over bonds. Conventional economic models have determined that this premium should be much lower. This lack of convergence between theoretical models and empirical results represents a stumbling block for academics to explain why the equity premium is so large.

Behavioral finance's explain equity premium puzzle with the concept called as ‘myopic loss aversion”. Myopic loss aversion shows that investors are more attentive towards negative impact of losses in comparison of positive impact of equivalent amount of gains. Investors take a very short term view on an investment and so such short sighted (myopic) investor act unfavorably for small downside changes in stock price. This is the reason for equities have such high premium to pay for investor’s short term but very high degrees of loss aversion attitude.

1.4 **Application - Behavioral corporate Finance**

Corporate finance deals with major corporate decision like capital structure, investments and financial decision, cost of capital etc. Behavioral application of corporate finance is integrated in two concepts. The first concept focuses on the irrationality among investors side while second focus on the irrationality on manager’s side. In reality both side of irrationality may exist same time but here I will assume any one agent as irrational while other as rational.

Corporate Finance describes the interaction between managers and investors and its impacts on firm value. Traditional theory supposes that both groups act rationally. If this was true, managers could assume efficient financial markets. Investors, on could assume that managers acted self-serving. Therefore, investors would have to offer incentives bringing the interests of managers in line with their own interests. In reality, however, rational behavior cannot be assumed for either managers or investors.
Instead, Behavioral Corporate Finance shows that several psychological biases influence decision making of both groups. In this thesis, I discuss studies in this academic field. I distinguish between two approaches. The first approach focuses on the analysis of irrational behavior of managers in the context of efficient financial markets. Many empirical studies discover irrational managerial behavior that is systematic. For example, it is shown that managers are overconfident and excessively optimistic (Ben-David, Graham & Harvey, 2010). Other psychological biases include anchoring, mental accounting and bounded rationality (Baker, Ruback & Wurgler, 2004; Gervais, 2010).

1.4.1 The irrational manager’s approach

This approach predicts that managers are irrational and influenced with behavioral traits.

The approach is centered on optimism and overconfidence of manager. The optimism and overconfidence are similar to agency and asymmetric information situations prevailing in the firm. The focus of study is behavioral that departs from rational expectations. Here managers are assumed that he can maximize firm value which is not realistic. The limiting factor here is corporate governance for making rational decisions. And unlike in a traditional agency problem, which arises when there is a
conflict of interest between managers and outside investors, standard incentive contracts have little effect: An irrational manager may well think that he is maximizing value.

Revising again that two approaches take different focus about duties and responsibility of managers and this have different impact for both line of approaches. If the main sources of rationality on manager’s side, value maximization and effective decision are central for managers. This suggests taking benefits from stock markets and valuations.

On the other hand if managers are irrational it requires reducing discretion and managers to respond to market price signals rapidly. The difference between the two approaches and its influence eon capital markets as well as on companies makes this field interesting.

1.4.2 The Irrational Investors approach

The “irrational investors approach” assumes that markets are inefficient and imperfect so prices are always deviated from its fundamental values. This causes mispricing to prevail in the market. Being corporate managers they are always having more information as compared to investors and are tempted to take benefit of such situations. Managers being rational decision maker would exploit such mispricing and respond by taking decision to increase value of the firm. This decision either increase value of the firm or lower firm value in long run.

Baker and wurgler asserts three objective functions for rational managers. First is increasing fundamental value second is taking decision to increase fundamental values (catering) and third is market timing which refers to issuance of overvalued security and purchase of undervalued securities. This function has been discussed in entire research deeply.
The entire research is based upon these lines. This research is linked with corporate behavioral finance and with decision framing criteria of managers. As the research is totally focused on irrational investors view, the starting point is market timing where managers are inclined to take advantage of overvalued market and so issue IPO. The data is taken for 48 Indian companies and identifies about the market timing mechanism.

1.5 Conclusion
Behavioral finance is a new approach to financial markets and helpful to solve difficulties faced by the traditional paradigm. It claims that some financial phenomena can be better understood in which some managers or investors are irrational.

Traditional finance’ main strength is its rigorous framework while major weakness is unrealistic assumption of rationality. Behavioral finance’s strength is its use of assumption based upon results from psychology literature about people’s irrational behavior at certain circumstances. The principle weakness of behavioral finance is its ad hoc collection of models which absence of stability and consolidated structure.

There are two basic actions can take place in the efficient capital market. First is when the stock price is different than the fundamental values mispricing creates and so arbitrage exists. Second is a rational agent will try to exploit this opportunity and make profits. Now in exploiting this opportunity rational agents are taking some steps to benefit, this steps either provide good profit or may worsen their positions.
In this context my thesis is based upon rationality among investors and irrationality among managers and analyzing manager’s action to exploit this. The next section shows the relevant literature review about the topic followed by research mythology.

**Figure 1.9 Behavioral Finance and its Applications**