

# EVOLUTION OF BEHAVIORAL FINANCE

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**Abstract:** While standard finance emphasizes theories such as modern portfolio theory and the efficient market hypothesis, this paper explores the evolution of modern behavioral finance theories from the traditional framework. Behavioral finance is a financial theory which has risen since 1980s. In recent years its influence has increasingly spread and has vigorously challenged modern financial theories to the investors for better decision making. It discusses three main issues. First, it predicts the importance of standard finance theories and the situations where they become insufficient i.e. market anomalies. Second, it signifies the role of behavioral finance in narrowing down the gaps between traditional finance theories and actual market conditions. This involves the substitution of standard finance theories with more realistic behavioral theories like the prospect theory (Kahneman & Tversky, 1979). In the end, it discusses some general principles of behavioral biases including the following: heuristic factors, and prospect theory, their underlying psychology and their impact on financial markets and decision making of investors.

**Keywords:** Standard finance, Behavioral Finance, Behavioral Biases, Investment Decision.

## Introduction

Human nature is complex, and behavioral finance studies how emotional, cognitive, and psychological factors influence investment decisions. Thousands of studies have confirmed that human beings are perfectly irrational in their decision making. Behavioral finance helps to explain the difference between expectations of efficient, rational investor behavior and actual behavior. Investing in financial markets in recent times has become popular not only among institutional but also individual investors. Communications and information have become available worldwide in seconds speed. Investment decisions depend on the data and its financial position in the future, but most of the time short-term price changes are driven by market participants that are not always based on logic but sometimes are inspired by mood or instantly received news and thus anomalies presented in the investors behavior.

Every investor can attest to the fact that investing in the stock market brings about a wide range of emotions, from the pain of watching your investment fall in value to the joy of watching your investment climb higher and higher, and these emotions can lead to mistakes, and errors in judgement. Prompted by recent shocks to the financial system, such as the Global Financial Crisis in 2008, the field of behavioral finance has grown increasingly popular, as investors seek to better understand the markets, and the participants within them. The presence of market anomalies like speculative bubbles, overreaction and under reaction to new information, is a proof to the financial decision making. Thus, the need for understanding such anomalies and shortcomings of human judgment involved with them became the precursor of behavioral finance.

Behavioral finance can be thought of as the marrying of traditional finance and psychology, it aims to explain stock market anomalies and how human behaviour and psychology can create inefficiencies and mispricing within the market. Behavioral Finance is not just a part of finance but is broader and wider in scope and includes insights from behavioral economics, psychology and microeconomic theory.

## Standard Finance Approach

Mid eighteenth century is considered to be the onset of the classical period in economics (Pompian, 2011). In 1844, John Stuart Mill introduced the term “*economic man*” or “*homo economicus*” means a person who acted rationally on complete knowledge out of self-interest and the desire for wealth, who tries to maximize his economic well being given the constraints he faces. He proposed three underlying assumptions are; perfect rationality, perfect self-interest and perfect information. These assumptions became the basis of the traditional financial framework that sought equilibrium solutions by maximizing marginal utilities of individuals’ subject to situational constraint (Pompian, 2011). Economists Thorstein Veblen, John Maynard Keynes, Herbert A. Simon, and many of the Austrian School criticize *homo economicus* as an actor with too great an understanding of macroeconomics and economic forecasting in his decision making. The behavior of individuals representing this paradigm is uniform as their main focus is on optimizing their marginal gains. As the noted researcher (Statman, 1999) quoted that “standard finance the body or Knowledge that is built on such pillars as the arbitrage principles of Merton Miller and Franco Modigliani, the portfolio construction principles of Harry Markowitz, the capital asset pricing theory of John Lintner and William Sharpe, and the option-pricing theory of Fischer Black, Myron Scholes, and Robert Merton is so compelling because it uses only a few basic components to build a unified theory”.

Standard Finance is also known as Academic Finance. Modern Portfolio Theory, etc., evolved in the 1950s and early 1960s. Thereafter, it got wide acceptance among the academia. Under this theory, investors were considered as fully rational decision making entities. The theory also accepted that the stock prices always incorporated the best information about the fundamental values, and prices changed only because of good and sensible information. The finance models of the 1970s related

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speculative asset prices to economic fundamentals, using rational expectations. Thus, finance was connected to the entire economy. Standard Finance is based on the following four foundations:

- Investors are rational;
- Markets are efficient;
- Investors should design their portfolios according to the rules of Mean-variance Portfolio Theory; and
- Expected returns are a function of risk, and risk alone.

These foundations are based on the early contributors to Standard Finance, mainly Merton Miller and Franco Modigliani, Eugene Fama, Harry Markowitz, William Sharpe, etc. Table.1 shows the details of their contributions. Expected Utility Theory (Bernoulli 1738, 1954; von Neumann & Morgenstern, 1944) states that the market participants make their decisions under risk by comparing the expected utility values of the available alternatives. Rational investors act to maximize their expected utility that is calculated as weighted sums of utility values multiplied by their respective probabilities. It categorizes the decision makers into risk averse, risk neutral and risk taker individuals.

Harry Markowitz (1952) introduced the concept of portfolio selection model. He assumes investors are risk averse and they can choose only the instruments having less risk with marginal rate of return. It describes the process of optimal portfolio construction by selecting the different securities with minimum risk and maximizing the return. Markowitz portfolio theory helps the practical construction of portfolios, and ultimately leads to the development of Capital Asset Pricing Model (CAPM). Pioneers of CAPM include Sharpe (1963, 1964) and Lintner (1965). It is a theoretical model for pricing individual security. It helps in determining the appropriate rate of return for an asset that is to be added to a diversified portfolio, given the risk of that particular asset. The core idea of this model is that investors need to be compensated for the time value of money and market specific risk. It describes the expected return for all assets and portfolios of assets in the economy. As per the model, the difference in the expected returns of any two assets can be related to the difference in their betas,  $b$ . The higher the value of  $b$ , higher would be the risk of the security and the consequent expected return.

**Table 1. Various Theories of Standard Finance**

Author	Year	Finding
John Stuart Mill	1844	Introduced the concept of Economic Man or <i>homo economicus</i> .
Bernoulli	1738, 1954	Expected Utility Theory (EUT)
Von Neumann and Morgenstern	1944	
Harry Markowitz	1952	Modern Portfolio Theory (MPT)
Merton Miller & Franco Modigliani	1961	Investors are Rational
Treynor, Sharpe and Lintner	1962, 1964, 1965	Capital Asset Pricing Model (CAPM)
Jan Mossin	1966	
Eugene Fama	1970	Efficient Market Hypothesis (EMH)
S.A Ross	1976	Arbitrage Pricing Theory (APT)

Another important theme in standard finance is known as the Efficient Market Hypothesis (EMH). In 1970s, Eugene Fama published his article entitled, Efficient Capital Markets, states that it is impossible to beat the market as financial markets are efficient regarding the distribution of information. The efficient market hypothesis states the premise that all information has already been reflected in a security's price or market value, and that the current price the stock or bond is trading for today is its fair value. Since stocks are considered to be at their fair value, proponents argue that active traders or portfolio managers cannot produce superior returns over time that beat the market. Therefore, they believe investors should just own the "entire market" rather attempting to "outperform the market." This premise is supported by the fact that the S&P 500 stock index beats the overall market approximately 60% to 80% of the time. Even with the pre-eminence and success of these theories, behavioral finance has begun to emerge as an alternative to the theories of standard finance.

The Arbitrage Pricing Theory (APT), developed by Ross (1976) pertains to investment strategy. This theory was developed to address some of the limitations of CAPM. He states that the underlying logic and methodology is that of the rational finance theory. According to this theory, an attractive opportunity is created by irrational or noise traders through creation of mispriced securities. The rational traders or arbitrageurs will be quick enough to grab this opportunity and the mispricing created by the irrational traders will be corrected. The arbitrage assumes that when investors seek to exploit excess profit opportunities that may arise as a result of drifts away from the fundamental value, the activity of certain speculators will increase the demand for it. Higher demand will drive up the prices, thereby leading to adjustment in prices, thus eliminating the opportunity for excess profits. Thus, the prices of securities would reflect the available information accurately, allowing efficient allocation of capital.

For a very long period of time these theories were accepted and considered to be the ultimate explanation for investor and market behavior. However, in recent times researchers have been observing that traditional theories get significantly violated in actual market conditions and investors also face so many issues in the stock market while trading. 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 behavioral finance which factors irrationalities and biases of investors.

### Behavioral Finance Approach

The investors are rational and argued that the concept of standard finance couldn't give sufficient results to the investors in decision making. The EMH is generally based on the belief that market participants view stock prices rationally based on all current and future intrinsic and external factors. When studying the stock market, behavioral finance takes the view that markets are not fully efficient. This allows for observation of how psychological factors can influence the buying and selling of stocks. Broadly, behavioral finance theories have also been used to provide clearer explanations of substantial market anomalies like bubbles and deep recessions. While not a part of EMH, investors and portfolio managers have a vested interest in understanding behavioral finance trends. These trends can be used to help analyze market price levels and fluctuations for speculation as well as decision-making purposes.

Behavioral finance is a relatively new school of thought that deals with the influence of psychology on the behavior of financial practitioners and its subsequent impact on stock markets (Sewell, 2007). Research in this field started in the eighteenth century with significant works like *Theory of Moral Sentiments* (1759) and *Wealth of Nations* (1776) by Adam Smith. In these studies Smith suggests the presence of an "invisible hand" or the morality of individuals that guides them in making social, economic and even financial decisions. Smith (1759) emphasizes on the role of sentiments like pride, shame, insecurity and egotism. Another thinker, Jeremy Bentham (1789) highlights the psychological aspects of utility function. He argues that human concern for happiness makes it impossible for them to make a decision that is entirely devoid of emotions. These researchers stress on the role of psychology on economic behavior, but their consensus was lost over the next century. Back in 1896, Gustave le Bon wrote *The Crowd: A Study of the Popular Mind*, one of the greatest and most influential books of social psychology ever written (le Bon 1896). This work was then reinstated in the twentieth century. Selden (1912) identifies that the stock price movements on the exchanges are dependent on the mental attitude of investors. Simon (1955) assumes that rationality of individuals is constrained by two factors: information they have at their disposal and the cognitive limitations of their minds. Bounded rationality is a more relaxed version of standard expected utility theory. It is also more realistic to its traditional counterpart as it incorporates the limitations of the human judgment. The utility function is further investigated by Pratt (1964). The author compares the utility with respect to local risk aversion and global risk aversion and explains that the decision maker will have a greater local risk aversion if he is globally more risk averse. The author also gives a related utility function where risk is measured as a proportion of total assets. In 1956 the US psychologist Leon Festinger introduces the concept of cognitive dissonance (Festinger, Riecken & Schachter 1956) which occurs when two simultaneously held cognitions are inconsistent. Moreover, this dissonance creates a feeling of unpleasantness or unrest in the people such that they try to avoid it or reduce it by changing their beliefs.

The father of Behavioural Finance Tversky and Kahneman (1973) introduced the availability heuristic: 'a judgmental heuristic in which a person evaluates the frequency of classes or the probability of events by availability, i.e. by the ease with which relevant instances come to mind.' The reliance on the availability heuristic leads to systematic biases. In 1974, two brilliant psychologists, Amos Tversky and Daniel Kahneman, described three heuristics that are employed when making judgments under uncertainty (Tversky and Kahneman 1974): representativeness, availability, anchoring and adjustment. The path-breaking work in behavioral finance is credited to the psychologists Daniel Kahneman and Amos Tversky. They introduced the concept of prospect theory for the analysis of decision making under risk (1979). This theory is considered to be the backbone of behavioral finance. It was developed as an alternative model for expected utility theory. It throws light on how individual evaluate gain or losses. Table 2. Presents that the different researchers found the details of evolution and development of behavioral finance.

**Table 2. Various Theories of Behavioral Finance**

Researcher Name	Year	Theory/ Concept/ Model
Herbert Simon	1955	Models of bounded rationality
Festinger, Riecken 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.
Meir Statman	1999	Behavioral asset pricing theory and behavioral portfolio theory
Andrei Shleifer	2000	Linkage of behavioral finance with Efficient market Hypothesis to find that stock markets are inefficient.
Grinblatt and Keloharju	2001	Role of behavioral factors in determining trading behavior.
Barberis and Thaler	2003	Survey of Behavioral Finance
Fernandes, J., Pena, J.I., and Benjamin, T.	2009	Through their working paper Behavior Finance and Estimation Risk in Stochastic Portfolio Optimization, they classified behavioral biases into "Cognitive biases" and "Emotional biases".

In the next section we will discuss about some of the behavioral irrationalities identified by eminent psychologists, researchers and throwlight on how these tendencies can result in anomalies in financial markets.

### Introduction to Behavioral Biases

Research in psychology has documented a range of decision-making behaviors called biases. These biases can affect all types of decision-making, but have particular implications in relation to money and investing. Behavioral finance captures the role of behavioral biases in investor decision making. Behavioral biases are also categorized by Pompian (2006) into cognitive and emotional biases. The cognitive biases include overconfidence, representativeness, anchoring and adjustment, framing, cognitive dissonance, availability, mental accounting, etc. The emotional biases include endowment bias, loss aversion, optimism and status quo. Table 3. shows the presence and impact of some of the prominent biases that influence investors in decision making.

**Table 3. Categorization of Behavioral Biases**

Cognitive Biases	Emotional Biases
1. Availability Bias	1. Status Quo Bias
2. Framing Bias	2. Regret Aversion Bias
3. Self Attribution Bias	3. Loss Aversion Bias
4. Overconfidence Bias	4. Confirmation Bias
5. Cognitive Dissonance Bias	5. Optimism Bias
6. Hindsight Bias	6. Self Control Bias
7. Mental Accounting	7. Endowment Bias
8. Anchoring And Adjustment Bias	
9. Ambiguity Aversion Bias	
10. Representativeness Bias	
11. Conservatism Bias	
12. Illusion Of Control Bias	
13. Recency Bias	

Source: Pompian (2006)

### Human Behavioral Theories

In order to explain the various irrational investor behaviors in financial markets, behavioral economists draw on the knowledge of human cognitive behavioral theories from psychology, sociology and anthropology. Two major theories are discussed: Heuristics and Prospect Theory

#### Heuristics

“Heuristics are simple efficient rules of the thumb which have been proposed to explain how people make decisions, come to judgments and solve problems, typically when facing complex problems or incomplete information. These rules work well under most circumstances, but in certain cases lead to systematic cognitive biases” – Daniel Kahneman

Heuristics are introduced by Tversky and Kahneman in 1974. It refers the rules of thumb or mental shortcuts that help people in reaching decisions quickly and easily. These shortcuts, although helpful, can lead to erroneous decisions. Heuristics theory are defined as the rule of thumb, which individual used in uncertainty situation to make decision simple and efficient (Tversky and Kahneman, 1974; Ritter, 1988). Kahneman and Tversky, (1979) observed that, irrational people used heuristics in their decision making because they fail to judge the perfect probability. Heuristics are useful if time is limited (Waweru et al., 2008) and limited information (Tversky and Kahneman, 1974). Therefore, irrational people do not collect all information, they just follow some mental shortcuts that make their decision making process easier, simple and efficient. Tversky and Kahneman (1974) introduce three heuristics that may use by individual investors in their decision-making that are representativeness, availability and anchoring. Later on Waweru et al. (2008) added one more heuristics in the list that is overconfidence.

Representativeness refers as the rule of thumb, by which individual assign the probability to that event which is more representative and similar to its population (Tversky and Kahneman, 1974). In representativeness heuristics investors buy hot stock and avoid stock that have performed poorly in the recent past (Waweru et al., 2008). This behavior explains the reason of investors' overreaction in the market (De Bondt and Thaler, 1995). People give more importance to that event which relate to good occurrence in past. For instance, if the firm reports increased earning for several quarters in row then investors overreact to change in stock price with belief that they can earn high long term earning growth (Barberis, 2001). Therefore, investors use trend analysis of some representative stock to make investment decision.

Anchoring heuristics in which people make their decision is based on initial point (Pompian, 2011). Shiller (2000) results showed that investors tend to be optimistic in bull market and pessimistic in bear market. In the absent of solid information, investors



set stock's price in relation to past price (Shiller, 1980). Therefore, the high rate of return achieved in the market before as the benchmark for estimating future return on investment and high return is the main motivating factor for investing.

Availability refers to the tendency in which people rely upon knowledge that is easily available (Tversky and Kahneman, 1974). Investors give more weight on easily available information (Pompian, 2011). Therefore, investors prefer to buy the local stock than international stock and consider the information from their close friends and relatives as the reliable reference for their investment decision.

When people overestimate their ability, skills and knowledge, it is termed as overconfidence (Hvide, 2002). Nofsinger (2016) argues that overconfident people overestimate their knowledge and underestimate the risk. They trade excessively in the stock market based on their overconfidence (Evans, 2006). In a sense, they consider to themselves a smart participant in the stock and believe that they can earn higher return.

### Prospect Theory

The prospect theory is an economics theory developed by Daniel Kahneman and Amos Tversky in 1979, showed how people manage risk and uncertainty. It challenges the expected utility theory, developed by John von Neumann and Oskar Morgenstern in 1944, and earned Daniel Kahneman the Nobel Memorial Prize in Economics in 2002. It is the founding theory of behavioral economics and of behavioral finance, and constitutes one of the first economic theories built using experimental methods. This theory explains the apparent irregularity in human behavior when assessing risk under uncertainty. It says that human beings are not consistently risk-averse; rather they are risk-averse in gains but risk-takers in losses. People place much more weight on the outcomes that are perceived more certain than that are considered mere probable, a feature known as the "certainty effect" (Kahneman and Tversky, 1979). People's choices are also affected by the 'Framing effect'. Framing refers to the way in which the same problem is worded in different ways and presented to decision makers and the effect deals with how framing can influence the decisions in a way that the classical axioms of rational choice do not hold. It also demonstrated systematic reversals of preference when the same problem was presented in different ways (Tversky and Kahneman, 1981). Theory of prospect variable described some of the effective mental conditions on the decision making process such as loss aversion, regret aversion, and mental accounting (Wawro et al., 2008: 28).

**Loss Aversion:** Aversion means the feeling of dislike or disinclination and loss aversion means disliking or feeling uncomfortable about a loss. Loss aversion is an important psychological concept which receives increasing attention in economic analysis. The investor is a risk-seeker when faced with the prospect of losses, but is risk-averse when faced with the prospects of enjoying gains. This phenomenon is called loss aversion (Venkatesh, 2002).

**Regret Aversion:** It arises from the investors' desire to avoid pain of regret arising from a poor investment decision. This aversion encourages investors to hold poorly performing shares as avoiding their sale also avoids the recognition of the associated loss and bad investment decision. Regret aversion creates a tax inefficient investment strategy because investors can reduce their taxable income by realizing capital losses.

**Mental Accounting:** Mental accounting is the set of cognitive operations used by the investors to organise, evaluate and keep track of investment activities. Three components of mental accounting receive the most attention. This first captures how outcomes are perceived and experienced, and how decisions are made and subsequently evaluated. A second component of mental accounting involves the assignment of activities to specific accounts. Both the sources and uses of funds are labelled in real as well as in mental accounting systems. The third component of mental accounting concerns the frequency with which accounts are evaluated and 'choice bracketing'. Accounts can be balanced daily, weekly, yearly, and so on, and can be defined narrowly or broadly. Each of the components of mental accounting violates the economic principle of fungibility. As a result, mental accounting influences choice, that is, it matters (Thaler, 1999).

### Conclusion

This paper takes an approach of Evolution of Behavioral Finance through an extensive literature. The concept has evolved as a systematic exodus from the rational decision making based on conventional finance. During 1970's the trend in the field of behavioral finance shows that it has been on a developing track. Earlier, most of the studies were done on the deviation from the field of standard finance, where researchers have disproved the theories like; Modern Portfolio theory, Efficient Market Hypothesis, capital asset pricing model, Arbitrage Pricing theory etc., which assumes markets are efficient and people are rational in nature. Then, with the development of theories in the field of behavioral finance, academicians have proved that those theories like; Heuristics, Prospect theory, Behavioral Portfolio Theory and Behavioral Asset Pricing Theory support the irrational thinking of investors in their decision making framework. The growing trend depicts that research based on the behavioral biases has been on the rise. The latest research works are more towards this phenomenon as the trend is more towards theoretical based research. Hence, more focus needs to be given to empirical papers in this field. So, there is a requirement to support the concepts based on empirical research.

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