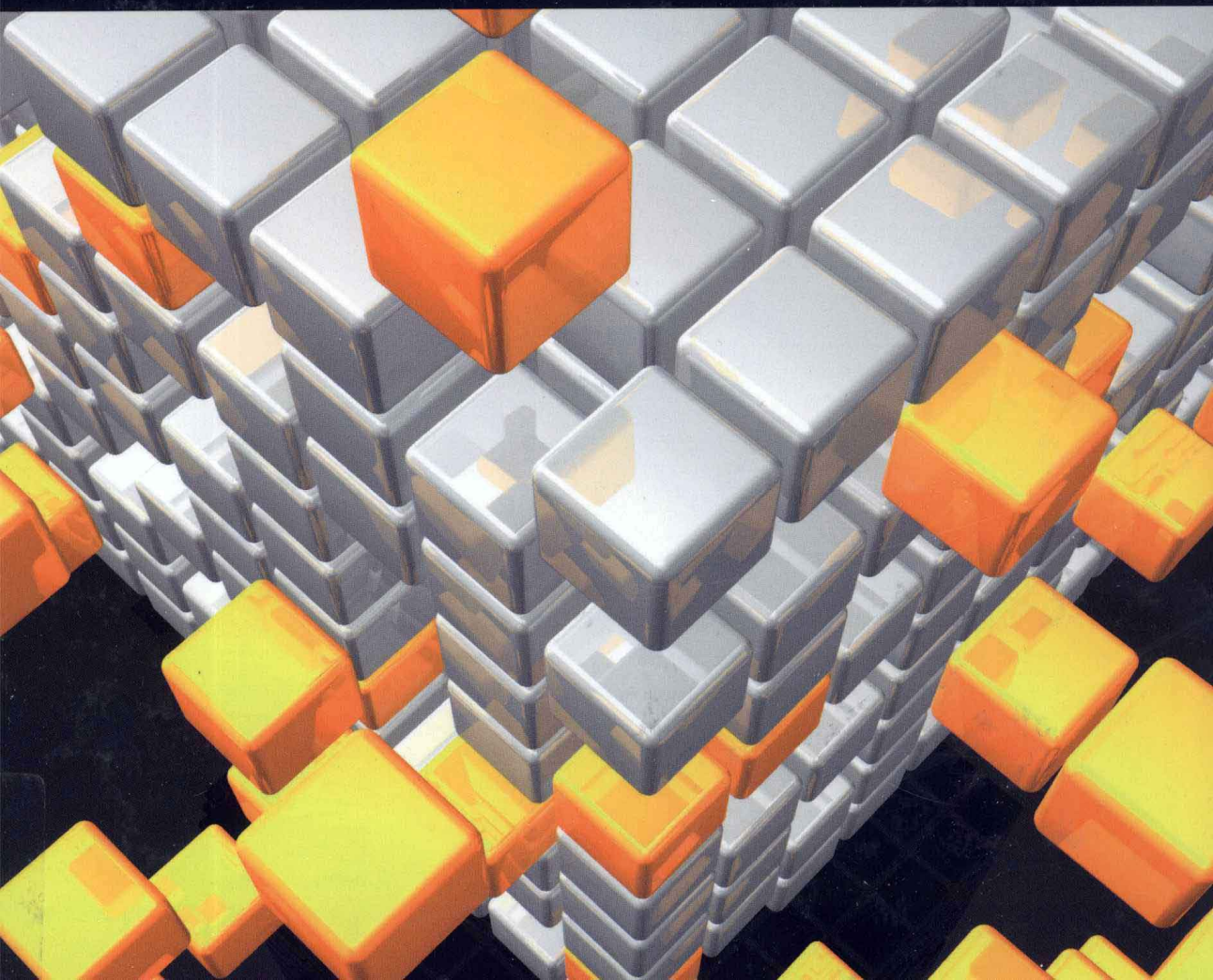




Handbook of Behavioral Finance

Edited by **Brian Bruce**



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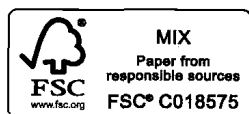
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Preface

The journey to produce this book began in 1998 when The Institute of Psychology and Markets was founded to study the impact of psychology on investor decision making. As the new century approached, the understanding of markets was moving beyond the perception that financial market participants are perfectly rational. The Institute was founded on the belief that new research would explore important dynamic processes previously ignored by traditional finance.

The Institute was interested in studying ways in which psychology played a role in understanding how financial markets function. The goal was to address issues surrounding the integration of many disciplines into the field of investing including social psychology, group psychology, psychiatry, organizational behavior, accounting, marketing, sociology, anthropology, behavioral economics, finance and decision making.

This initial meeting, held in Aspen, Colorado in December 1998, was limited to 25 participants and included some of the most important minds in the study of behavioral finance.

The Advisory Board of the Institute consisted of a diverse group of psychiatrists, psychologists, economists and market practitioners. They included:

Professor Brian Bruce, Department of Finance, Southern Methodist University
Mr David Dreman, Chairman of Dreman Value Advisors
Dr Richard A. Geist, affiliated with the Harvard Medical School
Dr Peter Neubauer, Clinical Professor of Psychiatry, New York University and
Chairman Emeritus, Columbia University, Center for Psychoanalytic Training and
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Professor Paul Slovic, President of Decision Research, Eugene, Oregon
Professor Vernon Smith, Director of Research and Education, University of Arizona
Professor Albert Solnit, Pediatrics and Psychiatry, Yale University
Mr Arnold Wood, President, Martingale Asset Management

As a result of this group's efforts came the launching of the Journal of Psychology and Markets (currently known as The Journal of Behavioral Finance) in January 1999. The journal aimed to be a source for sophisticated analysis of developments in the rapidly expanding new area of behavioral finance. The journal brought together leaders in many fields to address the implications of current work on individual and group emotion, cognition and behavior in markets. These included specialists in personality, social, cognitive and clinical psychology; psychiatry; organizational behavior; accounting; marketing; sociology; anthropology; behavioral economics; finance and the multidisciplinary study of judgment and decision making.

This book takes the foundations created by the *Journal of Behavioral Finance* and

strives to bring to readers new interdisciplinary research and theory to build a body of knowledge about psychological influences on market fluctuations and contribute to a new understanding of markets that can improve investment decision making. Offering penetrating insights into the performance of today's financial markets, the book is an indispensable resource for academics and practitioners who want to utilize behavioral concepts to understand the 'how, what, when and where' of investing. We hope you enjoy the results of this effort.

Brian Bruce

Abbreviations

AAII	American Association of Individual Investors
AMEX	American Stock Exchange
ANOVA	analysis of variance
APT	arbitrage pricing theory
BAPM	behavioural asset pricing model
BSA	buy-side analyst
CAPM	capital asset pricing model
CFO	chief finance officer
CRA	conditional risk attribution
CRRA	constant relative risk aversion
DMA	direct market access
EMH	efficient markets hypothesis
EPS	earnings per share
ETF	exchange-traded funds
FDI	foreign direct investment
FGM	first-generation model
GCRA	generalized conditional risk attribution
GDP	gross domestic product
II	Investor Intelligence
IMF	International Monetary Fund
IPO	initial public offering
IRF	impulse response function
IRS	Internal Revenue Service (USA)
KLSE	Kuala Lumpur Stock Exchange
KLSEB	Kuala Lumpur Stock Exchange Berhad
MCA	market contribution to asymmetry
MIS	management information systems
NAV	net asset value
NYSE	New York Stock Exchange
OLS	ordinary least squares
PGR	proportion of gains realized
PLR	proportion of losses realized
PPP	purchasing power parity
RM	ringgit Malaysia
ROA	return on assets
ROC	receiver operating characteristic
SD	standard deviation (std dev.)
SES	Singapore Stock Exchange
SEU	subjective expected utility

SGM	second-generation model
SSA	sell-side analyst
VAR	vector auto regression
WTI	West Texas Intermediate (oil)

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Introduction

Brian Bruce

The following paragraphs outline the structure of the handbook.

In Chapter 1, the results of an asset market experiment, in which 64 subjects trade two assets on eight markets in a computerized continuous double auction, indicate that objectively irrelevant information influences trading behavior. It was found that positively and negatively framed information leads to a particular trading pattern, but leaves trading prices and volume unaffected. The experiment also provided support for the disposition effect. Participants who experience a gain sell their assets more rapidly than participants who experience a loss, and positively framed subjects generally sell their assets later than negatively framed subjects.

Chapter 2 examines whether information overload might partially explain why defined contribution plan participants tend to limit their information search and use simple heuristics. The results of the experiments performed suggest that the success of certain plan features depends strongly on the financial background of the participant. We find that low-knowledge individuals opt for the default allocation more often than high-knowledge individuals. The results emphasize the importance of plan design, especially the selection of plan defaults, and the need to improve the financial literacy of participants.

The third chapter examines investment decisions using the fundamental investment decision matrix to define investment success and investment error. The framework is effective in describing passive investment. Conditional risk attribution (CRA) is a tool for identifying the asymmetric returns available to passive investors. The geometric interpretation is expanded into generalized conditional risk attribution (GCRA) to measure the effectiveness of active decision-making processes.

Recent studies have documented a strong tendency for individual investors to delay realizing capital losses, while realizing gains prematurely. This tendency has been termed the 'disposition effect.' In the fourth chapter individual investors were surveyed and it was found that more respondents reported regret about holding on to a losing stock too long than about selling a winning stock too soon. This finding suggests that individual investors are consistently engaging in behavior that they have been warned can cost them money and that they might regret later.

Chapter 5 presents a study of overreaction, motivated by the unique characteristics of exchange-traded funds (ETFs), which should contribute to market efficiency. Since ETFs represent portfolios of stocks, they may not be as susceptible to short-term overreaction as individual stocks. In addition, they can be traded throughout the day and can be sold short, which might further limit potential overreaction. Yet the tradability of ETFs may allow unusual pressure on ETF prices that is not initiated by price movements of all the component stocks.

Chapter 6 examines the intentional herd behavior of market participants within different international markets using a new approach that permits the detection of even moderate herding over the whole range of market return. This approach compares

the cross-sectional deviation of returns of each of the selected markets with the cross-sectional deviation of returns of an ‘artificially created’ market free of herding effects. It is suggested that intentional herding is likely to be better revealed when we analyze familiar stocks.

Chapter 7 synthesizes the financial crisis contagion literature through the gravity model from physics and tests the hypothesis that the severity of contagion relates positively to trade and financial linkages but negatively to psychic distance between countries, when macroeconomic fundamentals and institutional factors are controlled for. The psychic distance variable, a behavioral predictor constructed along four dimensions, including geographic distance, common language, development level and common membership, is of key interest in this study.

Chapter 8 examines how commissions influence trading behavior by analyzing a unique data set of the equity trades of both individual and institutional active traders. Individual traders pay higher trading costs than institutional traders. As a result, they engage in more risky trading behaviors in order to cover these costs. Individual traders also trade significantly less because of their higher costs of trading. Individual traders tend to trade higher-priced stocks, hold their trades longer, and they experience much larger price swings than institutional traders. This leads individual traders to realize more dramatic gains and losses on their round trips.

Economic simulations typically focus almost exclusively on economic variables. If non-economic factors are included at all, it is usually in some form of utility function calculation. Chapter 9 presents a model that allows formal specification of a much broader range of factors, processes and quantities involved in human communities. The phenomena include the hierarchically structured social practices of the group, the principles that underlie choices in the community, and the recognizable positions or statuses in the community. This allows one to model intrinsic or expressive behavior, capturing the concept of multi-aspect identity and the impact of the principles of the group on individual behaviors, all in formal and quantitative form. Having these factors represented formally enables the creation of significantly more realistic simulations incorporating a much wider range of variables, particularly when the economic facts and quantities of interest are affected by and affect several other kinds of factors that are not, on the face of it, economic.

Chapter 10 examines the relationship between net aggregate equity fund flow and investor sentiment using weekly flow data. Using sentiment indicators from the American Association of Individual Investors and Investor Intelligence, it was found that net aggregate equity fund flow in the current week is higher when individual investors became more bullish in the previous and current weeks. Moreover, higher net aggregate equity fund flow in the current week induces newsletter writers to become more bullish in the subsequent week. The relationship between net aggregate equity fund flow and investor sentiment remains strong even after accounting for the effects of risk premium and inflation. Overall, the evidence suggests that the behavior of equity fund investors is influenced not only by economic fundamentals, but also by investor sentiment.

Chapter 11 provides experimental evidence about the differences between buy-side analyst (BSA) and sell-side analyst (SSA) earnings forecasts, and investigates both motivational and cognitive determinants of these differences. The results indicate that, as expected, SSAs make more favorable earnings forecast revisions than BSAs, and,

consistent with prior research, analyst forecasts are greater as forecast horizon increases. In addition, while information variability does not contribute to optimism, differences in trend and recency do. Specifically, analysts act as if they discount both past earnings information with a decreasing trend and negative recent information when revising their forecasts. Directions for additional research on motivational and cognitive determinants of analyst forecasts are offered.

Empirical studies show that people tend to be overconfident about the precision of their knowledge, leading to miscalibration. Chapter 12 discusses this miscalibration, highlighting the decision makers of Swiss pension plans. These decision makers provided too narrow confidence intervals when asked to estimate past returns of various assets. Their confidence intervals are also very narrow in their forecasts of future returns. They are less miscalibrated, however, than the laypeople sample. Individual differences between the participants' degree of overconfidence are large and stable across those two different tasks. In a linear regression model the evidence shows that the size of participants' confidence intervals is linked to individual characteristics. In the sample, younger people with a degree from university and with more experience in finance provide larger intervals than older people without such an education and with less experience.

Chapter 13 reviews the hypotheses from a recent paper on rational versus bounded rationality, and discusses the results of stronger tests conducted using data from two complete business cycles to examine whether they can be validated beyond one business cycle. The original study tested two contrasting theoretical approaches, rational versus boundedly rational, to understanding the growth forecasting behavior of financial analysts as well as related decision making by managers.

Chapter 14 focuses on a model of forecasting behavior in which analysts do not always make forecasts that are consistent with their private information. Using this model to provide theoretical direction, the authors conducted experimental sessions to investigate individual forecasting behavior. The results were further examined to provide a less disperse distribution.

Chapter 15 argues that behavioural finance not only provides a theoretical foundation for financial advising, but also has highly practical relevance. To support this claim, this chapter reviews the main paradigms of traditional finance, expected utility theory and mean–variance analysis, and showed that mean–variance analysis does not serve well as a rational benchmark for investment decision making. This is followed by a short overview of the main insights of behavioral finance, which showed which aspects of the observed investor's behavior should be accepted as part of his preferences and which aspects should be corrected because they lead to irrational decisions.

Chapter 16 investigates whether traders' state-dependent expectations biases can account for anomalous country fund discount movements. A multiple-agent asset pricing model that includes both rational traders and traders who display biases in expectations formation following market states with large amounts of price variance or CNN financial news is provided. Importantly, traders' biased behavior is based on evidence of state-dependent over- or underreaction biases observed in asset price forecasting experiments. Closed-form solutions from a multi-agent pricing model predict a multiple-driver property of fund prices. Empirical tests for these drivers' influence in field data finds that up to 21 percent of the out-of-sample country fund discount variance can be explained by dummies representing the occurrence of behavioral bias trigger states.

Recent literature reports evidence on investor behavior that is inconsistent with traditional finance theory. One currently being debated is behavioral irrationality, the tendency of investors to hold losing investments too long and sell winning investments too soon, a phenomenon known as the disposition effect. Chapter 17 analyzes the trading records of all individual investors in the Finnish stock market and documents that capital losses reduce the selling propensity of investors. There is, however, no opposite effect identifiable with respect to capital gains. The results also showed, somewhat surprisingly, that both positive and negative historical returns significantly reinforce the negative association between the selling propensity of investors and capital losses. While these findings offer no direct support for the disposition effect, they do suggest that investors are loss averse.

Chapter 18 analyzes the effect of business and consumer confidence indexes on the returns of the Brazilian stock market using a model that accounts for fundamentals (rational) and noise components (irrational) of confidence indexes on the São Paulo leading index Bovespa. Consistent with previous studies for the US markets, statistically significant impacts of rational components of the indexes on Bovespa were found. In particular, there are immediate positive responses of the stock market returns to rational feedback, but negative responses of stock market returns to irrational feedback corrected by positive responses in the upcoming periods. There are positive effects of past stock market returns on rational but not on irrational feedback. The results support the economic-fundamentals-based arguments of stock returns.

Chapter 19 describes the interaction between noise traders and information traders. It is not assumed that information traders are error-free. Instead information traders make mistakes, leading to underreaction and overreaction. Information traders may even add to pricing errors in the market. These interactions are captured in an information-adjusted noise model. The model is tested using data from the Australian Stock Exchange. This market has a continuous information disclosure regime that allows a determination of when information is released to the market. Evidence is presented that is consistent with the notion that the market is often informationally inefficient.

Chapter 20 investigates behavioral effects known as illusion of control and ambiguity aversion using an experiment with business and economics students in Brazil. Empirical results suggest that people present both ambiguity aversion and illusion of control. Nonetheless, most agents are not willing to pay a premium to reduce or eliminate ambiguity aversion and to gain 'control.' These results share some similarities with results for developed markets, but it seems that cultural differences may play a role in these results.

Chapter 21 examines the investment practices of Malaysian institutional investors during bullish and bearish periods. The factors and forces that drive the Malaysian stock market are also identified. The investors used a great deal of information within and outside the firm before making any stock selection. The analysis of fundamentals appears to be the most popular method for share appraisal. The survey findings demonstrated that Malaysian investors appeared to be rational and prudent in making financial decisions.

PART I

BEHAVIORAL BIASES

