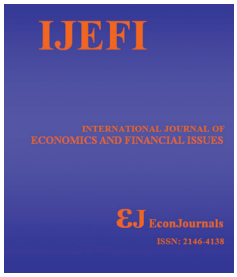

International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2017, 7(1), 448-459.

Contemporary Developments in Behavioral Finance

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ABSTRACT

Investors need not be rational for markets to be efficient. The axiom of efficient market hypothesis that it is not possible to earn excess profits because the available information gets factored in instantaneously fell flat due to influence of human behavior on the investment process. Exuberance of investors escalates asset values unduly on the back of financial irrationality. The intersection of human behavior and the investment decisions has since evolved as "behavioral finance." Research demonstrates that investment decision-making process is more human than analytical, owing to behavioral biases. Recent studies in prospect theory and heuristic decision-making process focused more on investor behavior causing market anomalies. At a time when irrational behavior is demonstrated not only in security markets but also in other markets such as property, bullion and commodities, this paper explores the contemporary research in behavioral finance.

Keywords: Behavioral Finance, Capital Market, Financial Irrationality, Irrational Behavior
JEL Classifications: M10, M20, M50

"The fact that people will be full of greed, fear or folly is predictable. The sequence is not predictable." ~ Warren Buffett

1. INTRODUCTION

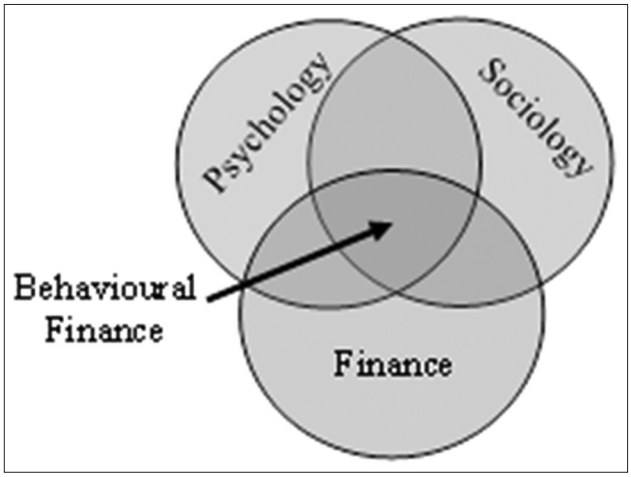
Investors take irrational decisions notwithstanding high performance technology platforms that enhance the probability of rational decisions. Investors have repeatedly been making the mistake of ignoring the supply response to rising prices in every market. An irrational investor is a normal human being - his/her utility contains benefits that cannot be understood or programmed into a computer (Statman, 2011). The foundation of traditional finance is associated with the modern portfolio theory (MPT) and the efficient market hypothesis (EMH). MPT is a stock or portfolios expected return, standard deviation, and its correlation with the other stocks or mutual funds held within the portfolio (Ricciardi and Simon, 2000). From the academic perspective, investor's behavior is not only related to finance, but also influenced by a combination of psychological, sociological and financial variables making "behavioral finance" truly interdisciplinary (Figure 1). The what, why, and how of finance and investing, viewed from a human and a social perspective is the scope of behavioral finance. It provides explanations to many market anomalies, speculative market bubbles and crashes.

2. EFFICIENT MARKET THEORY

Introduced by Fama (1970) EMH, fairly successful in traditional finance, states that financial prices incorporate all available information and can be regarded as optimal estimates of true investment value at all times. The basic assumption driving EMH is that people behave rationally, allocate their funds optimally and process all available information in the market while making an investment decision. However, this idea is flawed as there have been many instances in the past showing the markets to be behaving irrationally. Basic human behavior towards finance varies from individual to individual and a lot of financial decisions are made emotionally, rather than rationally. The idea of fully rational investors who always maximize their utility and demonstrate perfect self-control is becoming inadequate and inappropriate for the current investment scenario.

Theoretically the EMH rests on three basic assumptions viz., (a) investors in stock markets make decisions with complete rationality by valuing securities to their intrinsic value or true

Figure 1: Interdisciplinary nature of behavioural finance



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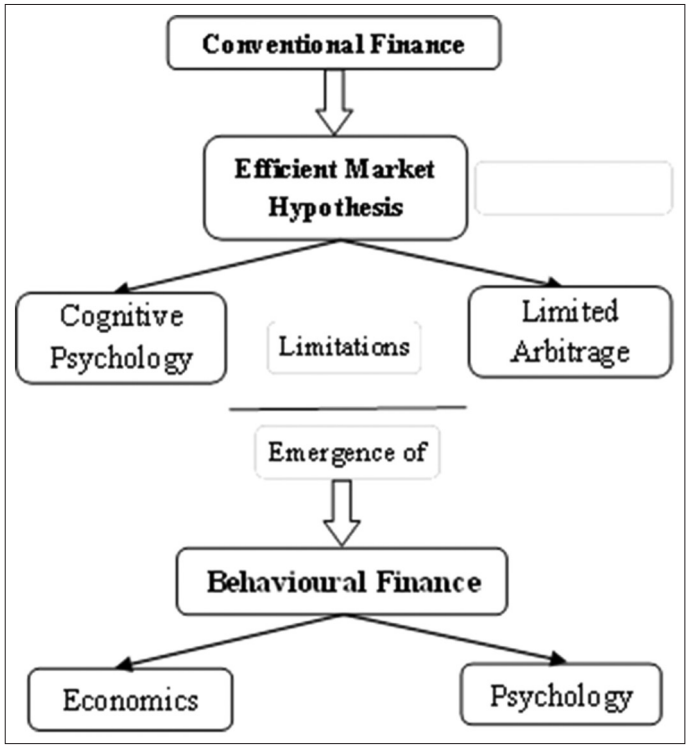
value, which means that these investors value each security by deriving the net present value of its project cash flows and discounting it by a risk factor that ultimately is the fundamental value of that security, (b) for investors who are not rational in their decision-making, their trades will either cancel out with one another or will get arbitraged by rational investors and (c) investors have well defined subjective utility functions that they will optimize, account for outcomes and try to maximize its end result (Shleifer, 2000).

3. BEHAVIOURAL FINANCE: THE EMERGENCE OF NEW EXEMPLAR IN FINANCE

Traditional finance attempts to explain the process of financial decision-making on the basis of rationality of markets and its players. However, investors act irrationally, particularly veterans, because inadvertently decisions are influenced by state of mind, emotions, trading theories, beliefs and interpretation of information. Behavioral biases do impact the actual process of investment decision-making. "Behavioral finance" has evolved for better understanding and to explain how emotions and cognitive errors influence investors during the decision-making process. Kahneman and Tversky (1979), Shefrin and Statman (1994), Shiller (1995), Shleifer (2000) are among the leading researchers who have utilized the theories of psychology and other social sciences to shed light on the efficiency of financial markets as well as explain the root cause of many stock market anomalies such as bubbles, depression, scams and market crashes. These researchers have revolutionized the way financial decision-making process is viewed and the factors impacting it. The evolution and the behavioral finance framework are depicted in Figure 2.

Behavioral finance is a study of human psychology and the rationality of making financial decisions minus the traditional assumptions of expected utility maximization in efficient market. A study on human behavior about the investment decision-making process helps to explain various market anomalies and inconsistencies that challenge the traditional standard theory.

Figure 2: Behavioural finance framework



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4. HUMAN BEHAVIOURAL THEORIES

A rational person is an individual with consistent preferences. Subjective priors in decision theory, called beliefs, logically stand between choices and payoffs. According to behavioral decision theorists there are important areas in which individuals appear to have inconsistent preferences. Human behavior is the potential and expressed capacity for physical, mental, and social activity during different phases of human life.

The several biases that influence decision-making incorporates loss aversion, regret avoidance, cognitive dissonance, herding behavior, overconfidence, over optimism, representativeness, limited attention, familiarity bias, over- and under-reaction, framing, conservatism, disposition effect, *status quo* bias, availability bias, hindsight bias, escalation of commitment, randomness bias, self-control, self-attribution, belief perseverance, conservatism, gamblers' fallacy, mental accounting, recency bias, endowment effect, and disposition. This paper reviews nine biases, the major influencing factors in decision-making, which are grounded in the empirical studies.

Human decisions are subject to several cognitive illusions which can be classified as the illusions identified within the prospect theory, and the illusions identified within the heuristic decision process.

5. THE PROSPECT THEORY

According to prospect theory a group of illusions may impact decision-making process of individuals (Kahneman and Tversky, 1979). It deals with how individuals manage risk and uncertainty.

In other words, it explains the apparent regularity in human behaviors when assessing risk under uncertainty. According to Kahneman and Tversky (1979) individuals 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." Individual choices are also affected by "framing effect" which refers to the way a problem is posed to the decision-maker and their "mental accounting" of that problem. Another establishment of the prospect theory is the value function. As indicated by Kahneman and Tversky (1979), the value function contrasts from the utility theory in anticipation that utility hypothesis due to a reference point, which is controlled by the subjective impression of people (Figure 3).

In the normal utility hypothesis, the utility theory is curved descending for all levels of riches. Despite what might be expected, by quality theory, the slant of the utility theory is upward inclination for riches levels under the reference point and descending slanting for riches levels after the reference point. The reference point is dictated by every person as a state of examination. For riches levels under this reference point, investors are danger seekers, while, for riches levels over this reference point, the value function is descending slanting in accordance with traditional investments, and investors are risk-averse.

Under the prospect theory, an investor's decision-making process will be influenced by four different behavior biases based on the uncertainty and risk as depicted in Figure 4. These are dealt with in detail herein.

5.1. Loss Aversion

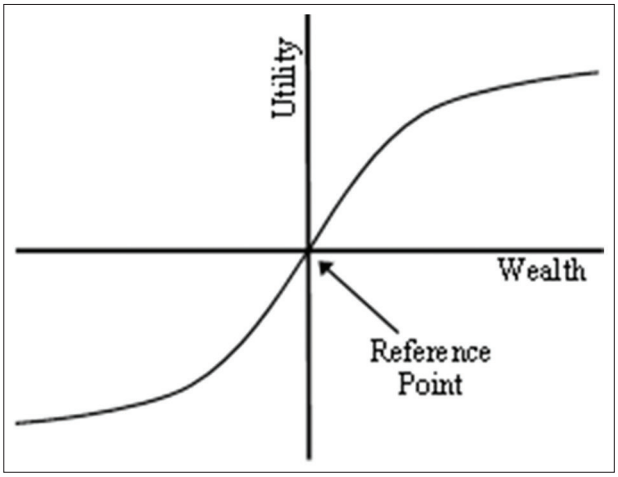
People value payoffs according to whether there are gains or losses compared to their *status quo* position. This is related to the notion that individuals adjust to an accustomed level of income, so that subjective well-being is associated more with changes in income rather than with the level of income (Gintis, 2009). Indeed, people appear to be about twice as averse to taking losses to enjoying an equal level of gains (Kahneman et al., 1990; Tversky and Kahneman, 1981). The brilliant experiments by Kahneman et al., clearly showed that humans exhibit systematic biases in the way they make decisions (Gintis, 2009). The focal presumption of the hypothesis is that misfortunes, losses and impediments have more prominent effect on inclinations than increases and preferences (Kahneman and Tversky, 1979). The theory was practically demonstrated by Tversky and Kahneman to the world for the first time.

A few studies recommend that losses are twice as mentally capable as gains. This prompts loss-aversion i.e. at the point when individuals assess a result including comparative gains and losses; since individuals favor loss-aversion by avoiding losses to making gains (Table 1).

5.2. Mental Accounting

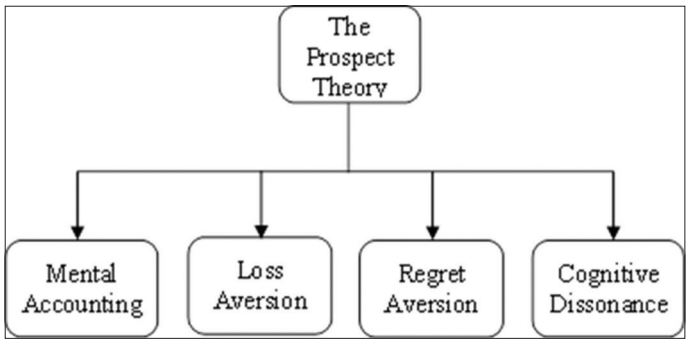
It is the inclination for individuals to part their cash into distinctive mental accounts based on a mixture of subjective criteria, similar to the source of the cash and reason for every account. Mental accounting, a bias entering into investing, refers to the tendency

Figure 3: Value function



Source: Kahneman and Tversky (1979)

Figure 4: Behavioural biases-the prospect theory



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for people to separate their money into separate accounts based on a variety of subjective criteria such as the source of the money and the purpose for each account (Thaler, 1985). It includes three components - first, captures how outcomes are perceived and experienced, and then how decisions are made and subsequently evaluated; second, assigns the activities to specific accounts and keeps track of inflow and outflow of funds from each specific activity; and third, concerned with the frequency with which accounts are evaluated. Accounts can be balanced periodically, i.e., daily, weekly, monthly, or yearly basis (Table 2).

5.3. Regret Aversion

We have a natural desire to avoid admitting an error and realizing a loss (Kahneman and Tversky, 1982). Regret aversion, as the trepidation to be sad in light of having taken awful choices, may particularly be a hindrance to rational choices. Investors hold on to losing positions too long due to regret aversion. Investors stay out of a market that has recently generated losses due to regret aversion, when in fact investment bargains may be most readily available. Offering victor stocks too early, holding on to losing stocks too long. Because of trepidation of disappointment investors settle on decisions either for risky unfriendly investment or for high hazard investment choices (Table 3).

Further, Bell (1982), Ferris et al. (1988), Pompian (2006) and Coffie (2013) have also endorsed the concept of regret aversion.

Table 1: Advances in loss-aversion

Kahneman and Tversky (1979)	Individuals are more grounded craving to stay away from losses as opposed to yearning for making profits
Shefrin and Statman (1985)	Individuals sell victor stocks too soon and ride on washouts stocks for too long
Kahneman et al. (1990)	Choice-making is delicate to the portrayal of the action decisions i.e., to the way options are confined
Kahneman and Tversky (1991)	Individuals will have a tendency to hang on to losing positions with the expectation that they will recuperate the prices in the long run
Benartzi and Thaler (1995)	Myopic loss-aversion is the mix of a more noteworthy affectability to misfortunes than to gains and a propensity to assess results regularly
Rhoades (1997)	Loss-aversion will be more intense when the issue is surrounded in negative terms and the same people will settle on less secure choices when confronted with a "negatively-framed dilemma"
Thaler et al. (1997)	Individuals are more sensitive to reductions in their wealth than to increments towards it
Scott et al. (1999)	Risk-taking in losses will bring about investors to hang on too long when costs decrease, along these lines creating the prices of stocks with negative force to exaggerate fundamental values of the investment
Bodie et al. (2000)	Investor's conduct is at times said to be near sighted, silly, in that it overlooks everything that may happen after the end of the single period and in this manner all investors plan for one indistinguishable holding period
Olsen (2000)	Individuals assign more noteworthiness to losses than they designate to gains
Barberis et al. (2001), Barberis and Huang (2001)	Endeavored to consolidate the event of loss-aversion into utility functions
Barberis and Huang (2001)	Loss-aversion in individual stocks prompts overabundance stock value changes
Kahneman and Tversky (2001)	It is not so much that individuals dislike instability - yet rather, they detest losing
Grinblatt and Han (2005)	In equilibrium, past victor stocks are undervalued and past failures are exaggerated
Coval and Shumway (2005)	Proprietary traders on the Chicago board of trade undertake more risks late in the day to cover their losses before all else of the day
Montier (2007)	Both the *status quo* bias and the endowment effect are part of a more broad issue known as loss-aversion
Carnevale (2008)	People are less eager to negotiate when there is a capability of loss on the grounds that they are not inclined to experience that loss
Gill and Prowse (2012)	Individuals are loss-averse around reference focuses given by their desires in an aggressive circumstance with genuine efforts
Wakker (2013)	It is possible that assorted fifty-fifty gambles (gambles with two likewise outcomes simply activate more risk taking than others
Yechiam and Hochman (2013)	Found that the addition of losses can increase the tendency to choose a gamble over a safer prospect with lower expected return
Ert and Erev (2013)	Respondents showed weaker risk aversion in selection among assorted prospects than in selection between gains. Likewise, in an ample set of circumstances, decisions among mixed prospects show a choice pattern that is more reliable with risk neutrality than with risk aversion

Table 2: Advances in mental accounting

Thaler (1980), Tversky and Kahneman (1981)	Individuals have a tendency to figure and acclimatize choices in a limited manner as opposed to contemplating a more extensive casing
Thaler (1985)	There are two cases: Basic gains and basic losses. Individuals want to isolate gains such that every increase is connected with its own quality
Shiller (1997)	Investors put their ventures into arbitrarily isolated mental compartments and respond independently in diverse approaches to the speculation relying upon which compartment they are set in
Shiller (1998)	Mental accounting depicts the inclination of individuals to place specific occasions into distinctive mental accounts in light of external characteristics
Goldberg and Nitsch (2001)	Mental accounts are basically disconnected on the premise of substance. However, they can be disengaged as for time too
Statman (2002)	People have a tendency to compartmentalize the benefits they use for downside assurance from the assets they use for upside potential
Brunel (2003)	Investment methods are relegated to four principal objectives: Liquidity, pay, capital safeguarding and growth
Rockenbach (2004)	Link for different investment potentials is frequently not made as it is helpful for free pricing of arbitrage
Das et al. (2010)	Developed portfolio structure for mental accounting which joins mean-variance portfolio theory with the mental accounting feature of behavioral portfolio theory
Matsumoto et al. (2012)	Individuals create mental computations for dealing any type of monetary operation. This was proved from experiment

5.4. Cognitive Dissonance

The tendency to adjust beliefs to justify past actions is a psychological phenomenon termed as cognitive dissonance. Individuals are distressed by conflicting cognitive elements, such as a discrepancy between empirical evidence and past choice, and that they alter their beliefs to reduce this discomfort (Festinger, 1957). Individuals alter their beliefs to conform to their past actions is the key feature of dissonance. Cognitive dissonance can be considered a psychological conflict that individuals seek to reduce by adjusting their beliefs about the efficacy of past investment choices in the context of investment decision-making. There is a mental clash that individuals face when they find that their convictions and suspicions aren't right, which prompts them out of line and irrational investment decisions. They tend to disregard new data that negates known convictions and choices (Table 4).

6. THE HEURISTIC DECISION PROCESS

It is not an overstatement that psychology today would not be what it is without Daniel Kahneman's and Amos Tversky's seminal work on heuristics and biases. A few years before this work spread like wildfire. Heuristics are efficient rules followed by people often to form judgments and make decisions that normally involve focusing on one aspect of a complex problem and ignoring others. These rules work well under most circumstances, but they may differ from common logic, probability or traditional rational choice theory. In reality, investors gather relevant information which is rationally evaluated, where the mental and emotional factors are involved that are difficult to separate. These factors include overconfidence, representativeness, anchoring, herd behavior and hindsight bias.

Under the heuristic decision theory, an investor's decision-making process will be influenced by five different biases based on the uncertainty and risk as depicted in Figure 5. These are dealt with in detail herein.

6.1. Overconfidence

Confidence is a fundamental element of accomplishment in an extensive variety of domains extending from professional performance and emotional wellness to sports, business and battle, while overconfidence alludes to a one-sided method for taking a gander at a circumstance. As indicated by Shefrin (2000), overconfidence "relates to how well individuals comprehend

Table 3: Advances in regret aversion

Shimanoff (1984)	Regret was most often taken as a negative feeling in an investigation of verbal articulation of emotions
Ferris et al. (1988)	Demonstrated that the disposition effect on current volume was contrarily connected with the volume on earlier days when stock costs were higher than the present value
Landman (1993)	Regret is a common, if not universal, experience
Larrick and Boles (1995)	Deals with the emotional response individuals experience subsequent to making what they believe is a lapse of judgment
Richard et al. (1996)	Anticipated feelings after unsafe sex showed less risky behavior
Zeelenberg et al. (1996)	Participants tend to choose the regret-minimizing gamble in both gains and losses and in both relatively high risk and relatively low risk pairs of gambles
Odean (1998)	There was a more noteworthy propensity to acknowledge paper gains up than paper losses
Connolly and Reb (2003)	No convincing evidence that a generalized "omission bias" plays any important role in vaccination decisions.
Thaler (2005)	Investors may sell victor stocks and hold on to loser stocks in light of the fact that they anticipate that their loser stocks will beat their victor stocks later on
Zeelenberg and Pieters (2007)	Regret is a decision-based aversive emotion that people are motivated to regulate in order to maximize outcomes in the short term and learn maximizing them in the long run
Subrahmanyan (2007)	Past victor stocks have abundant selling pressures and past loser stocks are not disregarded as fast as they ought to be, bringing on under-response to market knowledge
Razek (2011)	Regret as the feeling by looking at a given result or condition of events with the condition of a renounced decision or choice was clarified
Pompian (2012)	Characterized regret aversion bias as a passionate predisposition in which individuals have a tendency to abstain from settling on choices that will bring about activity out of trepidation that the choice will turn out ineffectively

Table 4: Advances in cognitive dissonance

Akerlof and Dickens (1982)	Cognitive dissonance theory may have significant inferences also for a broad range of economic challenges such as safety regulation, public safety, modernization, marketing, and offence
Elliot and Devine (1994)	Individuals experience cognitive dissonance as aversive and are aggravated to resolve the irregularity among their discordant cognitions
Shiller (1995), Montier (2002)	Cognitive dissonance is the mental enduring that individuals experience when they are given the confirmation that their convictions have been incorrect or inconsistent
Rabin (1998)	Individuals have a tendency to weigh vigorously on remarkable, vital, or distinctive confirmation regardless of the fact that they have better data
Pompian (2006)	Psychologists presume that individuals frequently perform sweeping rationalizations keeping in mind the end goal to synchronize their discernments and keep up mental soundness
Powers and Jack (2013)	Regret is a sentiment after something has been occurred, which articulates dissatisfaction in the constancy of one's cognitive fundamentals

their own particular capacities and the points of confinement of their knowledge." Psychologists opined that a large portion of the financial specialists have a tendency to think little of danger and overestimate their capacity to conjecture the occasions with pomposity. A pompous speculator enjoys an excess of unsafe exchanges and they for the most part don't do astute enhancements (Table 5).

6.2. Anchoring

The anchoring effect is described as the heuristics implemented when making judgments under uncertainty (Tversky and Kahneman, 1974). Amid choice making, anchoring happens when people utilize an introductory bit of data to make resulting judgments. When a stay is situated, different judgments are made by conforming far from that anchor, and there is an inclination toward deciphering other data around the anchor. In numerical prediction, when a relevant value is available, people make estimates by starting from an initial value that is adjusted to yield the final answer. In either case, adjustments are typically insufficient (Rekik and Boujelbene, 2014).

Frequently, financial specialist's utilization to offer significance to mentally decided "anchors" and factually irregular facts which is unnecessary as this inclination drives irrational investment decisions. Information in number may not reflect real force of its nature and inherent value (Table 6).

Figure 5: Behavioural biases - heuristic decision theory

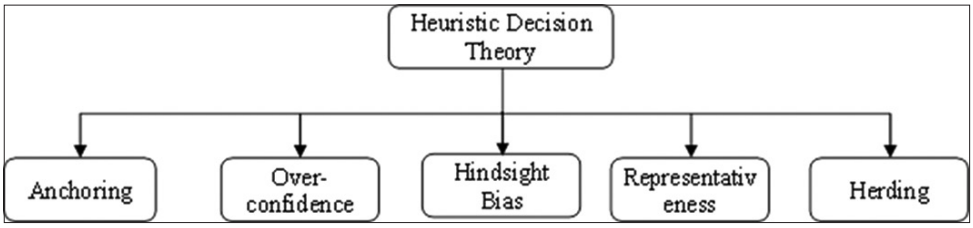

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Table 5: Advances in overconfidence

Langer (1975)	Illusion of control is the propensity for individuals to overestimate their capacity to control events that they have no impact over
Miller and Ross (1975), Kunda (1987)	Self-attribution bias is crediting fruitful results to claim aptitude yet accusing unsuccessful results for misfortune
Weinstein (1980), Kunda (1987)	Inclination to take a positive or confident perspective about the accessible data
Svenson (1981)	Better than average effect infers that individuals think they have prevalent capacities than on average
DeLong et al. (1990)	Irrational agents, being pompous, can wind up bearing a greater amount of the risk and can henceforth acquire more noteworthy expected returns over the long run
Russo and Shoemaker (1992)	Confirmation bias as the propensity for individuals to support data that affirms their contentions, desires or convictions
Kyle and Wang (1997)	Though agents are risk-neutral, overconfidence acts as a reassurance to act assertively, which causes the rational agent to scale back trading actions
Odean (1998)	Investors have a tendency to overestimate their capacity, unreasonably idealistic about future events, excessively positive on self-assessments
Easterwood and Nutt (1999)	Even proficient analysts under-respond to most negative data, but overreact up to most positive market information
Barber and Odean (2000)	Individual investors who hold common stocks specifically pay a gigantic penalty for dynamic and active trading
Welch and Bernardo (2001)	Overconfidence in an economy is helpful because expanded risk taking by pompous agents encourages the rise of business visionaries who misuse new thoughts
Barber and Odean (2001)	Ladies outperform men in their individual stock investments. They ascribe this to the thought that men have a tendency to be more overconfident than ladies
Scheinkman and Xiong (2003)	Agent with positive data may be enticed to purchase overvalued assets that they trust can sell them to agents with significantly more great convictions
Nevins (2004)	Overconfidence suggests that investors overestimate their capacity to foresee market events, and as a result they regularly go out on a limb without getting similar returns
Chen et al. (2007)	Agents in China trade more rapidly and dynamically as compared to the ones in US.
Ekholm and Pasternack (2007)	Affirm that investors with lean portfolios are more overconfident contrasted with investors with bigger portfolios as the former are more experienced and wealthier
Fagerström (2008)	Analysts of the S&P 500 were exaggerated by the issues of overconfidence and the over hopeful inclinations
Graham et al. (2009)	Wealthier and profoundly educated investors are more inclined to see themselves as skilled, suggesting overconfidence
Deaves et al. (2010)	Misbalanced investors expect lower level of oversight than they really make
Jaya (2014)	It is found that men are more overconfident. Moreover, the intraday traders; traders with high practice and investor of latest companies are prone this predisposition

Table 6: Advances in anchoring

Lord et al. (1979)	Individuals are unrealistic to change their assessments notwithstanding when new data gets to be accessible
Benartzi and Thaler (1995)	Reference point is the stock value that investors contrast with the present stock cost
Shiller (1998)	The more ambiguous the estimation of an asset, the more critical a proposal is and the more essential anchoring is liable to be for value determination
Fisher and Statman (2000)	Used forecasts based on P/E ratios and dividend yields to discuss the anchoring bias in market forecasts
Barberis and Thaler (2002)	No less than two effects are at work. In the first place, individuals are hesitant to hunt down confirmation that contradicts their convictions. Second, regardless of the possibility that they discover such confirmation, they treat it with unreasonable distrust
Törngren and Montgomery (2004)	Persons are usually influenced by the historical price movements of stocks, implying that past movements serve as anchors for their expectations
Kaestner (2006)	Financial specialists neglect to remedy their mistakes of forecast. They also depend intensely on significantly more traditionalist desires
Mangot (2008)	There exists an anchoring bias which mirrors the propensity to concentrate on a value and received it as a kind of a perspective moment that wants to make estimation
Fagerström (2008)	Examiners of the S&P 500 were overstated by the issues of anchoring bias
Kaustia et al. (2008)	Whether participants are students or professionals, their estimates are affected by an initial value
Park (2010)	The proportion of 50 days moving averages to 200 days moving averages are used to forecast to forecast the upcoming returns
Chang et al. (2011)	There is a strong positive association among previous day price and present day price
Chang et al. (2013), Baker et al. (2012)	Chart patterns are used as anchors and next day returns and price movements are forecasted by the practiced investors
Cen et al. (2013)	The forecast median industry EPS serves as an anchor, showing that analysts' earnings forecasts for firms with a low forecast EPS vis-à-vis the industry median are more optimistic than firms with a high forecast EPS
Duclos (2015)	If previous day closing value is superior than the opening value i.e., the previous day was a ascendant moving day, then the forecast for the next day is for ascendant actions and result in superior investments that day

6.3. Herding Bias

Herd bias is caused by the tendency of individuals who copy the actions of a large group irrespective of whether or not they would make the decision individually. Absence of distinction in choice-making makes the investors follow choices of different investors without making a big deal about the consequences of specialized and basic examination of specialists in the field. Herding could be considered as an opposite tendency to overconfidence regarding information efficiency. Herding is an obvious intent by investors to ignore their personal information and copy the behavior of other investors leading them to trade in the same direction and thus moving in and out of markets as a group (Nofsinger and Sias, 1999; Bikhchandani and Sharma, 2001). Herding behavior among investors can be driven by rational or irrational motives, it can clearly lead to market stress by pushing asset prices away from their fair values as supported by the economic fundamentals, hence driving up market volatility (Blasco et al., 2012).

A number of studies in the literature on US equities have utilized a measure of cross-sectional dispersion of stock returns and examined the relationship between return dispersions and market return in order to make inferences on whether herding behavior exists (Christie and Huang, 1995). The testing methodology used by Christie and Huang (1995) was later modified by Chang et al. (2000). This modified methodology has been employed in a number of papers including Gleason et al. (2003) on commodity futures traded on European exchanges, Gleason et al. (2004) on exchange traded funds, Demirer and Kutan (2006) and Tan et al. (2008) on Chinese stocks, and Demirer et al. (2010) on Taiwanese stocks and Chiang and Zheng (2010) on global stock markets (Table 7).

6.4. Representativeness

Representativeness heuristic is a judgment based on stereotypes (Shefrin, 2000). Representativeness is high when an observation fits the pattern (Goldberg and Nitzsch, 2001). Representativeness heuristic affects the investor's decision when evaluating stocks (Barberis et al., 1998; Bloomfield and Hales, 2002; Frieder, 2004; 2008; Kaestner, 2006; Alwathainani, 2012). Boussaidi (2013) tried to explain the investor overreaction by the representativeness heuristic. Guo (2013) examined through an analytical model of a competitive securities market to examine the survival of representativeness heuristic traders in competition with rational traders. Guo (2013) showed that without the presence of noise traders, heuristic traders will be driven out of the market by rational traders due to their representativeness heuristic (Table 8).

6.5. Hindsight Bias

Hindsight bias is one of the most frequently cited cognitive biases (Christensen-Szalanski and Beach, 1984). The more familiar the subject is with the task, the smaller the effect of the hindsight bias (Christensen-Szalanski and Willham, 1991). Hindsight bias refers to an outcome's occurrence increases its perceived *ex-ante* probability of occurrence. People unambiguously violate rationality precepts in adjusting their estimates of the *ex-ante* probability of an outcome they know has occurred if, but only if, they underestimate the possibility that the actual distribution of observed outcomes is a result simply of sampling error and

Table 7: Advances in herding bias

Scharfstein and Stein (1990)	Investors exhibit "herd behavior" on the grounds that they are concerned of what others think about their investment choices
Prendergast and Lars (1996)	Herding happens when an investor decides to overlook his/her private data and mimics the activity of another individual
Khanna and Slezak (1998)	An investor may decide to copy the activity of others rather than acting as per his private data. This kind of impact is frequently alluded to as information cascade
Graham (1999)	Herding regularly happens when numerous individuals make the same move, maybe on the grounds that some impersonate the activities of others in making investment decisions
Welch (2000)	Herding causes a "snowball-impact" that is hard to stop
Spiwoks et al. (2008)	Investigative herding implies that getting data is just beneficial when others also get this data
Finkelstein and Greenwald (2009)	Investors uncertain of their choices attempt significant endeavors to persuade themselves that the investment choice was justified
Matoussi and Zoghlami (2009)	Investors have a tendency to take after the activities of others paying little mind to their reasons
Hott (2009)	Stock value bubbles are chiefly brought about by herding behavior
Singh (2009), Lawlor (2009)	Regret Aversion is frequently connected to Herding Theory
Economou et al. (2010)	Herding behavior is connected with returns, exchanging volume and return instability
Lu (2010)	Uneducated and Less-experienced investors have an inclination of herding, which mutilates stock price
Emma (2012)	Geological space affects herding across national borders
Gunay and Demirel (2011)	Gender connects with five monetary behavioral components i.e., overreaction, herding, cognitive bias, irrational thinking, and overconfidence
Jaya (2014)	Herd behavior influence on the aged investors

Table 8: Advances in representativeness

Tversky and Kahneman (1974)	Individuals regularly foresee the future estimation of a stock taking into account representativeness
Grether (1980)	Affirm representativeness heuristic for unpracticed or fiscally unmotivated subjects; the confirmation is less clear for different subjects
Andreassen and Kraus (1990)	Investors may imagine that recent brief time of value movements is gotten from a procedure with bull or bear attributes
DeBondt (1993)	Investors may consider recent past outcomes to be representative of what they can expect later on
Shefrin and Statman (1994)	Investors give more weights to the recent perceptions or essentially trust that recent occasions are turned around in a manner that short run event be like long haul probabilities
Lakonishok et al. (1994)	Financial investors think recent performance of growth stocks will proceed later on as they extrapolate the arrival pattern of these stocks and put resources into growth stocks
Shefrin and Statman (1995)	Investors depend on representative heuristics in framing desires on the grounds that they have a tendency to view great stocks as the stocks of huge organizations
Barberis et al. (1998)	Representativeness biases can make high (low) returns after great (awful) income declarations, high (low) returns for late champs (failures), and the inversion of these late victor or washout stocks returns over longer horizons, as seen in financial markets
Benartzi (2001)	There is a positive connection between past returns and resulting assignments to organization stocks
Dhar and Kumar (2001)	Investors have a tendency to purchase stocks that have lately appreciated some positively strange returns
Vissing-Jørgensen (2003)	A strong positive correlation between investors expecting one-year-ahead market returns and current market levels
Chan et al. (2004)	Representativeness heuristic is evaluated by utilizing the connection between stock buys and later past performance of stocks
Shefrin (2005)	The representativeness predisposition, seen as a mental alternate route, includes overreliance on generalizations
Ji and Zhang (2006)	Chinese investors are less inclined to display the extrapolation inclination than Canadian financial specialists do.
Chen et al. (2007)	Representativeness heuristic is just pertinent to individual financial investors
Lee et al. (2008)	Keeps up that the analyst long haul growth estimates are hopeful amid positively trending markets and pessimistic amid bear markets
Wen and Jianfeng (2011)	Genuine investors in the markets extrapolate past returns and subsequently, past income growth rates have solid ramifications for future exploration on asset valuation.
Onsomu (2014)	Effect by representativeness bias was moderate
Onsomu (2015)	Insignificant relationship between age and representativeness bias

instead treat observed outcomes as inexorably reflective of a distinct initial probability distribution (Kelman et al., 1998). Hindsight bias may compromise the ability to compare new information to previous expectations so that individuals confuse their prior expectations with the new information. Because of the hindsight bias, investors may suffer from overconfidence because they believe they are better forecasters than they really are Table 9.

Table 9: Advances in hindsight bias

Fischhoff (1975)	The groups that were educated on a certain outcome having occurred gave that specific result a higher ex-bet likelihood than given by the control group
Camerer et al. (1989)	Hindsight bias induces individuals to be overconfident and to overreact to new information
Shiller (2000)	Hindsight bias has the propensity to surmise that one would have known real events were coming sooner than they occurred, had one be present then or had cause to focus
Werth et al. (2002)	An individual's high confidence level in their apriori estimates (those made before knowing the outcome information) and a low confidence level in their recalled estimates (those recalled after receiving the outcome information) will induce hindsight bias for the subject
Frederick (2005)	The subjects with better cognitive capability showed superior investment choices
Pompian (2006)	Keeping in mind the end goal to comprehend hindsight bias, financial investors need to concede that they are powerless to them. Numerous people block intuitively recollections of poor investment choices, reviewing fruitful choices at a rate that far surpasses their genuine results
Pezzo and Pezzo (2007)	Investors are not even ready to acknowledge the actuality that they can't forecast the occurrence
Biais and Weber (2008)	Explored the knowledge of the past hindsight bias in the financial market with two studies, one with understudies and one with bankers. In both cases, they clearly displayed hindsight bias
Cassar and Justin (2009)	Failed nascent entrepreneurs evoke a poorer predicted probability of their start-up movement ensuing in an operating business, than they did during the nascent activity
Goodwin (2010)	Segregates the sample into 3 groups, stock broker, students and professional, found that professionals were exhibited this bias
Tchai (2012)	Hindsight bias misrepresents investment decision and individuals take disproportionate risk owing to faulty predictability of incident
Hussain et al. (2013)	All the respondents were hindsight biased and more confident in their estimate and less confident in their recall

7. CONCLUSION

Behavioral finance attempts to explain and improve people's awareness about psychological processes and the emotional factors that influence the invest decisions. It augments the traditional finance theories that dominated the realm of academics, which assumed speculators behave sanely and efficiently, thus missing the irrationality of human behavior. The interdisciplinary nature of investment behavior has attracted many a scholars and professionals. Contemporary research in prospect theory (mental accounting, loss aversion, regret aversion and cognitive dissonance) and heuristic decision process (anchoring, overconfidence, hindsight bias, representativeness and herding) would help in structured guidelines and rule of thumb investment choices for individuals by drawing attention to potential mental mistakes, hopefully leading to increased investment returns. Irrational behavior is demonstrated not only in security markets but also in property, bullion, and commodities markets.

Thus behavioral finance has important allusions for both intellectuals and practitioners. It provides the groundwork for evolving theories for a deeper understanding of the psychological processes involved in financial decision-making. In fact the behavioral finance research is quickly spreading to other markets investigating multiple variables involved in decision-making. The effectiveness and foretelling power of investors' conduct is expected to improve through the rapid developments in behavioural finance in the years to come. Behavioral biases have been and will continue to influence human judgment in financial decision-making. As it is still evolving, both theoretical analysis and pragmatic testing are required.

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