Chapter 10

The Future of Finance:
Artificial Intelligence's Influence on Behavioral Investment Decisions

Amar Rao

https://orcid.org/0000-0002-0564-2964
BML Munjal University, India

Mohammad Razib Hossain
The University of Adelaide, Australia

ABSTRACT

The convergence of behavioral finance and artificial intelligence (AI) has attracted substantial attention in recent years, representing a dynamic amalgamation of insights stemming from psychology and economics with state-of-the-art technology. AI's prowess extends to bias detection, wherein it meticulously examines patterns in investment decisions. It adeptly identifies prevalent biases like loss aversion and overconfidence by contrasting responses to losses and gains. Furthermore, AI plays a crucial role in uncovering biases related to social and ethical considerations, such as ethnoracial equity, and aids in identifying and mitigating biases within AI models themselves. Cutting-edge frameworks, crowdsourced failure reports, bias auditing tools, and psychophysics-inspired methodologies all contribute to the comprehensive detection of biases. In summary, the synergy between behavioral finance and AI revolutionizes our comprehension of financial decision-making.

1. INTRODUCTION TO BEHAVIORAL FINANCE

Behavioral finance, an interdisciplinary field amalgamating insights from psychology and economics, delves into the intricate relationship between human psychology and cognitive biases and their influence on financial decision-making. This branch of study departs from the conventional financial theories like the Efficient Market Hypothesis (EMH), which presuppose that market participants unfailingly act with perfect rationality, consistently making decisions solely in their best economic interests. In contrast, behavioral finance acknowledges the prevalent human tendency to deviate from rationality, propelled by

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a plethora of psychological factors that wield substantial impact on both individual investment choices and broader market outcomes. A fundamental aspect of behavioral finance is its focus on the behavior of investors and how their biases and emotions can exert influence on financial markets (Shambora & Rossiter, 2007). Its roots can be traced back to seminal works like Prospect Theory, formulated by Kahneman and Tversky in 1979 (Yang, 2016). Prospect Theory laid the foundation for behavioral finance by introducing the concept of decision-making under risk and highlighting the systematic cognitive biases that individuals exhibit when confronted with uncertainty.

Cognitive style, an essential facet of behavioral finance, pertains to an individual's consistent pattern of processing and organizing information, which in turn can significantly influence decision-making and problem-solving (Chudry et al., 2011). This concept of cognitive style stands distinct from cognitive capacity, typically measured by IQ or creativity levels. Understanding an individual's cognitive style can provide crucial insights into their decision-making processes and help elucidate why specific biases and heuristics may be more pronounced in certain individuals. Another pivotal avenue explored by behavioral finance is the notion of misvaluation within financial markets. Several behavioral models predict that misvaluation of firms can exhibit commonality, resulting in positive movement among stocks sharing similar characteristics and negative comovement among stocks with dissimilar traits (Hirshleifer & Jiang, 2010). This misvaluation may stem from irrational investor enthusiasm for specific stock attributes or from overconfidence in the interpretation of private information. The ramifications of behavioral finance extend broadly across the entire finance landscape. It brings to the forefront the profound impact of psychological phenomena on financial markets, effectively challenging the underpinnings of classical finance theory, which posits that prices remain uninfluenced by behavioral factors (Almansour, 2020). Contrarily, behavioral finance contends that emotional and cognitive biases can indeed sway asset prices, thus introducing inefficiencies into markets and presenting potential opportunities for investors.

Human psychology emerges as a potent force shaping investment decisions. Investors do not consistently exhibit rational behavior; rather, they are susceptible to cognitive biases, emotional responses, and heuristic shortcuts, all of which can result in less than optimal choices. Cognitive biases, encompassing overconfidence, anchoring, confirmation bias, and loss aversion, wield the power to distort perceptions of risk and return, leading to erratic and potentially irrational investment behavior. Emotional reactions like fear and greed can prompt impulsive buying or selling, contributing to market volatility. Additionally, reliance on heuristics, which are mental shortcuts simplifying complex decisions, can inadvertently lead to systematic errors. The influence of human psychology and biases on investment choices is substantiated by extensive research. Ariely (2008) extensively discusses how irrational behavior and biases shape decision-making processes. Notably, cognitive biases like overconfidence, anchoring, and regret aversion bias have been shown to exert a considerable influence on investment decision-making (Dhungana et al., 2022). These biases can incline investors towards suboptimal choices, such as retaining losing investments due to regret aversion or over-relying on initial information (anchoring bias). Emotions and risk perception can also sway investment decisions, as exemplified by fear and greed driving impulsive decisions or herd behavior (Latief & Niu, 2020). Understanding these psychological factors is crucial due to their profound impact on asset prices, market trends, and overall market dynamics. Behavioral finance offers valuable insights into why asset prices may stray from their intrinsic values and how market phenomena like bubbles and crashes transpire. This understanding equips investors and financial professionals to navigate the complexities of financial markets adeptly.

Recognizing the importance of behavioral aspects in investment is imperative for several reasons. Firstly, it fosters self-awareness among investors, enabling them to make more informed decisions by

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