INSTITUTE OF MANAGEMENT AND INFORMATION TECHNLOGY,CUTTACK

BEHAVIORAL FINANCE

18MBA402B

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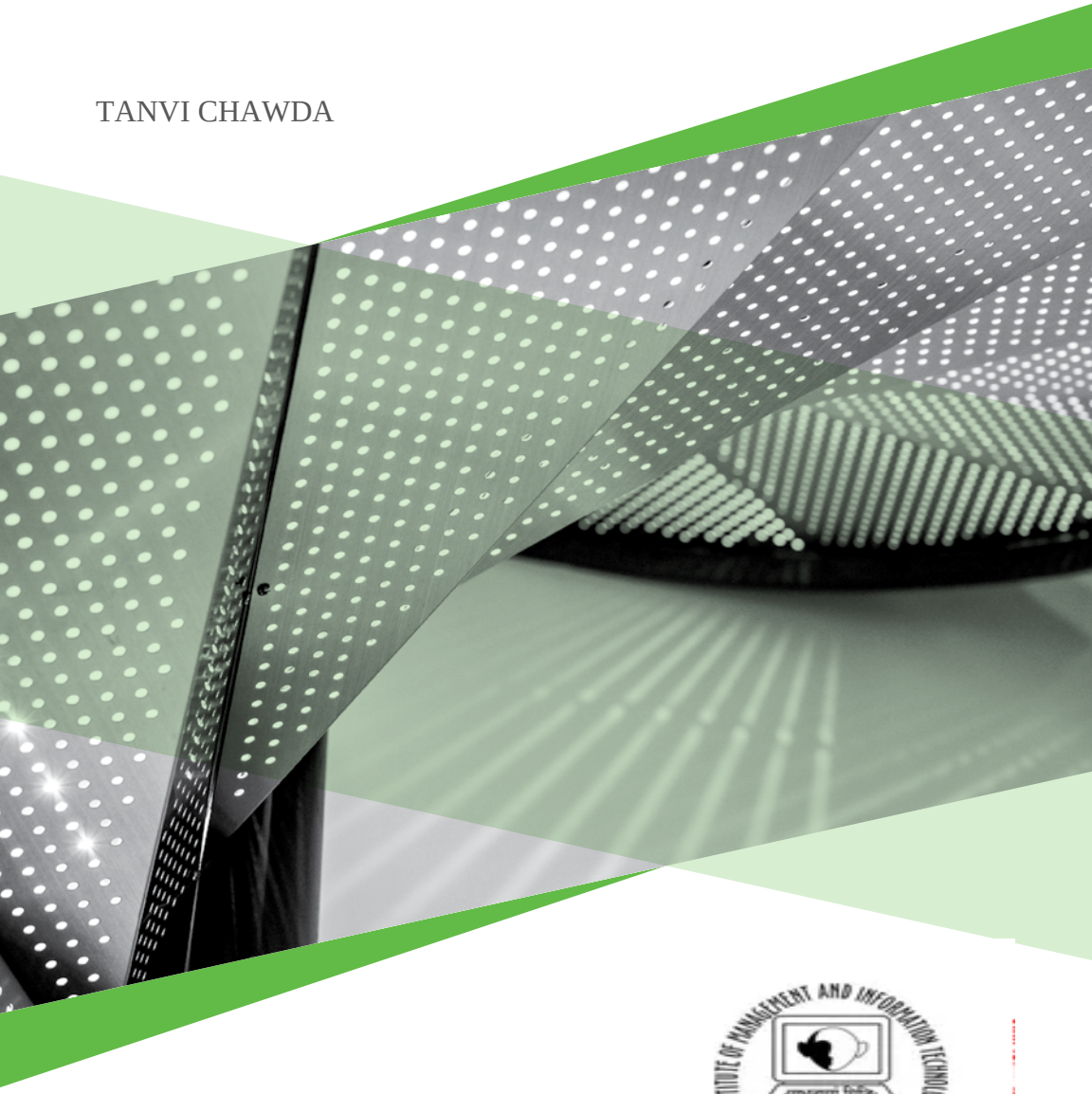

BEHAVIORAL FINANCE

18MBA402B

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SYLLABUS

4th Semester	18MBA402B	Behavioural Finance	L-T-P 3-0-0	3 Credits	35 hrs

Module- I

Foundations of Finance: Nature, Scope and Significance Behavioral Finance, Market Strategies, Expected Utility Theory, Risk Attitude, Allais paradox. Building Blocks.

Module –II

Prospect Theory: Prospect Theory. Framing and Mental Accounting, Rationality in investment decision, Ellsberg's paradoxes, Investors sentiments and Bubble creation.

Module-III:

External Factors and investors behavior: Heuristics and Biases; Overconfidence, Fear and Greed in Financial Market, emotions and financial markets, statistical methodology for capturing the effects of external influence onto stock market returns. Behavioral Corporate Finance.

Reference Books:

- Behavioral Finance: Sinha PK - Himalaya
- Behavioral Finance: Shuchita Singh and Batt, Vikas.
- Value investing and behavioral Finance, Parag Parikh, TMH
- Understanding Behavioral Finance, Cengage
- Behavioral Finance, Chandra, Mc GrawHill

MODULE-1

DEFINITION OF BEHAVIOURAL FINANCE:

Behavioural finance, with its roots in the psychological study of human decision-making, is a relatively new and evolving subject in the field of finance. In brief, behavioural finance is the study of investors' psychology while making investment decisions. Being a relatively new subject, not much prodigious research literature is available in this subject.

However, some research studies have revealed that psychological biases such as emotions, fear, over- confidence, greed, and risk aversion influence investors' behaviour that, in turn, influences stock markets. As such, there is a need for studying and understanding behavioural finance to exploit investors' psychology for profits.

Behavioural finance is the study of investors' psychology while making financial/investment decisions. Sewell (2001) has defined behavioural finance as **"the study of the influence of psychology on the behaviour of financial practitioners and the subsequent effect on markets".** According to Shefrin (1999), "behavioural finance is the application of psychology to financial behaviour – the behaviour of investment practitioners."

DEFINITIONS OF BEHAVIOURAL FINANCE

- Lintner G. (1998) has defined behavioural finance as being study of human interprets and acts on information to make informed investment decisions.
- Olsen R. (1998) asserts that behavioural finance seeks to understand and predict systematic financial market implications of psychological decision process.
- Shefrin (1999), **"Behavioural finance is rapidly growing area that deals with the influence of psychology on the behaviour of financial practitioner".**
- W. Forbes (2009) defined behavioural finance as a science regarding how psychology influences financial market. This view emphasizes that the individuals are affected by psychological factors like cognitive biases in their decision-making, rather than being rational and wealth maximizing.
- M. Sewell (2007) has stated that behavioural finance challenges the theory of market efficiency by providing insights into why and how market can be inefficient due to irrationality in human behaviour.
- M. Schindler (2007) has given certain examples while defining behavioural finance:

(a) Investors' biases when making decisions and thus letting their choices to be influenced by optimism, overconfidence, conservatism.

(b) Experience and heuristics help in making complex decisions.

(c) The mind processes available information, matching it with the decision's maker own frame of reference, thus letting the framing by the decision the maker impact the decision.

Thus behavioural finance is defined as the field of finance that proposes psychological based theories to explain stock market anomalies. Within the behavioural finance it is assumed that the information structure and the characteristics of market participants systematically influence individual's investment decisions as well as market outcomes.

MEANING OF BEHAVIOURAL FINANCE

Behavioural finance is the study of the influence of psychology on the behaviour of financial practitioners and the subsequent effect on market. According to behavioural finance, investors' market behaviour derives from psychological principles of decision-making to explain why people buy or sell stock. Behavioural finance focuses upon how investor interprets and acts on information to take various investment decisions.

In addition, behavioural finance also places emphasis on investor's behaviour leading to various market anomalies. Behavioural Finance (BF) is the study of investors' psychology while making financial decisions. Investors fall prey to their own and sometimes others' mistakes due to use of emotions in financial decision-making. For many financial advisors BF is still an unfamiliar and unused subject.

There are some financial advisors, however, who have taken the time to read and learn about BF and use it in practice with good results. These advisors realize that being successful is just as much about building great relationships with clients as it is about delivering investment performance.

And they have observed that BF can provide tools that can help them 'get inside' the head of their clients in order to build mutually beneficial relationships. Understanding how clients actually think and behave is a key ingredient in the recipe for success in acquiring and retaining clients. As such, BF is becoming a powerful force in the financial advisory field.

BF tries to understand how people forget fundamentals and take investment decisions based on emotions. For decades, economists have argued about the rational behaviour of investors.

Now psychologists are weighing in, and they are finding that human beings often do not act that way.

"Psychology has a story to tell about investing, and it is different from the one economics tells," says Princeton Psychologist Daniel Kahneman. BF is the study of the influence of psychology on the behaviour of financial practitioners and the subsequent effect on markets.

Research in this area is emerging from the academia and the results are being taken into account in the field of money management. Finance practitioners use rules of thumb or heuristics to process data.

For example, people use past performance as the best predictor for future performance and often invest in the mutual funds with the best five-year track records. These rules are likely to be faulty and generally lead to poor decisions. Relying on such heuristics is called 'Heuristic Bias'.

DEVELOPMENT OF BEHAVIORAL FINANCE

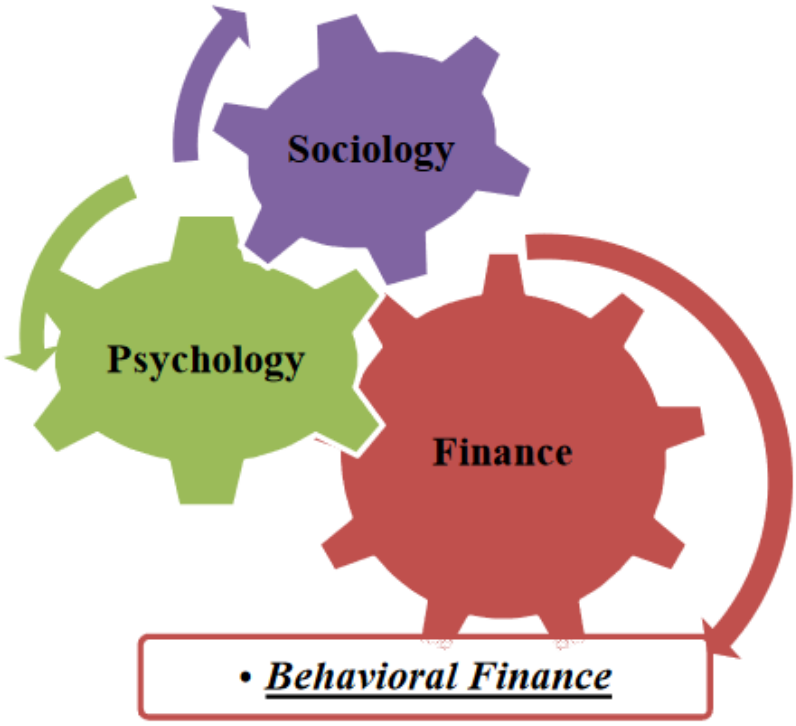
The rationality of traditional finance is questionable because traditional finance theories cannot give a proper explanation for it (Copur, 2015). The traditional finance theories are based on certain assumptions. These are investors are rational, the market is efficient, investors form their portfolio based on the mean-variance rule and the expected return are the function of the risk. Behavioural finance criticized each and every assumption saying that investors are normal or irrational, the market is not efficient, investors do not construct their portfolio based on mean-variance and risk is not the function of the expected return.

Behavioural finance developed in the 1980s by different researchers from different fields combining together like economics, sociology, psychology and engineering (Werner DeBondt et. al.) it is still in its developing stage. It has attracted interdisciplinary researchers especially from economics, sociology, and psychology and the original researchers are still now the leading researchers in this filed. Behavioural finance studies the behaviour of investor and their decision behaviour based on the psychological and sociological factors

Psychology to Finance

The credence of the new dimension of Behavioural Finance is being defined as the application of psychology to finance. The evolution of this proliferated section explains the way of thinking process of investors counting with the emotional cycle, which actually

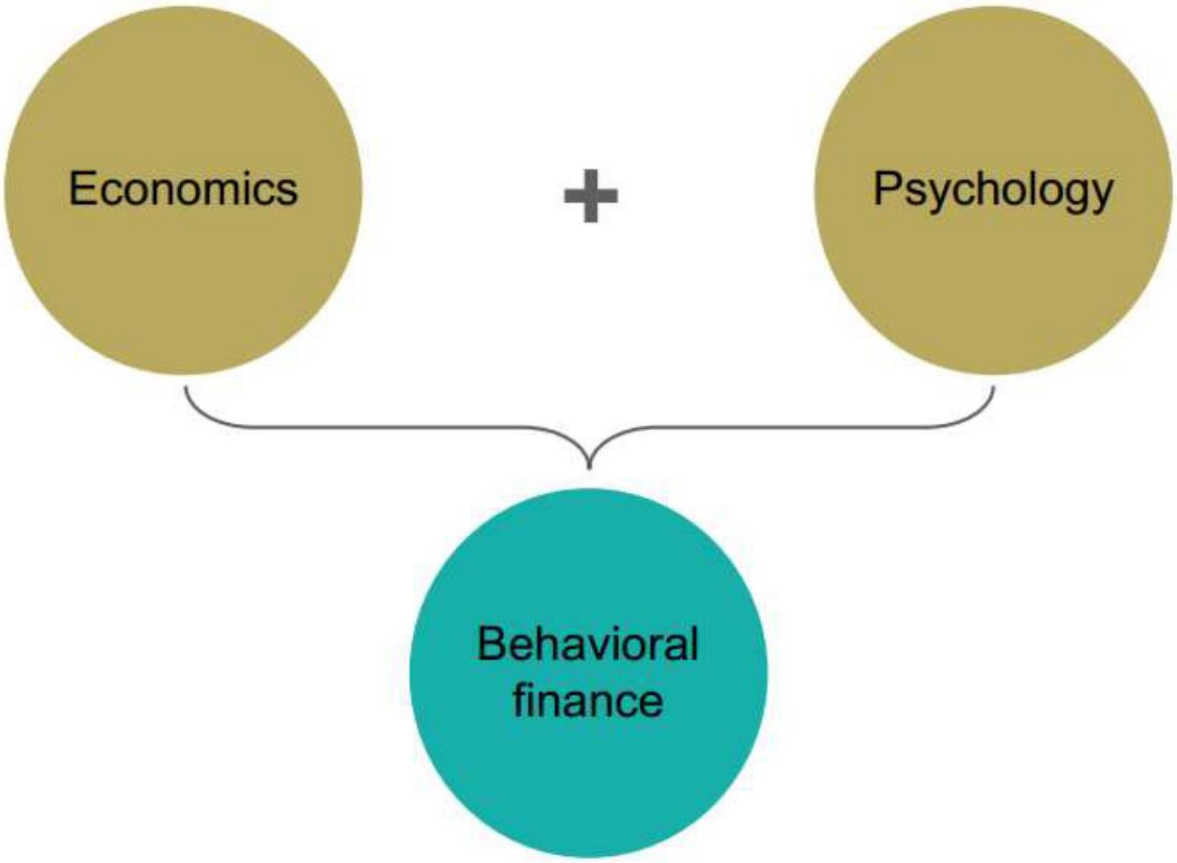
intervene in the decision making process. Behavioural finance is being built on the basic tilt of understanding of the fields like Psychology, Sociology and Finance (Ricciardi & Simon, 2000)



Behavioural Finance Theories

Researcher Name	Year	Theory/Concept/Model
Herbert Simon	1955	"Models of bounded rationality"
Festinger, Recken, and Schachter	1956	"Theory of cognitive dissonance"
Tversky and Kahneman	1973, 1974	"Introduced heuristic biases: availability, representativeness, anchoring, and adjustment"
Kahneman and Tversky	1979	"The prospect theory introduced loss

		aversion bias”
Tversky and Kahneman	1981	“Introduced framing Bias”
Richard Thaler	1985	“Introduced mental accounting bias”
De Bondt and Thaler	1985	“Theory of overreaction in stock markets”
Barberis, Shleifer, and Vishny	1998	“Investor sentiment model for underreaction and overreaction of stock prices”
Meir Statman	1999	“Behavioral asset pricing theory and behavioral portfolio theory”
Andrei Shleifer	2000	“Linkage of behavioral finance with the Efficient Market Hypothesis to find that stock markets are inefficient”
Barberis, Huang, and Santos	2001	“Incorporation of prospect theory in asset prices”
Grinblatt and Keloharju	2001	“Role of behavioral factors in determining trading behavior”
Hubert Fromlet	2001	“Importance of behavioral finance, emphasis on departure from homoeconomicus’ or traditional paradigm to more realistic paradigm”
Barberis and Thaler	2003	“Survey of behavioral finance”
Coval and Shumway	2006	“Effects of behavioral biases on stock prices. The price reversal for biased investors is quicker than unbiased investors”



CHARACTERISTICS OF BEHAVIOURAL FINANCE

Four Key Themes- Heuristics, Framing, Emotions and Market Impact characterized the Field. These themes are integrated into review and application of investments, corporations, markets, regulations, and educations-research.

1. **HEURISTICS**: Heuristics are referred as rule of thumb, which applies in decision making to reduce the cognitive resources to solve a problem. These are mental shortcuts that simplify the complex methods to make a judgment. Investor as decision maker confronts a set of choices within certainty and limited ability to quantify results. This leads identification and understanding of all heuristics that affect financial decision making. Some of heuristics are representativeness, anchoring & adjustments, familiarity, overconfidence, regret aversion, conservatism, mental accounting, availability, ambiguity aversion and effect. Heuristics help to make decision.

2. **FRAMING**: The perceptions of choices that people have are strongly influenced by how these choices are framed. It means choices depend on how question is framed, even though the objective facts remain constant. Psychologists refer this behaviour as a' frame dependence'. As Glaser, Langer, Reynders and Weber(2007) show that investors forecast of the stock market depends on whether they are given and asked to forecast future prices or future return. So it is how framing has adversely affected people's choices.

3. **EMOTIONS**: Emotions and associated human unconscious needs, fantasies, and fears drive much decision of human beings. How these needs, fantasies, and fears influence financial decision? Behavioural finance recognise the role Keynes's "animal spirit" plays in explaining investor choices, and thus shaping financial markets (Akerlof and Shiller, 2009). Underlying premises is that our feeling determine psychic reality affect investment judgment.

4. **MARKET IMPACT:** Do the Cognitive errors and biases of individuals and groups of people affect market and market prices? Indeed, main attraction of behavioural finance field was that market prices did not appear to be fair. How market anomalies fed an interest in the possibility that they could be explained by psychology? Standard finance argues that investors' mistakes would not affect market prices because when prices deviate from fundamental value, rational investor would exploit the mispricing for their own profit. But who are those who keep the market efficient? Even institutional investor exhibits the inefficiency. And other limit to this is arbitrage. (Shleifer and Vishny, 199742; Barberies and Thaler,2003)43. This prevents rational investor from correcting price deviations from fundamental value. This leaves open the possibility that correlated cognitive errors of investor could affect market prices.

NATURE

- Behavioural Finance is just not a part of finance.
- It is something which is much broader and wider and includes the insights from behavioural economics, psychology and microeconomic theory.
- The main theme of the traditional finance is to avoid all the possible effects of individual's personality and mind-set

BRANCHES OF BEHAVIOURAL FINANCE

• **Micro Behavioural Finance:**

– This deals with the behaviour of individual investors. – In this the irrational investors are compared to rational investors (also known as homo economics or rational economic man)

• **Macro Behavioural Finance:**

– This deals with the drawbacks of efficient market hypothesis.

– EMH is one of the models in conventional finance that

helps us understand the trend of financial markets.

BEHAVIOURAL FINANCE AS SCIENCE AS WELL AS AN ART

• **Behavioural Finance as a Science**:

• Science is a systematic and scientific way of observing, recording, analysing and interpreting any event.

• Behavioural Finance has got its inputs from traditional finance which is a systematic and well-designed subject based on various theories.

• On this basis behavioural finance can be said to be a science.

The theories of standard finance also helps in justifying the price movements and trends of stocks (Fundamental Analysis), the direction of market (Technical Analysis), construction, revision and evaluation of investors' portfolios(Markowitz Model, Sharpe's Performance Index, Treynor's Performance Index, various formula and plans of portfolio revision)

• **Behavioural Finance as an Art**

• In art we create our own rules and not work on rules of thumb as in science.

• Art helps us to use theoretical concepts in the practical world.

• Behavioural finance focuses on the reasons that limit the theories of standard finance and also the reasons for market anomalies created.

• It provides various tailor made solutions to the investors to be applied in their financial planning.

• Based on above behavioural finance can be said to be an art of finance in a more practical manner.

It also helps to guide the investors to identify themselves better by providing various models of human personality.

SCOPE OF BEHAVIOURAL FINANCE

• **To understand the Reasons of Market Anomalies:** though standard finance theories are able to justify the stock markets to a great extent, still there are many market anomalies that takes place in the stock market**,** like creation of bubbles, the effect of any event, calendar effect on stock market and trade etc. these market anomalies remain unanswered in standard finance but behavioural finance provides explanations and remedial actions to various market anomalies.

• **To Identify Investor's Personalities:** study of behavioural finance helps in identifying the different type of investors personality. Once the biases of the investor's actions are identified, by the study of investor's personality, Various new financial instruments can be developed to hedge unwanted biases created in financial markets.

• **Helps to identify the risks and their hedging strategies**: because of various anomalies in the stock market, investments these days are not only exposed to the identified risks, but also to the uncertainty of the returns.

• **Provides an explanation to various corporate activities:** behavioural Finance provides explanations on the behaviour of the investors towards a stock once the dividend has been declared or Effect of good or bad news, stock split, dividend decision etc.

• **To enhance the skill set of investment advisors:** It can be done by better understanding of investor's goal, maintaining a systematic approach to advise, earn the expected return and maintain win-win situation for both the client and the advisors.

OBJECTIVES OF BEHAVORIAL FINANCE

- Correct decision making
- Provide knowledge to unaware investors
- Identifies emotions and mental errors
- Delivering what the client expects
- Ensuring mutual benefits
- Maintaining a consistent approach
- Examining a consistent approach

SIGNIFICANCE OF BEHAVORIAL FINANCE

- Determining goals of investors
- Defines investors' biases
- Manages behavioural biases
- Helps in investment decisions
- Helps for financial advisors' and fund managers
- Signifies that investors are emotional

MARKET STRATEGIES

1.MARKET TIMING: Market timing is an investment or trading strategy in which a market participant attempts to beat the stock market by predicting its movements and buying and selling accordingly.

1. Market timing is the opposite of buy-and-hold, a passive strategy in which investors buy securities and hold them for a long period, regardless of market volatility.
2. While feasible for traders, portfolio managers, and other financial professionals, market timing can be difficult for the average individual investor.

2.TECHNICAL ANALYSIS: In trading, technical analysis is a method used to forecast the direction of the market price or the strength of the trend by analyzing the past market price. Technical analysis trading focuses on the charts and other technical indicators to forecast the market. The three fundamental principles behind technical analysis basics are as follows:

1. Market price action discounts everything. So, wherever the market is trading now that's the fair market price. All the hopes, fears and market expectations they're all factored into the price.
2. Markets move in trends. The markets take a while to get to wherever they are going to go.
3. The third assumption is that history tends to repeat itself so price levels that were vital in the past can often be important in the future.

3.PYRAMID SCHEME; A pyramid scheme is a sketchy and unsustainable business model, where a few top-level members recruit newer members, who pay upfront costs up the chain, to those who enrolled them. As newer members in turn recruit underlings of their own, a portion of the subsequent fees they receive is also kicked up the chain. Often called "pyramid scams," these operations are illegal in some countries.

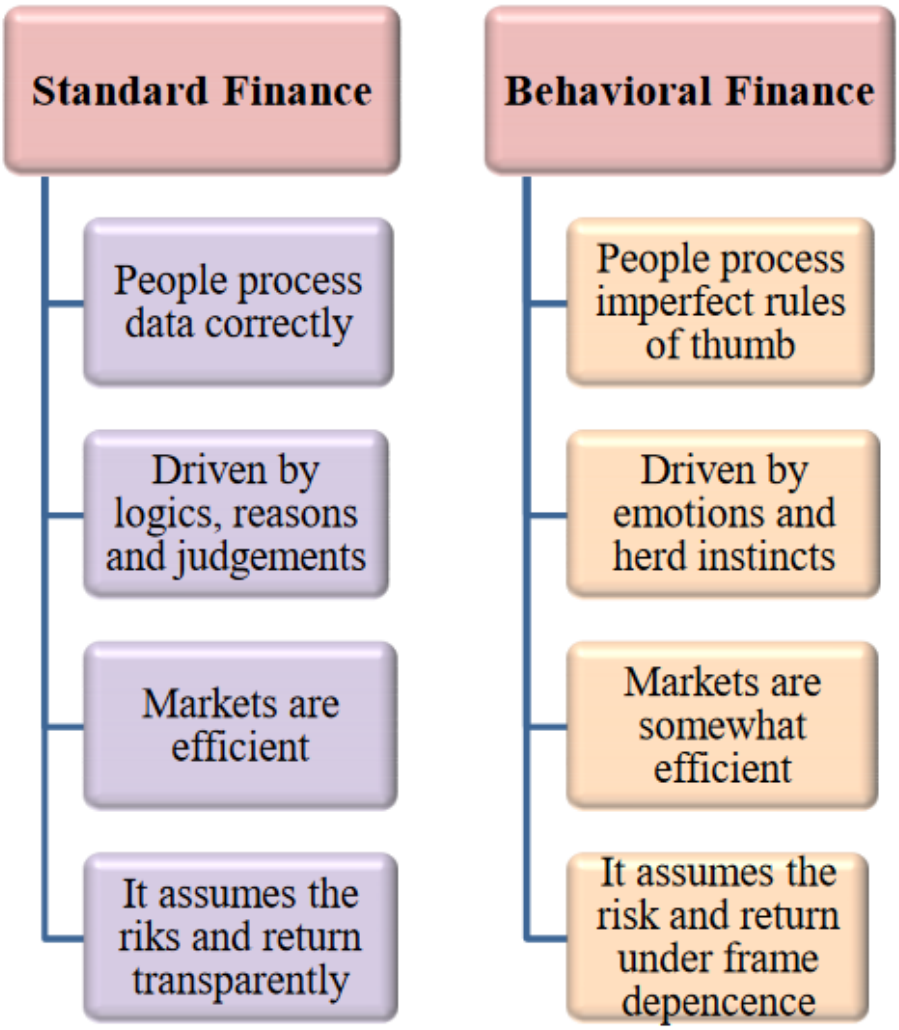
4.EFFICIENT MARKET HYPOTHESIS; The efficient market hypothesis (EMH), alternatively known as the efficient market theory, is a hypothesis that states that share prices reflect all information and consistent alpha generation is impossible. According to the EMH, stocks always trade at their fair value on exchanges, making it impossible for investors to purchase undervalued stocks or sell stocks for inflated prices. Therefore, it should be impossible to outperform the overall market through expert stock selection or market timing, and the only way an investor can obtain higher returns is by purchasing riskier investments.

STANDARD OR TRADITIONAL FINANCE AND BEHAVIORAL FINANCE

The pillars of standard or traditional finance are built on the notion of 'homo economicus' or 'rational economic man'. It states that investors being rational all the time make perfectly rational economic decisions. This actually postulates that how investor should behave in the idealized manner

In contrast to this, behavioural finance emphasizes on how investors actually behave in the real world situation. The modern theories are focusing that investors are not rational, but quasi-rational or irrational. This is backed by the notion of psychology of each and every individual which is distinct from one another. If all investors can rationally figure out the whole picture, then why some investors see the green grass and some gets nothing out of the

available information which is common to all. Behavioural finance elegantly works upon the observed behaviour rather than the idealized one.



ADAPTIVE MARKET HYPOTHESIS

It is the research that modifies the efficient market theories with behavioural economics, asserting that markets evolve over time as individuals utilize biases to make investment decisions.

Markets tend to be inefficient because investors have a bias towards “survival” rather than rational economic decisions, profit, and utility. Markets have cycles, trends, panics, manias, and crashes. Rather than being efficient, markets have anomalies that can be exploited by investors.

1. **Technical Anomalies**: Technical analysis of charts and volume history can be used to forecast future stock prices. Technicians will also analyse relative strength, moving averages, support, and resistance.

2. Fundamental Anomalies: Fundamental analysis of valuation metrics including price to earnings, price to cash flow, and price to book value can be used to find companies trading below their intrinsic value. Studies have shown that, historically, undervalued stocks tend to outperform the broad stock market over the long term with less risk.

3. The January Effect: Stocks tend to rebound from tax loss selling at the end of the year. Returns tend to be abnormally higher for the month of January than the rest of the year.

4. Arbitrage Opportunities: Often derivatives such as convertibles, preferred stock, and options can be mispriced by the market.

5. More Inefficient Asset Classes: Historically, small capitalization stocks, international stocks, and venture capital investments have tended to be the most inefficient and the best long term opportunity for investors. However, they tend to have a higher standard deviation (statistical measure of volatility) and a great deal of risk as well.

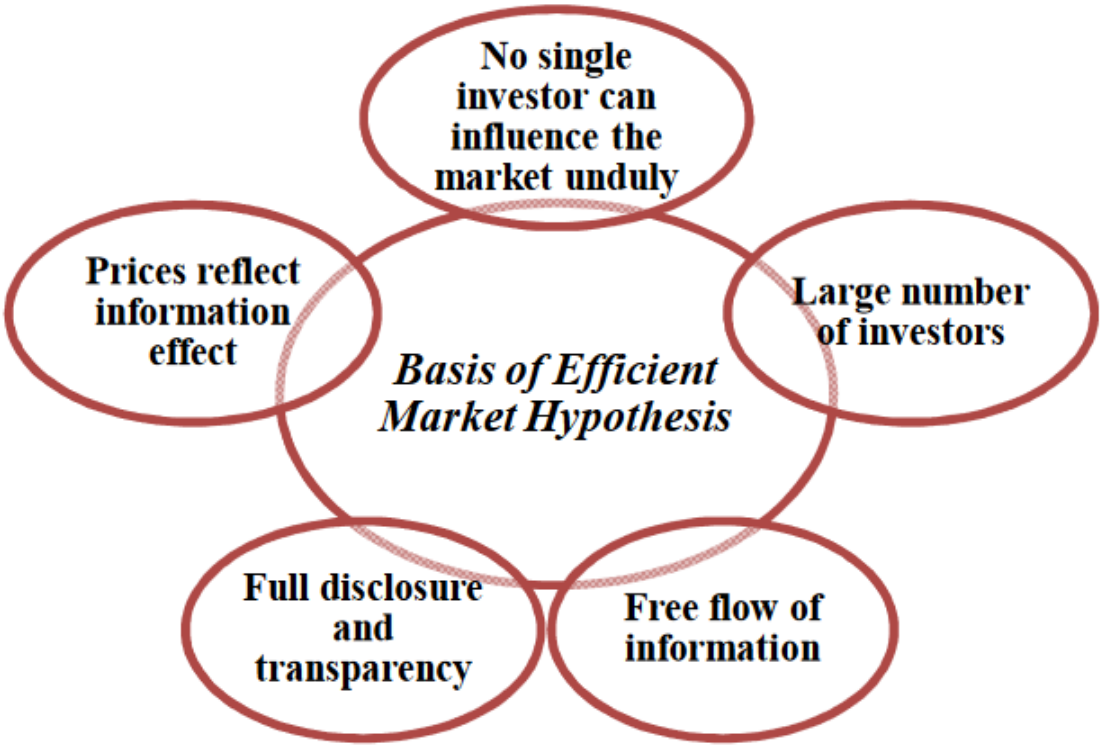
EFFICIENT MARKET HYPOTHESIS (EMH)

The EMH is being based on the notion that it is impossible to beat the market. In this market, share prices follow an independent path. It is being associated with the idea of 'Random Walk Theory' which was traced by a French broker, Jules Regnault in 1863. 'Random Walk' asserts that information is opaquely seen in the stock prices. As soon as information is being flown it reflects in stock prices immediately. The daily fluctuations are being dependent on the news and this news is unpredictable. Owe to this, resulting prices is random and the returns are as generous as received by the experts (Malkiel, 2003).

The efficiency of stock market lies in the line of reflection of the available information on the stock prices. EMH states that stocks always trade on the fair value

and there is no opportunity for investors to earn abnormal returns by means of buying undervalued security and selling the inflated security. The belief of EMH is tied with

the conviction that nobody can outperform the markets and one can only earn higher returns by purchasing the risky securities



FORMS OF MARKET EFFICIENCY

The Fama's contribution in 1970 is backed by the CAPM model which holds that the securities markets are efficient. It exclaims that all priced securities fall on SML because of which there is no opportunity of under and over valuation. The internal and external efficiency is necessary so that lower transaction costs and high transaction speed can

be sailed. Along with this the absorption of any information must be in an unbiased manner. Eugene Fama, classified the forms of market on the basis of absorption of information and time taken for soaking up the information.

Weak Form

The weak form of market holds the phenomena that all the historical sequences are reflected in the stock prices. The price of the stock budges with the random fashion, and moves only in the tandem of demand and supply positions. Thus, historical prices cannot help in forecasting the future prices of the security therefore technical analysis is of no use.

Semi-Strong Form

This form of the efficient market states that the stock price does not only reflect the historical series of activities but all those information as well which is publicly available. The

disclosure of corporate reports, financial statements, etc. is available to each and every investor. Thus, superior returns cannot be earned on a regular basis. Semi-strong form

asserts that the results are predictable and investor cannot take advantage of the fundamentals. Thus fundamental analysis is of no use.

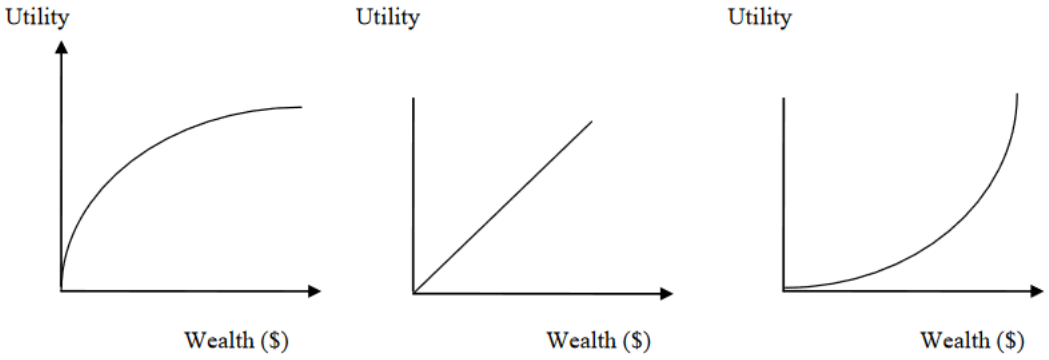
Strong Form

Beyond the historical prices and publicly available information, this strong form of efficient market postulates that insider and hidden information is of no use because investor cannot earn the abnormal returns giving due respect to full disclosure and transparency. The strong market absorbs all the information and news whether it is of past, present or insider information. All the prices are independent of previous happenings similar to 'random walk theory'.

EXPECTED UTILITY THEORY

Though the Expected Utility Theory was coined initially with the description given in the terms of mathematical explanations given by Nicolas Bernoulli in 1738. It was regarded as classical theory of utility. It was not intended to describe how people actually behave, but how people would behave if they followed certain requirements of rational decision making. One of the main purpose of this theory was to provide an explicit set of assumptions that underelie rational decision making. When researchers documented the violations of the assumptions, the theory was revised.

It was revised by John Von Neumann and Oskar Morgenstern in 1944. It stated that the market participants make their decisions under risk by comparing the expected utility values of the available alternatives. Rational investors act to maximize their expected utility that is calculated as weighted sums of utility values multiplied by their respective probabilities. It categorizes the decision makers into risk averse, risk neutral and risk loving individuals. Further, it explains that the utility function for a risk averse investor is concave (figure 2.1a). This implies that, for an increase in expected wealth the utility function of a risk averse person decreases. In other words, for the same amount of utility a risk averse person would like to take lesser risk than risk loving person. It explains the difference between investors‟ behaviour with respect to their risk tolerance. This theory along with its variants like subjective expected utility theory was the most accepted theory for decades in financial literature in decision making under risk.



Risk Averse Risk Neutral Risk Lover

The rationality of the agents turned out to be the key to unlock the stock market behaviour. Alongside this assumption, several corresponding theories developed that established the groundwork of standard finance theories. The predominant theories amongst these were the Markowitz portfolio theory and the capital asset pricing model.

A great deal of asset pricing theories is based on the assumption of market efficiency, which is introduced and explained by Eugene Fama in 1970. He defines the efficient financial market as one in which security prices always fully reflect available information. It further identifies that in an efficient market all the investors are well informed, rational individuals who aim to maximize their profits. This means that if the efficient market hypothesis (EMH) holds true, then the investors cannot hope to beat the market and no amount of analysis would help in generating abnormal returns. This theory takes the standard finance literature one notch higher by taking into account irrational traders. It notes that the irrational or noise traders can distort the prices, but it is a temporary phenomenon and is quickly eliminated by the arbitrageurs. The theoretical and empirical assumptions of EMH are illustrated.

The theoretical assumptions of the EMH

•Investors are assumed to be rational. Therefore, they value the securities rationally, incorporating all the available information

.•Irrational investors, if present, trade randomly; therefore their trades cancel each other out without affecting the prices.

•Further, the effect of irrational investors on prices is also eliminated by the trading activities of arbitrageurs

The empirical assumptions of the EMH turned out to be an enormous empirical success in the first decade of its conception. stated that, „there is no other proposition in economics which has more solid empirical evidence supporting it than the Efficient Market Hypothesis". The empirical focus of the EMH has two aspects. It first considers the impact of new information on security prices. It states that any new information in the market should be incorporated in the security prices quickly and correctly such that price trends or reversals could not exist after the initial impact of the news. Secondly, since the price of a security is equal to its value; therefore, it should only move when there is a news about a change in its fundamental value and not otherwise. It is further noted that in an efficient market scenario old information has no monetary value.

He categorizes the old information into three types which gives rise to three forms of market efficiencies: weak, semi-strong and strong.

- In the weak form of market efficiency, the past prices and returns are taken as old information and here technical or trend analysis cannot yield superior abnormal returns.

- In semi-strong form of market efficiency, any publicly available information is considered old and its fundamental analysis also fails to give superior returns. This means that as soon as the information becomes public it gets incorporated into security prices.

- However, investors can still earn abnormal returns by having information that is not made public i.e. insider trading. Here comes the importance of strong market efficiency wherein even insider trading cannot provide abnormal return as this information leaks out quickly and gets incorporated into security prices. For a very long period of time these theories were considered to be the ultimate explanation for investor and market behaviour. However, in recent times researchers have been observing that traditional theories get significantly violated in actual market conditions. They have started accepting that these theories are based on the over-simplified assumptions. Its foundations are built on how market participants ought to behave rather than how they actually behave. This led to the emergence of behavioural finance which factors irrationalities and biases of investors.

RISK ATTITUDE

In finance and economics, **risk** is a term that's related to uncertainty about an event and its outcome, regardless of whether the event and outcome are positive or negative. A good example of this is the risk of making a financial investment. We are uncertain about the outcome of investing in a stock, and may quantify our uncertainty of loss and/or gain via a probability distribution model.

However, some models of risk are quite subjective. This is because some of our assumptions about risk deal with a person's individual attitudes toward risk and their understanding of a specific situation.

Types of Attitudes

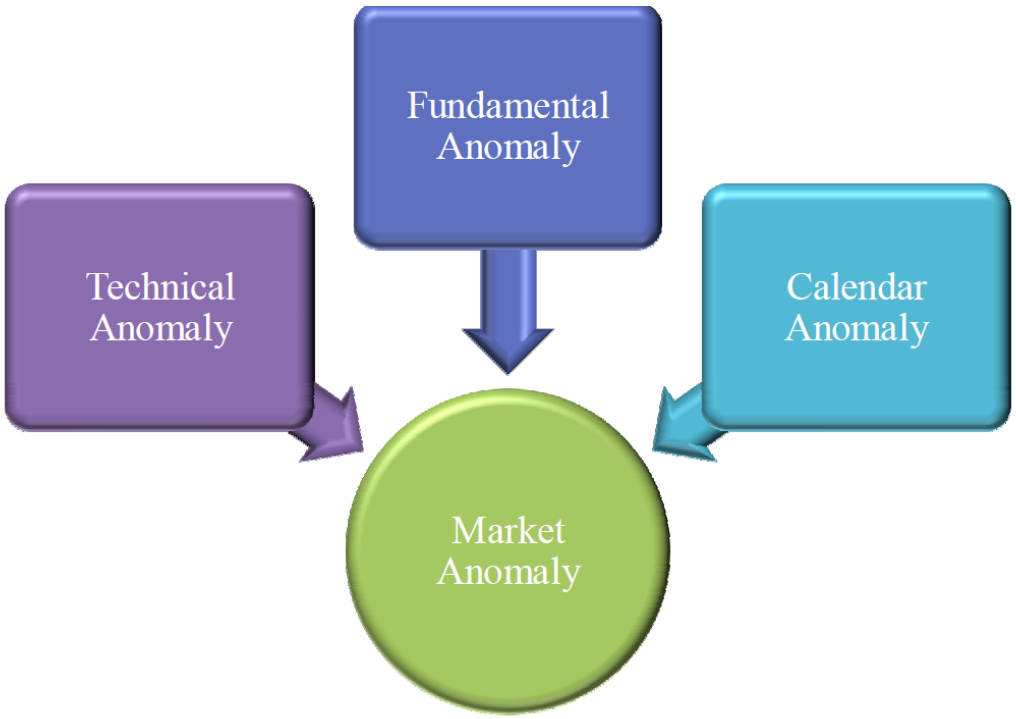
- **Risk aversion** is a type of attitude where an individual gravitates toward certain, as opposed to uncertain, events.
- **Risk seeking** is a type of attitude or behavior where a person is inclined to take on less-certain activities in lieu of more certain ones.
- In the middle are **risk neutral** individuals, who have an indifferent attitude toward risk.

ANOMALIES OF FINANCIAL MARKET

'Anomaly' in general is nothing but the deviation from what is set

as a standard which is being expected in normal parlances. (Tversky & Kahneman, 1986), defined market anomalies as "an anomaly is a deviation from the presently accepted paradigms that is too widespread to be ignored, too systematic to be dismissed as random error, and too fundamental to be accommodated by relaxing the normative system".

Market inefficiency assumes just a logical and rational behaviour which actually contradicts with the Efficient Market Hypothesis. The variance in stock price and returns in financial markets paved the way for the field of 'Behavioural Finance'.



Fundamental Anomaly

Fundamental irregularities in stock performance contradict with the Efficient Market Hypothesis and states that investors can earn abnormal returns. It folds in its layers in the form of value anomalies and small-cap effect, low price to book value, high-dividend yield, price to sales ratio, price to earnings etc.

Calendar Anomaly

This anomaly can be seen with reference to a particular time. Some of the specific periods are weekend effect, turn on the month effect, turn on the year effect, January effect. The broadened framework also includes the announcements of information regarding stock splits, dividend, results, earnings and mergers & acquisitions

Technical Anomaly

Technical analysis encompasses that security's prices can be forecasted by studying the past prices. This analysis sometimes reveals the irregularity with EMH, thus anomalies in this arena arise. The most common techniques include moving averages, relative strength, support and resistance. It is being a debatable topic because weak form of EMH asserts that prices adjust rapidly with the flow of information that is why there is no use of technical analysis however, opponents argue that technical strategies exists These anomalies dig that markets are neither efficient nor anomalous and this actually violates modern financial and economic

theories. The formation of behavioural finance finds its roots from here, which is the convention of psychology to finance. The irrational behaviour of investor gives birth to the notion of biases which depicts how an investor reacts in certain circumstances.

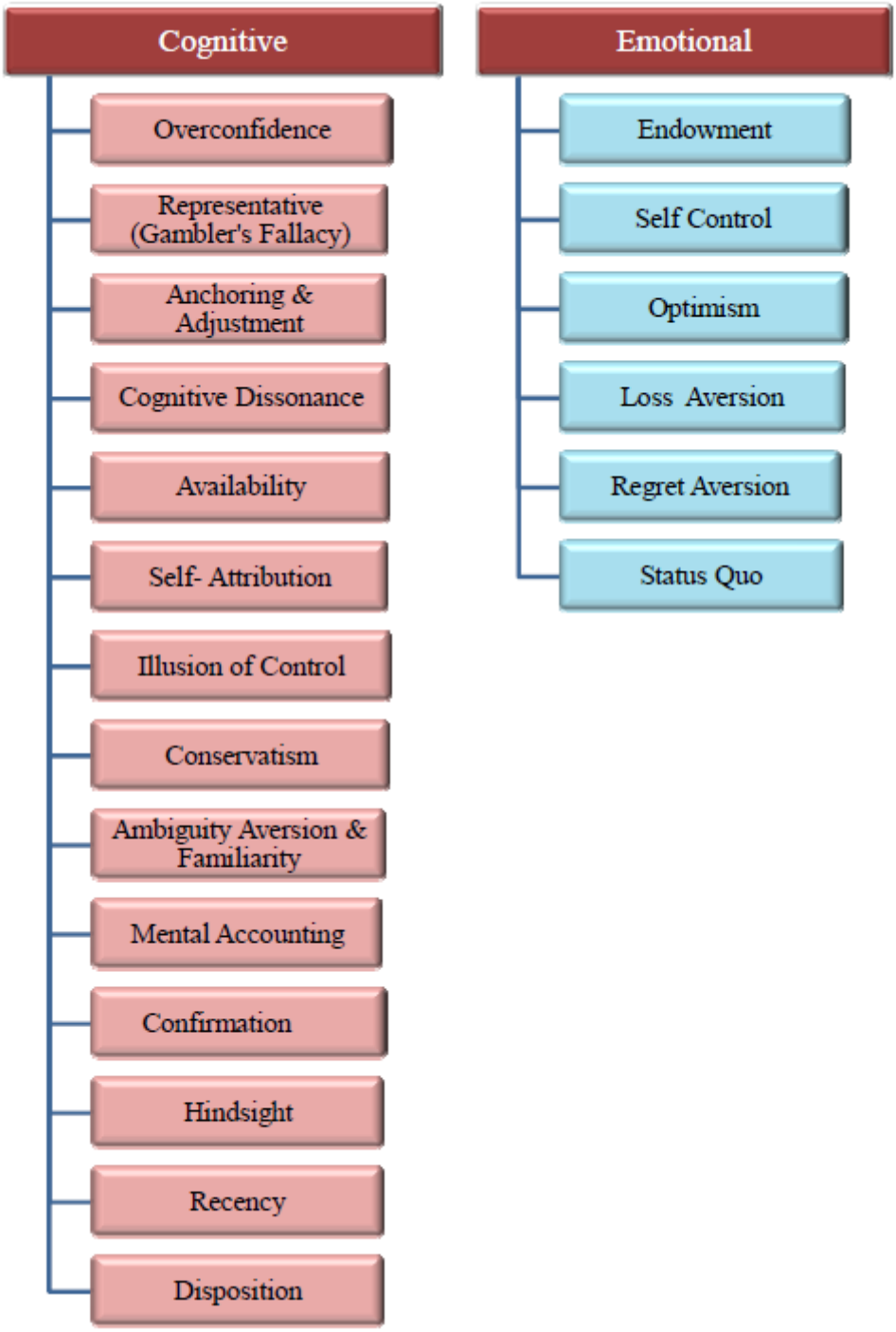
BUILDING BLOCKS

We all have strongly-ingrained biases that exist deep within our psyche. While they can serve us well in our day-to-day lives, they can have the opposite effect with investing. Investing behavioral biases encompass both cognitive and emotional biases. While cognitive biases stem from statistical, information processing, or memory errors, an emotional bias stems from impulse or intuition and results in action based on feelings instead of facts

BEHAVIORAL BIAS

Human minds are prone to observations which are led by filters of gained experiences. These filters create biases in judgment and decision making in certain circumstances. The decisions are backed by some rule of thumb but not logics which are also known as ‘heuristics’. It is thorny that people let them isolate with the biases in decision making. Thus, investing biases can be categorized into two categories:-

- **Cognitive Bias**
- **Emotional Bias**



COGNITIVE BIAS

This is the mistake of processing information in one's own beliefs, judgments and preferences. The faulty reasoning, evaluation and remembering by keeping into fists the existing heuristics regardless of differing information let the occurrence of cognitive bias. The statistical flaws and false sense of calculating the probabilities are the key concerns for

eliminating the cognitive errors. The earlier studies evidenced that sometimes cognitive biases lend hands for processing information in an effective manner. Thus, the thorough understanding of this bias is required as it enables quick decisions when appropriateness is more valuable than accuracy.

OVERCONFIDENCE BIAS

"Too many people overvalue what they are not and undervalue what they are." - Malcolm S. Forbes

The thin line between confidence and overconfidence surpasses the negative connotation to overconfidence. It gives the faulty notion of intuition, reasoning, and beliefs by overestimating one's capabilities and underestimating an opponent. The tendency of presumptions falls under the following aspects: -

Exaggerating one's ability and quality

· Having a high flying sense of control over the events

· Invulnerability to risk (Johnson & Fowler, 2011).

The past studies show that investors are overconfident with respect to their investing knacks. This tact can be divided into two parts

Prediction Overconfidence: Investors and traders assign their range of expectation in a narrow framework.

Certainty Overconfidence: Traders become too certain for their predictions and if they enter in a sure win sort of situation, they become vague for the outcome and it certainly dishearten to extreme. It must be kept in the wall of mind that investing is a crucial exercise and there is

nothing like 100% return aspect always

REPRESENTATIVE BIAS

This cognitive heuristic puts weight on previous experiences and beliefs which gives the thought to investors for being in a stereotype framework. The new antecedents become the representative sample for old patterns or familiar elements which leads to deception and fabricates the understanding in indefinite manner. The determinants of representative bias

such as 'similarity and randomness' were observed by Tversky and Kahneman in 1972. The similarity postulates that concrete examples are stored in the memory which deviates the state of mind of investors, whereas randomness asserts there is no logical sequence of happening of events and thus regarded as representative of randomness which is most likely to occur in the next step.

Types of Representative Heuristics	Description
Gambler's Fallacy	If something is happening more frequently then it is less likely to happen in the near future.
Base Rate Fallacy	People prefer individuating or specific information over general ones when the former is available.
Regression to the mean	People are most likely to take action when variance is at its peak. Then after results become more normal they believe that their action was the cause of the change when in fact it was not causal.
Conjunction Fallacy	The extra specificities pave the way for assessing the integrity of someone's' claims.

Gambler's fallacy is nothing but expecting outcomes in random sequences to exhibit systematic reversals. When observing flips of a fair coin, for example, people believe that a streak of heads makes it more likely that the next flip will be a tail. The gambler's fallacy is commonly interpreted as deriving from a fallacious belief in the "law of small numbers" or "local representativeness": people believe that a small sample should resemble closely the underlying population, and hence believe that heads and tails should balance even in small samples.

On the other hand, people also sometimes predict that random sequences will exhibit excessive persistence rather than reversals.

ANCHORING AND ADJUSTMENT BIAS

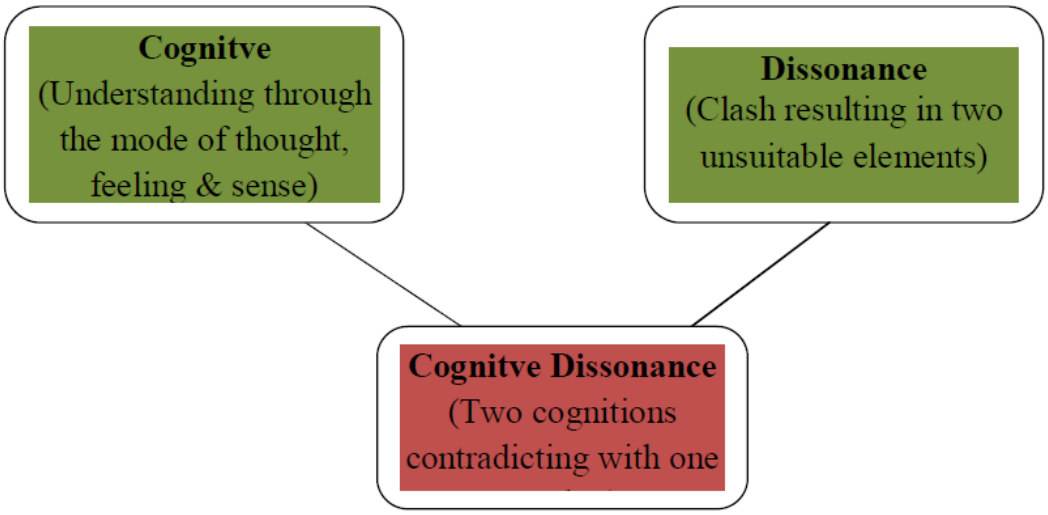
In the series of assessing the indefinite value or information the anchoring bias uses the irrelevant information as reference. The 'anchor' acts as the first and foremost piece of information while making decisions and by the time subsequent judgment is adjusted.

This bias tends that if the stock in which investors have invested has gone up and just afterwards if it declines, investor's waves in dilemma to hold onto that stock until the prices again touch the previous point. It is also considered by many authors that basic anchoring effects may occur, but important is that there are endless uninformative anchors which directly or indirectly affect the judgment. This suspicion of anchoring and adjustment distort the decision making process which affects the wealth of an investor.

COGNITIVE DISSONANCE

Cognitive Dissonance is the state of mind where the incompatibility between the two cognitions contradicts with the existing level of knowledge, belief, attitude, emotion and behaviour. This concept was introduced by the US Psychologist Leon Feininger in 1956 which states that the new fangled piece of information conflicts with existing notions of experience and thus creates dissonance.

If an investor is keeping in sight the bull view the trend for trading is on upper side, but immediate bearish sentiment might lead the trader in a discomfort situation. The decision making will become very thorny because the disequilibrium situation puts the investor in dilemma for further actions.



Cognitive Dissonance

The behaviour and attitude does not match which leads to mental discomfort. The bulk of information and sequence of the presentation of information plays a vital role for making the sound investment decision.

AVAILABILITY BIAS

In 1974, Tversky and Kanheman beautifully cited the heuristic of Availability Bias which tends that people prospects the rate of events in the way they are effortlessly recalled from the memory. The notion of recalling is utmost important as it acts as an alarm for the upcoming consequences which have been perceived. The prior experiences build an array of analogues events which contributes in the development of biases. The varied aspects of availability bias are bifurcated in table below.

Forms of Availability Bias

Forms of Availability Bias	Brief Description
Retrievability	The phenomenon of people's memory gives due emphasis on recent, traumatic happenings which are very close to oneself and could be memorized simply.
Categorization	It is being backed by Stereotyping which invades that investors make wrong decisions time to time. It is also supported by the idea of categorizing the situation which in reality is not the best description of the live situation.
Narrow Range of Experience	This asserts that the surroundings of experience construct the opinion, which fits the narrow range of experience of an investor.
Resonance	Investors opt for those investments which resonate with their own behavior. If not, investors ignore the potential investments.

SELF ATTRIBUTION BIAS

Self-Serving or Self Attribution bias links the successful outcomes to the investors' own skill and unsuccessful outcomes to chance or bad luck. The consequences of this bias lie in further aspects:

- ·The investors who constantly make the mistakes do not learn from their past mistakes.
- Those investors who detrimentally give credit to their own skills for their successful outcomes tends to become overconfident.

Thus, self-attribution bias is the noticeable element for exacerbating overconfidence bias.

ILLUSION OF CONTROL BIAS: This bias results in overestimating ability to control the events. People tend to believe that they can control the outcomes which results in higher volume of trading. This cycle ultimately leads to lesser amount of returns. Ellen Langer, Psychologist and Ph.D. of Harvard University evolved this concept of illusion of control. The factors which strongly contribute in the cognitive development of illusion of control are mentioned in table below

Factors affecting Illusion of Control	Brief Description
Choice	Investors wishes to choose their investment option on their own due to the invasion of choices which induces control.
Outcome Sequence	The initial positive outcomes in sequences surpass the sense of illusion of controlling the events.
Task Familiarity	The familiar task delivers the sagacity of controlling the task.
Information	The bulk amount of information available with the intellect of investors gives the urge of control.
Active Involvement	The level of participation in task pushes the active involvement which leads to more trade.

Factors Affecting Illusion of Control

CONSERVATISM BIAS

Human mind always resist change because it is conservative. If the new piece of information contradicts with the existing information people tend to under react to the available pie. The prior views are being maintained and the span of time widens for updating the cliché with new information.

On the other hand, representative bias differs in the aspect of over reaction on the new information. Under conservatism, the beliefs get stuck at one place and the investors does not look for up to the minute information. The concept of conservative can be explored in two of the underneath ways:

- If an investor holds that stock which has declined in the recent past, they become very sluggish in selling that stock.
- If in the series, the investor is purchasing a security with a notion that the prices will go up and suddenly the company undergoes in a difficult situation, an investor might not value this information because of resistance to change.

AMBIGUITY AVERSION AND FAMILIARITY BIAS

Ambiguity aversion itself depicts that a known risk is always welcomed over unknown risk. In general, the uncertainty is encircled with unfamiliar elements which might hurt the wealth of the investor vehemently. The Ellsberg Paradox classifies this bias in risky and ambiguous events. This behavioral reaction is identified in the stock market where investors are not prone to ambiguous information. The probability of future outcome results in unfavourable prospects. This is being bound in the following manner:

- Investors look for higher compensation for the amount of risk they are going to bear.
- Investors often invest in the familiar stocks rather than investing in the alien ones.
- The sense of competency effect asserts that a lesser competent

  investor would definitely avoid investing in foreign stocks.

When people are offered two or more than two alternatives people tend to prefer that option for which they are familiar with. This is also connected with stock selection decision. This actually happens because people tend to get more information for those stocks for which they are familiar.

Investors face a challenge when they decide to buy a security among many alternatives that is beyond the capabilities of human capacity to analyse and select. Hence, when deciding what securities to invest, individual investors should simplify the search process. This means that individual investors focus on securities that grab their attention most, implying that investors will be inclined to invest in familiar securities.

MENTAL ACCOUNTING

Richard Thaler, in 1980 coined the concept of 'Mental Accounting' which asserts the propensity to code, categorize, analyse and evaluation of the outcomes by framing a block of assets into non interchangeable mental accounts., lays down concrete on the floor of rational mind where the elements are mentally categorized. Investors suffer a lot due to this because these options only entice the investors, but actually choices are not as wise as they simply look. People in broad spectrum put money in separate accounts for their financial investment decisions. For instance, people full their 'money pot' separately for marriage purposes, vacations, education for children and many more, but still goes to the debt of bank or credit card with due mechanism of interest dues. This is illogical to increase the debt obligations and reducing the net worth, but over the time people are hard headedly hit with this bias. Logically the origin of money does not get contradict with illogical mental blocking.

CONFIRMATION BIAS

This bias favours the information which confirms the strong beliefs. Confirmation bias puts more weight on the information which investors already believe with burly cult. It often becomes very hazardous for the wealth due to over optimism with the available information for the respective company. Due to this investor stuck with the prior tendencies as it paves the way for easier dealing with cognition. Under the purview of Confirmation Bias, investors fail to accept anything with negative connotation for whatever investment they have made recently. It starts contradicting with the arguments.

HINDSIGHT BIAS

This tends the inclination to predict the event before they happen and get imbibed with the feelings that people know it prior to that. The understanding of the situation after they happen bring around towards this bias. Many of the investors claim that they have predicted the bubbles like Sovereign Crisis, Subprime crisis of 2008, Tulip bubble of 1630 etc. Investors are found being filled with creeping which affects the future forecasting. Hindsight bias along with anchoring leads to unavoidable blunders and in the sequence hind sight contributes in exaggerating the distinct feature of predictions and forecasting. This dangerously exacerbates overconfidence amongst investors.

RECENCY BIAS

The recency effect is the implication of the free recall out of the human memory which is one of the elements of "Serial Position Effect". This effect was observed by Hermann Ebbinghaus, who found 'primacy and recency effect. The human memory is divided into two lobes long term and working memory. This long term memory remembers the primary items of the list for a long while due to more rehearsal in the initial phases whereas the working memory puts more weight on the recent items of the list. The middle one in the list is generally not easily remember. This effect is being termed as 'Recency Bias'. In an investment world this phenomenon gives strong emphasis on momentum effects. This

effect can be seen from the underneath 'U Shaped curve.'.

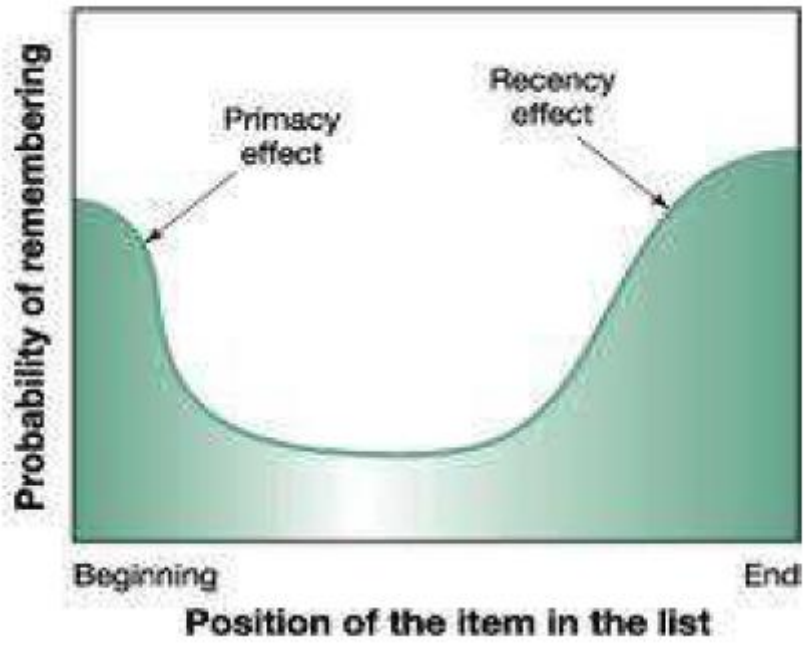


Chart: **U Shaped Curve**

Module-2

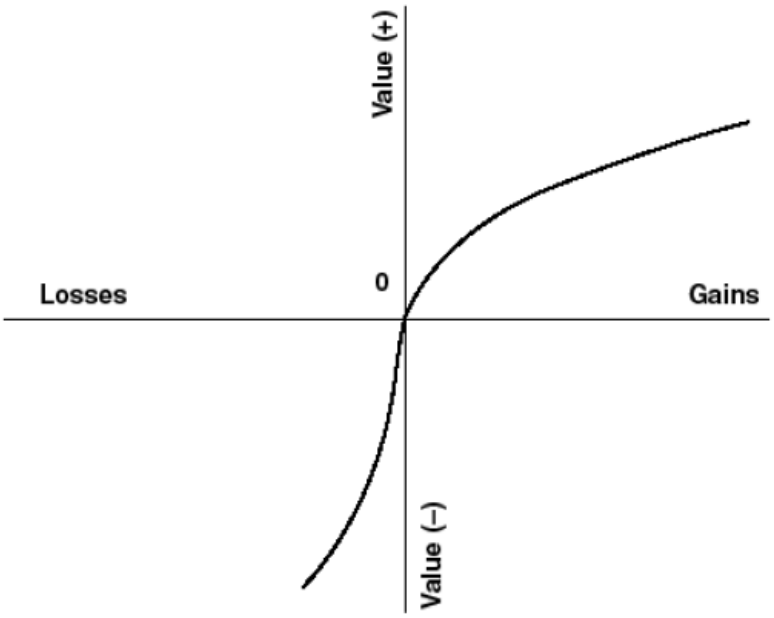
PROSPECT THEORY:

Prospect theory has done more to bring psychology into the heart of economic analysis than any other approach. Prospect theory, developed by Kahneman and Tversky (1979)48 and Tversky and Kahneman was proposed as a best practice alternative to conventional wisdom. Prospect theory is a theory of average behaviour. It theorizes how an individual or group of individuals behaves, on average, in a world of uncertainty.

The prospect theory is proposed by Daniel Kahneman and Tversky. They describe how people frame and value decision involving uncertainty. According to Prospect theory, people look at choices in terms of potential gains or losses in relation to specific reference point, which is often a purchase price. People feel more strongly about the pain from loss then the pleasure from equal gain.

Prospect theory is a representation of the statistical average of individual behaviours. Thus, there will be deviations from the mean. For example, a subsample of individuals behaving in a consistently deviant fashion can help explain important aspects of choice behaviour, whether or not such behaviour is consistent with the conventional wisdom or prospect theory. Nevertheless, the underlying empirics of prospect theory with regard to average choice behaviour have been well documented. As Tversky and Kahneman write:

“Prospect theory and the scales [used in this theory] should be viewed as an approximate, incomplete, and simplified description of the evaluation of risky prospects. Although the properties of v and n summarize a common pattern of choice, they are not universal: the preferences of some individuals are not well described by an S-shaped value function and a consistent set of decision weights.”



This figure presents a visual representation of prospect theory and shows an S shaped Value function. Above fig. shows value function- this is prospect theory's equivalent of classical

economic utility function. However, it is defined over gains and losses around a reference point. The reference point is determined by the subjective feelings of the individual. It is the individuals' point of reference, the benchmark against which all comparison is made. Value function is concave for gains and convex for losses. This means that value function is steeper for losses than for gains- this is referred as loss aversion.

Three unique features of prospect theory:

• Prospect theory assumes that choice decisions are based upon a subjectively determined reference point independent of the decision maker's state of wealth.

• Subjective reference points introduce a frame to a prospect, which affects choice behaviour.

• A kink exists at the reference point of prospect theory's value function, assuming individuals weight losses at above twice that of gains.

Individuals tend to think in terms of gains and losses rather than a state of wealth. For example, if there are two people, one of them learns that his wealth has gone from 1 million to 1.3 million while other one learns that his wealth gone down from 5 million to 4.5 million. Most of the people will say that the first guy is happier. However, if we look in terms of finance, the second person should be better pay off in terms of total wealth.

The Prospect theory explains that people focus on the outcomes of their decisions. This is in contrast to Bernoulli's expected utility theory that looked at the utility of the 19 state of wealth. The Prospect Theory of Kahneman and Tversky follow value functions. Reference points serve to frame the decision parameters. Thus, gain and losses are evaluated both separately and relatively, as opposed to simultaneously and in terms of absolute values of state of wealth.

FRAMING

The term Frame dependence means the way people behave depends on the way that their decision problems are framed. There is much evidence that variation in the framing of options, in terms of gains and losses, yield systematically different preference. (Tversky and Kahneman, 1986). Framing is the way in which a question is structured with regard to the issue being evaluated. Economists argue that framing is transparent; implying that investors can see through all the different ways cash flows might be described. According to Modigliani and Miller approach "if you transfer a dollar from your right pocket to your left pocket, you are no wealthier". Franco put it as "Frame independent investors pay attention to changes in their total wealth" Framing is the notion that how a concept is presented to individual matters. A frame is the Form used to describe a decision problem, and Frame dependence means that the form is relevant behaviour (Shefrin,2000). In reality, behaviour is frame dependent. This means that, the form used to describe a problem has bearing on decision making. Frame dependence stems from mix of cognitive and emotional factors. The Cognitive aspects relate to how people organise information mentally, in a coding losses and profits.

MENTAL ACCOUNTING:

Mental accounting was proposed by Richard Thaler. Traditional finance holds that wealth in general and money in particular must be regarded as 'fungible' and every financial decision should be based on rational calculation of its effects on overall wealth position. In reality, however, people do not have computational skills and will power to evaluate decisions in terms of their impact on overall wealth. So people separate their money into various mental accounts which has different significance to them.

Mental accounting describes the tendency of people to place particular events into different mental accounts based on superficial attributes. People separate money and financial risk into 'mental accounts' putting wealth into various buckets. They place their money into separate parts on a variety of subjective criteria, like the source of money, and intend of each account, which has an often irrational and detrimental effect on their consumption decision and other behaviours. For example, investors may feel free to take risk in their own account rather than their children.

Mental accounting manifests itself in investors' behaviour in following ways:

• Investors have a tendency to ride losers as they are reluctant to realize losses. Mentally, they treat unrealized 'paper loss' and realised 'loss' differently, although from a rational economic point of view they are same.

• Investors often integrate the sale of losers so that the feeling of regret is confined to one-time period.

• Investors tend to stagger the sale of winners over time to prolong favourable experience.

• People are more venturesome with money received as bonus but very conservative with money set aside for children's education.

• Investors often have irrational preference for stocks paying high dividends, because they don't mind spending the dividend income, but are not inclined to sell a few shares and 'dip into the capital'. So, 'mental accounting' refers to how individuals mentally integrate different parts of their wealth. Even over monitoring of portfolio is the result of this biasness. That reflects the way in which investors assign sums of money to different actual or notional accounts for different purposes with varying degrees of risk tolerance upon the importance of achieving the particular objective.

LOSS AVERSION

Prospect theory supposes that people's utility derives from losses and gains, rather than from final wealth. People work from a psychological reference point and strongly prefer to avoid losses below it. The value function shows the sharp asymmetry between the values that people put on gains and losses. This asymmetry is called "loss aversion". Empirical tests indicate that losses are weighted about twice as heavily as gains, i.e. losing 1 € is about twice as painful as the pleasure of gaining 1 €. This can also be expressed as the phenomenon in

which people will tend to gamble in losses, i.e. investors will tend to hold on to losing positions in the hope that prices will eventually recover. This is due to the fact that the utility function under the prospect theory is upward sloping for wealth levels under each individual's reference point.

Loss aversion can help to explain the tendency of investors to hold on to loss making stocks while selling winning stocks too early. Shefrin (2000) called this occurrence the "disposition effect". This hypothesis has been supported empirically for field data (Heisler, 1994; Odean, 1998), and in experimental asset markets (Heilmann et al., 2000; Weber & Camerer, 1998). Odean (1998) analysed trading records for 10,000 accounts at a large discount brokerage house and found that investors held losing stocks for a median of 124 days, while winners were held for only 104 days. Using an experimental call market, Heilmann et al. (2000) showed that the number of assets offered and sold was higher during periods of rising trading prices than during periods of falling trading prices. When investors view stocks on an individual basis, then risk aversion in gains will cause them to sell too quickly into rising stock prices, thereby depressing prices relative to fundamental values. Conversely, risk seeking in losses will cause investors to hold on too long when prices decline, thereby causing the prices of stocks with negative momentum to overstate fundamental values. Loss aversion also implies that decision-making is sensitive to the description of the action choices, i.e. to the way the alternatives are "framed".

There are two particular areas of investors' preference that have been highlighted by behavioural finance. The first is loss aversion, which in behavioural finance fills the roles of risk aversion in traditional finance, and the second is mental accounting.

Loss Aversion is a pervasive phenomenon in human decision making under risk and uncertainty, according to which people are more sensitive to losses than gains. It plays a crucial role in Prospect Theory (Tversky and Kahneman, 1974), and (Tversky and Kahneman, 1992). A typical financial example is in investor's difficulty to realize losses. Shefrin(2000) calls this phenomenon 'Get-evenities' that is, people hope that markets will work in their advantage and they will be able to terminate their investment without incurring losses. The human tendency to take extreme measures to avoid loss leads to some behaviour that can inhibit investment success. So the human attitude to risk and reward can be very complex and subtle, which changes over time and in different circumstances.

RATIONALITY IN INVESTMENT DECISION

Rational behaviour refers to a decision-making process that is based on making choices that result in the optimal level of benefit or utility for an individual. The assumption of rational behaviour implies that people would rather take actions that benefit them versus actions that are neutral or harm them. Most classical economic theories are based on the assumption that all individuals taking part in an activity are behaving rationally. Rational behaviour may not involve receiving the most monetary or material benefit, because the satisfaction received could be purely emotional or non-monetary.

Rational behaviour is the cornerstone of rational choice theory, a theory of economics that assumes that individuals always make decisions that provide them with the highest amount of personal utility. These decisions provide people with the greatest benefit or satisfaction given the choices available. Rational behaviour may not involve receiving the most monetary or material benefit, because the satisfaction received could be purely emotional or non-monetary.

For example, while it is likely more financially beneficial for an executive to stay on at a company rather than retire early, it is still considered rational behaviour for her to seek an early retirement if she feels the benefits of retired life outweigh the utility from the pay check she receives. The optimal benefit for an individual may involve non-monetary returns.

Further, a person’s willingness to take on risk, or conversely, their aversion to risk, may be considered rational depending on their goals and circumstances. For example, an investor may choose to take on more risk in his own retirement account than in an account designated for his children's college education. Both would be considered rational choices for this investor.

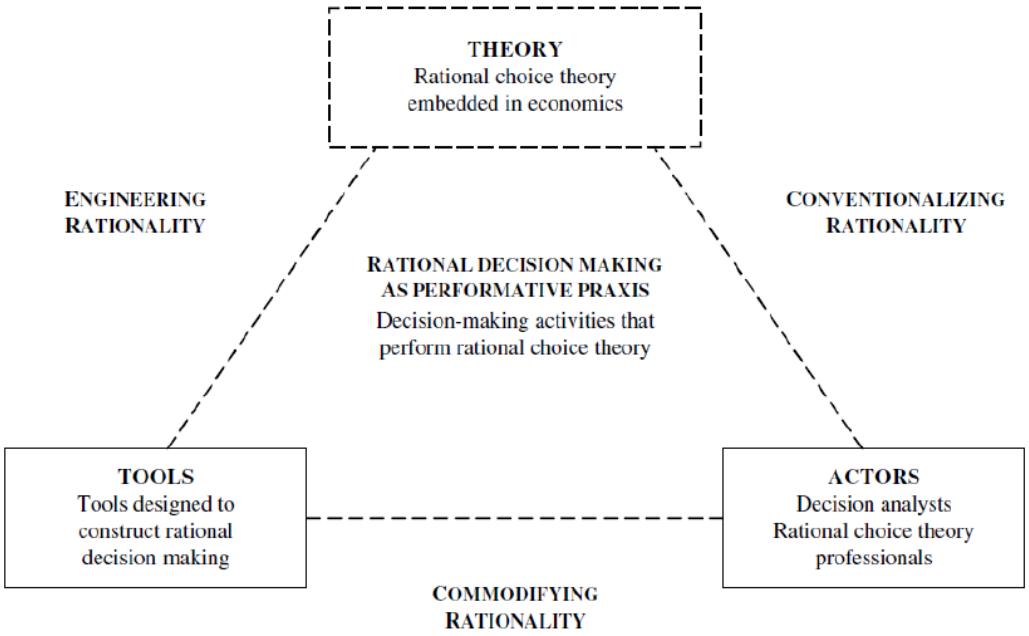
Behavioural Economics

Behavioural economics is a method of economic analysis that considers psychological insights to explain human behaviour as it relates to economic decision-making. According to rational choice theory, the rational person has self-control and is unmoved by emotional factors. However, behavioural economics acknowledges that people are emotional and easily distracted, and therefore, their behaviour does not always follow the predictions of economic models. Psychological factors and emotions influence the actions of individuals and can lead them to make decisions that may not appear to be entirely rational.

Behavioural economics seeks to explain why people make certain decisions about how much to pay for a cup of coffee, whether or not to pursue a college education or a healthy lifestyle, and how much to save for retirement, among other decisions that most people have to make at some point in their life.

Investors may also make decisions primarily based on emotions, for example, investing in a company for which the investor has positive feelings, even if financial models suggest the investment is not wise.

Organizational studies primarily approach decision making as a process and consider the level of rationality within decision making as an outside variable (Langley et al. 1995; Fredrickson 1984). However, performativity approaches rational decision-making as a determined action of actors in search of rationality. Therefore, it is vital to unfold the production of rationality by examining organizational scholars who study decision making as something emerging from the actions of organizational actors (Jarzabkowski et al, 2007; Whittington, 2006). The following section will present the different elements and mechanisms that together compose the model of performativity as described in figure



The Trinity

Theory -Actors -Tools The economic model of rationality is used by economists to conceptualize practices related to investment decisions (Mas-Colell et al. 1995). The first step

in the model requires decision makers to structure the problem and then define a set of alternative decisions, e.g. scenario planning or utility functions. In the second step, decision makers should specify each alternative in a way that reflects their preferences and assess the probability of each alternative taking place. Thirdly, decision makers should select the alternative with the highest possible expected value and then work to implement it (Keeney 1982, von Neumann & Morgenstern 1947). The underlying theoretical framework for the decision-making process derives from two different branches within decision theory; normative decision theory and descriptive decision theory (E.Bell & Raiffa, 1988). Normative decision theory, as in this paper rational choice theory, advises on how to make the best optimal decision in relation to a set of uncertain possibilities and values. Whereas descriptive decision theory describes and analysis the existing decision behaviour of possible irrational agents. The normative approach assumes that the individual actor can assess and make the optimal decision to maximize the utility outcome (Myerson, 1991). By following this process, the investment decision will in theory be considered to minimize risk and therefore also increase the level of rationality (Cabantous & Gond, 2011). However, in business praxis, actors may not have all the available information, thus incapable of making fully rational investment decisions. In that sense, creating a pre-negotiated decision process will not fully have an effect the final decision since it lacks the ability to make use the missing data. Rather every single action performed by actors related to the decision will eventually shape how actual decisions are performed Henry (2000).

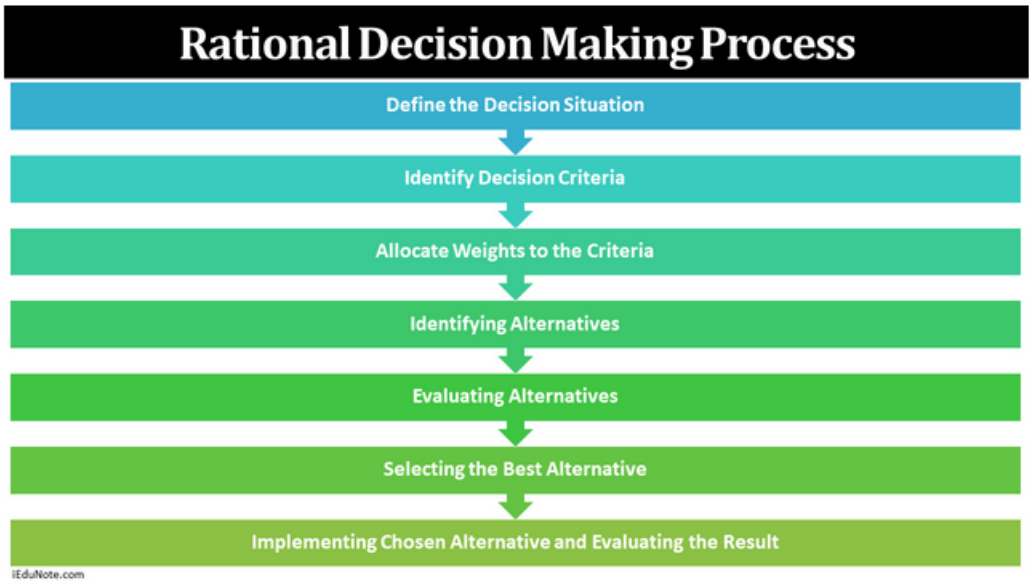
In the model of performativity, actors include the decision makers and a whole range of other individuals, who are contributing to the final decision. An actor inside the organization can be a business-analyst who conduct the necessary analytics on behalf of the final decision maker (Langley, 1989). An external actor could be a consultant assisting in various tasks with the purpose of providing additional support for their clients' investment activities (Hodgkinson et al, 2006). Non-human actors can be exemplified as investment tools and other supportive decision-making systems (Clemen & Reilly, 2001; Hodgkinson et al. 1999). In that sense, actors can be both human and non-human that together affect rationality in the investment process. In a practical perspective, both researchers and practitioners emphasize on the importance of techniques and tools in decision-making (Reckwitz, 2002; Orlikowski, 2007). In theory, tools are designed to produce rationality for investment decisions and support actors in their quest to perform rational investment choices. Actors striving for making rational decisions can overcome their limited cognitive capacities with the help of decision-

making techniques and tools (Clemen & Reilly 2001; Hodgkinson et al. 1999). Therefore, the perception of rationality in the investment praxis will continuously reappear in research due to technologies of model-based rationality (March, 2006).

The three links; rationality conventionalization, rationality engineering, and rationality commodification, together shape rational choice theory in organizational decision-making praxis. Firstly, conventionalization rationality explains how rational choice theory influence organizational practices. Secondly, engineering rationality is a processwhere tools and artifacts implement rational choice theory in organizations' investment practices. Finally, commodifying rationality supports the influence and diffusion of rational choice theory, and enforces conventionalization and engineering by incorporating practitioners in the development of the tools and methods used in investment process.

The Process of Rational Decision Making

- Define the Decision Situation.
- Identify Decision Criteria.
- Allocate Weights to the Criteria.
- Identifying Alternatives.
- Evaluating Alternatives.
- Selecting the Best Alternative.
- Implementing Chosen Alternative and Evaluating the Result



Define the Decision Situation

The model begins by defining the problem. A problem exists when there is a discrepancy between an existing and a desired state of affairs (Pounds, 1969). It is impossible to make a rational decision unless one can clearly define the problem or context in which the decision needs to be made.

- Why does a decision need to be made?
- What will be the outcome if no decision is made?
- What outcome is desired?
- What is preventing that outcome from being realized?

Identify Decision Criteria

Once a decision-maker has defined the problem, he or she needs to identify the decision criteria that will be important in solving the problems. In this step, the decision maker determines what is relevant in making the decision. This step brings the decision maker's interests, values, and similar personal preferences into the process. Identify criteria is important because what one person thinks is relevant to another person may not. Also, keep in mind that any factors not identified in this step are considered irrelevant to the decision maker.

Allocate Weights to the Criteria

After identifying all the criteria, the decision maker will give weights to these. The main purpose of this is to give importance to the criteria which are most important in nature. Basically, in this way, the decision maker will give them the correct priority in the decision.

Identifying Alternatives

The key to this step is not to limit one too obvious alternatives or to what has worked in the past. This step requires the decision maker to generate possible alternatives that could succeed in resolving the problems. The better decision's come from being open to multiple alternatives. It is often helpful to consult trusted adults or experts in the area in which the decision needs to be made.

Evaluating Alternatives

As the decision makers evaluate each alternative, they should be looking at the likely positive and negative consequences associated with each. It is unusual to find one alternative that would completely resolve the problem. As they consider positive and negative consequences, they must be careful to differentiate between what they know for a fact and what they believe might be the case. The more the evaluation is fact-based, the more confident he/she can be that the expected outcome will occur

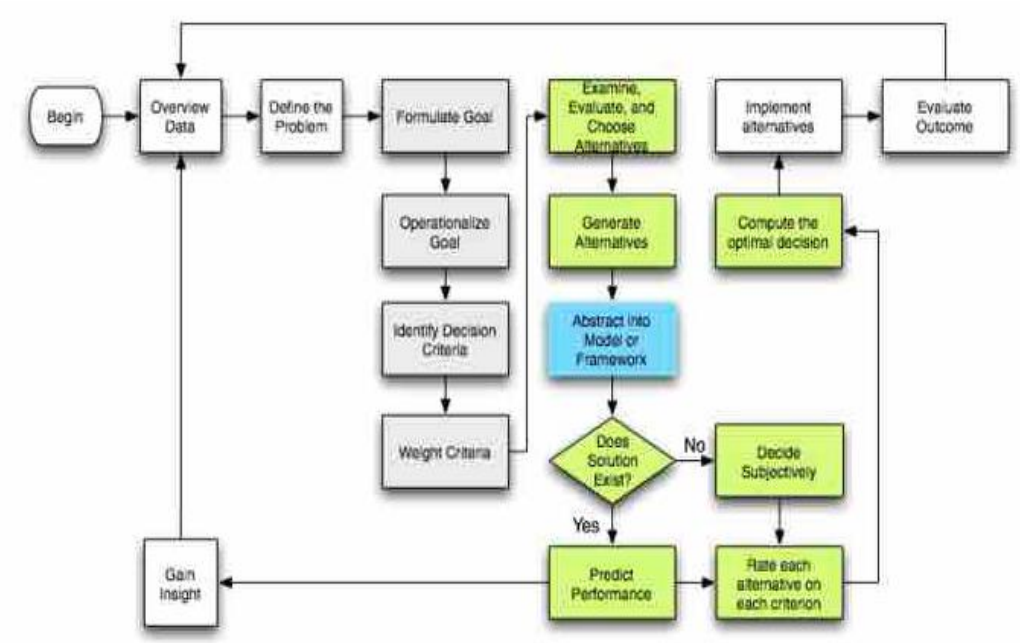
Selecting the Best Alternative

When acting alone or as part of a group, this is the natural next step after evaluating each alternative. In general, the best alternative is the one with the highest degree of probability that it will resolve the problem and the least amount of risk.

Implementing Chosen Alternative and Evaluating the Result

While this might seem obvious, it is necessary to make the point that deciding on the best alternative is not the same as doing something. The action itself is the first real and tangible step in changing the situation. It is not enough to think about it or talk about it or even decide to do it. A decision only counts when it is implemented. In the final step, the result is to be evaluated. That means after implementing the decision, whether the problem is solved or not will be evaluated. If the problem remains or has worsened, the steps of the decision-making process need to be repeated until an acceptable resolution has been found. Effective decision making requires that the decision maker understand the situation.

Most of the people will consider an effective decision to be one that optimizes some set of factors, such as profits, sales, employee welfare, and market share. In some situation, an effective decision may be one that minimizes loss, expenses, or employee turnover.



ASSUMPTIONS OF THIS MODEL

The rational decision-making model We just described contains a number of assumptions. These assumptions are-

1. **Problem Clarity:** The problem is clear and unambiguous. The decision maker is assumed to have complete information regarding the decision situation.
2. **Known Options:** It is assumed the decision maker can identify all the relevant criteria and can list all the viable alternatives. Furthermore, the decision maker is aware of all the possible consequences of each alternative.
3. **Clear Performances:** Rationality assumes that the criteria and alternatives can be ranked and weighted to reflect their importance.
4. **Constant' Preferences:** it is assumed that the specific decision criteria are constant and that the weights assigned to them are stable over time.
5. **No Time or Cost Constraints:** The rational decision maker can obtain full information about criteria and alternatives because it is assumed that there are no time or cost constraints.
6. **Maximum Payoff:** The rational decision maker will choose the alternative that yields the highest perceived value.

ELLSBERG PARADOX

The Ellsberg's paradox was developed by Daniel Ellsberg in his paper "Risk, Ambiguity, and the Savage Axioms", 1961. It concerns subjective probability theory, which fails to follow the expected utility theory, and confirms Keynes' 1921 previous formulation. This paradox is usually explained with the next experiment (you may try it yourself):

An individual is told that an urn contains 90 balls from which 30 are known to be red and the remaining 60 are either black or yellow. He is asked to choose between the following gambles:

Gamble A: – $100 if the ball is red

Gamble B: – $100 if the ball is black

And one between the following:

Gamble C: – $100 if the ball is not black

Gamble D: – $100 if the ball is not red

In most cases people will choose A Over B and D over C. It is thought that betting for or against the known information (red ball) is safer than betting for or against the unknown (black ball). Nevertheless, these choices of preferences result in a violation of the sure-thing principle, which would require the ordering of A to B to be preserved in C to D.

We can derive a series of conclusions from this paradox. First, the appearances of a breach in the independence axiom, as common elements are considered in both gambles. Second, how individuals are reluctant to play in complex games, which shows their aversion to ambiguity. This statement also concerns the last conclusion which regards the disjunction effect. Decisions are postponed until having information, although this information may not have an influence is our final decision.

BUBBLE CRAETION

A bubble is an economic cycle characterized by the rapid escalation of asset prices followed by a contraction. It is created by a surge in asset prices unwarranted by the fundamentals of the asset and driven by exuberant market behaviour. When no more investors are willing to buy at the elevated price, a massive sell-off occurs, causing the bubble to deflate.

How a Bubble Works

Bubbles form in economies, securities, stock markets and business sectors because of a change in investor behaviour. This can be a real change — as seen in the bubble economy of Japan in the 1980s when banks were partially deregulated, or a paradigm shift — which took place during the dot-com boom in the late 1990s and early 2000s. During the boom, people bought tech stocks at high prices, believing they could sell them at a higher price until confidence was lost and a large market correction, or crash, occurred. Bubbles in equities markets and economies cause resources to be transferred to areas of rapid growth. At the end of a bubble, resources are moved again, causing prices to deflate.

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Key Takeaways

- A bubble is a rapid escalation of asset prices followed by a contraction, often created by a surge in asset prices that is fundamentally unwarranted.
- Changes in investor behaviour are the primary causes of bubbles that form in economies, securities, stock markets, and business sectors.

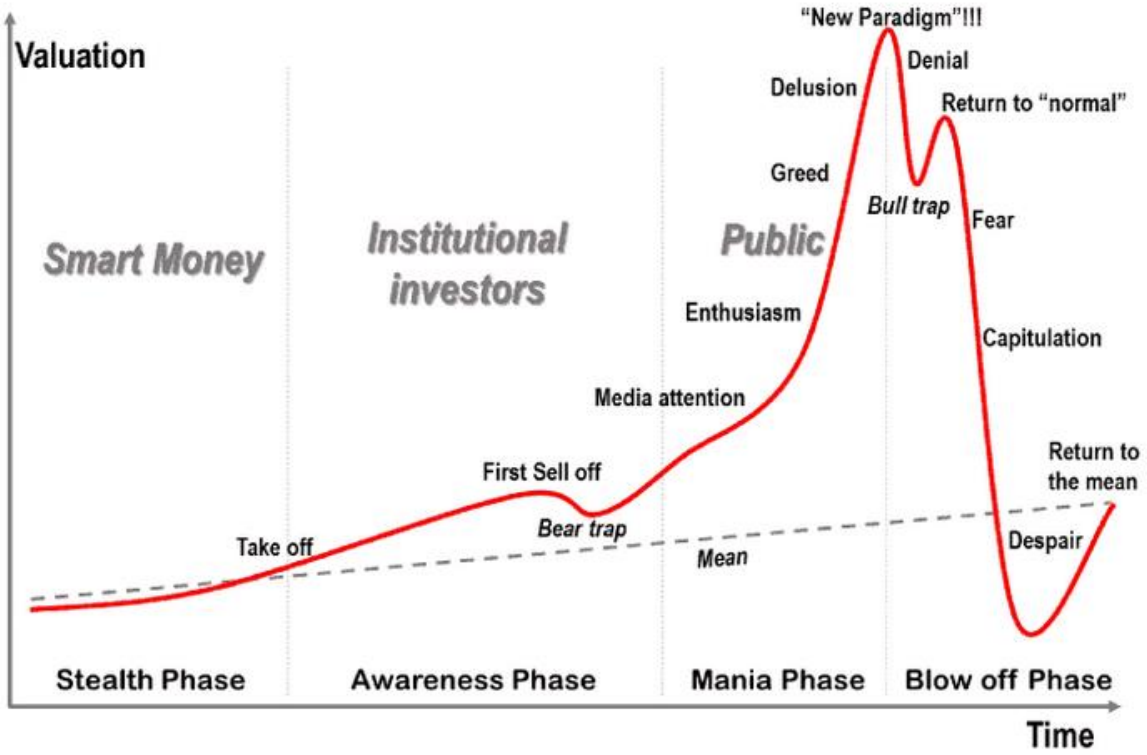
THE FIVE STEPS OF A BUBBLE

Economist Hyman P. Minsky, who was one of the first to explain the development of financial instability and the relationship it has with the economy, identified five stages in a typical credit cycle. The pattern of a bubble is pretty consistent, despite variations in how the cycle is interpreted.

1. **Displacement**: This stage takes place when investors start to notice a new paradigm, like a new product or technology, or historically low interest rates — basically anything that gets their attention.
2. **Boom**: Prices start to rise at first, then get momentum as more investors enter the market. This sets up the stage for the boom. There is an overall sense of failing to jump in, causing even more people to start buying assets.
3. **Euphoria**: When euphoria hits and asset prices skyrocket, caution is thrown out the window.
4. **Profit taking**: Figuring out when the bubble will burst isn't easy; once a bubble has burst, it will not inflate again. But anyone who looks at the warning signs will make money by selling off positions.
5. **Panic**: Asset prices change course and drop as quickly as they rose. Investors and others want to liquidate them at any price. Asset prices decline as supply outshines demand.

The Dutch tulip bulb market bubble, also known as 'tulip mania' was one of the most famous market bubbles and crashes of all time. It occurred in Holland during the early to mid1600s when speculation drove the value of tulip bulbs to extremes. At the height of the market, the rarest tulip bulbs traded for as much as six times the average person's annual salary.

Stages in a Bubble



Stages in a Bubble

1. **Stealth**. Those who understand the new fundamentals realize an emerging opportunity for substantial future appreciation, but at risk since their assumptions are so far unproven. So the "smart money" gets invested in the asset class, often quietly and cautiously. This category of investors tends to have better access to information and a higher capacity to understand the wider economic context that would trigger asset inflation. Prices gradually increase, but often completely unnoticed by the general population. Larger and larger positions are established as the smart money starts to better understand that the fundamentals are well-grounded and that this asset class is likely to experience significant future valuations.

2. **Awareness**. Many investors start to notice the momentum, bringing additional money in and pushing prices higher. There can be a short-lived sell-off phase taking place as a few investors cash in their first profits (there could also be several sell-off phases, each beginning at a higher level than the previous one). The smart money takes this opportunity to reinforce its existing positions. In the later stages of this phase, the media starts to notice with positive reports about how this new boom benefits the economy by "creating" wealth; those getting in becoming increasingly "unsophisticated".
3. **Mania**. Everyone is noticing that prices are going up and the public jumps in for this "investment opportunity of a lifetime". The expectations about future appreciation become a "no brainer" and a linear inference mentality sets in; future prices are an extrapolation of past price appreciation, which of course goes against any conventional wisdom. This phase is however not about logic, but a lot about psychology. Floods of money come in creating even greater expectations and pushing prices to stratospheric levels. The higher the price, the more investments pour in. Fairly unnoticed from the general public caught in this new frenzy, the smart money, as well as many institutional investors, are quietly pulling out and selling their assets. Unbiased opinion about the fundamentals becomes increasingly difficult to find as many players are heavily invested and have every interest to keep asset inflation going. The market gradually becomes more exuberant as "paper fortunes" are made from regular "investors" and greed sets in. Everyone tries to jump in and new intrants have absolutely no understanding of the market, its dynamic and fundamentals. Prices are simply bid up with all financial means possible, particularly leverage and debt. If the bubble is linked with lax sources of credit, then it will endure far longer than many observers would expect, therefore discrediting many rational assessments that the situation is unsustainable. At some point statements are made about entirely new fundamentals implying that a "permanent high plateau" has been reached to justify future price increases; the bubble is about to collapse
4. **Blow-off**. A moment of epiphany (a trigger) arrives and everyone roughly at the same time realizes that the situation has changed. Confidence and expectations encounter a paradigm shift, not without a phase of denial where many try to reassure the public that this is just a temporary setback. Some are fooled, but not for long. Many try to unload their assets, but takers are few; everyone is expecting further price declines. The house of cards collapses under its own weight and late comers (commonly the

general public) are left holding depreciating assets while the smart money has pulled out a long time ago. Prices plummet at a rate much faster than the one that inflated the bubble. Many over-leveraged asset owners go bankrupt, triggering additional waves of sales. There is even the possibility that the valuation undershoots the long term mean, implying a significant buying opportunity. However, the general public at this point considers this sector as “the worst possible investment one can make”. This is the time when the smart money starts acquiring assets at low prices.

The Bubble Bursts

By the end of 1637, the bubble had burst. Buyers announced they could not pay the high price previously agreed upon for bulbs and the market fell apart. While it was not a devastating occurrence for the nation's economy, it did undermine social expectations. The event destroyed relationships built on trust and people's willingness and ability to pay.

According to Smithsonian.com, Dutch Calvinists painted an exaggerated scene of economic ruin because they worried that the tulip-driven consumerism boom would lead to societal decay. They insisted that such great wealth was ungodly and the belief remains to this day.

Module 3

HEURISTICS AND BIASES RELATED TO FINANCIAL INVESTMENTS

The presence of regularly occurring anomalies in conventional economic theory was a big contributor to the formation of behavioural finance. These so-called anomalies, and their continued existence, directly violate modern financial and economic theories, which assume rational and logical behaviour. A relevant point of criticism, levied against traditional models in economics and finance, is that they are often formulated as if the typical decision-maker were an individual with unlimited cerebral RAM. Such a decision-maker would consider all relevant information and come up with the best choice under the circumstances in a process known as constrained optimisation.

Normal humans are imperfect and information requirements are for some financial models egregious. A well-known example is that capital asset pricing model, the famous model important enough that William Sharpe won the 1990 Nobel Prize for Economics Sciences for this contribution. This model assumes that investors are capable of studying the universe of securities in order to come up with all required model inputs. These inputs include expected returns and variances for all securities, as well as covariances among different securities. Only then is the investor able to make appropriate portfolio decisions.

The dictionary definition for heuristics refers to the process by which people find things out for themselves usually by trial and error. Trial and error often leads people to develop “rules of thumb”, but this process often leads to other errors. Heuristics can also be defined as the “use of experience and practical efforts to answer questions or to improve performance”. Due to the fact that more and more information is spread faster and faster, life for decision-makers in financial markets has become a mostly inevitable approach, but not always beneficiary. Heuristics may help to explain why the market sometimes acts in an irrational manner, which is opposite to the model of perfectly informed markets. The interpretation of new information may require heuristic decision-making rules, which might later have to be reconsidered.

There is a large number of identified heuristics and biases from psychology and they come in all shapes and sizes. One dichotomy is between those heuristics that are reflexive, autonomic, and noncognitive, and economise on effort (Type A); and others, which are cognitive in nature (Type B). Type A heuristics are appropriate when a very quick decision must be made

or when the stakes are low (e.g. “I choose a burger over a pizza because I usually prefer them”). Type B heuristics are more effortful and are appropriate when the stakes are higher. In some cases, an initial reaction using Type A heuristic can be overruled or corroborated using Type B heuristic (e.g. “No, I will choose the pizza today because it is prepared a bit differently and I like to try new things”).

HEURISTICS AND BIASES:

Kahneman and Tversky (1974) is still a classic description of the main heuristics that people use to judge probability and frequency. Heuristics can be thought of as mental 'rules of thumb' that people employ for all kinds of judgements. For example, if you want to share a cake among 5 people, rather than optimize the size of each slice depending on each person's unique preferences, level of hunger, etc you might employ a 1/n heuristic and give everyone an equal 1/5th slice. Or if you see dark clouds forming on your way to work, you might decide to bring a raincoat. To paraphrase Kahneman & Tversky, "*People rely on heuristic principles to reduce the complex tasks of assessing probabilities to simpler judgmental operations*."

a. Anchoring Heuristic:

Making estimates by starting from an initial value that is then adjusted to get the final answer. The adjustment is usually insufficient.

b. Availability Heuristic:

Judging the probability of an event or the frequency of a class based on the ease with which occurrences or instances can be brought to mind.

c. Representativeness Heuristic:

Probabilities are evaluated by the degree to which A is representative of B - by the degree to which A resembles B. For example, when A is highly representative of B, the probability that A originates from B is judged to be high. On the other hand, if A is not similar to B, the probability that A originates from B is judged to be low.

Types of Representative Heuristics	Description
Gambler's Fallacy	If something is happening more frequently then it is less likely to happen in the near future.
Base Rate Fallacy	People prefer individuating or specific information over general ones when the former is available.
Regression to the mean	People are most likely to take action when variance is at its peak. Then after results become more normal they believe that their action was the cause of the change when in fact it was not causal.
Conjunction Fallacy	The extra specificities pave the way for assessing the integrity of someone's' claims.

REPRESENTATIVENESS:

According to Shefrin (2000), Representative heuristic is a judgment based on stereotypes. It is also referred as drawing conclusions from little data. Representativeness refers to the tendency to form judgment based on stereotypes. For example, you may form an opinion about a student to perform academically in college on the basis of how he has performed academically in school. While representativeness may be a good rule of thumb, it can also lead people astray. Representative bias occurs when it is required to assess the probability of an object. A belonging to B. The heuristic rule says that if object A is highly representative of class B, the probability of A originating from B is judged as high, and vice versa (Tversky and Kahneman, 1974)58. They showed that representative is insensitive to prior probability of outcomes, when description is provided. Furthermore, it is insensitive to sample size, when people estimate the probability related to the sample randomly drawn from a large population, based on the similarity with the population parameter. Heuristics are just rule of thumb for dealing with the information deluge that we are all faced with. Representativeness

refers to our tendency to evaluate how likely Actions which is explaining representativeness bias:

• Investors often try to detect patterns in data which is random number.

• Investors extrapolate past returns which actually follow randomness.

• Investors may be drawn to MFs with good track record because such funds are believed to be representative of well –performing funds. They forget that even unskilled manager can earn higher return by chance.

• Investors are overly optimistic about past winners.

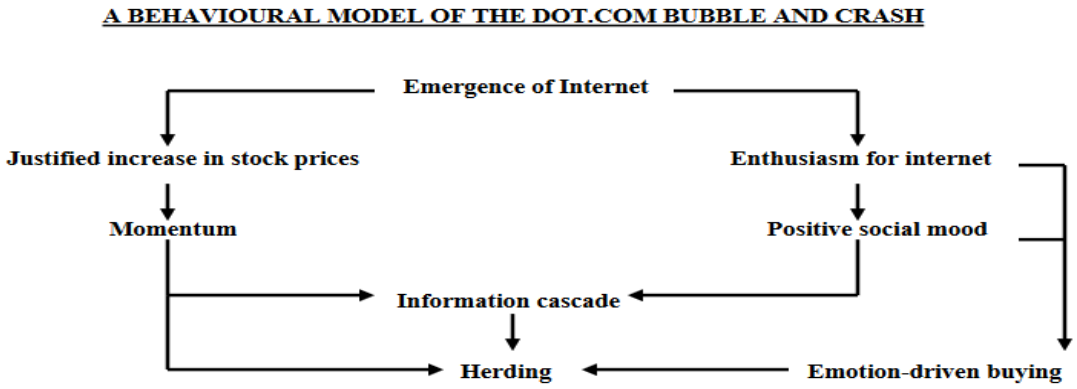
• Good companies -good stock syndrome.

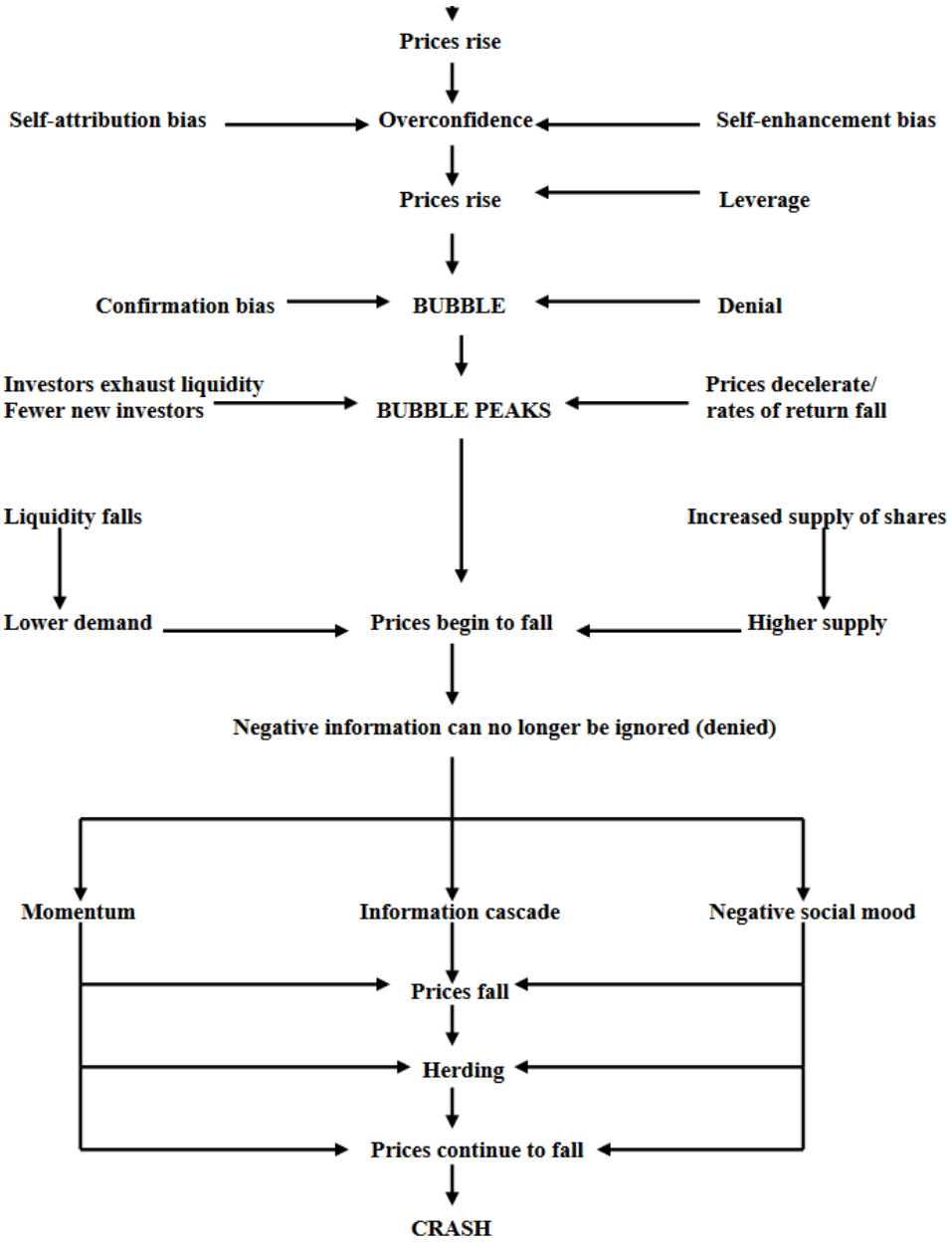
This heuristic leads people to judge the stock market changes as bull or bear market without valuing that the likelihood that particular sequences happen rarely. In the same way it could lead the investors to be more optimistic about the past winners and more pessimistic about the past losers which may assume that a recent trend in price movements will definitely continue into the future. It may also result in individual investors developing too much attention to popular stocks that have recently been performing well.

Statman explains that being duped into making investment decisions based upon imperfect theory of small numbers is something that standard finance investor would never do. Statman argued conversely that the investors consider past performances as evidence of future returns is a realistic possibility, contrary to the standard finance model of an investor.

Representativeness and sample size neglect, bias is where individual are too quick to conclude that they understand developments on the basis of too little information and limited data, where conclusions from small data sets were used even when that is the only evidence available. One aspect of representativeness is often referred to as the law of small numbers. It is believed that random sample will resemble each other and the population more closely than statistical sampling theory would predict. This representativeness heuristic has application in finance. For e.g. investor are subject to law of small number when dealing with earning data. Another example of representativeness is the way in which investors often mistake good companies for good stocks.Representativeness can cause investors to overreact to new

information, i.e. investors give new information too much weight in forming their expectation about future.





OVERCONFIDENCE BIAS

Overconfidence bias is a tendency to hold a false and misleading assessment of our skills, intellect, or talent. In short, it's an egotistical belief that we're better than we actually are. It can be a dangerous bias and is very prolific in behavioral finance and capital markets. The danger of an overconfidence bias is that it makes one prone to making mistakes in investing. Overconfidence tends to make us less than appropriately cautious in our investment

decisions. Many of these mistakes stem from an illusion of knowledge and/or an illusion of control.

Overconfidence is fuelled by a number of other related psychological biases:

1. Optimism is a perfectly sensible coping strategy for life but can be problematic when investing. We routinely underestimate the likelihood of falling ill for instance, yet, overestimate the probability of good events happening to us, which goes a long way to explaining lottery ticket sales.
2. The illusion of knowledge is the tendency for people to believe that the accuracy of their forecasts necessarily increases with more information. This however is not necessarily the case given information is not the same as insight.
3. The illusion of control, is the tendency to overestimate our ability to influence events over which we have little control. Today, investors are bombarded daily with financial information, and every twist and turn in stock markets is discussed at length. This information encourages some investors to make frequent changes to their portfolios. However, studies suggest that these investors are in fact overtrading and virtually guaranteeing themselves mediocre returns after transaction costs.2 One explanation for overtrading is that investors feel motivated to master the environment -The illusion of control.
4. Hindsight bias can feed confidence levels further. By extrapolating recent experience into the future, (often based on limited data), investors are often guilty of making confident predictions that are regularly shown to be flawed.
5. Overconfidence becomes particularly problematic in bull markets and in periods of sustained stability. During these periods, the “good times” are widely expected to continue forever, and overconfidence becomes prevalent among allocators of investment capital.

Indeed, our collective bias towards overconfidence in good times seems to sow the seed of our subsequent downfall. Economist, Hyman Minsky famously observed that “stability begets instability”. His ‘Financial Instability hypothesis’ suggests that people tend to take greater and greater risks in periods of sustained stability. Minsky observed that capitalists extrapolate stable financial conditions into the future, encouraging them to put in place ever-more risky debt structures, which ultimately undermine stability itself.

In challenging times, overconfidence can work the other way, combining with hindsight bias to result in over-pessimism. In the same way that we are guilty of becoming overconfident in the good times, during the bad times we can become much too confident things will stay gloomy. Again we are guilty of letting hindsight and information dominate our thinking.

FEAR AND GREED IN FINANCIAL MARKET

Greed and fear refer to two opposing emotional states theorized as factors causing the unpredictability and volatility of the stock market, and irrational market behaviour inconsistent with the efficient-market hypothesis. Greed and fear relate to an old Wall Street saying: “financial markets are driven by two powerful emotions – greed and fear.” Greed and fear are among the animal spirits that Keynes identified as profoundly affecting economies and markets. Warren Buffett found an investing rule in acting contrary to such prevailing moods, advising that the timing of buying or selling stocks should be "fearful when others are greedy and greedy only when others are fearful." He uses the overall Market capitalization-to-GDP ratio to indicate relative value of the stock market in general, hence this ratio has become known as the "Buffett Indicator".

Greed

Greed is usually described as an irresistible craving to possess more of something (money, material goods) than one actually needs. According to several academics greed, like love, has the power to send a chemical rush through our brains that forces us to put aside our common sense and self-control and thus provoke changes in our brains and body. However, there is no generally accepted research on physiology of greed.

Other academics tend to compare greed to an addiction, because greed like smoking and drinking can illustrate that if a person can take over one's addictions it is possible to avert bad effects from resisting it. On the other hand, if one cannot resist its temptations, he can easily get swept away by it. In other words, it can be deduced that certain traders who join the business world for the emotional agitation and desire of hitting that emotional high, are addicted to the release of certain brain chemicals that determine those states of happiness, euphoria and relaxation. Before mentioned fact can also imply that such traders are susceptible to all addictions. Furthermore, humans' brains are naturally activated by financial awards, which in the same way as drugs produce an incredible but perilous feeling and thus

an addictive experience.One of the most common examples of situations where greed took over people's actions is the 1990s dot-com bubble

The Dot-com bubble, also known as Internet bubble, referenced the speculative investment bubble that was created around new internet startup companies between the years 1995–2000. In that time, exorbitant prices of new Internet companies motivated investors to invest into companies whose business plans included a "dot com" domain. Investors became greedy, creating further greed, resulting in securities being heavily overpriced, which eventually created a bubble

Fear

Emotion of fear is usually characterised as an inconvenient, stressful state, triggered by impending peril and awareness of hazard. Internet bubble is not only a good example of investors' greed but also the period following the bubble can serve as a good characteristic for fear induced market.

In pursuance of solutions to suppress their losses after Internet bubble crash, fearful investors decided to swiftly move out of the stock markets concentrating their attention on less uncertain purchases, spurring their capital into market securities, stable value funds and principal protected funds, all of low risk and return securities. Such behaviour is an example of a complete negligence of long term investing plan which is based on fundamentals. Investors disregarded their plans because of fear of committing persisting losses, which identically did not bring any profits and benefits.

Greed and hope

Some academics disagree with the notion that greed and fear are main emotions driving financial markets.

According to psychologist Lola Lopes, while fear is indeed a crucial factor driving financial markets, majority of investors don't respond that much to greed but to hope. Lopes indicates that fear, unlike hope, provokes investors to concentrate on unprofitable invests, while hope does the complete opposite. Furthermore, hope and fear are believed to alter the manner in which investors estimate other possibilities. Fear provokes investors to ask: *How bad can it*

get?, while hope: *How good can it get?*. In this case, fear drives investors to enhance security, while hope stimulates investors to emphasise potential

One of the best available and accepted tools to measure stock market volatility is CBOE Volatility Index, elaborated by Chicago Board Options Exchange in 1993. In other words, VIX can be defined as a sentiment ratio of Wall Street's fear or greed gauge. It is usually used by traders to check the grade of investor complacency or market fear.

In practice, VIX is usually called the fear index. In case of increased VIX index, investors' sentiment leans toward higher volatility which corresponds to higher risk. If a VIX reading is under 20 it usually indicates that investors became less concerned; however, if the reading exceeds 30 it implies that investors are more fearful because prices of the options increased and investors are more prone to pay more to preserve their assets

EMOTIONS AND FINANCIAL MARKET

Emotion can be defined loosely as a physiological state of arousal triggered by beliefs about something (Elster 1998). Arnold (1960) defines emotion as "the felt tendency toward anything intuitively appraised as good (beneficial), or away from anything intuitively appraised as bad (harmful)". A strict definition of the term is complex because emotion has cognitive, physiological, social, and behavioral aspects.

Despite the lack of a unified definition of emotion, there is some agreement on the set of emotions that exist. According to Elster (1998), some states are clearly emotions, including, for instance, anger, hatred, guilt, regret, fear, pride, elation, joy, and love. Elster further argues that these emotional states can be differentiated from other mental states on the basis of six features put forth long ago. These features do not provide a complete definition of emotion because not even one feature is an element of every emotion. Yet these six features remain central to current discussion and provide a framework for understanding what an emotion is. The brief descriptions that follow use one emotion—regret—for illustrative purposes

1. Cognitive antecedents. Emotions are triggered by beliefs. An investor regrets an investment decision because she believes that bad outcomes could have been avoided.

2. Intentional objects. Emotions are about something. The object of an emotion is usually the cognitive antecedent. For example, the poorly performing investment is the object of the regretful investor

3. Physiological arousal. Changes in hormonal conditions and the autonomic nervous system accompany emotions. The regretful investor may feel pangs, a hollow stomach, or depression.

4. Physiological expressions. Observable expressions characterize emotions. Facial expressions, posture, voice intonation, and outward appearance are noteworthy. The regretful investor may appear pale, with slumped shoulders.

5. Valence. Emotions can be placed on a scale with pleasure at one extreme and pain at the other. Valence, or the experience of pleasure versus pain, translates to happiness or unhappiness. The regretful investor is decidedly unhappy about the poor investment outcome.

6. Action tendencies. Emotions are associated with a tendency to act. The regretful investor might take actions to avoid being exposed to similar investment opportunities.

Emotions have a bearing on risk tolerance, and risk tolerance influences portfolio selection. Investors experience a variety of emotions as they consider alternatives, decide how much risk to take, watch their decisions play out, assess whether the initial strategy needs modification, and finally learn how far they have succeeded in achieving their financial objectives.

The emotions experienced by a person with respect to investment may be expressed along an emotional time line as shown as below

Hope Anticipation Pride

Decision----------Goals

Fear Anxiety Regret

Investment decisions lie at the left end of the time line and investment goals at the right end. According to psychologist Lola Lopes, investors experience a variety of emotions, positive and negative. Positive emotions are shown above the time line and negative emotions below the time line.

On the positive side, hope becomes anticipation which finally converts into pride. On the negative side, fear turns into anxiety which finally transforms into regret Hope and fear have a bearing on how investors evaluate alternatives. Fear induces investors to look at the downside of things, whereas hope causes them to look at the upside. The downside perspective emphasizes security; the upside perspective focuses on potential gains.

According to Lopes, these two perspectives reside in everyone, as polar opposites. However, they are often not equally matched, as one pole tends to dominate the other. The relative importance of these conflicting emotions determines the tolerance for risk.

GEOMAGNETIC STORM AND Its EFFECTS ON FINANCIAL MARKET

The geomagnetic storm (GMS) which gives rise to beautiful Northern lights is a short lived disturbance in the earth's upper atmosphere or earth's magnetosphere. It is caused by solar flares or solar winds that is intense explosion from originating the visible segment of the sun's chromospheres which disturbs magnetic field. These solar flares are known as plasma which is made up of electrons and protons with the energy of earth of some thousands electron volts.

Disturbance – Storm Time (DST) is the index which tells about the changes in the geomagnetic storm. The Disturbance Storm Time index calculates approximately the worldwide average modification in the horizontal module of Earth's charismatic field at the equator and the measurements are done from different magnetometer stations. Disturbance Storm Time is calculated in every one hour and its description is given in close to real time. During normal days, Disturbance Storm Time is between plus twenty and minus twenty nanotelsa (nT)

OBJECTIVES

•To determine how Geomagnetic Storms impact every day returns of capital market, deviations in the average returns, and change in investor's strategies.

•To determine the effect of geomagnetic storms on people's moods while relating to the decisions, opinions and behaviour of the people.

Phases of Geomagnetic Storm

The phases of geomagnetic storm are divided into three parts which tells about how geomagnetic storm occurs from initial phase to recovery phase, which are as follows:

- Initial Phase: In the initial phase of geomagnetic storm, it is illustrated by DISTURBANCE STORM TIME or SYM-H, which is a one-minute component, increased by twenty to fifty NT (in tens of minutes). Most of the geomagnetic storm does not have an initial phased and there is no unexpected increase in DISTURBANCE STORM TIME or SYM-H is follow by a geomagnetic storm. The

initial phase of geomagnetic storms is also known as Storm Sudden Commencement (SSC). This phase is connected by means of density of the magnetosphere, which results in an enhance in local strength. The period of this phase can be up to 2-8 hours.

- Main Phase: The period of main phase of geomagnetic storm is about 12 to 24 hours. The main phase is about decreases in surrounding field intensities. In this phase, geomagnetic storm is characterized in terms of DISTURBANCE STORM TIME, typically less than -50 NT. Typically, the lower bound of values during the course of storm is said to be in the range of -50 and -600 NT.
- Recovery Phase: This phase ranges from 10 hours to as much as 7 days. This phase results from reconciliation between the lower and bound and normal range of storm time.

Geomagnetic Storms (GMS) and Investor's Psychology

There is a growing attention in the enterprise of psychological sciences towards the measurable effect of high intensity of geomagnetic activity and psychological states of those experiencing it. Surely, this area remains under-explored at this point in time and merits attention from both psychologists as well as behavioral economists. For instance, geomagnetic activities have been speculated to be associated with differing mental states of confusion as well higher alert levels - and such mental states certainly contribute to how people process information, evaluate alternatives, and make financial decisions. For instance, one potential way this effect may manifest is as follows: Investors under the in influence of geomagnetic storms, if they tend to become distrustful, such a mental state may influence their trading behaviour. Thus we can make a case for a systematic association between GMS and investor behaviour. For instance, there are documented cases of returns from investments going down during strong geomagnetic activity. Whether or this association is causal or just correlation-al is contentious. Rigorous experimental designs are required to establish any causal connection between the two. Moreover, it has also been documented that the relative effects of geomagnetic storm on small capitalization capitals is more in magnitude compared to that on large ones. Interestingly, Gompers and Metrick (2001) noticed a marked difference in effects of geomagnetic storms in individual versus institutional investors, in that while influence on individual investors was more, on institutional investors it was relatively less. We can conjecture a hypothesis to explain this: whereas individuals stand to be affected by such emotions as fear, anxiety and greed (which are triggered by geomagnetic storms, as we

saw earlier), the institutional investors play mostly by established and time-tested rules, leaving little chance for emotions to come into play. The gamut of the aforementioned finding concentrates on the idea that GMS have conspicuous influence on evaluation of small cap capitals which in turn influence the ensuing financial decisions of investors.

BEHAVIOURAL CORPORATE FINANCE

When thinking about a firm's financing and investment decisions, rational executives are guided by a belief in the efficiency of markets. But what if markets aren't always as efficient as we believe they are? And what if executives *themselves* are not rational, and their decisions are biased in some predictable way? This second question, central to research in a new academic discipline called behavioural corporate finance, forces us to re-examine conventional ideas about corporate finance and compensation strategies. Behavioural finance (of which behavioural corporate finance is a sub discipline) integrates psychology and economics into the study of human judgment and biases in decision making under conditions of uncertainty

Research in behavioural corporate finance takes two distinct approaches. The first emphasizes that investors are less than fully rational. It views managerial financing and investment decisions as rational responses to securities market mispricing. The second approach emphasizes that managers are less than fully rational. It studies the effect of nonstandard preferences and judgmental biases on managerial decisions. This survey reviews the theory, empirical challenges, and current evidence pertaining to each approach. Overall, the behavioural approaches help to explain a number of important financing and investment patterns.

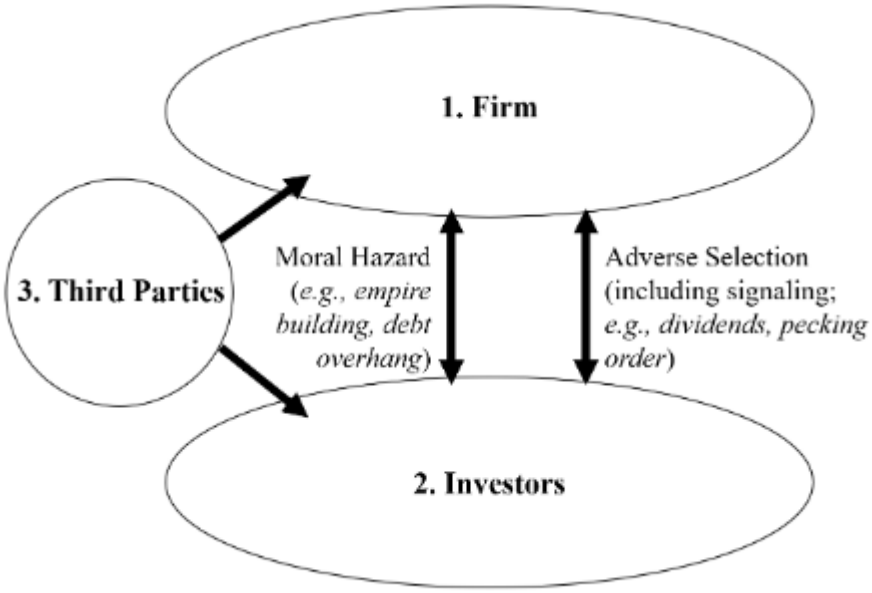
Two more general insights have emerged from Behavioural Corporate Finance research on high-level decision-makers. First, the evidence on biased behaviour of smart and talented professionals implies that successful "fixes" of biased decision-making will need to be of a different nature than implied by the earlier emphasis on education and financial literacy.

Second, behavioural researchers should consider carefully which biases are plausible for which individual in which setting, rather than testing them uniformly in their "convenience sample. "Being confronted with the objection that "successful CEOs surely won't be biased," or concerns about the seeming inconsistency of considering investor biases in one paper and

managerial biases in another, researchers in Behavioural Corporate Finance had to think hard about the type of biases that are plausible for decision-makers in a corporate setting and how they differ from those considered for the untrained individual.

Corporate Finance and Behavioural Corporate Finance

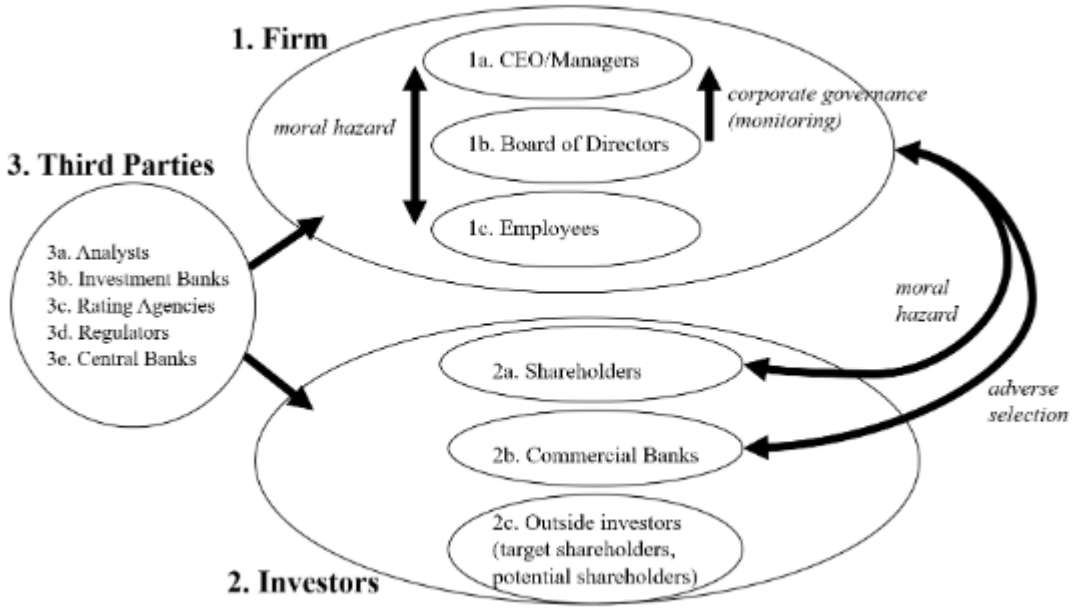
corporate Finance seems a misnomer for the type of research presented at modern corporate finance conferences, or at least it is far too narrow. While the finances of corporations were originally at the centre of the field,3and the Modigliani and Miller (1958) theorem. It covers firms that are not incorporated, entrepreneurs, analysts, and households, all making decisions far beyond the "financing" aspects



Corporate finance in nutshell

A firm seeks financing from outside investors, and has to overcome two hurdles: moral hazard and adverse selection. Moral hazard concerns incentive misalignment between managers and investors. For example, a manager may choose to expand the firm due to private benefits, even when such expansion is not profitable. This incentive conflict affects the firm's ability to obtain financing when investors cannot observe and control managers' behaviour. Adverse selection concerns a different type of asymmetric information, namely, that investors cannot distinguish promising and less promising investment opportunities. As a result, a firm can fail to obtain financing for an investment project even when it would be profitable to the investors. The firm may resort to signalling via dividend payments or to a pecking order of financing choices in order to overcome these frictions.

The following figure also acknowledges moral hazard issues within the firm, which constitute part of the research in corporate finance, in particular the large area of corporate governance.



Behavioural Corporate Finance, which applies tools and insights from Behavioural Economics to corporate finance settings. Behavioural Economics as an approach that allows for1. deviations from rational belief formation,2. non-standard utility maximization, and3. imperfect maximization processes due to cognitive limitations.

Three Perspectives

Perspective 1: Biased Investors

Perspective 1 analyses the interaction between investors that exhibit non-standard behaviour ("investor sentiment") and rational managers. It explains the corporate-finance policies that have been hard to reconcile with standard neo-classical models as the managerial response to investor biases. This explains several important stylized facts incorporate finance, most of them revolving around the type of financing chosen by managers. Other puzzles of seemingly non-standard managerial decisions remained unexplained, such as patterns of investment-cash flow sensitivity, the strong path-dependence of capital structure, and the het-erogeneity in financing patterns among otherwise similar firms. This observation was the starting point of the Behavioural Corporate research performed from the perspective of biased managers.

Perspective 2: Biased Managers

Behavioural Corporate Finance considers biases on the side of the manager. Here the question is whether non-standard managerial behaviour, and the market's response to it, helps explain existing puzzles in corporate finance. The managerial biases considered include overconfidence, reference-dependence, experience effects, and more generally "traits" that are not relevant in traditional models. The response of the market is generally assumed to be rational. The manager aims to maximize own or existing shareholders' wealth, but fails: Due to the manager's biased perspective, it ends up maximizing "perceived" wealth. The chosen actions that seem optimal under her biased beliefs, but might not be optimal given the true probability distribution. As a result, it will not maximize true objectives. These welfare considerations are a key reason why researchers should aim to go beyond rational "as if" models for reasons of modelling discipline when, in reality, behavioural biases may be at work.

Perspective 3: Biased Third Parties

Many corporate finance settings feature a third group of players, most frequently financial intermediaries or analysts, who may also display non-standard behaviour. This could in turn affect corporate decision making.

They provide evidence that credit analysts are often biased in their assessment of borrowers and that these differences in assessment carry through debt prices.

Corporations need a lot of improvement in some of those aspects referring to management and corporate governance: sensible incentives that mix the personal interest with corporate risk and reward, control & communication systems, risk management systems, accounting standards and procedures and human resources. As investors, we also need to take in consideration aspects like dividends, earnings announcements and the evolution of closed-end funds industry in order to understand better the investors and the market's sentiment, the price momentum and price reversal so we may increase further our wealth.