

PART I

# Foundation and Key Concepts

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## CHAPTER 1

# Behavioral Finance: An Overview

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## INTRODUCTION

Behavioral finance is a relatively new but quickly expanding field that seeks to provide explanations for people's economic decisions by combining behavioral and cognitive psychological theory with conventional economics and finance. Fueling the growth of behavioral finance research has been the inability of the traditional expected utility maximization of rational investors within the efficient markets framework to explain many empirical patterns. Behavioral finance attempts to resolve these inconsistencies through explanations based on human behavior, both individually and in groups. For example, behavioral finance helps explain why and how markets might be inefficient. After initial resistance from traditionalists, behavioral finance is increasingly becoming part of mainstream finance.

An underlying assumption of behavioral finance is that the information structure and the characteristics of market participants systematically influence individuals' investment decisions as well as market outcomes. The thinking process does not work like a computer. Instead, the human brain often processes information using shortcuts and emotional filters. These processes influence financial decision makers such that people often act in a seemingly irrational manner, routinely violate traditional concepts of risk aversion, and make predictable errors in their forecasts. These problems are pervasive in investor decisions, financial markets, and corporate managerial behavior. The impact of these suboptimal financial decisions has ramifications for the efficiency of capital markets, personal wealth, and the performance of corporations.

The purpose of this book is to provide a comprehensive view of the psychological foundations and their applications to finance as determined by the current state of behavioral financial research. The book is unique in that it surveys all facets of the literature and thus offers unprecedented breadth and depth. The targeted audience includes academics, practitioners, regulators, students, and others

interested in behavioral finance. For example, researchers and practitioners who are interested in behavioral finance should find this book to be useful given the scope of the work. This book is appropriate as a stand-alone or supplementary book for undergraduate or graduate-level courses in behavioral finance.

This chapter begins in the next section with a brief discussion of behavioral finance from the context of its evolution from standard finance. Four key themes of behavioral finance (heuristics, framing, emotions, and market impact) are delineated next. These themes are then applied to the behavior of investors, corporations, markets, regulation and policy, and education. Lastly, the structure of this book is outlined, followed by an abstract for each of the remaining 35 chapters.

## BEHAVIORAL FINANCE

Before the evolution of behavioral finance, there was standard or traditional finance. This section discusses some of the key concepts underlying standard finance and the need for behavioral finance.

### Standard (Traditional) Finance

At its foundation, standard finance assumes that finance participants, institutions, and even markets are rational. On average, these people make unbiased decisions and maximize their self-interests. Any individual who makes suboptimal decisions would be punished through poor outcomes. Over time, people would either learn to make better decisions or leave the marketplace. Also, any errors that market participants make are not correlated with each other; thus the errors do not have the strength to affect market prices.

This rationality of market participants feeds into one of the classic theories of standard finance, the efficient market hypothesis (EMH). The rational market participants have impounded all known information and probabilities concerning uncertainty about the future into current prices. Therefore, market prices are generally right. Changes in prices are therefore due to the short-term realization of information. In the long term, these price changes, or returns, reflect compensation for taking risk. Another fundamental and traditional concept is the relationship between expected risk and return. Risk-averse rational market participants demand higher expected returns for higher risk investments. For decades, finance scholars have tried to characterize this risk-return relationship with asset pricing models, beginning with the capital asset pricing model (CAPM). The paradigms of traditional finance are explained in more detail in Chapter 2. Chapter 8 summarizes the behavioral finance view of risk aversion.

### Evolution of Behavioral Finance

Although the traditional finance paradigm is appealing from a market-level perspective, it entails an unrealistic burden on human behavior. After all, psychologists had been studying decision heuristics for decades and found many biases and limits to cognitive resources. In the 1960s and 1970s, several psychologists began examining economic decisions. Slovic (1969, 1972) studied stock brokers and

investors. Tversky and Kahneman (1974) detailed the heuristics and biases that occur when making decisions under uncertainty. Their later work (see Kahneman and Tversky, 1979) on prospect theory eventually earned Daniel Kahneman the Nobel Prize in Economics in 2002. (See Chapters 11 and 12 for discussion about prospect theory and cumulative prospect theory, respectively.)

In his book, Shefrin (2000) describes how these early psychology papers influenced the field of finance. The American Finance Association held its first behavioral finance session at its 1984 annual meeting. The next year, DeBondt and Thaler (1985) published a behaviorally based paper on investors' overreaction to news and Shefrin and Statman (1985) published their famous disposition effect paper. Chapter 10 provides a detailed discussion of the disposition effect.

The beginning of this psychologically based financial analysis coincided with the start of many empirical findings (starting with the small firm effect) that raised doubts about some of the key foundations in standard finance: EMH and CAPM. Chapter 18 provides a discussion about these anomalies and market inefficiency. The early anomaly studies examined security prices and found that either markets were not as efficient as once purported or that the asset pricing models were inadequate (the joint test problem). However, later studies cut to the potential root of the problem and examined the behavior and decisions of market participants. For example, Odean (1998, 1999) and Barber and Odean (2000) find that individual investors are loss averse, exhibit the disposition effect, and trade too much. Researchers also discovered that employees making their pension fund decisions about participation (Madrian and Shea, 2001), asset allocation (Benartzi, 2001; Benartzi and Thaler, 2001), and trading (Choi, Laibson, and Metrick, 2002) are largely influenced by psychological biases and cognitive errors. Evidence also shows that even professionals such as analysts behave in ways consistent with psychologists' view of human behavior (DeBondt and Thaler, 1990; Easterwood and Nutt, 1999; Hilary and Menzly, 2006).

Today, the amount of research and publishing being done in behavioral finance seems staggering. Though psychology scholars have been examining economic and financial decision making for decades, psychology research is conducted in a fundamentally different manner than finance research. Psychology research involves setting up elaborate surveys or experiments in order to vary the behavior in which researchers are interested in observing and controlling. The advantage of this approach is that researchers can isolate the heuristic they are testing. Several disadvantages include doubt that people might make the same choice in a real life setting and using college students as the most common subjects. Finance scholars, on the other hand, use data of actual decisions made in real economic settings. While using this method is more convincing that people would actually behave in the manner identified, isolating that behavior in tests is difficult. Chapter 7 provides a discussion on experimental finance.

## KEY THEMES IN BEHAVIORAL FINANCE

To help organize the vast and growing field of behavioral finance, it can be characterized by four key themes: heuristics, framing, emotions, and market impact.

## Heuristics

Heuristics, often referred to as rules of thumb, are means of reducing the cognitive resources necessary to find a solution to a problem. They are mental shortcuts that simplify the complex methods ordinarily required to make judgments. Decision makers frequently confront a set of choices with vast uncertainty and limited ability to quantify the likelihood of the results. Scholars are continuing to identify, reconcile, and understand all the heuristics that might affect financial decision making. However, some familiar heuristic terms are affect, representativeness, availability, anchoring and adjustment, familiarity, overconfidence, status quo, loss and regret aversion, ambiguity aversion, conservatism, and mental accounting. Heuristics are well suited to help the brain make a decision in this environment. Chapter 4 discusses heuristics in general, while many other chapters focus on a specific heuristic. These heuristics may actually be hardwired into the brain. Chapter 5 explores the growing field of neuroeconomics and neurofinance, where scholars examine the physical characteristics of the brain in relation to financial and economic decision making.

## Framing

People's perceptions of the choices they have are strongly influenced by how these choices are framed. In other words, people often make different choices when the question is framed in a different way, even though the objective facts remain constant. Psychologists refer to this behavior as frame dependence. For example, Glaser, Langer, Reynders, and Weber (2007) show that investor forecasts of the stock market vary depending on whether they are given and asked to forecast future prices or future returns. Choi, Laibson, Madrian, and Metrick (2004) show that pension fund choices are heavily dependent on how the choices and processes are framed. Lastly, Thaler and Sunstein's (2008) book, *Nudge*, is largely about framing important decisions in such a way to as "nudge" people toward better choices. Chapter 31 describes in detail how poor framing has adversely affected many people's pension plan choices.

## Emotions

People's emotions and associated universal human unconscious needs, fantasies, and fears drive many of their decisions. How much do these needs, fantasies, and fears influence financial decisions? This aspect of behavioral finance recognizes the role Keynes's "animal spirits" play in explaining investor choices, and thus shaping financial markets (Akerlof and Shiller, 2009). The underlying premise is that the subtle and complex way our feelings determine psychic reality affect investment judgments and may explain how markets periodically break down. Chapter 6 describes the role of emotional attachment in investing activities and the consequences of engaging in a necessarily ambivalent relationship with something that can disappoint an investor. Chapter 36 examines the relationship between investor mood and investment decisions through sunshine, weather, and sporting events.

## Market Impact

Do the cognitive errors and biases of individuals and groups of people affect markets and market prices? Indeed, part of the original attraction for a fledgling behavioral finance field was that market prices did not appear to be fair. In other words, market anomalies fed an interest in the possibility that they could be explained by psychology. Standard finance argues that investor mistakes would not affect market prices because when prices deviate from fundamental value, rational traders would exploit the mispricing for their own profit. But who are these arbitrageurs who would keep the markets efficient? Chapter 32 discusses the institutional class of investors. They are the best candidates for keeping markets efficient because they have the knowledge and wealth needed. However, they often have incentives to trade with the trend that causes mispricing. Thus, institutional investors often exacerbate the inefficiency. Other limits to arbitrage (Shleifer and Vishny, 1997; Barberis and Thaler, 2003) are that most arbitrage involves: (1) fundamental risk because the long and short positions are not perfectly matched; (2) noise trader risk because mispricing can get larger and bankrupt an arbitrageur before the mispricing closes; and (3) implementation costs. Hence, the limits of arbitrage may prevent rational investors from correcting price deviations from fundamental value. This leaves open the possibility that correlated cognitive errors of investors could affect market prices. Chapter 35 examines the degree of correlated trading across investors, and Chapter 19 describes models that attempt to accommodate these influences in asset pricing.

## APPLICATIONS

The early behavioral finance research focused on finding, understanding, and documenting the behaviors of investors and managers, and their effect on markets. Can these cognitive errors be overcome? Can people learn to make better decisions? Some of the more recent scholarship in behavioral finance is addressing these questions. Knowing these biases goes a long way to understanding how to avoid them.

### Investors

A considerable amount of research has documented the biases and associated problems with individual investor trading and portfolio allocations (see Chapters 28 and 29). How can individual investors improve their financial decisions? Some of the problems are a result of investor cognitive abilities, experience, and learning. Chapter 30 discusses learning and the role of cognitive aging in financial decisions. This chapter provides recommendations for dealing with the limitations of aging investors. Other problems arise from the decision frames faced by employees making investment decisions. The reframing of pension choices helps employees make better choices. This topic is addressed in Chapter 31.

## Corporations

Traditional finance argues that arbitrageurs will trade away investor mistakes and thus those errors will not affect market prices. Limits to arbitrage put in doubt any real ability of arbitrageurs to correct mispricing. However, the arbitrage argument may be even less convincing in a corporate setting. In companies, one or a few people make decisions involving millions (even billions) of dollars. Thus, their biases can have a direct impact on corporate behavior that may not be susceptible to arbitrage corrections. Therefore, behavioral finance is likely to be even more important to corporate finance than it is to investments and markets. Shefrin (2007, p. 3) states that “Like agency costs, behavioral phenomena also cause managers to take actions that are detrimental to the interests of shareholders.” Knowledgeable managers can avoid these mistakes in financing (Chapter 21), capital budgeting (Chapter 22), dividend policy (Chapter 23), corporate governance (Chapter 24), initial public offerings (Chapter 25), and mergers and acquisitions (Chapter 26) decisions to add value to the firm.

## Markets

The manner in which cognitive errors of market participants affects markets is a key theme of behavioral finance scholarship. Markets are the critical mechanism for distributing financing in a capitalistic society. Therefore, their functioning directly affects the health of the economy. Chapter 33 provides an example of the biases of the people who work in these markets, specifically the derivative markets. As Chapter 27 shows, behavioral finance also has implications for the trust between participants and markets. Trust is another important component for a well-functioning market.

## Regulations

Behavioral finance has the potential to impact the regulatory and policy environment in several ways. First, the heuristics that impact investors and managers also influence the politicians who make law and policy. New regulation and policy tends to overreact to financial events. Second, well-designed policy can help people overcome their biases to make better choices. Chapter 9 provides a discussion on the psychological influences in regulation and policy. Chapter 34 describes how cultural factors, including religion, affect financial laws and development.

## Education

The psychological biases of employees, investors, institutions, managers, politicians, and others can clearly have negative consequences on the financial well being of individuals and society. As a new field, behavioral finance is not systematically taught in business schools. Yet, knowledge and understanding of behavioral finance offer the potential to add substantial value to any undergraduate and graduate business program. This book will be useful in educating future business students and training current managers. Chapter 3 provides ideas about implementing a course or training program in behavioral finance.



## STRUCTURE OF THE BOOK

This book is organized into six sections. A brief synopsis of each chapter follows.

### Foundation and Key Concepts

The remaining eight chapters (Chapters 2 to 9) of the first section provide an overview of behavioral finance. These chapters lay the foundation and provide the concepts needed for understanding the chapters in the other five sections.

#### *Chapter 2 Traditional versus Behavioral Finance (Robert Bloomfield)*

This chapter examines the tension between traditional and behavioral finance, which differ only in that the latter incorporates behavioral forces into the otherwise-traditional assumption that people behave as expected utility maximizers. Behavioralists typically argue their approach can account for market inefficiencies and other results that are inconsistent with traditional finance, while traditionalists reject this new paradigm on the grounds that it is too complex and incapable of refutation. A history of behavioral research in financial reporting shows the importance of sociological factors in building acceptance for behavioral finance. Behavioral researchers should redouble their efforts to demonstrate that the influence of behavioral factors is mediated by the ability of institutions (such as competitive markets) to scrub aggregate results of human idiosyncrasies. Such research will establish common ground between traditionalists and behavioralists, while also identifying settings in which behavioral research is likely to have the most predictive power.

#### *Chapter 3 Behavioral Finance: Applications and Pedagogy in Business Education and Training (Rassoul Yazdipour and James A. Howard)*

While behavioral finance had its beginnings in the early 1970s, it has not yet been fully and systematically accepted into the finance curricula of higher education. Acceptance of the findings from psychological research and recent advances in neuroscience are now being fully integrated into a research framework that explains how managers and investors make decisions. The framework also explains why some, if not all, decisions persistently deviate from those predicted by the economic theories of the law of one price and expected utility theory. More importantly, such a framework also prescribes strategies to avoid costly mistakes caused by behavioral phenomena. This chapter contends that the time is right for higher education programs to develop and offer courses in behavioral finance. Such courses should be based upon a new and developing paradigm that has its roots mainly in the field of cognitive psychology with added enrichments from the field of neuroscience.

#### *Chapter 4 Heuristics or Rules of Thumb (Hugh Schwartz)*

Heuristics or rules of thumb provide shortcuts to full-fledged calculation and usually indicate the correct direction, but with biases. There is considerable evidence on general heuristics—notably representativeness, availability, anchoring and adjustment, and affect (dealing with emotions) but much less on the specific heuristics used in most decision-making processes. The direction of heuristic biases is almost

invariably predictable. There are reasons for using heuristics, beginning with the presence of uncertainty, but there is not yet an adequate theory of the matter. This leads to problems, particularly conflicts in the results obtained using different heuristics. The affect heuristic often influences judgments, sometimes triggering but at other times countering cognitive reasoning. Major biases of the general heuristics stem from a lack of attention to base-rate data, generalizing from too small a sample, failing to allow for regression toward the mean, overconfidence, imperfect memory, reliance on incorrect applications of statistics, and framing.

***Chapter 5 Neuroeconomics and Neurofinance (Richard L. Peterson)***

By observing predictive correlations between financial behavior and neural activations, researchers are gaining novel perspectives on the roles of emotions, thoughts, beliefs, and biology in driving economic decision making and behavior. Experimental techniques from the neuroscience community including functional magnetic resonance imaging, serum studies, genetic assays, and electroencephalogram, used in experimental economic research, are bridging the fields of neuroscience and economics. The use of such techniques in the investigation of economic decision making has created the monikers “neuroeconomics” and “neurofinance” (specifically in relation to the financial markets). Research in behavioral finance typically identifies and describes nonoptimal financial behavior by individuals and in market prices (often extrapolated from collective behavior). Neuroeconomics research is identifying the origins of nonoptimal economic behavior, from a biological perspective, which opens up the dual possibilities of modifying problematic behaviors and promoting optimal ones through individual education and training, biological intervention, and public policy.

***Chapter 6 Emotional Finance (Richard J. Taffler and David A. Tuckett)***

This chapter explores the role of emotions in financial activity. Emotional finance is a new area of behavioral finance that seeks to examine how unconscious needs, fantasies, and fears may influence individual investor and market behaviors. Theory is first outlined together with some of its implications for market participants. These concepts are then applied in practice. Particular theoretical contributions include the different states of mind in which investment decisions can be made, how markets become carried away under the sway of group psychology, the way uncertainty leads to anxiety, and the unconscious meaning financial assets can represent as “phantastic objects.” Applications described include: the “real” meaning of risk, market anomalies, the reluctance to save, market pricing bubbles including dot-com mania, hedge funds and the Bernie Madoff conundrum, and aspects of the current credit crisis. The chapter concludes that cognition and emotion need to be considered together as they are intertwined in all investment activity.

***Chapter 7 Experimental Finance (Robert Bloomfield and Alyssa Anderson)***

This chapter provides a guide for those interested in experimental research in finance. The chapter emphasizes the role experiments play in a field governed largely by modeling and archival data analysis; discusses the basic methods and challenges of experimental finance; explores the close connection between experiments and behavioral finance; and comments on how to think about experimental design. First, the chapter begins by discussing the relationship between

experiments and archival data analysis. Experiments are useful because they allow researchers to circumvent common econometric issues such as omitted variables, unobserved variables, and self-selection. Next, the chapter examines the contributions that experiments can make beyond theoretical models, either by relaxing certain assumptions or by addressing settings that are too complex to be modeled analytically. Lastly, the chapter discusses the difference between experiments and demonstrations, and emphasizes the critical role of controlled manipulation.

***Chapter 8 The Psychology of Risk and Uncertainty (Victor Ricciardi)***

The topic of risk incorporates a variety of definitions within different fields such as psychology, sociology, finance, and engineering. In academic finance, the analysis of risk has two major perspectives known as standard (traditional) finance and behavioral finance. The central focus of standard finance proponents is based on the objective aspects of risk. The standard finance school uses statistical tools such as beta, standard deviation, and variance to measure risk. The risk-related topics of standard finance are classical decision theory, rationality, risk-averse behavior, modern portfolio theory, and the capital asset pricing model. The behavioral finance viewpoint examines both the quantitative (objective) and qualitative (subjective) aspects of risk. The subjective component of behavioral finance incorporates the cognitive and emotional issues of decision making. The risk-oriented subjects of behavioral finance are behavioral decision theory, bounded rationality, prospect theory, and loss aversion. The assessment of risk is a multidimensional process and is contingent on the particular attributes of the financial product or service.

***Chapter 9 Psychological Influences on Financial Regulation and Policy (David Hirshleifer and Siew Hong Teoh)***

This chapter reviews how financial regulation and accounting rules result in part from psychological bias on the part of political participants (such as voters, politicians, regulators, and media commentators) and of the designers of the accounting system (managers, auditors, and users, as well as the above-mentioned parties). Some key elements of the psychological attraction approach to regulation are limited attention, omission bias, in-group bias, fairness and reciprocity norms, overconfidence, and mood effects. Regulatory outcomes are influenced by the way that individuals with psychological biases interact, resulting in attention cascades and in regulatory ideologies that exploit psychological susceptibilities. Several stylized facts about financial regulation and accounting flow from this approach. To help explain accounting, the chapter also discusses conservatism, aggregation, the use of historical costs, and a downside focus in risk disclosures. It also explains informal shifts in reporting and disclosure regulation and policy that parallel fluctuations in the economy and the stock market.

**Psychological Concepts and Behavioral Biases**

The eight chapters (Chapters 10 to 17) in the second section describe the fundamental heuristics, cognitive errors, and psychological biases that affect financial decisions.

***Chapter 10 Disposition Effect (Markku Kaustia)***

Many investors tend to sell their winning investments rather quickly while holding on to losing investments. The *disposition effect* is a term used by financial economists to describe this tendency. Empirical studies conducted with stocks as well as other assets show strong evidence for the disposition effect. The effect varies by investor type. Household investors are more affected by the disposition effect than professional investors. Investors can also learn to avoid the disposition effect. The disposition effect underlies patterns in market trading volume and plays a part in stock market underreactions, leading to price momentum. In addition to the original purchase price of the stock, investors can frame their gains against other salient price levels such as historical highs. This chapter also discusses the potential underlying causes of the disposition effect, which appear to be psychological.

***Chapter 11 Prospect Theory and Behavioral Finance (Morris Altman)***

Prospect theory provides better descriptions of choice behavior than conventional models. This is especially true in a world of uncertainty, which characterizes decision making in financial markets. Of particular importance is the introduction and development of the concepts of the differential treatment of losses and gains, emotive considerations, loss aversion, and reference points as key decision-making variables. Prospect theory questions the rationality in decision making. This chapter argues, however, that prospect theory-like behavior can be rational, albeit non-neoclassical, with important potential public policy implications.

***Chapter 12 Cumulative Prospect Theory: Tests Using the Stochastic Dominance Approach (Haim Levy)***

Prospect theory and its modified version cumulative prospect theory (CPT) are cornerstones in the behavioral economics paradigm. Experimental evidence employing the certainty equivalent or the elicitation of utility midpoints strongly supports CPT. In these two methods, all prospects must have at most two outcomes. Recently developed Prospect Stochastic Dominance rules allow testing CPT with realistic prospects with no constraints either on the number of outcomes or on their sign. The results in the econometrically important uniform probability case do not support the S-shape value function and the decision weights of CPT. Yet, loss aversion, mental accounting, and the employment of decision weights in the non-uniform probability case, which are important features of CPT, still constitute a challenge to the expected utility paradigm.

***Chapter 13 Overconfidence (Markus Glaser and Martin Weber)***

Overconfidence is the most prevalent judgment bias. Several studies find that overconfidence can lead to suboptimal decisions on the part of investors, managers, or politicians. This chapter explains which effects are usually summarized as overconfidence, shows how to measure these effects, and discusses several factors affecting the degree of overconfidence of people. Furthermore, the chapter explains how overconfidence is modeled in finance and that the main assumptions—investors are miscalibrated by underestimating stock variances or by overestimating the precision of their knowledge—are reasonable in modeling.

Applications of overconfidence in the theoretical and empirical finance literature are also described.

***Chapter 14 The Representativeness Heuristic (Richard J. Taffler)***

This chapter explores the role the representativeness heuristic plays in investor judgments and its potential implications for market pricing. The theory underlying the representativeness heuristic is first outlined and different aspects of the representativeness heuristic described. The chapter highlights how tests of the heuristic's validity are typically based on simple and context-free laboratory-type experiments with often naïve participants, followed by a discussion of the problems of directly testing this heuristic in real-world financial environments. The chapter also describes a range of financial market-based "natural experiments." The chapter concludes by pointing out the tendency in behavioral finance to apply the label of representativeness *ex post* to describe anomalous market behaviors that cannot readily be explained otherwise. Nonetheless, despite questions relating to the heuristic's contested scientific underpinning, if investors are aware of their potential to make representativeness-type decisions, they may be able to reduce any resulting judgmental errors.

***Chapter 15 Familiarity Bias (Hisham Foad)***

Familiarity bias occurs when investors hold portfolios biased toward local assets despite gains from greater diversification. Why does this bias occur? This chapter examines different explanations involving measurement issues, institutional frictions, and behavioral matters. On the measurement side, the chapter discusses estimates of familiarity bias from both a model-based and data-based approach, while discussing the merits of each method. Institutional explanations for home bias cover such costs of diversification as currency risk, transaction costs, asymmetric information, and implicit risk. Behavioral explanations include overconfidence, patriotism, regret, and social identification. The chapter provides an assessment of the existing literature involving these explanations and concludes by examining the costs of familiarity bias.

***Chapter 16 Limited Attention (Sonya S. Lim and Siew Hong Teoh)***

This chapter provides a review of the theoretical and empirical studies on limited attention. It offers a model to capture limited attention effects in capital markets and reviews evidence on the model's prediction of underreaction to public information. The chapter also discusses how limited attention affects investor trading, market prices, and corporate decision making and reviews studies on the allocation of attention by individuals with limited attention. The final topic discussed is how limited attention is related to other well-known psychological biases such as narrow framing and the use of heuristics.

***Chapter 17 Other Behavioral Biases (Michael Dowling and Brian Lucey)***

This chapter discusses a range of behavioral biases that are hypothesized to be important influences on investor decision making. While these biases are important influences on behavior, they are individually limited in scope and thus a number of biases are discussed together in this chapter. A key purpose of the chapter is to emphasize the interaction among the various biases and to show how a richer

picture of investor psychology can be built from an awareness of these interactions. The biases are categorized into three groups: inertia, self-deception, and affect.

## Behavioral Aspects of Asset Pricing

The third section consists of two chapters (Chapters 18 and 19), which discuss market inefficiency and behavioral-based pricing models.

### *Chapter 18 Market Inefficiency (Raghavendra Rau)*

Many stock patterns seem to deviate from the efficient market paradigm, given the possibility of constructing profitable trading strategies that take advantage of the predictability of these patterns. These anomalies include calendar effects, short-term and long-term momentum, firm characteristics (such as the book-to-market ratio) effects, the market reaction to news, and even investor moods. Though investor biases are systematic and predictable, markets are inefficient because limits to arbitrage mean that arbitrageurs cannot take advantage of these biases and restore market efficiency. Noise trader risk and limits to arbitrage explain several anomalies in efficient markets.

### *Chapter 19 Belief- and Preference-Based Models (Adam Szyszka)*

This chapter presents behavioral attempts of modeling the capital market. Described first are the early models that seem to fit some market peculiarities well but are unable to provide explanations of other important anomalies. Thus, these models have often been accused of being incomplete, fragmentary, and designed *a priori* in such a way as to fit only selected empirical observations. Next, the new Generalized Behavioral Model is presented. It develops a generalized asset pricing model that could be applied to a possibly broad catalogue of phenomena observed in the market. The GBM incorporates key categories of psychologically driven factors and describes how these factors might impact the return-generating process. The model is capable of explaining a vast array of market anomalies including market underreaction and overreaction, continuations and reversals of stock returns, the high volatility puzzle, small size and book-to-market effects, calendar anomalies, and others.

## Behavioral Corporate Finance

The fourth section consists of seven chapters (Chapters 20 to 26) and relates heuristics to corporate and executive behavior. These chapters focus on the behavioral influences involving investment and financing decisions as well as corporate governance.

### *Chapter 20 Enterprise Decision Making as Explained in Interview-Based Studies (Hugh Schwartz)*

Most analyses of enterprise decision making are based on data that reflect the result of what occurs. Interview-based studies attempt to uncover the reasoning that underlies decisions, something traditional analyses and laboratory experiments have been unable to do. Interview-based studies allow for open-ended responses and, despite problems, constitute a legitimate empirical technique. Such studies

can provide more plausible explanations for many aspects of business and employee behavior including seemingly anomalous results such as downward wage rigidity. Key factors such as the importance of morale and imperfect perception of information emerge more clearly with this approach. Interview-based analyses have only begun to deal with financial matters.

***Chapter 21 Financing Decisions (Jasmin Gider and Dirk Hackbarth)***

This chapter surveys the effect of well-documented managerial traits on corporate financial policy within an efficient capital market setting. Optimistic and/or overconfident managers choose higher debt levels and issue new debt more often but need not follow a pecking order. Surprisingly, these managerial traits can play a positive role for shareholder value. Biased managers' higher debt levels restrain them from diverting funds, which increases firm value by reducing this manager-shareholder conflict. Though higher debt levels delay investment, mildly biased managers' investment decisions can increase firm value by reducing bondholder-shareholder conflicts. In addition to existing theoretical research, this chapter reviews several recent empirical studies and proposes several open research issues.

***Chapter 22 Capital Budgeting and Other Investment Decisions (Simon Gervais)***

This chapter surveys the literature on the effects of behavioral biases on capital budgeting. A large body of the psychology literature finds that people tend to be overconfident and overly optimistic. Because of self-selection, these biases tend to affect firm managers more than the general population. Indeed, the literature finds that biased managers overinvest their firm's free cash flows, initiate too many mergers, start more firms and more novel projects, and stick with unprofitable investment policies longer. Corrective measures to reduce the effects of the managers' biases include learning, inflated discount rates, and contractual incentives, but their effectiveness in curbing overinvestment appears to be limited.

***Chapter 23 Dividend Policy Decisions (Itzhak Ben-David)***

Firms have been paying dividends for four centuries, yet the motivation for doing so is still debated in the academic literature. This chapter reviews the literature that attempts to explain dividend payout policies based on theories that relate to behavioral finance, that is, recognizing that markets are not necessarily efficient or that investors and managers are not necessarily rational. The balance of the evidence suggests that behavioral theories can meaningfully contribute to understanding why firms distribute dividends.

***Chapter 24 Loyalty, Agency Conflicts, and Corporate Governance (Randall Morck)***

Agency problems in economics concern self-interested agents' "insufficient" loyalty to their principal. Social psychology also embraces problems of agency, but concerning excessive loyalty—an "agentic shift" where people forsake rationality for loyalty to a legitimate principal, as when "loyal" soldiers obey orders to commit atrocities. This literature posits that human nature features a deep inner satisfaction from acts of loyalty—essentially a "utility of loyalty"—and that this both buttresses institutions organized as hierarchies and explains much human

misery. Agency problems of excessive loyalty, as when boards kowtow to errant chief executive officers or controlling shareholders, may be as economically important as the more familiar problems of insufficient loyalty of corporate insiders to shareholders.

***Chapter 25 Initial Public Offerings (François Derrien)***

The literature on initial public offerings (IPOs) has identified and analyzed three puzzles: high first-day returns, hot-issue markets characterized by the clustering of IPOs in some periods, and poor long-run performance following IPOs. Can behavioral explanations help to understand these phenomena? This chapter presents the main behavioral theories that have been proposed to explain these puzzles and discusses their empirical validity. In particular, the chapter focuses on stylized facts that are not easily explained by standard theories, such as the extremely high IPO first-day returns observed in the late 1990s. This chapter also critically assesses the validity of the behavioral explanations and their relative explanatory power compared with that of the traditional theories.

***Chapter 26 Mergers and Acquisitions (Ming Dong)***

Recent studies suggest that market misvaluation and managerial behavioral biases have important effects on mergers and acquisitions. Both the irrational investor and the irrational manager approaches provide useful complements to neoclassical theories of acquisitions. In particular, the irrational investors approach in combination with agency factors in some cases helps to unify a wide range of findings about the relative bidder and target valuations, offer characteristics, managerial horizons, long-run bidder performance, and merger waves. The behavioral approaches also provide insights into acquisitions involving unlisted firms.

**Investor Behavior**

Much of the scholarship in behavioral finance has been conducted on individual and institutional investors' holdings and trading. These topics are detailed in the fifth section, which consists of seven chapters (Chapters 27 to 33).

***Chapter 27 Trust Behavior: The Essential Foundation of Securities Markets (Lynn A. Stout)***

Evidence is accumulating that in making investment decisions, many investors do not employ a "rational expectations" approach that predicts others' future behavior by analyzing their incentives and constraints. Rather, many investors rely on trust. Indeed, trust may be essential to a well-developed securities market. A growing empirical literature investigates why and when people trust, and offers several useful lessons. In particular, most people seem surprisingly willing to trust other people and even to trust institutions such as "the market." Trust behavior, however, is subject to "history effects." When trust is not met by trustworthiness but is instead abused, trust tends to disappear. These lessons carry important implications for our understanding of modern securities markets.



***Chapter 28 Individual Investor Trading (Ning Zhu)***

Individual investors trade stocks in a way that differs from what mainstream financial economic theory would predict: The investors generate too much trading volume and yet obtain below-benchmark performance. This chapter provides an overview of major “puzzles” of individual investor trading. The extant literature suggests that behavioral biases and psychological explanations are largely responsible for many of the observed patterns in individual trading. The chapter discusses three aspects of individual investor trading: the disposition effect, the local bias, and the ability to learn overtrading, followed by a discussion of the costs associated with individual investor trading.

***Chapter 29 Individual Investor Portfolios (Valery Polkovnichenko)***

This chapter focuses on two aspects of individual portfolio choice: diversification and stock market participation. Evidence from the Survey of Consumer Finances shows that many investors combine diversified investments in funds with a substantial share of their portfolio allocated in just a few different stocks. Furthermore, some investors, even those with considerable wealth, choose not to hold any stocks either directly or through mutual funds. This chapter presents an argument that the neoclassical portfolio model based on expected utility has difficulty explaining the data on individual portfolio allocations and evaluates potential portfolio inefficiencies and biases implied by the model. Next, the chapter shows that rank-dependent utility functions can explain the observed portfolios. According to these utility models, two opposing forces drive investor decisions: standard risk aversion, and the desire to get ahead by chasing high but unlikely gains from undiversified investments. In addition, the first-order risk aversion explains limited stock market participation.

***Chapter 30 Cognitive Abilities and Financial Decisions (George M. Korniotis and Alok Kumar)***

This chapter demonstrates that a person’s level of cognitive abilities is a key determinant of financial decisions. Households with high cognitive abilities tend to participate more in the stock market and accumulate more financial wealth than households with low cognitive abilities. Upon participation, portfolio performance improves with experience, but it is negatively correlated with age due to the adverse effects of cognitive aging. A portfolio choice model that accounts for cognitive abilities can also provide a parsimonious explanation of why retail investors hold under diversified portfolios, engage in active trading, and overweight local stocks. Specifically, portfolio distortions by smart investors reflect an informational advantage and generate higher risk-adjusted returns. In contrast, the distortions by investors with lower abilities arise from psychological biases and result in low risk-adjusted performance.

***Chapter 31 Pension Participant Behavior (Julie Richardson Agnew)***

Over the past 25 years, the United States has witnessed a dramatic shift in pension plan coverage. Today, many individuals have more responsibility for their own financial security at retirement than they would have had in previous years. This shift has provided academic researchers a rich context to test behavioral finance theories. This chapter summarizes the most significant findings in this area and

the resulting changes to retirement plan design. In addition, the chapter includes a discussion of how financial illiteracy and lack of interest can contribute to the influence of biases and heuristics in these decisions.

***Chapter 32 Institutional Investors (Tarun Ramadorai)***

This chapter discusses the literature on institutional investors. First, it selectively surveys the vast literature on whether institutional investment managers (specifically hedge funds and mutual funds) deliver superior risk-adjusted returns to their outside investors. Early work was skeptical about the ability of investment managers to deliver alpha, but the use of new econometric techniques and the advent of hedge funds have resulted in new evidence that some investment managers can deliver consistently positive risk-adjusted performance. Next, the chapter discusses the literature that analyzes the holdings and trades of institutional investors at both low and high frequencies. Evidence suggests that institutions are well informed about cash flow–relevant news and trade consistently in the right direction before and after earnings announcements. Also discussed are the restrictions on institutional investors imposed by the behavior of capital flows from outside investors and the incentives that institutions have to exacerbate, rather than correct, mispricings in asset markets.

***Chapter 33 Derivative Markets (Peter Locke)***

Derivative markets, especially futures markets, are an ideal setting for investigating behavior-driven market anomalies. Derivatives traders, especially locals, trade frequently, and a near perfect symmetry exists between the costs of holding long and short positions. For locals, the typical pattern is to begin and end a day with a flat position so that each trading day is a new experience with no direct dependence on past positions. Many studies use data generated by traders in these markets to perform behavioral experiments. Not surprisingly, the results on the behavior of these professional traders are mixed. Other research examines the effect of regret aversion and overconfidence on equilibrium hedging, along with the impact of speculative strategies on the futures price backwardation or contango.

**Social Influences**

The sixth and final section contains three chapters (Chapters 34 to 36) and shows how cultural factors and society attitudes affect markets.

***Chapter 34 The Role of Culture in Finance (Rohan Williamson)***

The influence of culture in finance cannot be ignored. There are significant differences across countries in the importance of capital markets, the access of firms to external finance, and the ownership of publicly traded firms. Additionally, economic development as well as firm and investor decisions vary greatly across societies. Some of these differences cannot be easily explained by conventional approaches in finance and economics. The evidence in this chapter shows that culture plays a very important role in financial decisions and outcomes from economic development to cross-border trade and foreign direct investment. The chapter also argues that cultural values and beliefs impact the development of institutions, values, and the allocation of resources. Religion, language, ethnicity, and wars can affect the culture in a society, which is transmitted through generations.

Culture also influences firm investment decisions, corporate governance, and investor portfolio decisions.

***Chapter 35 Social Interactions and Investing (Mark S. Seasholes)***

How do social interactions affect investment behavior? Answering such a question touches on vast and diverse research in the field of financial economics. This chapter provides an overview of published work. The emphasis is on recent empirical papers covering correlated trading (herding), the effects of neighbors/colleagues, information diffusion, and the link between social capital and financial development. The final section discusses the difficulty of identifying a causal link between social interactions and investment behavior. Papers employing identification strategies are rare. The chapter provides examples of four strategies currently being used: (1) laboratory experiments; (2) field experiments; (3) instrumental variable approaches; and (4) exploitation of market structures.

***Chapter 36 Mood (Tyler Shumway)***

Several variables that psychologists associate with mood are also associated with stock market returns. Sunny weather, long days, and winning sports teams are all associated with relatively high stock market returns. Mood variables are unlikely to be affected by either the market or any other variable that simultaneously causes market returns to fluctuate. This makes correlations between mood variables and market returns particularly strong evidence that something beyond discounted expected cash flows affects prices. While mood effects are generally too small to allow traders to make large arbitrage profits, their existence implies that at least some traders are suboptimally trading on their short-term moods.

## SUMMARY AND CONCLUSIONS

Although a relatively young field, behavioral finance seems to be growing exponentially. This growth is not surprising given that behavioral finance has the potential to explain not only how people make financial decisions and how markets function but also how to improve them. Four key themes—heuristics, framing, emotions, and market impact—characterize the field. These themes are integrated into the scholarly review and application of investments, corporations, markets, regulations, and education. Leading scholars provide a synthesis of the current state of each behavioral finance topic and give suggestions or predictions about its future direction. Now, let's continue our journey into exploring the fascinating world of behavioral finance.

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