

FROM PERFECTION TO PSYCHOLOGY: RECONCILING MATHEMATICAL FINANCIAL MODELS WITH INVESTOR BEHAVIOUR

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ABSTRACT

This research examines how the notion of rationality has developed and been applied within the contrasting frameworks of traditional and behavioural finance. Traditional finance is grounded in the idea of fully rational agents who maximize utility in efficient markets, whereas behavioural finance challenges this view by asserting that actual decision-making is shaped by bounded rationality. The paper conducts an in-depth analysis of key theoretical foundations and empirical evidences to trace the transformation of the rational investor from a strictly logical, model-driven figure into a more realistic, psychologically influenced decision-maker. The research highlights that cognitive limitations, psychological biases, and emotional triggers often lead market participants to rely on heuristics, resulting in systematic errors and market anomalies that classical models fail to explain. Ultimately, the research concludes that rationality serves as a multidimensional bridge between human cognition and effective financial action. By synthesizing these opposing frameworks, the study provides a more holistic foundation for future financial modelling and offers practical insights for investors and advisors to enhance risk management and long-term wealth preservation.

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1. Introduction

By directing capital from savers to productive sectors, investment serves as a cornerstone of economic expansion and financial stability. Investment is defined as the strategic deployment of capital with the goal of securing future profits, a process that inherently requires balancing potential gains against various levels of risk (Brennan and Cao, 1997; Bodie, Kane, & Marcus, 2021). Whether conducted by individuals or large organizations, these financial choices are driven by the desire to build wealth, protect purchasing power from inflation, and reach specific financial milestones, positioning investment behaviour as a vital subject of financial research.

The landscape of financial theory has evolved significantly over the last several decades, moving away from rigid classical assumptions toward a more human-centric view. Beginning in the 1970s, the industry began distancing itself from traditional finance, which viewed investors as purely logical actors operating within friction-less, efficient markets (Fama, 1970). In its place, behavioural finance emerged, positing that market participants possess bounded

rationality. This framework suggests that instead of making optimal mathematical calculations, investors are steered by psychological triggers, social pressures, and deep-seated cognitive biases. As a result, investors frequently depend on heuristics which are mental shortcuts designed to streamline the processing of intricate financial data. While these simplifying strategies enable rapid decision-making in fast-moving markets, they often come at the expense of objective accuracy and logical consistency. By prioritizing speed over exhaustive analysis, individuals become susceptible to systematic errors, as these rules of thumb may ignore critical underlying fundamentals in Favour of more easily accessible, though often misleading information (Loomes and Sugden, 1982;Mellers and Schawrtz, 1998; Gilovich, Griffin, & Kahneman, 2002; Barberis and Thaler, 2003; Baker and Wurgler, 2007; Gavrilakis and Floros, 2022; Agunsoye and James, 2024; Chishti et al., 2025).

Historically, the framework of traditional finance characterized market participants as entirely logical, dispassionate actors. This paradigm is built upon the premise that individuals remain unaffected by psychological biases or emotional impulses when managing wealth. According to Statman (1999), this body of knowledge is anchored by several landmark frameworks: the Arbitrage Theories of Miller and Modigliani, Markowitz's Portfolio Theory, the Capital Asset Pricing Model (CAPM) developed by Sharpe, Lintner, and Black, and the Option-Pricing Theory of Black, Scholes, and Merton. A cornerstone of this era was the Efficient Market Hypothesis (EMH), which maintained widespread academic and professional dominance until the 1980s. Within this traditional landscape, a rational investor is viewed as a "utility maximizer" who consistently seeks the highest possible return for a specific level of risk. Essentially, their primary objective is the optimization of the risk-return trade off. This view was reinforced by early empirical studies, such as Baker, Hargrove, and Haslem (1977), which concluded that investors act logically by placing significant weight on the mathematical relationship between risk and potential profit.

Numerous behavioural finance scholars have challenged conventional financial theories, contending that they lack the capacity to address or explain practical, real-world complexities. Olsen (1998) posited that traditional finance remains an incomplete discipline because it overlooks the profound impact of psychological factors. Seminal research by Kahneman and Tversky (1979), Shefrin and Statman (1994), Shiller (1995), and Shleifer (2000) demonstrated that the concept of a purely rational, utility-maximizing agent is an unrealistic abstraction when applied to actual human behaviour. Modern finance thought has moved away from conventional frameworks by acknowledging that individuals typically rely on heuristics to manage complex data (Kahneman & Tversky, 1974). Academic researches indicate that market dynamics and personal investment strategies frequently diverge from the rigid logic of Expected Utility Theory, particularly when navigating volatile or uncertain conditions (Kahneman & Tversky, 1979; Machina, 1982).Instead, real-world investor behaviour frequently diverges from rationality due to subjective influences, including varied risk tolerance, information processing biases, personal traits, and fluctuating emotional states such as mood and expectation (Bodie, Kane & Marcus, 2008; Barnea, Cronqvist, & Siegel, 2010; Alam et al., 2025; Hans et al., 2026).

Although a considerable number of prior review studies have broadly investigated behavioural biases and deviations from the concept of market efficiency, limited attention has been provided to reconceptualizing rationality as a continuum that integrates both traditional

and behavioural perspectives. Most existing literature treats rationality as a binary construct, either fully rational or irrational, without exploring its dynamic and context-dependent nature. This dichotomous perspective limits a comprehensive understanding of how investment decisions are actually formed in real-world contexts.

2. Objective of the Study

The emergence of behavioural finance was significantly propelled by the pioneering work of Herbert Simon and Daniel Kahneman, who introduced bounded rationality and prospect theory, respectively. These concepts fundamentally redirected financial discourse, shifting it away from purely mechanical models toward a more nuanced understanding of human judgment. Today, traditional and behavioural finance stand as the two dominant, yet contrasting, paradigms within financial management. While they share the goal of explaining market activity, they diverge sharply in their views on investor behaviour and the foundational role of rationality.

This research aims to investigate how traditional and behavioural finance frameworks elucidate investment decision-making, specifically focusing on the pivotal role of investor rationality. By synthesizing key theoretical advancements and milestone contributions in both disciplines, the study seeks to bridge the gap between idealized models and actual market behaviour. To achieve this, a comprehensive review of foundational theories, core concepts, and empirical literature will be conducted to evaluate the evolution of the rationality assumption in modern finance.

3. Research Problem

For decades, the field of finance was dominated by the assumption of the rational agent, a theoretical construct that processes information perfectly and maximizes utility without emotional interference. However, this traditional framework rooted in the efficient market hypothesis and modern portfolio theory has consistently failed to explain significant market anomalies, such as asset bubbles, sudden crashes, and persistent irrational investor behaviour. While traditional models provide a clear mathematical baseline, they ignore the cognitive limitations and psychological biases inherent in human decision-making. Despite the groundbreaking work of Herbert Simon on bounded rationality and Daniel Kahneman on prospect theory, a gap remains in how these two opposing paradigms (traditional and behavioural) can be synthesized to create a more accurate predictor of investment behaviour. The central problem lies in the tension between the normative (how investors should act) and the descriptive (how investors actually act). Without a cohesive understanding of where rationality ends and behavioural influence begins, financial models remain incomplete, leaving investors and policymakers ill-equipped to handle the complexities of modern market volatility. Moreover, prior reviews have mainly emphasized descriptive comparisons between the two frameworks without adequately exploring how the concept of rationality itself has evolved across these paradigms or how it can function as a unifying foundation for financial decision-making. There remains a lack of integrative analyses that synthesize normative theories of rational choice with descriptive insights from behavioural finance into a coherent conceptual framework. In particular, limited attention has been given to examining rationality as a

dynamic, context-dependent construct influenced by cognitive limitations, emotional factors, and environmental conditions. This study addresses this issue.

4. Significance of the Study

The significance of this study lies in its capacity to reconcile the divergence between the mathematical perfection of classical theory and the psychological realities of the modern marketplace. By positioning rationality as the bridge between these two schools of thought, the research offers meaningful insights for both the academic community and the financial industry.

1. Advancing Theoretical Synthesis

This study contributes to the academic discourse by moving beyond the binary "rational vs. irrational" debate. Instead of viewing traditional finance and behavioural finance as mutually exclusive, this research explores a unified framework. Particularly, the present study reconceptualizes rationality not as a fixed or absolute condition, but as a continuum that bridges traditional and behavioural finance. By systematically synthesizing key theoretical developments and empirical findings, the study offers a holistic perspective that integrates the logical rigor of classical models with the psychological realism of behavioural insights. Specifically, this research contributes to the literature in three important ways. First, it advances the conceptual understanding of rationality by framing it as a multidimensional and evolving construct rather than a static assumption. Second, it offers an integrative framework that reconciles the normative foundations of traditional finance with the descriptive accuracy of behavioural finance. Third, it establishes a foundation for future research aimed at developing hybrid financial models that better reflect actual investor behaviour. Through these contributions, the study enhances both the theoretical depth and practical relevance of financial decision-making research.

2. Enhancing Investor Self-Awareness and Performance

For individual and institutional investors, the study is highly practical. It sheds light on how cognitive shortcuts, or heuristics, can lead to systematic errors in judgment, such as the disposition effect or overconfidence. By recognizing the limitations of their own rationality, investors can develop more disciplined strategies that account for emotional volatility, ultimately leading to better risk-management and long-term wealth preservation.

3. Optimizing Wealth Management and Advisory

Financial advisors can utilize the findings of this study to transition from purely quantitative asset allocation to behavioural coaching. Understanding that clients are often satisfiers rather than optimizers allows advisors to design portfolios that are not just mathematically sound on an efficient frontier, but are also psychologically sustainable during periods of market stress.

4. Informing Market Policy and Stability

At a macro level, this research holds significance for regulators and policymakers. By understanding the behavioural triggers that lead to herd mentality and market bubbles, authorities can better design market interventions and nudges that protect the integrity of the financial system. This is particularly relevant in an era where social media and algorithmic trading can amplify irrational market sentiments at high speeds.

5. Methodology

A systematic literature review approach is adopted by this study, to ensure a comprehensive, transparent, and methodologically rigorous examination of the concept of rationality within traditional and behavioural finance. A systematic review is appropriate for this study as it enables the structured identification, evaluation, and synthesis of existing academic contributions, thereby minimizing selection bias and enhancing the reliability and reproducibility of findings. The review focuses on both foundational theories and contemporary developments in order to capture the evolution of rationality as a central construct in financial decision-making.

The data for this study were collected from a range of reputable academic databases, including Scopus, Web of Science, ScienceDirect, and Google Scholar. These databases were selected due to their extensive coverage of high-quality peer-reviewed journals in finance, economics, and behavioural sciences. A comprehensive search strategy was employed using relevant keywords such as “rationality in finance,” “behavioural finance,” “investment decision-making,” “bounded rationality,” “heuristics and biases,” and “prospect theory.” Boolean operators (AND, OR) were used to refine the search and ensure the retrieval of relevant studies.

To maintain the quality and relevance of the review, specific inclusion and exclusion criteria were applied. The inclusion criteria consisted of peer-reviewed journal articles, seminal theoretical works, and influential empirical studies published in English that directly relate to traditional finance, behavioural finance, or investor rationality. In addition, recent studies were considered to incorporate current developments in the field. However, non-academic sources, duplicate records, and studies not directly relevant to the research objectives were excluded from the analysis.

6. Rationality

In a broad sense, rationality refers to the alignment of an individual's beliefs and actions with the best available evidence and logic to achieve specific outcomes. It is not merely a measure of intelligence, but a measure of how effectively one uses their cognitive tools to reach truth (epistemic rationality) and success (instrumental rationality). In classical economics, rationality is often defined through the lens of rational choice theory, which uses mathematical models to predict human behaviour. A decision is rational if it consistently chooses the option that provides the highest expected utility (the most benefit weighted by the probability of success) based on the agent's stable preferences (Von Neumann and Morgenstern, 1944). According to Stanovich (2011), rationality is the degree to which an individual adopts goals that are in their own interest and takes actions that maximize the probability of achieving those goals, while maintaining a web of beliefs that are internally consistent and reflect the world accurately.

In modern financial theory, rationality is often framed as a two-part process involving how people process information and how they act upon it. According to the framework established by Barberis and Thaler (2003), a rational investor must first adhere to Bayesian updating, meaning they adjust their personal beliefs in strict alignment with mathematical probability when new data emerges. Secondly, their decision-making should be normatively acceptable,

following Savage's principles of subjective expected utility to ensure their choices are logically consistent with their goals.

In the field of financial psychology, Statman (1988) posits that the hallmark of a rational investor is the commitment to a thorough and exhaustive appraisal of all relevant data. According to this view, achieving success in financial markets requires an individual to move beyond superficial observations, instead performing a comprehensive evaluation of information to guide their strategic decisions.

Therefore, the concept of rationality tends to have the following features. A primary feature of rationality is the adherence to a logical system for updating one's worldview. According to Barberis and Thaler (2003), a rational agent processes new data in a manner consistent with Bayes' Law. This means that when an individual encounters fresh evidence, they do not react emotionally or ignore the data; instead, they mathematically revise their prior beliefs to arrive at a new, more accurate posterior belief.

Beyond just processing information, rationality involves making choices that are normatively acceptable (Ambarwati & Yoga, 2025). Barberis and Thaler (2003) describe this as the application of subjective expected utility. In this framework, a rational actor identifies all possible courses of action, weighs the potential benefits of each against the probability of their occurrence, and selects the path that maximizes their overall satisfaction. This feature requires the individual to have stable, transitive preferences to ensure their behaviour is logically consistent.

In the specific context of investment and professional decision-making, rationality is characterized by the depth of one's inquiry. Statman (1988) argues that a truly rational actor must engage in a comprehensive evaluation of information. This feature demands that the individual does not rely on heuristics or gut feelings; but instead performs a holistic appraisal of all accessible data points. By conducting a deep analysis rather than a superficial one, the rational actor minimizes the risk of being swayed by noise or irrelevant market fluctuations (Kathpal et al., 2025).

Therefore, rationality serves as a multidimensional framework that bridges the gap between human thought and effective action. It is defined not by the achievement of perfect outcomes, but by the systematic application of logic to the processing of information and the selection of behaviour. In other words, rationality can be viewed as the cognitive infrastructure that ensures our internal world (thoughts and beliefs) remains synchronized with the external world (reality and consequences). It is a two-way bridge: one side brings information in, and the other sends actions out.

7. Rationality in Standard Finance

In traditional finance, the concept of rationality serves as the primary engine for market behaviour and price formation. Traditional finance is built upon the assumption that market participants are rational agents who consistently process information and execute decisions to maximize their own well-being. This perspective is not merely a description of behaviour but a normative framework that defines how an ideal investor should operate. Rationality in traditional finance acts as a benchmark for professional excellence and market stability. It provides the mathematical and logical tools necessary to translate raw data into strategic action.

In the paradigm of traditional finance, market participants are characterized by their substantive rationality, operating under the assumption that every decision is the result of a comprehensive appraisal of all relevant data. These investors are viewed as logical optimizers who possess the necessary information to accurately calculate the risk and return profiles of various assets, allowing them to determine an asset's intrinsic or fundamental value rather than relying on market sentiment (Roger, 2011).

The primary normative standard for this behavior is the Expected Utility Theory, established by Von Neumann and Morgenstern (1947). This model posits that rational actors possess the cognitive sophistication to navigate intricate financial choices while remaining consistently risk-averse. Within this framework, wealth maximization is achieved by weighing potential outcomes by their mathematical probability and selecting the option that yields the highest total utility. Ultimately, this theory suggests that investors strive to improve their overall welfare by constructing portfolios that amplify expected returns while simultaneously mitigating exposure to potential losses.

The Capital Asset Pricing Model (CAPM) is built upon the foundational assumption of investor homogeneity. Under this framework, every market participant is viewed as a rational actor with access to an identical set of information. Furthermore, the model suggests that these individuals process and interpret this data through a uniform analytical lens. As a consequence of these shared perceptions and logical processes, the model predicts that all investors will arrive at the same conclusion regarding asset allocation. Specifically, they are expected to maintain the same optimal risky portfolio, characterized by identical weighting for every financial asset included in that selection (Sanfey et al., 2003).

According to Fama (1965), an efficient marketplace is characterized by the presence of rational participants who possess the capability to incorporate new information into asset prices both immediately and independently. This framework, known as the Efficient Market Hypothesis (EMH), suggests that because investors react with such speed and logic to maximize their gains, it is impossible for any single individual to consistently outperform the broader market to achieve superior returns over the long term. The cornerstone of the EMH is the premise that market actors are perfectly rational. This assumption implies that investors have the cognitive sophistication required to evaluate the intrinsic or fundamental value of securities accurately. In this environment, the price of a financial instrument is always seen as a reliable reflection of its true worth, as rational agents effectively price in all available data as soon as it emerges.

Modern Portfolio Theory (MPT), introduced by Harry Markowitz in 1952, represents a cornerstone of traditional finance that relies heavily on the assumption of investor rationality. In this framework, rationality is not just a personality trait but a mathematical consistency in how individuals process risk and return to construct wealth. In the framework of Modern Portfolio Theory (MPT), rationality is defined as the mathematical pursuit of mean-variance optimization. Rather than evaluating assets in isolation, a rational investor analyses how individual securities interact within a collective portfolio to maximize the expected return for a specific level of risk. This perspective assumes that investors are inherently risk-averse, meaning they will only accept higher volatility if it is accompanied by a commensurate increase in potential reward. By utilizing diversification to eliminate idiosyncratic risk, rational actors aim to position their holdings along the efficient frontier. Ultimately, this theory treats the

investor as a disciplined logical agent who uses statistical correlations and historical data to construct a portfolio that aligns perfectly with their personal utility and risk tolerance (Markowitz, 1952).

In traditional financial frameworks, the premise of investor rationality carries several critical requirements for how individuals manage their portfolios. According to De Bondt, Mayoral, and Vallelado (2013), this concept primarily implies that market participants consistently update their perspectives using a structured approach and execute choices that adhere to the principles of subjective expected utility. This aligns with the perspective of Roger (2011), who asserts that classical economic models view investors as agents who process information via Bayes' Rule, with the singular goal of maximizing their personal utility. Additionally, Loewenstein et al. (2001) note that according to the rational choice framework, individuals conduct a comprehensive assessment of the pros and cons for every potential alternative, eventually choosing the path that provides the optimal trade-off between risk and return. This disciplined decision-making process serves as the underlying engine for foundational theories such as Markowitz's Modern Portfolio Theory and the Capital Asset Pricing Model (CAPM), both of which presume that investors are logical optimizers seeking to maximize wealth through systematic analysis.

Moreover, Samuelson and Zeckhauser (1988) highlight that during the selection process, investors weigh various asset classes by their projected utility, ultimately committing to the option that offers the highest possible value. This objective is closely tied to the findings of Nagy and Obenberger (1994), who observe that the primary motivation for market participants is the systematic maximization of their wealth. In the specific context of the Malaysian market, research by Lai, Low, and Lai (2001) as well as Albaity and Rahman (2012) suggests that institutional investors tend to operate with a high degree of prudence and logic. These participants typically maintain a risk-neutral stance, anchoring their choices in technical proficiency and rigorous fundamental analysis. By relying heavily on empirical data rather than speculation, they exemplify a disciplined approach to capital allocation.

8. Criticisms against Rationality

The paradigm of perfect rationality, which has long underpinned traditional financial and economic models, is increasingly scrutinized for its detachment from the complexities of human cognition. Critics argue that the traditional definition of rationality fails to account for the biological, psychological, and environmental realities of human decision-making. The critique of rationality is primarily cantered on the friction between the mathematical ideals of traditional finance and the observable tendencies of human psychology.

While traditional financial models are predicated on the existence of a perfectly rational agent, practical reality often tells a different story. In actual market conditions, investors frequently demonstrate behaviours that deviate from logic, largely due to flawed perceptions and the misinterpretation of complex data. According to Babajide and Adetiloy (2012), these cognitive distortions and erroneous judgments result in investment patterns that contradict the rational ideal, highlighting the gap between theoretical assumptions and human action.

The most foundational critique came from Herbert Simon (1955,1957), who argued that humans do not possess the global rationality required by classical models. In practical financial environments, investor behaviour often diverges from the ideal of absolute rationality,

particularly when faced with ambiguity, risk, or heightened complexity. These systematic departures driven by inherent human constraints and psychological influences form the foundation of the concept known as bounded rationality. Initially proposed by Simon (1957), bounded rationality recognizes that cognitive limitations restrict an individual's decision-making capacity. Under this framework, investors are characterized as satisfiers rather than optimizers; they pursue solutions that meet a threshold of acceptability rather than exhausting all resources to find a mathematically perfect outcome (March, 1994). This phenomenon, which Rubinstein (2001) termed minimal rationality, serves as a cornerstone of the behavioural approach to finance. As Simon (1997) noted, it provides a realistic lens through which to observe how the actual mechanics of human thought influence capital allocation. Critically, the term bounded rationality is not synonymous with irrationality. Instead, it suggests that while investors strive to be logical, they are confined by the scarcity of their own cognitive resources (Conlisk, 1996). This more nuanced perspective has been successfully integrated into contemporary economic models to better explain market anomalies. Ultimately, incorporating the theme of bounded rationality into financial frameworks allows for a more accurate and predictive understanding of how decisions are made in the real world.

Scholarly critiques of traditional finance emphasize that human cognitive limitations and market realities prevent the perfect decision-making assumed by classical models. March and Simon (1958) observed that investors often lack essential information regarding problem definitions and evaluative criteria. This is compounded by the findings of Slovic (1972) and Shefrin (2000), who characterize investors as imperfect information processors prone to perceptual errors and systematic mistakes. Central to this critique is Simon's (1957) assertion that individuals possess a limited capacity for processing complex data, making traditional theories a misleading representation of actual financial behaviour. Hindess (1998) further argues that due to these capacity constraints, it is impossible for individuals to account for every piece of data, list all potential alternatives, or accurately calculate the probabilities of various outcomes. This theoretical gap is supported by empirical evidence. For instance, Ahmed, Ahmad, and Khalil (2011) noted that investors at the Lahore Stock Exchange often fail to integrate all available data, leading to irrational choices. Hirshleifer and Teoh (2003) highlight that limited attention spans cause investors to overlook subtle details in financial disclosures that are not explicitly emphasized. Finally, the very important idea of all information are perfectly reflected in prices is challenged by Grossman (1976) and Grossman and Stiglitz (1980), who contend that a perfectly efficient information market is a practical impossibility. As noted by Letkiewicz and Fox (2014), real-world markets are defined by numerous complicating factors that disrupt the tidy assumptions of traditional economic theory. In the financial sector, the concept of rationality is inextricably tied to the principle of market efficiency. However, a significant body of empirical evidence reveals market anomalies, including extreme price fluctuations, momentum trends, and the formation of speculative bubbles and subsequent collapses, challenge the notion of a perfectly logical marketplace. According to De Bondt and Thaler (1985), these occurrences are difficult to explain through the lens of pure rationality. These market irregularities stem from a combination of human cognitive biases and limits to arbitrage, which prevent rational actors from immediately correcting mispriced assets. This suggests that rather than being perfectly efficient at all times,

markets can remain decoupled from their fundamental values for extended durations due to collective irrationality.

The Efficient Market Hypothesis (EMH) has faced rigorous challenges from researchers who argue that arbitrage mechanisms often fail to neutralize the mispricing triggered by irrational market participants. Shleifer and Vishny (1997) contend that arbitrage is frequently constrained by significant costs; specifically, as market prices diverge further from their fundamental values, arbitrageurs may face capital exhaustion due to the pressures of marking-to-market. Furthermore, Daniel et al. (2001) suggest that the inherent risk-averse nature of professional arbitrageurs prevents them from fully committing the resources necessary to eradicate pricing inefficiencies. There is also strong opposition to the traditional view that irrational traders inevitably lose influence over time. DeLong, Shleifer, Summers, and Waldmann (1991) argue that overconfident, irrational investors may actually secure superior long-term returns by assuming higher levels of risk. In certain scenarios, Hirshleifer et al. (2006) observe that when stock prices begin to dictate corporate investment fundamentals, irrational actors can potentially outperform their rational counterparts. Finally, Haugen (1999) maintains that the concept of a rational, efficient market is inconsistent with empirical evidence regarding abnormal stock returns. These anomalies including high book-to-price ratios, superior current earnings yields, short-term momentum, long-term reversals, and extreme price volatility suggest that market prices are driven by more than just fundamental logic.

Behavioral economists dispute the concept of absolute rationality, providing empirical proof that psychological and emotional elements significantly impact investment choices. During the late 1970s and throughout the 1980s, a surge of academic inquiries began contrasting real-world investor conduct with the theoretical benchmarks of classical finance. This body of research demonstrates that investors rarely operate with pure logic. Instead, their financial strategies are shaped by a diverse array of variables, including demographic profiles, cognitive biases, mental shortcuts (heuristics), and social influences (Baker & Wurgler, 2007; Barnea et al., 2010; Goyal, Gupta, & Yadav, 2023). Furthermore, scholars such as Mansor and Lim (1995) and Banerjee (1992) suggest that market participants are only partially rational, navigating a middle ground between cold calculation and instinctive behavior.

While Simon focused on cognitive limits, Tversky and Kahneman (1974) revolutionized the field by demonstrating that even when information is available, humans process it incorrectly. Their research into heuristics, which are mental shortcuts used to simplify complex problems, showed that people consistently deviate from the rules of probability and logic. For example, the representativeness heuristic leads individuals to judge the likelihood of an event based on how much it resembles a stereotype, rather than using the Bayesian updating required by rational models. These are not random errors but systematic biases that occur repeatedly across different populations, suggesting that the pure rationality described by Barberis and Thaler (2003) is a flawed description of human behavior.

Classical financial models, anchored in the Expected Utility Theory established by Von Neumann and Morgenstern (1947), operate on the premise that market participants weigh gains and losses with mathematical symmetry. This perspective was fundamentally challenged by Kahneman and Tversky (1979) through the introduction of Prospect Theory, which identified a core psychological phenomenon known as Loss Aversion. Their empirical research demonstrated a distinct asymmetry in human perception: the psychological distress associated

with a \$1,000 loss is approximately twice as intense as the satisfaction derived from an equivalent \$1,000 gain. Expanding on this departure from pure logic, Loewenstein et al. (2001) proposed the risk as feelings hypothesis. This theory suggests that during periods of significant uncertainty or high stakes, emotional impulses such as acute fear or speculative greed can entirely circumvent cognitive processing. Consequently, visceral reactions often supersede the calculated optimal risk-reward ratios that a strictly rational agent would be expected to follow. Additionally, social norms, peer effects, and herd behavior can lead individuals to make decisions that deviate from rational self-interest (Shiller, 2000). Furthermore, Barberis and Thaler (2003) point out that while the expected utility model is intended as a blueprint for rational behavior, a significant body of research proves that individuals methodically violate its core tenets when faced with risky alternatives.

Statman (1995) asserts that the investment decision-making process is fundamentally shaped by behavioral and psychological factors, particularly regarding risk perception and framing effects. Risk assessment involves the systematic gathering of data to determine acceptable levels of exposure; however, the way investors interpret this data is often contingent upon how the information is presented. Extensive research suggests that under conditions of uncertainty, affective states or feelings exert a significant influence on choices (Zajonc, 1980; Forgas, 1995; Isen, 2000; Loewenstein et al., 2001; Yasmin & Sarwar, 2025). Similarly, Fenton-O’Creevy et al. (2011) emphasize that emotions are central to the cognitive process of deciding. Statman (2011) further argues that emotional drivers such as greed, apprehension, and anxiety often lead investors to be swayed by transient, short-term market phenomena. This perspective is supported by Sultana (2010), who observes that investors do not always rely on mathematical calculations; instead, irrational emotional impulses frequently dominate the decision-making cycle. From the standpoint of financial psychology, human cognition contains various irrational elements, where cognitive illusions and intuitive judgments systematically bias investment outcomes (Kahneman and Riepe, 1998).

Research by Daniel, Hirshleifer, and Subrahmanyam (2001) highlights several pervasive behavioral patterns that characterize individual investment decisions. Their findings indicate that investors typically exhibit loss aversion and fail to diversify across all available asset classes. Furthermore, individuals often engage in excessively aggressive trading and rely heavily on historical stock performance to predict future returns. This group behaviour is often synchronized, with investors frequently influenced by stocks hitting historical price peaks or troughs. In a similar vein, Conlisk (1996) identified a comprehensive suite of cognitive failures that impede logical decision-making. He observed that individuals often exhibit intransitivity in their preferences and fundamentally struggle with statistical concepts, such as the independence of events and the law of large numbers. Conlisk further noted that people frequently fail to refine their probability assessments accurately upon receiving new data; a departure from Bayesian logic and are prone to making erroneous causal connections. This flawed analytical process is often exacerbated by the tendency to focus on tangential details while overlooking critical data. Additionally, investors tend to manifest overconfidence in their own predictive abilities and struggle with hyperbolic discounting, leading to an inconsistent evaluation of future values. March (1994) categorizes these shortcomings into four fundamental human fallacies: restricted concentration, unreliable memory, diminished comprehension, and inadequate communication skills. He emphasizes that these inherent

cognitive barriers represent significant obstacles to achieving the complete rationality envisioned by traditional economic models.

Scholars increasingly argue that the idealized rationality of traditional finance fails to account for the constraints of the real world. Hoffmann, Eije, and Jager (2006) assert that investors operate under bounded rationality, a view supported by empirical evidence from various markets. For instance, Rekik and Boujelbene (2013) observed that Tunisian investors frequently deviate from logical norms, while Sevil, Sen, and Yalama (2007) determined that the decision-making processes of retail investors on stock exchanges consistently fail to align with standard economic models.

9. Rationality in Behavioural Finance

Behavioural finance serves as a vital interdisciplinary bridge, merging principles from psychology and sociology with financial theory to provide a realistic lens on market behaviour. Traditional economic models are predicated on the rational actor hypothesis, which assumes that investors process information perfectly and always act to maximize their personal utility. Extensive empirical researches have demonstrated that actual financial behaviour frequently contradicts these idealized assumptions, resulting in market anomalies and persistent errors that classical theories, such as the Efficient Market Hypothesis, fail to account for (Rehman et al., 2025).

The limitations inherent in traditional financial models necessitated the emergence of behavioural finance, a field that bridges the gap between theoretical ideals and market realities (Statman, 1995). Since the 1970s, academic focus has shifted toward psychology as the core driver of investor irrationality, forming the bedrock of modern behavioural inquiry. Barberis and Thaler (2003) posit that behavioural finance clarifies the complexities of the investment decision-making process by examining cognitive psychology and the inherent biases that shape investor beliefs. By integrating psychological insights with classical theories, behavioural finance offers a more robust explanation for irrational decision-making than standard models alone (Shefrin, 2002). As Linter (1998) suggests, the field essentially explores how individuals process and react to information when making investment commitments. Behavioural finance seeks to refine our understanding of investment choices by synthesizing economic principles with psychological nuances (Olsen, 1998). Furthermore, it aims to pinpoint and analyse how cognitive errors and emotional responses distort financial judgment (Statman, 1999; Kazmi, 2024).

The literature of behavioural finance is primarily categorized into two dimensions: the identification of market anomalies that contradict the Efficient Market Hypothesis (DeBondt & Thaler, 1985) and the detection of specific investor biases that diverge from the rational behaviour predicted by classical economics (Odean, 1999). By challenging the Efficient Market Hypothesis, behavioural finance highlights how investors subjectively interpret and act upon available data. This perspective is reinforced by Etzioni (2014), who argues that behavioural economics exposes the cognitive constraints and biases that limit human intellectual capacity in financial contexts. Research into trading phenomena; such as overreaction, under-reaction, herding, and momentum; demonstrates that these anomalies frequently violate traditional trading rules, rendering classical risk-and-return models inadequate (Daniel et al., 1998; Barberis & Shleifer, 2003). Ultimately, by incorporating the

complexities of human nature into economic frameworks, behavioural finance provides a more accurate reflection of actual market practices and investor behaviour.

The academic shift toward behavioural finance was catalysed by research into the cognitive and emotional constraints that govern human judgment. Central to this shift is Prospect Theory, developed by Kahneman and Tversky (1979). Their work dismantled the traditional utility framework by illustrating that individuals perceive gains and losses asymmetrically. This loss aversion explains why investors often experience the pain of a loss more intensely than the satisfaction of an equivalent gain, leading to unconventional risk-taking patterns in investment portfolios. Beyond emotional responses, the field examines heuristics which are cognitive shortcuts used to navigate complex financial data. While efficient, these shortcuts frequently result in systematic biases, including overconfidence, anchoring, and herding (Tversky & Kahneman, 1974; Barberis, Shleifer, & Vishny, 1998; Talwar et al., 2021; Shunmugasundaram & Sinha, 2025; Khalid & Riaz, 2026; Sadeeq, 2026). Such psychological tendencies are not limited to retail investors; they also influence institutional professionals, often fuelling speculative bubbles, excessive market turnover, and long-term asset mispricing. Kahneman and Tversky (1979) observed that investors often transition into risk-seeking behaviour when attempting to avoid losses, interpreting outcomes through subjective lenses. Ultimately, Prospect Theory demonstrates that psychological factors are the primary drivers causing actual decision-making to diverge from the classical definition of rationality. This theory posits that investors do not always select the mathematically optimal choice. Instead, they exhibit a bias toward certainty, over-weighting guaranteed outcomes while under-weighting those that are merely probable. Furthermore, the theory highlights that individuals evaluate changes in wealth (gains and losses) rather than their final absolute asset position.

According to Shefrin (2002), the framework of behavioural finance is anchored by three central themes: heuristics, framing, and market inefficiencies. Heuristics refer to the mental shortcuts or rules of thumb that investors employ to navigate complex financial landscapes. Because human cognitive capacity is finite, which is limited by memory constraints and computational power, individuals often struggle with the significant cognitive load required for perfectly rational analysis (Simon, 1955; Conlisk, 1996; Jain et al., 2022; Ahmad and Wu, 2024; Khan and Ullah, 2024; Bashir and Mehta, 2026; Koilyenda and Mbogela, 2026). Consequently, these simplifications can lead to systematic irrationality and suboptimal investment outcomes (Kahneman & Tversky, 1974). The second theme, framing, suggests that the specific manner in which information or a financial problem is presented significantly influences the resulting decision. Finally, market inefficiencies describe observed market phenomena that contradict the expectations of rational efficiency, such as persistent mispricing and return anomalies.

Scholars have consistently demonstrated that psychological inclinations significantly shape the financial choices of market participants. Lin (2012) contends that behavioural biases are a primary force within the investment decision-making process, a sentiment echoed by Waweru, Mwangi, and Parkinson (2008), who identified a diverse array of behavioural factors that dictate how individual investors allocate capital. Barber and Odean (1999) noted that investors frequently fail to achieve the level of judgment required for optimal decision-making. The practical consequences of these biases are evident in global markets; for instance, Kim and Nofsinger (2008) observed that the irrational tendencies of Japanese investors led to

measurable impacts on their portfolios, often resulting in suboptimal financial outcomes. This departure from logical precision is not an isolated occurrence. Furthermore, Kahneman and Riepe (1998) emphasized that these deviations from the standard of rationality are neither random nor rare; rather, they are methodical and pervasive throughout the investment community.

A vast body of behavioural finance literature indicates that personal investors often make decisions that contradict standard financial models, primarily due to various psychological biases. These individuals exhibit inconsistent risk preferences, characterized by a broad avoidance of risk (Statman, 1999) and a heightened sensitivity to losses. This phenomenon, known as loss aversion, suggests that the distress caused by a financial loss is significantly more intense than the satisfaction gained from a profit of the same magnitude (Kahneman & Tversky, 1979; Odean, 1998). Furthermore, these emotional drivers often lead to inadequate portfolio diversification, leaving investors exposed to unnecessary idiosyncratic risk (Benartzi & Thaler, 2001). This is frequently compounded by overconfidence, which causes market participants to exaggerate their own expertise or their capacity to forecast future price trends (Barber & Odean, 2001; Shunmugasundaram & Sinha, 2024; Mehmood et al, 2025).

Beyond individual psychology, social influences exert significant pressure via herding behaviour. This occurs when investors disregard their own unique insights or private information to mirror the collective actions of the majority (Talwar et al., 2021). This tendency is often rooted in the belief that the majority consensus is inherently correct (Asch, 1956). Beyond simple imitation, interpersonal communications, social interactions, and peer recommendations significantly shape trading patterns, moving the market away from the sterile, independent decision-making assumed by classical economics (Shiller, 1990; Oberlechner & Hocking, 2004).

Cognitive shortcuts further distort objective analysis. Investors frequently fall prey to anchoring, where they rely too heavily on initial price points (Shiller, 1998; Mahmood et al., 2024; Rahahleh, 2024), and availability bias, where they over-emphasize recent or easily recalled information (Kahneman & Tversky, 1973). Other prevalent errors include representativeness, which involves making judgments based on stereotypes or past patterns (DeBondt & Thaler, 1985), and mental accounting, the tendency to categorize money into different buckets rather than viewing a portfolio holistically (Thaler, 1985; Barberis & Thaler, 2003).

Research by Lin (2011) examined the intersection of logical choice and psychological inclination, identifying three critical phases of the investment process: recognizing demand, conducting information searches, and assessing alternatives. The study found that both the initial recognition of demand and the subsequent evaluation of options are positively correlated with overconfidence. Notably, the evaluation phase is simultaneously influenced by both overconfidence and the disposition effect, suggesting that psychological distortions are deeply embedded in how investors weigh their choices (Irvansyah et al., 2024).

The influence of non-cognitive factors extends to physiological and emotional states as well (Priyono et al., 2026). Hirshleifer and Shumway (2003) and Kamstra et al. (2003) demonstrated that investor moods can significantly sway market decisions, reinforcing Statman's (1988) conclusion that trading is driven by both cognitive logic and emotional impulses. One such emotional driver is the fear of the unknown, which manifests as familiarity

bias. Consequently, investors tend to exhibit a marked preference for local assets, allocating a disproportionately large share of their portfolios to domestic securities while overlooking international opportunities (French & Poterba, 1991; Huberman, 2001). This home bias is even observable at a local level; for example, Grinblatt and Keloharju (2001) found that Finnish investors show a distinct preference for companies located in close geographical proximity to their own homes.

By replacing the concept of perfect rationality with psychological realism, behavioural finance offers a more sophisticated understanding of market fluctuations. This framework has become essential for modern asset pricing, portfolio strategy, and regulatory oversight, providing practitioners with the tools to better anticipate and navigate the complexities of real-world financial environments (Shiller, 2003).

10. Conclusion

In traditional finance, rationality denotes a rigorous process where individuals possess the capacity to acquire all pertinent data, apply sophisticated analytical techniques, and reach conclusions that remain consistent even as new information emerges. Under this paradigm, a rational investor is viewed as a perfectly informed agent who evaluates the entire spectrum of available investment opportunities. By calculating the precise trade-off between risk and return through mathematical modelling, this investor arrives at an optimal, error-free decision designed solely to maximize personal utility. Ultimately, this framework rests on the core tenets of wealth maximization, enlightened self-interest, and logical consistency.

Nevertheless, the assumption of perfect rationality relies on the premise that all investors can access comprehensive market information. However, investors in emerging or less developed markets face significant structural hurdles in information acquisition. Despite global advancements in digital communication, a digital divide persists, leaving many without the necessary technological infrastructure to monitor markets effectively. Furthermore, linguistic barriers pose a substantial challenge; essential financial disclosures, such as annual reports and economic journals, are predominantly published in English. This creates an information asymmetry for investors who are not proficient in English, effectively barring them from the data required for informed decision-making. Additionally, the high cost associated with obtaining premium financial data further restricts the ability of these individuals to achieve the fully informed status required by traditional financial models.

Furthermore, in many practical contexts, the ideal of absolute rationality is hindered by widespread deficits in financial literacy. The initial phase of any investment strategy requires individuals to establish clear, well-defined objectives based on a firm grasp of core financial principles. However, a lack of conceptual knowledge often prevents investors from articulating sound goals, which fundamentally misaligns the entire subsequent decision-making process. A truly rational actor must also possess an exhaustive understanding of all available alternatives to solve a financial problem. In many developing regions, however, investors remain unaware of the full spectrum of financial instruments at their disposal. This knowledge gap contributes to low participation rates in sophisticated sectors such as equity markets and government debt securities. Because these individuals lack familiarity with market procedures and the unique risk-return profiles of various assets, their portfolios often remain underdeveloped and poorly

diversified. In regions where financial markets are still in their infancy, this limited perspective serves as a persistent barrier to optimal wealth management.

Moreover, a truly rational investor must possess the analytical proficiency required to evaluate diverse opportunities against their specific informational background. This optimization process necessitates not only access to data but also the intellectual capability to interpret and synthesize it. However, a significant segment of the investing population struggles with limited financial literacy, which obscures the meaning of fundamental concepts such as yield, volatility, asset valuation, and diversification. These conceptual gaps prevent investors from accurately calculating expected returns or assessing the intrinsic value of financial instruments, leading to flawed inferences and an inability to navigate complex corporate financial disclosures.

Beyond cognitive constraints, socio-cultural variables act as formidable barriers to objective rationality. While the rational model demands an unbiased assessment of information, empirical evidence suggests that demographic factors, such as age and gender, significantly skew risk perception; for example, younger and male investors typically demonstrate a higher propensity for risk-taking compared to older or female cohorts. Furthermore, religious beliefs and cultural values often impose specific ethical or practical frameworks on capital allocation, creating subjective boundaries that deviate from the purely mathematical pursuit of utility maximization.

In various regions, particularly within South Asian economies, a cultural emphasis is placed on professional labour and capital preservation rather than active investment. Many individuals view their primary vocation as the sole engine of wealth creation, leading them to set aside a significant portion of their earnings as idle savings. However, these individuals often fail to deploy this accumulated capital into optimized investment vehicles.

Because they do not prioritize the time or analytical rigor required to evaluate diverse financial instruments, their wealth management strategies remain passive. Consequently, a vast majority of these savers default to traditional bank fixed deposits. While these schemes offer a sense of security, they typically provide lower returns that may not outpace inflation or maximize long-term wealth. This tendency reflects a fundamental disconnect between the act of saving and the strategic pursuit of capital growth through informed investment.

Against this backdrop, the past few decades of behavioural finance research have consistently demonstrated that investors rarely act with perfect rationality or synthesize the full spectrum of available data. While early studies in the late 1970s and 1980s focused on identifying market anomalies, the 1990s marked a pivot toward deep-seated investor psychology. This research reveals that individuals are prone to systematic behavioural biases that distort information processing, leading to flawed investment choices. Consequently, behavioural finance has become essential for clarifying how actual market practices diverge from theoretical ideals.

A fundamental distinction between traditional and behavioural finance lies in their differing interpretations of rationality. The behavioural paradigm replaces the assumption of perfect knowledge and global optimization with the concept of bounded rationality. This core theme posits that while investors are not entirely irrational, their decision-making is constrained by psychological factors and limited cognitive resources. This shift redirected the field of finance

from a focus on optimizing behaviour based on perfect information to satisficing behaviour which seeks satisfactory results based on incomplete and imperfect knowledge.

Furthermore, while traditional finance attributes decision-making failures to external environmental factors, bounded rationality identifies the root cause as the internal cognitive limitations of the individual. In real-world scenarios, investors lack the computational capacity to analyze every variable or compile an exhaustive list of potential outcomes. To manage this complexity, they rely on heuristics, while occasionally effective, often lead to systematic errors. Ultimately, the bounded rationality framework provides a more authentic and realistic lens through which to analyze investor behaviour and modern market dynamics.

In summary, traditional and behavioural finance serve as complementary frameworks that collectively enhance the calibre of investment strategies and overall market performance. The rise of behavioural theory does not negate the foundational significance of classical finance; rather, it seeks to refine and complete models that were previously behaviourally inadequate. By integrating psychological dimensions into traditional economic concepts, researchers can better decipher the intricate patterns of investor behaviour and decision-making.

Standard financial theories achieve greater predictive accuracy and descriptive power when they account for human attitudes, psychological processes, and actual market habits. Because these two disciplines interpret rationality through different lenses, they offer distinct yet interconnected approaches to the investment landscape. Consequently, the definition and application of rationality stand as the pivotal intersection between standard and behavioural finance. Nevertheless, our understanding of the nuanced role rationality plays in financial markets remains an open field, presenting significant opportunities for future academic and empirical exploration.

This research explores rationality as the fundamental nexus between traditional and behavioural finance, tracing its shifting definition within financial discourse. In the traditional finance framework, rationality is viewed as an unwavering, utility-maximizing process predicated on perfect information. While these assumptions fostered the creation of precise mathematical models, a vast body of empirical data has highlighted their inability to account for the nuances of human behaviour and recurring market inconsistencies. Consequently, behavioural finance redefined rationality as bounded, recognizing that it is inherently limited by cognitive capacity, emotional states, and social pressures.

This study suggests that these two perspectives are not contradictory but rather exist on a rationality continuum. Investors rarely function as purely logical machines or entirely erratic actors; instead, their level of rationality fluctuates based on environmental factors, experience, and the quality of available data. Behavioural finance does not seek to dismantle the concept of rational choice but rather to sharpen it by integrating psychological realism. It serves as a necessary complement to traditional theory, pinpointing the specific conditions under which market participants diverge from logical norms and explaining why these deviations endure. Treating rationality as a bridge between these disciplines has profound implications for the future of finance. It promotes the creation of hybrid models that synthesize the normative standards of classical theory with the descriptive accuracy of behavioural research. This integrated approach strengthens the predictive capabilities of financial models, aids in more informed investment strategies, and assists policymakers in designing more resilient regulatory

systems. Ultimately, viewing rationality as a flexible, bounded construct offers a more holistic foundation for navigating the complexities of modern global markets.

11. Directions for Future Researches

Future studies should empirically test the proposed rationality continuum with the support of investor-level data. In addition, more research is needed in emerging economies such as Sri Lanka to understand the influence of cultural and structural factors on bounded rationality. Moreover, the role of Artificial intelligence and fintech in shaping rational decision-making remains underexplored.

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