Tools for Teaching

Behavioral Finance

Instructor's Guide to[1]

Teaching *Beyond Greed and Fear*

Together With

Investments 6/e by Bodie, Kane, and Marcus

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[1] Comments are welcome. Users of this guide who have comments are welcome to communicate them using email to Hersh Shefrin, hshefrin@scu.edu.

1. Introduction

The purpose of this instructor's guide is to provide a series of techniques for combining the behavioral approach described in *Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing* (*BG&F*) by Hersh Shefrin with the traditional approach in *Investments 6/e* by Zvi Bodie, Alex Kane, and Alan Marcus.

The technical term for the study of how psychology impacts finance is *behavioral finance*. Psychologists who study human behavior are often called behavioral psychologists. Behavioral finance refers to the application of behavioral psychology to finance.

Proponents of behavioral finance seek to behavioralize the traditional approach to finance in order to take full account of the psychological propensities that human beings exhibit when they make financial decisions. In this respect behaviorists seek to integrate behavioral concepts into traditional material, and that is the recommended approach for using *Beyond Greed and Fear* together with *Investments*.

An effective way of integrating *BG&F* with *Investments* is to teach the two in parallel, within the context of a course in investments. In the parallel approach, *Investments* is treated as the primary text, and selected chapters from *BG&F* are ***matched*** with blocks of chapters from *Investments*. In this respect, the traditional approach in *Investments* is juxtaposed by the behavioral approach described in *BG&F*. The juxtaposition provides an opportunity for instructors to help students engage in critical thinking, as they seek to sort out the differences between the two approaches, and relate these differences to real world phenomena. In this last respect, most of the application chapters in *BG&F* begin with a short case study, in order to emphasize how behavioral concepts occur in real world phenomena.

To be sure, elements from behavioral approach are coming to be incorporated into traditional textbooks. And *Investments* is no different. At the same time, the treatment of behavioral finance in traditional textbooks remains peripheral. More importantly the core psychological concepts are not described in any depth within traditional textbooks. In contrast, the treatment of the core psychological concepts is a key feature of *BG&F*, as is the precise way that these concepts affect financial behavior and financial markets.

2. Matching Map Overview

This section provides an overview of how behavioral material in *BG&F* maps to the contents of Bodie, Kane, and Marcus' textbook *Investments*. The chapters in Investments are divided into nine blocks. Each block contains chapters in *Investments* that are matched with particular chapters in *BG&F*.

For the purpose of this section, assume that an instructor teaches a course in investments by using the chapters in *Investments* in the order that they appear. In order to reduce the possibility of confusion, chapter numbers have either the letter *I* or the letter *B* affixed to them: *I* refers to *Investments*, *B* to *BG&F*. Note that the 2002 Oxford edition of *BG&F* contains updated material in the preface, which accounts for multiple references to B.Preface.

The nine blocks are as follows:

Block 1

- Chapters I.1 and I.2 – introduction of general subject matter
- Chapters B.1 through B.3 – introduction of behavioral approach

Block 2

- Chapter I.3 and I.4 – introduction to securities and markets
- Chapters B.17, B.12 and B.13 – behavioral applications: initial public offerings (IPOs) and investment companies, B.Preface – pages x-xv, xxiv-xxv, xxvi-xxxi

Block 3

- Chapter I.5 and I.6 – interest rates, risk premiums, and risk aversion
- Chapter B.9 – risk aversion or loss aversion?

Block 4

- Chapter I.7 and I.8 – diversification and mean-variance portfolio theory
- Chapters B.10 and B.11 – behavioral portfolio theory, B.Preface, pages xix-xxiv

Block 5

- Chapter I.9-I.13 – capital asset pricing model, factor models, arbitrage pricing theory, market efficiency, empirical evidence on security returns
- Chapters B.1, B.4, B.6, B.7, B.8, B.13, B.Preface, pages x-xii, xviii and xxxi – Long-term Capital Management, inefficient prices, picking stocks to beat the market, biased reactions to earnings announcements

Block 6

- Chapter I.14-I.17 – bond prices, bond yields, the term structure of interest rates, and managing bond portfolios.
- Chapter B.5, B.14, B.Preface, pages xv-xvi – the market predictions of Wall Street strategists, the case of the Orange County Investment Pool, Wall Street strategists.

Block 7

- Chapter I.18-I.19 – equity valuation and financial statement analysis.
- Chapter B.18, B.16, B.Preface, pages xvi-xvii – analysts' stock recommendations, earnings forecasts, and corporate takeover premiums

Block 8

- Chapter I.20-I.23 – options, futures and swaps
- Chapter B.19-B.21, B.Preface, page xxvii – behavioral issues associated with options, futures and foreign exchange

Block 9

- Chapter I.24-I.27 – active money management
- Chapter B.15, B.Preface, page xxv – the money management industry

3. Time Management

Time constraints may prevent instructors from comfortably covering the behavioral material in all nine blocks in-depth within a single semester (or quarter). Of the nine blocks below, blocks 1, 3, 4, and 5 are the most important. Block 1 deals with the main behavioral concepts. Block 3 discusses the difference between risk aversion and loss aversion. Block 4 focuses on portfolio theory. Block 5 addresses the controversial issues associated with market efficiency. Estimates for the length of class time required to cover the behavioral material is provided for each block.

Many chapters in *BG&F* use of a series of questions that psychologists have used to identify particular traits in the way that human beings deal with choices that entail risk. The questions just mentioned are found in the accompanying file *BG&F Questionnaire.doc*.

Implicit in the time estimates is the presumption that instructors will more or less follow the suggested outline below, making use of the questionnaire in the manner described. Some instructors may wish to devote less time to these topics than the time estimates provided. Time is a scarce resource, and that is perfectly understandable. It is possible simply to assign chapters in *BG&F* as reading assignments. Indeed, students can grasp the main approach simply by reading chapters B.1-B.4. However, an in-depth understanding of behavioral finance requires a systematic approach to using the questionnaire, including in-class discussion. The questionnaire is the main tool for teaching the foundation psychological concepts, concepts that are as necessary to behavioral finance as algebra and statistics are to traditional finance.

Instructors concerned about time constraints might find that they are better off concentrating on blocks 1, 2, 4 and 5 at the outset. The material in block 5, which deals with the issue of market efficiency and the anomalies literature, has certainly received the most attention when it comes to behavioral finance. However, there has been an overfocus on the anomalies relative to other areas in finance, such as portfolio selection. And even in respect to the anomalies, attention has been focused on the anomalies themselves rather than the underlying psychological issues. The whole point of using *BG&F* in conjunction with *Investments* is to provide a balanced approach to all these issues.

To be sure instructors will find other issues in respect to time constraints and tradeoffs. These tradeoffs will vary from instructor to instructor, and even class to class.

Most instructors will learn how to manage the tradeoffs through experience with the material, and by starting slowly. In doing so, *instructors should be sure to assign the questionnaire in advance.* The meaning of those questions is discussed thoroughly in the text, so even if some questions are not discussed in class, students will still benefit if they read the material.

Note: Instructors just need to be mindful that question 27 requires additional data, which instructors are to assign. Question 27 is valuable, but requires several hours of time to complete. For this reason, the question should be considered optional, meaning instructors have the option about whether or not to assign it. (If assigned, it is not optional for students.)

A final point, the amount of time required for class discussion is unpredictable. The *estimated times* that appear at the end of the nine blocks are only estimates, and

students' desire to discuss the material injects considerable randomness to the amount of time required. Instructors who run out of time always have the option of assigning remaining topics to students as reading assignments, and moving on. In this respect, *BG&F* is self-contained. What class discussion does is to enhance the depth of understanding.

4. Approach to Teaching Matched Material

In this section, instructors will find a detailed discussion about how to approach the matched material, block-by-block. The material in this section should be viewed as a guide, or set of suggestions. There is much room for pedagogic variation, as instructors differ in their individual styles.

Block 1: The first two chapters of *Investments* serve to introduce the basic concepts in a traditional course in investments. Chapter I.1 introduces the relationship between financial markets and the economy. Chapter I.2 introduces the main market instruments. The matching chapters from *BG&F* are B.1 through B.3. Chapters B.1 through B.3 of *BG&F* provide an introduction to two of the three main themes of behavioral finance, heuristic-driven bias and framing effects. (The third theme, inefficient markets, is discussed at a later point.)

The recommended order in which to teach the material is:

- Chapters I.1 and I.2 – introduction of general subject matter
- Chapters B.1 through B.3 – introduction of behavioral approach

Consider the nature of the matched material. The typical introduction to an investments course is to introduce the concepts of investors, securities and markets. The typical introduction to the behavioral approach is to introduce the main psychological concepts that underlie the way people make decisions in the face of risk. In this regard, chapter I.1 presents the relationship between real assets and financial assets, financial markets and the economy, the clients who participate in financial markets, market structure, and trends. Chapter I.2 describes the main market instruments: different types of debt and equity securities, stock and bond indexes, and derivative markets.

The matching introductory behavioral material can be found on the first two and a half pages of chapter B.1 that introduce the three themes of behavioral finance, and chapters B.2 and B.3 that explain the first two themes, heuristic-driven bias and frame dependence respectively.

The approach to teaching chapters B.2 and B.3 is critical. Many chapters in *BG&F* make use of a series of questions that psychologists have used to identify particular traits in the way that human beings deal with choices that entail risk. The questions just mentioned are found in the accompanying file *BG&F Questionnaire.doc*. The analysis of the questions is contained in the *BG&F*, essentially in the order that the questions appear in the questionnaire.

The most effective way to use the behavioral questionnaire is to assign the questions in advance, and have students record their responses. Ideally, students should attempt the entire questionnaire before encountering any of the behavioral material. The questions are discussed in the text, and ***the main benefit of completing the questions will be lost if students read the analysis of the questions before answering on their own***.

Some instructors may ask students to reveal their responses by a show of hands in class. Other instructors may wish to take a more systematic approach by asking students to turn in their responses, and collating the results for class presentation. In the latter case, students can record their responses in an accompanying Excel file (*Questionnaire*

Responses.xls), and provide their files to the course instructor through email or on diskette.

Note: Instructors who plan to collate responses should be aware that doing so involves a fair amount of work. Students often mistype responses by forgetting to enter %-signs, or enter responses in the wrong cells. Therefore, care must be taken to check responses for consistency before analyzing them. Instructors who do intend to collate responses for advance analysis, may still wish to consider using the show-of-hands technique in class, at least the first time round.

Questions 1 through 17 pertain to block 1. Question 1 pertains to chapter B.1. Questions 2 through 7 pertain to chapter B.2. Questions 8 through 17 pertain to chapter B.3.

Chapters B.2 and B.3 are organized around questions 2 through 17. Each question serves to focus attention on a particular behavioral trait. When introducing and discussing a behavioral trait within a general context, the text will then describe how that trait applies in a financial context.

Class discussion can follow the development of the ideas in the text, as a series of concepts introduced with a generic behavioral question and followed up, where appropriate, with a specific financial example. A useful way to approach the material is to treat each question in a series of steps, such as the following:

1. Restate the question.
2. Establish the distribution of responses in the class.
3. Present the general response distribution as described in the textbook.
4. Discuss the meaning of the question in respect to the underlying generic behavioral concept.
5. Discuss how the behavioral concept applies in a finance context.

Question 2 is intended as an example to explain the concept of heuristic-driven bias. See the bullet point summary on page 14 of chapter B.2. When this question was first studied in the 1970s, most people responded by saying that homicide was the more frequent cause of death than stroke. Now students seem to anticipate the intent of the question and respond with stroke more frequently. However, they are surprised that in the 1970s, eleven times as many people died from stroke than were murdered. In the late 1990s, the relative ratio dropped from 11 to 8.

Question 3 involves predicting the grade point averages (GPA) of graduating college students. The question appears in the section entitled “Representativeness” that begins on page 14. The generic behavioral issue that lies at the heart of this question involves the failure to account properly for regression to the mean, because of a behavioral heuristic known as *representativeness*. After presenting the generic issue within the context of a nonfinancial example (predicting student GPAs), on page 16 the text discusses a financial application, namely the prediction of market returns.

For some questions, the context will already be financial, as is the case with question 4, an overconfidence question that involves the Dow Jones Industrial Average. (The correct answer to question 4 is 823,245, since the wording is a bit different than in the text.) For some questions, supplementary material will be available. For instance, question 5 involves the application of Bayes rule and the binomial distribution. The Excel file *Bayes rule.xls* contains the analysis of this particular question in the worksheet

Question 5. This file also contains a worksheet for the analysis of question 37 in block 2 below.

Question 8 is the first question that pertains to chapter B.3. The context for that question is general, and behavioral trait involved is the willingness to behave in a risk seeking fashion when facing the possibility of a loss. The phenomenon is known as *loss aversion*. After discussing the question, the text provides applications involving a series of financial contexts—individual investors (stock broker training manual), institutional investors (famous case of Nicholas Leeson and Barings Bank) and corporate executives (Apple Computer's Newton project).

Estimated time: Instructors should alert students to the fact that completing the questionnaire normally requires at least three hours. Indeed some students may spend double the time, especially if they take question 27 seriously. As far as in-class time is concerned, for purposes of discussion, instructors should allow approximately three and a half hours. The amount of time required depends crucially on the propensity of the class to engage in discussion. If the instructor does most of the talking, with little discussion, less time will be required, perhaps two hours or so. Typically, students will want to describe their thinking when answering some of the questions, and instructors should be aware that this tendency can increase the amount of class time required.

Block 2: *This block* matches chapters 3 and 4 of *Investments* with chapters in *BG&F* that address the same general issues from a behavioral perspective. The matched material is:

- Chapter I.3 and I.4 – introduction of securities and markets
- Chapters B.17, B.12 and B.13 – behavioral applications: initial public offerings (IPOs) and investment companies, B.Preface – pages x-xv, xxiv-xxv, xxvi-xxxi

Chapter I.3 discusses the manner in which securities are traded, and differentiates between the primary market and secondary market, and describes the structure of each. The specific material being matched in chapter I.3 is the discussion of initial public offerings (IPOs) on pages 68-71. The matched material can be found in chapter B.17, which is dedicated to the behavioral aspects of IPOs. Chapter B.17 is divided into two parts. The first part, pages 239-246 contains two short case studies. The second part, on pages 247-255, describes the general findings, which overlap with the discussion in chapter I.3 of *Investments*. The case studies serve to illustrate the general findings, but in a way that brings out many of the behavioral elements. The case studies are the most important material from chapter B.17.

Chapter I.4 explains how investment companies are organized, distinguishes between open-end funds and closed-end funds, and describes the manner in which mutual funds differ from one another in terms of style, fee structure, tax features, and performance.

The matched behavioral material for chapter I.4 can be found in chapters B.12 and B.13. These chapters deal with the behavioral aspects of open-end funds and closed-end funds respectively. Chapter B.12 addresses an important series of puzzles about open-end mutual funds, issues discussed on pages 122-128 of chapter I.4. There is little evidence to support the claim that after fees, investors earn higher risk-adjusted returns

from holding actively managed open-end mutual funds than holding passive index funds. Why then do investors hold actively managed funds? Students should especially notice the overlap between the material in chapter B.12 and the discussion on pages 123-124 of chapter I.4.

Questions 37 and 38 from the questionnaire pertain to chapter B.12. These questions are discussed on pages 161-166 of *BG&F*. The correct solution to question 37 involves the binomial probability distribution and Bayes rule. Most students will have studied both the binomial distribution and Bayes rule in a previous class in probability and statistics. Instructors should expect to find that most students do not remember how to apply these concepts to answer question 37 correctly. And that is the point. Most investors do not possess the statistical tools to think about mutual fund performance sensibly. Instead most investors rely on heuristics that induce them to hold erroneous beliefs about the use of track record to predict the future performance of a mutual fund manager.

Instructors who wish to discuss how to use Bayes rule in question 37 can find the solution worked out in the file *Bayes rule.xls*, in the worksheet *Question 37*.

Instructors may wish to draw students' attention to the discussion on pages xxiv and xxv about the investment company Marketocracy. The investment strategy of this firm is closely related to the discussion in chapter B.12. Instructors may wish to ask students if they see how the Olympic coins framework in chapter B.12 applies to Marketocracy's Masters 100 Fund. (Instead of a record that features 7 heads out of 10 tosses, as discussed in chapter B.12, a better analogy for the Masters 100 would be a record that features 10 heads out of 10 tosses.)

The January 26, 2002 issue of the *Financial Times* contains an article on Zvi Bodie, one of the three authors of *Investments*. The article is entitled "Academic with a Mission," and that mission is to bridge the gap between personal finance and academic theory. At the beginning of the article, Bodie complains that individual investors do not understand the riskiness of the products they buy from the investment industry. In fact, he asserts that the investment industry is misinforming investors about the risks.

Bodie's point is behavioral. Indeed the manner in which the mutual fund industry misinforms investors is the subject of the section "Obfuscation Games," found on pages 170-174 of chapter B.12. Are these issues at all discussed in *Investments*? Students can be encouraged to look through *Investments* and see if they can find such a discussion. If they are searching the fifth edition, it will be a futile search.

Chapter B.13 addresses an important puzzle involving closed-end funds. The puzzle has four parts that are explained in a short case study that appears on pages 175-182.

New questions added by instructor: BG&F has many examples drawn from the financial press, which can be used to teach students how to recognize behavioral issues when they read financial articles, say in *The Wall Street Journal*. Instructors might wish to assign new articles from the popular press that relate to the material under discussion, and ask students to identify the behavioral material in question. For example, an instructor who read the article "Well-Baked: With Its Business So Slow, Wall Street Shows Hunger for Any Deal," that appeared in *The Wall Street Journal* on October 30, 2002. The article describes the challenges faced by investment bankers in light of the fact that no IPOs came to market between mid-August and mid-October, a situation that had

not occurred since 1975. Instructors would then be interested to see whether students placed the issue into the context of "hot issue" markets, or in this case a very cold issue market. This is but one example, and current events-based questions apply to all blocks below.

Estimated Time: Instructors should allow at least three hours for discussion of these chapters. Discussion time for chapter B.17 on IPOs can vary from one to two hours, depending on students desire to participate. Discussion time for chapters B.12 and the first portion of B.13 typically require about two hours.

Block 3: *This block* matches chapters 5 and 6 of *Investments* with chapter 9 in *BG&F*. The matched material is:

- Chapter I.5 and I.6 – interest rates, risk premiums, and risk aversion
- Chapter B.9 – risk aversion or loss aversion?

Chapter I.5 describes the historical time series of interest rates, presents a measure of risk using return standard deviation, and discusses the magnitudes of the historical risk premiums associated with different asset classes. Chapter I.6 discusses attitude towards risk, especially risk aversion, return covariance, and presents tools for defining and measuring an investor's tolerance for risk.

The matched material for these chapters from *Investment* is chapter B.9. The heart of chapter B.9 is a real estate case study found on pages 110-115. Notably, this case study forms part of the questionnaire, namely question 28. Students should complete question 28 before beginning to read chapter B.9.

Chapter B.9 presents an in-depth view of loss aversion, the tendency for people to appear to be risk-seeking when they perceive themselves to be facing a likely loss. The instructor can summarize the essential points of the first three mini-cases, and then lead a discussion of the real estate study, asking for a show of hands on how people responded. When answering the case questions, most people do not recognize the underlying situation as being the Whitewater investment that dominated the Clinton Presidency.

Instructors may wish to lead a discussion about the issues of pages 114 and 115 of chapter B.9, asking students whether they believe the events described on these pages constitute additional instances of loss aversion (get-even-it is).

The last paragraph of the section on Whitewater concludes that the case was not over when the book went to press. Instructors may wish to bring closure by pointing out that on March 20, 2002, Independent Counsel Robert Ray concluded in his final Whitewater report, that Bill and Hillary Clinton's land venture benefited from criminal transactions but there was insufficient evidence to prove the former president or his wife engaged in wrongdoing. The five-volume report wrapped up a six-year investigation by three prosecutors of the Clintons' finances and detailed the business transactions they undertook with partners Jim and Susan McDougal.

Instructors may wish to move the discussion to the academic studies described on pages 116-117. In doing so, they may wish to ask students to indicate what they learned from the studies done by Terrance Odean and Jeffrey Heisler.

The main lesson from behavioral studies of attitude towards risk is that individuals do not hold consistent attitudes towards risk. Rather people are chameleon-

like in their attitude towards risk, depending on the circumstances. When faced with situations that involve only gains, and success probabilities that are not especially small, people tend to be risk-averse. However, when success probabilities are small, as with winning a lottery, people tend to be risk-seeking. Conversely, when facing situations involving only losses, where the loss probability is not especially small, people tend to be risk-seeking. Yet when the probabilities are small, as in the case of one's home burning to the ground, then they are risk averse, and purchase insurance coverage. Behavioral studies emphasize that most people's attitude towards risk is complex, and cannot be boiled down to a single parameter, as suggested by the discussion on pages 168-172 of chapter I.6.

Moreover, attitude towards risk is rendered even more complex by frame dependence. It is worthwhile asking students if they recall the lessons about hedonic editing discussed on pages 26-29 of chapter B.3. Specifically, questions 10 and 13 are numerically equivalent but framed differently. Many people choose differently in question 13 than they do in question 10. The same statement applies to questions 11 and 14. They too are numerically equivalent, but framed differently.

Estimated Time: Discussion time for chapter B.9 is typically about an hour.

Block 4: *This block* matches chapters 5 and 6 of *Investments* with chapter 9 in *BG&F*. The matched material is:

- Chapter I.7 and I.8 – diversification and mean-variance portfolio theory
- Chapters B.10 and B.11 – behavioral portfolio theory, B.Preface, pages xix-xxiv

Chapters I.7 and I.8 are a pair. Chapter I.7 develops the capital market line and associated concepts such as the reward-to-variability ratio. Chapter I.8 develops the theory for optimally combining risky assets. The two chapters together provide the basic framework known as modern portfolio theory, that economist Harry Markowitz put forward in the 1950s.

The matching chapters to chapters I.7 and I.8 are chapters B.10 and B.11. Chapter B.10 puts forward the essential features of behavioral portfolio theory, a framework that captures many of the features that individual investors take into account when they form their portfolios. A central concept in behavioral portfolio theory is that individuals divide their portfolios into layers in order to deal with two primary needs, the need for downside protection, and the need for upside potential. One of the key criteria in the behavioral approach involves the likelihood of achieving downside protection goals and the likelihood of achieving upside protection goals.

In order for a security to be attractive from a behavioral perspective, it must address the key psychological goals of downside protection and upside potential. The section "Security Design" on pages 127-128 of chapter B.10 discusses this issue and provides some examples. The securities featured here all combine protection of principal with participation on the upside.

Chapter B.10 opens by noting that even Harry Markowitz admits to being influenced by behavioral considerations when choosing his own portfolio. Moreover, in 1952, when Harry Markowitz published his first article on mean-variance theory, he

published a second article that became the basis for behavioral portfolio theory. In this respect, Markowitz can rightly be regarded as the father of both approaches.

The main issue in contrasting chapters I.7 and I.8 with chapter B.10 is to ask whether individual investors choose well-diversified portfolios in accordance with mean-variance theory? Pages 134-136 of chapter B.10 feature two sections that address this issue. The section "The Failure to Diversify" reviews evidence indicating that diversification is the exception rather than the rule. The section "Naïve Diversification" discusses heuristics that individual investors use when they seek to avoid putting all their eggs in one basket.

At this stage, instructors may wish to remind students about question 9 from the questionnaire, which is discussed on pages 25 and 26. That question has many facets, one being diversification. Students who choose the A&D combination, instead of the B&C combination, act as if they are throwing $100 away. Those who choose A&D do not have as a goal the loss of $100. Rather they are not accustomed to thinking about how the different risks that they face interact with each other. They are not accustomed to thinking about covariance. In modern portfolio theory, diversification involves more than not putting all one's eggs in one basket. Diversification involves exploiting covariance.

The aim of behavioral finance is not to identify where traditional finance fails. The aim of behavioral finance is to identify how psychology impacts financial decisions, and if that psychology is at odds with the traditional approach to finance, to point that out. This is something of a philosophical difference with traditionalists. Proponents of behavioral finance do not automatically assume that the mean-variance approach is *the* way investors ought to behave, and that their failure to do so reflects stupidity on their part. Instead, psychology introduces the analogue of mental transaction costs.

At this point, instructors should initiate a discussion about how investors do behave when they choose portfolios. Begin with question 9 from the questionnaire. Part of the answer is mental accounting, as discussed on pages 25 and 26. Why do many people choose the A&D combination over the dominant B&C combination? People think separately about the A vs. B part of the decision and the C vs. D part of the decision. They separate the two parts of the decision into distinct mental accounts.

Instructors might also want to ask whether peoples' attitude towards risk is the same in the two mental accounts. For people who choose A&D, the answer is surely no. Choosing A over B is the risk averse choice. Choosing D over C is the risk seeking choice.

This is a good point for instructors to return to the issue of security design, but focus on the discussion on pages 121-128 of chapter B.12. The discussion on these pages concerns the perception of a portfolio as a layered pyramid, a layer of mental accounts. Here the bottom layer holds securities whose primary function is to meet the need for downside protection. The upper layers hold securities whose primary function is to meet the need for upside potential. Some securities in the middle layer may strike a balance between the two, as in the case of the examples described on pages 127-128 of chapter B.12.

As was mentioned above, the January 26, 2002 issue of the *Financial Times* contains an article on Zvi Bodie, one of the three authors of *Investments*. The article is entitled "Academic with a Mission," and that mission is to bridge the gap between personal finance and academic theory. In the article, Bodie predicts that the successful

investment products of the future will be guaranteed equity products, where people receive back the amount that they invest plus a proportion of any rise in the stock market.

At this point the instructor ask students to consider the basis for such a prediction. Does such a prediction stem naturally from mean-variance theory? Can students find a discussion of this point anywhere in *Investments,* especially chapters I.7 and I.8?

Chapter B.10 also includes discussions about the impact of other behavioral influences on the portfolio choices of individual investors, namely regret, undue optimism, and overconfidence. The questions pertaining to regret in the questionnaire are 15, 28c, 29, and 30. The key question in respect to optimism is question 31. The meaning of this question is discussed on page 132. The first question in the text pertaining to overconfidence is question 4, which is discussed on page 18.

The responses to most of the questions mentioned in the preceding paragraph can be elicited through a straightforward show of hands in class. However, question 31, the optimism question is a bit more complicated. Students need first to separate the favorable outcomes from the unfavorable outcomes, and then compute their average numerical response to the items in the two groups. The typical response features a score that is higher than 7 for the favorable outcomes and less than 7 for the unfavorable outcomes. That is, students tend to believe that favorable outcomes are more likely to happen to them than to others in their peer group, and unfavorable events are less likely to happen to them than to others in their peer group.

After discussing the issue of undue optimism, instructors may wish to review question 4 in the questionnaire about overconfidence. At this point, instructors may wish to raise questions with students about how optimism and overconfidence affect investors. Possible questions are: do investors trade too much? Are men any different from women when it comes to overconfidence and trading? When people come together in investment clubs to trade, does the club perform as well or better than individuals? How successful are online investors? Are most investors capable of coping intelligently with the wide array of investment choices that the market provides? How do investors decide which stocks to buy? Answers to these questions can be found on pages 132-134 of chapter B.10, as well as pages xix through xxiii of B.Preface.

The evidence on the pages just mentioned indicate that in the aggregate individual investors make poor investment decisions, and are overconfident at the same time. In this respect, instructors may wish to draw students' attention to the section entitled "A Meeting of the Ways" on page 126 of chapter B.10. This section describes the use of online mean-variance optimization techniques by individual investors, especially for 401(k) retirement wealth allocations. The software was designed by Nobel laureate William Sharpe to operationalize mean-variance portfolio selection. Interestingly, the software interface conforms to behavioral portfolio theory, and focuses investors' attention on the key criteria in the behavioral approach: the likelihood of achieving upside protection goals (and downside protection goals too).

Chapter B.11 focuses explicitly on retirement saving, presents evidence that individual investors do not save adequately for retirement, and discusses the behavioral aspects of saving over the life cycle. Questions 32-36 pertain to this particular chapter. The theme of the chapter is inadequate saving, and question 32 bears directly on this issue. See the discussion of this question on pages 140-141. However, the chapter also affords students with an opportunity to reinforce issues discussed in the prior chapter,

especially as regards mental accounting. Question 33, discussed on pages 143-145, shows how consumption behavior is influenced by the manner in which wealth is framed. At this point, the instructor might ask students to revisit the explanation of frame dependence on page 23, particularly the statement by Merton Miller. A natural question to ask students would be whether they see a connection between Miller's quip and their own behavior in this question.

Question 34 is discussed on pages 145-148. This question provides an opportunity to focus on how investors conceptualize risk. The tendency to avoid risks in question 34a, but accept risk in questions 33c and 33d, suggest that relative to the traditional mean-variance approach, people weight the probability of loss more than the amounts that are at risk. In *Investments,* traditional utility theory is introduced on pages 168-173 of chapter I.6, and elaborated in Appendix B, pages 178-182. Expected utility theory implies that people who refuse to take the risk in question 33a should also refuse to take the risk in questions 33c and 33d. This assertion can be verified in the case of log-utility described in Appendix B of chapter I.6. See the Excel file *Myopic loss aversion.xls* for a demonstration involving log utility and the binomial distribution.

In this file, a cell for initial wealth is provided. A key difference between traditional theories of choice and behavioral theories of choice is that traditional theories emphasize the importance of final wealth position, whereas behavioral theories emphasize the importance of changes in wealth, with the level of initial wealth being of secondary importance. Instructors may wish to ask students to extend the analysis in the worksheet for 10 rounds. The key here is to keep the potential loss less than the initial wealth, so that at no time wealth becomes negative. At this point, the instructor can ask how many students answered question 33 in accordance with expected utility theory.

Questions 35 and 36 pertain specifically to psychological aspects associated with income from dividends. These questions are discussed on pages 151-153 of chapter B.11. For question 35, the instructor might ask students whether they think there are mental accounting issues associated with the typical response to this question. For question 36, the instructor might ask students whether they think there are issues associated with hedonic editing that are connected to the typical responses to this question.

Estimated Time: Instructors should plan to devote between three and four hours of class time to discuss the material in chapters B.10 and B.11.

Block 5: *This block* matches chapters 9 through 12 of *Investments* with chapters 7 and 8 in *BG&F*. The matched material is:

- Chapter I.9-I.13 – capital asset pricing model, factor models, arbitrage pricing theory, market efficiency, empirical evidence on security returns
- Chapters B.1, B.4, B.6, B.7, B.8, B.13, B.Preface, pages x-xii, xviii and xxxi – Long-term Capital Management, inefficient prices, picking stocks to beat the market, biased reactions to earnings announcements

Chapters I.9 through I.13 constitute a joint hypothesis about asset pricing. That joint hypothesis involves a factor model, such as the capital asset pricing model (CAPM) together with the efficient market hypothesis.

Chapter I.9 presents the theory underlying the CAPM. Chapter I.10 discusses some of the empirical issues in implementing the CAPM, and introduces a generalization, a factor pricing model. Chapter I.11 elaborates on the concept of factor pricing models, focusing on arbitrage pricing theory (APT).

Chapter I.12 presents the notion of market efficiency. Page 373 discusses three alternative definitions of market efficiency, the weak form, semi-strong form, and strong form. These three definitions differ in respect to information, such as past prices, publicly available information, and all information.

In introducing the definition of efficient markets, instructors might wish to emphasize the phrase "prices already reflect all information." This phrase is common to all three definitions and is key. Instructors might ask students exactly how they understand this phrase. Is the phrase well defined or ill defined? Instructors might ask whether the phrase "prices already reflect all information" is equivalent to saying that market price coincides with fundamental value, when fundamental value is conditioned on particular information such as past prices (weak form), all publicly available information (semi-strong form), or all information (strong form)?

Instructors might ask students whether the equality between price and fundamental value implies that investors can expect to earn abnormal profits by actively trading on particular information (such as past prices, publicly available information, and any information)? The answer to this question is yes.

One of the most common sources of confusion in debates about market efficiency involves the definition of market efficiency. Instructors should be sure to emphasize that market efficiency means that price coincides with fundamental value, where fundamental value is based on particular information available at the time. That is, or should be, what "fully reflect" means, if that phrase is to be meaningful. Instructors should stress that when markets are efficient relative to some information, it is not possible to earn abnormal profits by trading on that information.

At the same time, instructors might suggest that there is some disagreement about whether one can establish that markets are efficient by showing that most traders fail to earn positive abnormal profits. Why? Because most traders may be subject to behavioral biases that prevent them from exploiting abnormal profit opportunities. Moreover, and this is critical, the smart money may not find it worthwhile to exploit every abnormal trading opportunity that they perceive. The smart money may prefer to leave something on the table. It may not be worth the risk, where risk includes both fundamental and sentiment components.

The material presented in chapter I.12 is a mix of evidence about performance and patterns in return data. Some of these patterns have been called anomalies because they appear to be anomalous relative to the efficient market hypothesis.

Chapter I.13 discusses a series of questions that lie at the heart of the debate between proponents of market efficiency and proponents of behavioral finance. Section 13.3 is entitled "The Anomalies Literature: Risk Premiums or Inefficiencies?" When discussing this section, instructors should be sure to emphasize that proponents of market efficiency argue that the explanation for the apparent anomalous patterns lies with measuring risk appropriately. That is, were risk measured properly, the patterns in question would not be seen as inconsistent with markets being efficient. Section 13.5 is entitled "The Equity Premium Puzzle." The equity premium puzzle is that the historical

return premium that stocks have earned over bonds in the period since 1949 appears to be too high to be justified by market efficiency.

At the end of chapter I.12, the text poses a summary question, "So, Are Markets Efficient?" Instructors should attach some emphasis to the answer provided by the authors of *Investments*. The answer according to the authors of *Investments* is: "We conclude that markets are very efficient, but that the rewards to the especially diligent, intelligent, or creative, may in fact be waiting." This answer sets the stage for the discussion of the matching behavioral chapters.

Chapter I.12 does contain a cursory discussion about the behavioral perspective. That discussion appears on pages 396-401, and mentions forecast errors, overconfidence, conservatism, representativeness, regret avoidance, and framing and mental accounting. Instructors may wish to begin the behavioral discussion by asking students to identify the effects discussed in chapter I.12 they have encountered before. Students should respond by mentioning that they are *generally* familiar with overconfidence and regret avoidance, but not in respect to the applications specifically mentioned in chapter I.12. Students should indicate that they are familiar with the framing and mental accounting issues.

Chapter B.1 contains a discussion about the difference in perspective between proponents of market efficiency and proponents of behavioral finance. The section that begins at the bottom of page 5 is entitled "Why is Behavioral Finance Important for Practitioners?" That section begins with question 1 in the questionnaire, involving a game, the "pick-a-number" game. Instructors are urged to play the game by collecting students' responses in advance of class, and identifying the winner. By identifying a winner before class discussion, instructors can discuss question 1 using the format suggested earlier.

1. Restate the question.
2. Establish the distribution of responses in the class.
3. Present the general response distribution as described in the textbook.
4. Discuss the meaning of the question in respect to the underlying generic behavioral concept.
5. Discuss how the behavioral concept applies in a finance context.

The game itself is discussed on pages 6 and 7 of chapter B.1, and related to the experience of hedge fund Long-term Capital Management (LTCM). In discussing items 4 and 5 in the above list, instructors should emphasize the point of the game. As mentioned on page 6, the game illustrates that people commit errors and these errors lead prices to be different than they would be in an error-free environment. At this stage instructors should amplify the point. Someone who plays this game as if nobody makes errors is unlikely to win. The skill component of winning at this game entails understanding the errors of others. Item 5 in the above list involves that point for financial markets. For LTCM, betting that the relative prices for Royal Dutch and Shell would revert towards unity in the short-term was analogous to entering a 1 in the pick-a-number game.

The experience of LTCM provides a good vehicle for discussing the issue of market efficiency. The opening section of Chapter B.4, entitled "Cause and Effect," opens with a vignette about LTCM. Instructors should ask students if they understand what the phrase "cause and effect" means for the issue under discussion. It means that the

errors that investors make, because of the first two themes, heuristic-driven bias and frame dependence, cause markets to be inefficient.

In discussing the contents of chapter B.4, instructors can encourage critical thinking by asking students to juxtapose readings that discuss the same material. For example, students can be asked to review the section "Reversals" on pages 386-387 in chapter I.12 before reading the section "Effects Stemming from Representativeness" on pages 34-35 of chapter B.4. Students can be asked to review the section "Post-earnings-announcement drift" on pages 392-393 of chapter I.12 before reading the section "Events Stemming from Conservatism" on pages 35-37 of chapter B.4. In comparing the perspectives in respect to these selections, instructors are encouraged to remind students about prior discussions of representativeness (pages 14-18 and 19-20 of chapter B.2).

Continuing in this vein, students can be asked to review the section "The Equity Premium Puzzle" on pages 435-437 of chapter I.13 before reading the section "Events Stemming from Frame Dependence" on pages 37-38 of chapter B.4. In discussing the behavioral issues in respect to the equity premium puzzle, instructors should begin with question 17. This question appears on page 37 of chapter B.4. When discussing the Benartzi-Thaler article mentioned at the bottom of page 37 of chapter B.4, instructors might remind students about question 37 in the questionnaire that pertains to myopic loss aversion (see pages 145-148).

Pages 38-41 of chapter B.4 pertain to whether the market as a whole is priced efficiently, as opposed to whether groups of stocks are priced efficiently. The focal point for this part of the discussion is the work of Robert Shiller and his co-author John Campbell. Figure 4-3 depicts the contrast between the price of the overall market (Stock Price) and Shiller's forward-looking dividend-based measure of fundamental value. As noted on page 40, students' attention should be drawn to the period 1995-1999, and Shiller and Campbell's assertion at the time that stock prices were in the midst of a major bubble.

BG&F was published in late 1999. An updated version with a new preface was published in August 2002. At this point of the discussion, students' attention should be drawn to pages xii of the Preface through the discussion of IPOs on page xv. Instructors might ask students whether they believe that the events that took place after *BG&F* was first published effectively serve as an informal out-of-sample test of the power of the behavioral perspective?

Pages 40-41 of chapter B.4 contain a discussion about the role of overconfidence in respect to investors who seek to exploit market efficiency. In beginning a discussion of this section, instructors might present question 18 from the questionnaire. As was mentioned before, instructors are encouraged to present the question in five-item format: restating the question, eliciting the students' responses, describing the general pattern of responses described on page 41 of chapter B.4, discussing what the pattern of responses tells us about overconfidence generically, and concluding with a discussion of how overconfidence applies to investors. In regard to the fifth item, there are two applications described on pages 41-42, one involving LTCM and the other involving Fuller & Thaler Asset Management. Additional discussion about LTCM and overconfidence appears on pages x-xii of B.Preface. Instructors might wish to encourage students to relate the discussion about overconfidence to the concluding section of chapter I.12 on page 405 of *Investments*.

In *Investments*, the debate about whether predictable return patterns constitute evidence of anomalies, risk premiums, or data mining centers on pages 394-396. Instructors wishing to juxtapose these discussions with a detailed behavioral perspective can do so by leading students through a discussion of chapters B.7 and B.8.

The analysis of the responses to question 27 in the questionnaire provides a useful way to discuss the issues in chapter B.7. Question 27 is complex and time consuming to complete in a careful, reflective manner. What is **very important** is that instructors who plan to use this question should understand how to use it before assigning it to students. At the end of this section is a discussion about how to use question 27.

Instructors may wish to begin the discussion of chapter B.7 by asking students to compare the discussion of pages 69-74 of B.7 with the discussion of active management and portfolio management on pages 378-379 of chapter I.12 of *Investments*. Students should conclude that although there is evidence that professional management can earn abnormal returns, the evidence presented on pages 69-74 of B.7 is suggestive.

Beginning with the section entitled "Risk" at the bottom of page 74, students will reencounter discussions about the Fama-French findings (pages 429-432) and momentum, issues described in chapter I.12 and I.13.

The most important part of chapter B.7 is the discussion on pages 80-89, centers on a crucial question about anomalies: do anomalies stem from unmeasured risk or mispricing? This discussion centers on investors' expected returns. It is at this point that instructors can use question 27. Question 27, described in detail at the end of this section, is intended to elicit students' return expectations and risk perceptions, and correlate both against the characteristics that lie at the heart of the discussion: past returns, size, book-to-market equity, past sales growth, etc. Although there is variation in students' responses from class-to-class, students typically indicate that (own) expected returns are:

- positively correlated with past returns;
- negatively correlated with perceived riskiness;
- negatively correlated with beta;
- positively correlated with size;
- negatively correlated with book-to-market equity;
- positively correlated with past sales growth.

These response patterns are consistent with the behavioral view that anomalies stem from mispricing arising from investor errors rather than because factors such as book-to-market equity are proxies for unobservable risk.

Page 400 of chapter I.12 provides a critique of the behavioral perspective. Students are encouraged to contrast the points made in this section with the discussion on pages 86 and 87 in chapter B.7, including footnote 29 on page 320. In an influential article that appeared in 1998, Fama provides a critique of the behavioral perspective. Pages 86-87 of chapter B.7 discuss Fama's critique. Fama is critical of much of the anomalies literature, especially the apparent co-existence of short-term momentum and long-term reversals. At the same time, he does acknowledge that post-earnings-announcement drift does present a serious challenge to the efficient market position. For this reason, post-earnings-announcement drift may merit a closer look, particularly

because it features both short-term momentum and long-term reversals. Chapter B.8 discusses a case featuring post-earnings-announcement drift.

Instructors who assign chapter B.8 might wish to ask students to read the chapter, especially the case on pages 92-96, and offer comments in a followup class discussion. Such a discussion might begin with a review of the events that occurred in the case, with special emphasis on what can be learned from the statements made by analysts (pages 94 and 95). Instructors might then ask students if the case portrays features that correspond to the general findings about post-earnings-announcement drift. For the most part, the answers should be that it does. The last part of the discussion might focus on the experience of Fuller & Thaler Asset Management whose longest-running fund is based on exploiting post-earnings-announcement drift. A key part of this discussion should revolve around Fuller's views about the underlying behavioral elements that drive the effect, to be followed by some of the new academic theories described on pages 101-102.

In block 2, the behavioral material included pages 175-182 of chapter B.13 on closed-end funds. At this stage, instructors may suggest that their students finish reading chapter B.13, emphasizing pages 183-185. The section entitled "Sentiment" is particularly important, as it ties back to the material discussed earlier, notably the size effect in chapter B.7 and IPOs in chapter B.17. Instructors might find it helpful to ask students what connections they perceive among the discount on closed-end funds, the size effect, and IPO activity. Finally, the remaining pages in chapter B.13 offer some intriguing behavioral examples. Instructors might wish to elicit suggestions from students of what they perceive. The suggestions should include salience (country funds) and framing (dividends, leverage, and rights offerings).

BG&F was published in late 1999. Pages xxvi – xxxii of the Preface contains an update to this material, as of June 2002. Of special interest is the discussion on pages xxix and xxx discussing the performance of funds using behaviorally based trading strategies. Among the funds whose performance is updated is Fuller & Thaler's fund mentioned above. The update is to figure 8-2 that appears on page 99 of chapter B.8.

Pages 373-377 of chapter I.12 discuss technical analysis. If the weak form of the efficient market hypothesis were true, then technical analysis would have no value. This is because most technical trading rules are based on prices and trading volume. Instructors might wish to ask students which, if any, of the winner-loser effect, P/E effect, momentum effect, size effect, and book-to-market effect contradict the weak form of the efficient market hypothesis. (Answer, they all do.)

Matching material to pages 373-377 of chapter I.12 can be found in chapter B.6. There are two issues about chapter B.6 that instructors might wish to stress. The first issue concerns sentiment, where sentiment is understood to be excessive optimism or pessimism on the part of investors, in the aggregate. In this respect, technical analysts believe that sentiment can be measured. One such measure is described on page 60 of chapter B.6, and is known as the Bullish Sentiment Index. This index is reported weekly in *Barron's*.

The second issue concerns the validity of a trading rule based on the Bullish Sentiment Index. The basis for this discussion is figure 6-1. The figure, and associated regression analysis indicate that the Bullish Sentiment Index does not provide any predictive power in respect to future changes in the value of the Dow Jones Industrial Average.

At the heart of the discussion about the behavioral issues in chapter B.6 is question 26 in the questionnaire. This question does not itself appear in the text. However, the question is often used to help students understand confirmation bias, a phenomenon discussed on pages 62-66, in connection with statements made by Louis Rukeyser, the host of the longest running television program dealing with financial markets.

Instructors may wish to elicit from students how they answered question 26. Students can first be asked how many cards they asked to be turned over. 5? 4? 3? And so on. Then which cards?

Instructors can then make the point that the way to think about this question is to consider whether we are being lied to when someone tells us that "each card that has a green back on one side has a joker on the other side." What is the easiest way to ascertain whether someone is lying in this case? The correct answer is to ask that only two cards be turned over: the card with the green back be turned over, and the card with the four-of-hearts. If we are being lied to, these are the cards where the lie will show up. The card with the green back may not have a joker on the other side. The card with the four-of-hearts may have a green back.

Most importantly, there is no value to be gained by turning over the cards with the jokers. Why? Because no matter what is on the other side, we will not learn anything that can help us ascertain whether a false statement has been made to us.

Typically a sizable proportion of students ask for the jokers to be turned over. They are seeking *confirming* evidence, that is to say evidence that confirms the hypothesis being tested. Some will not ask that the four-of-hearts be turned over. They resist asking for *disconfirming* evidence. Confirmation bias is the tendency to seek confirming evidence and overlook disconfirming evidence.

Instructors may wish to ask students if they see how the principle in question 26 applies to Louis Rukeyser's statements discussed on pages 62-64.

Question 27: The remainder of this section discusses question 27 of the questionnaire. In question 27, students analyze a series of firms in respect to 15 items. Students should do so at the beginning of the course, *before being exposed to the ideas in chapters I.9 through I.13*. Although the question does not say so explicitly, the first 8 items are the attributes that make up the annual corporate reputation survey conducted by *Fortune Magazine*. Instructors should not reveal this fact until presenting the analysis of the question during class discussion.

The remaining 7 items are the students' assessments of the one-year expected return on the firm's stock, 6-month expected return, 3-year expected return, riskiness of the firm's stock, and forecasts of the firm's earnings for three time horizons (1 year, 2 year, and 5 year).

In order to make this question meaningful, students should be asked to base their responses on financial data about the firms. Instructors can either provide these data to students, or ask students to find these data on their own. Most of these data are provided by *Yahoo*, and links are provided in both questionnaire, as well as the tab "Question 27" on the Excel sheet for recording the responses. Students can access "The Executive Report" from the resulting menu after having entered the Company name or ticker symbol and clicked. To this end, the ticker symbol for each firm is provided in the

question. The information includes recent news about a firm, recent stock price performance, recent financial statements, financial ratios, the beta of its stock, etc. Students should also have access to each firm's stock return history for the past three-years, which is something instructors may have to provide separately. For this question, it is important that the information available to students include each firm's three-year stock price performance, market value of equity, book value of equity, sales revenue history dating back at least three years, and beta.

Students should enter their responses in the Excel file *Questionnaire responses.xls*, with their own name added to the filename. This file is a template for answering all the questions in the questionnaire. Most importantly, the questionnaire format is structured to encourage students to analyze all the questions about each firm before moving on to the next firm. In this respect the response format is completely vertical. Students do not automatically compare their responses across firms.

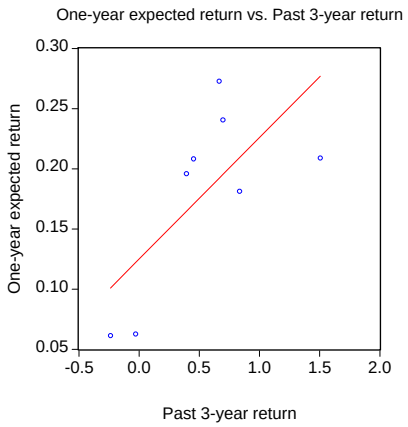
Consider two approaches to using students' responses as part of class discussion relating to question 27. In the first alternative, students construct scatter plots of their own responses. Instructors can then ask, by show-of-hands, for students to indicate which of each type of scatter plot features a positive slope, zero slope, or negative slope.

If students analyze their own responses, then instructors may wish to set up the exercise by asking that they assemble a table that features market value of equity, book-to-market equity, sales growth from the past three years, the average rate of return on the firm's stock over the past three years, beta, arranged with rows being firms and the characteristics in the columns. Then students can look at their own responses in tabular format in the worksheet *Question 27,* copy the first row down, copy and transpose the table to achieve the variables in columns and the firms in rows. Having done so, they will have two tables that taken together serve as the database for question 27.

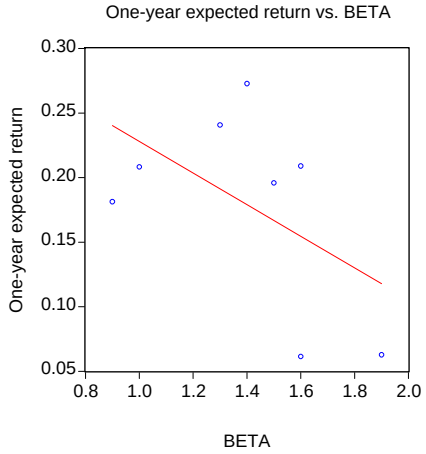
In the second alternative, instructors compile a database, tallying the average responses to each question. Instructors can assemble the class database by using the technique described in the preceding paragraph but applied to the average responses, rather than the individual responses. The database can be analyzed directly in Excel although it may be easier to import it into a different program such as Eviews.

The point of question 27 is to elicit students' views about the factors that underlie the relationship among risk, expected returns, earnings forecasts, and company characteristics. In this respect, consider the sample scatter diagram below that plots students' one-year expected returns against actual past 3-year returns. Notice that the relationship between the variables is positive. These particular students respond as if they believe that the stocks of firms whose stocks featured high returns during the past three years will continue to outperform the stocks of firms that featured low returns. In this particular situation, the magnitude of the slope coefficient was 0.1 and it had an associated t-statistic of 2.4.

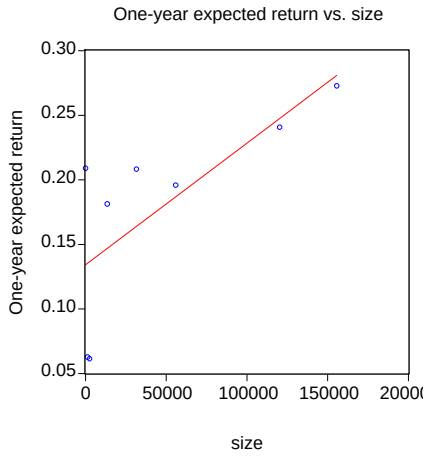
What kind of lesson can be drawn from the sign of the relationship? As both textbooks report, on average there is a winner-loser effect, whereby the stocks of past losers outperform past winners.

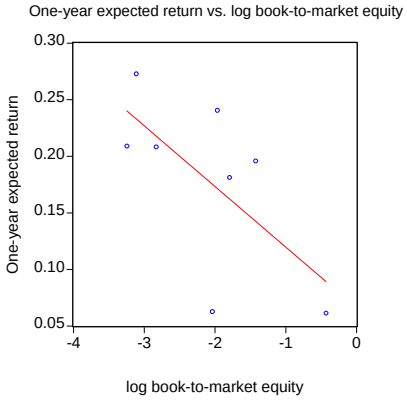


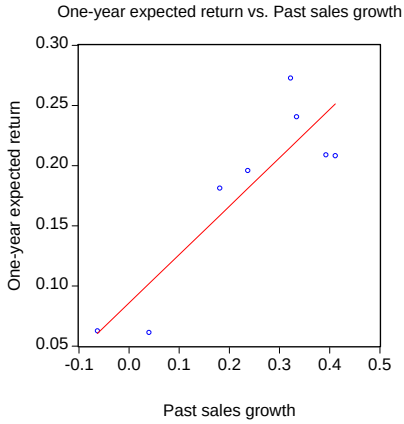
One of the most consistent responses that students provide to this question concerns the relationship between their subjective risk assessments and their subjective expected returns. At this point, instructors should remind students about the security market line, defined and discussed on pages 289-291 of chapter I.9. Instructors should be sure to draw students' attention to figure 9.2 on page 290. After doing so, instructors can proceed to show students their own intuitive perceptions about the relationship between beta and return. The following scatter plot is typical. As the scatter plot below illustrates, students view the relationship between beta and expected return as *negative*.



There are at least three additional scatter plots involving expected returns that are of interest in connection with the issues that arise in chapter B.7. The three plots pertain respectively to size (log market value of equity), log book-to-market equity, and past sales growth. Sample scatter plots (from actual student responses) are:







Instructors may wish to include the three foregoing scatter plots as part of their discussions of chapter B.7.

Although students' responses typically feature the relationships described above, students will often indicate that they did not consciously consider past returns, size, or book-to-market equity when formulating their return expectations. Indeed unless these variables were presented explicitly as part of the data for the question, most students do

not compute book-to-market equity, even though the data includes the components of the ratio.

The scatter plot of perceived risk against the same variables indicates that students respond as if they believe that riskiness is positively correlated with book-to-market equity and beta, and negatively correlated with past returns and size. The signs of these relationships are consistent with the Fama-French three-factor model. However, the correlation between expected returns and these characteristics is inconsistent with the three-factor model.

One explanation for the structure of these relationships is that both return expectations and perceived risk are driven by representativeness. Specifically, students think that the stocks of good companies are representative of good stocks. That is, students believe that "good stocks are the stocks of good companies." In this respect, good stocks feature both high expected returns and low risk.

As was mentioned earlier, students answer question 27 using a vertical format, completing the analysis of each firm in turn before moving on to other firms. Instructors should be cognizant of the role played by framing here. If students are presented with a horizontal format that makes risk and return salient across firms, then the sign of the relationship between their return expectations and their risk perceptions may well be positive.

Instructors may wish to ask students whether the above patterns in their responses simply reflect inexperience. After posing that question, instructors may wish to draw students' attention to the top of pages xviii and xxxi in B.Preface. Students will find references to two publications that discuss the fact that these patterns also seem to occur in the return expectations of analysts and portfolio managers.

Additional question: Instructors may wish to pose additional questions to students, which involve subtleties. For example, on page 10 of chapter B.1, Robert Merton is mentioned as having suggested that there is a contradiction between the De Bondt-Thaler winner-loser effect and the Shefrin-Statman disposition effect. Instructors might say to students that the De Bondt-Thaler effect would seem to suggest that investors should hold losers. Yet the Shefrin-Statman disposition effect suggests that investors mistakenly hold losers too long. Instructors can then ask whether these statements are mutually contradictory?

Robert Merton is a Nobel laureate, so the issue is unlikely to be straightforward. In order to reconcile the two effects, bear in mind that the De Bondt-Thaler effect applies to extreme losers, where the criterion for being a loser is based on past three-year performance. The disposition effect stipulates that when a stock held by an investor drops below the purchase price the investor paid for the stock, then, the investor can offset capital gains elsewhere in his portfolio by selling the losing stock. Here loser is defined relative to purchase price for the investor in question, and not past three year returns as in the De Bondt-Thaler effect.

Investors who are looking to purchase new stocks might wish to purchase stocks that are past losers, though not for them. Investors who refuse to sell stocks on which they have lost money, may inadvertently end up holding a De Bondt-Thaler loser, in that the loss may end up being extreme. In that case, it might make sense to continue to hold the losing stock, as long as the expected abnormal return was large enough to offset any tax benefits associated with loss realization.

Investors who inadvertently end up holding extreme losers may find that the stock subsequently performs well, in accordance with the De Bondt-Thaler effect. Investors often hold such stocks, but sell as soon as the price reaches the original purchase price. Of course, there is nothing special about the price at which one particular investor purchased the stock. Nevertheless, investors frequently sell as soon as the price recovers to that value.

Think carefully about the last point. As mentioned in the second-last paragraph on page 116 of chapter B.9, Terrance Odean has demonstrated that the stocks investors sell subsequently outperform the stocks that they buy. That is to say, these investors not only held their losers too long at the beginning. But in holding onto stocks that eventually become De Bondt-Thaler losers that recover, they sell too early during the recovery phase. They do so because their motivation stems from a framing effect, where they define gains relative to the purchase price reference point. In particular, they do not define gains in a mark-to-market sense.

In the end, the De Bondt-Thaler winner-loser effect and Shefrin-Statman disposition effect are mutually consistent. However, to see why this is the case, students need to understand exactly what these effects entail.

Estimated Time: The behavioral material in this block is controversial. As a result it is difficult to assess how much time to allow for class discussion. A range would be three to six hours of class time.

Block 6: *This block* matches chapters 14 through 17 of *Investments* with chapters 14 and 5 in *BG&F*. The matched material is:

- Chapter I.14-I.17 – bond prices, bond yields, the term structure of interest rates, and managing bond portfolios.
- Chapter B.5, B.14, B.Preface, pages xv-xvi – the market predictions of Wall Street strategists, the case of the Orange County Investment Pool, Wall Street strategists.

Most discussions about interest rates in the media take place in the context of the macroeconomy. For this reason, instructors may wish to discuss the behavioral material about interest rates after chapter I.17 that pertains to macroeconomics.

Students in classes that are following the above chapter order will already have encountered discussions about Wall Street strategists on pages 17-18 of chapter B.2 and pages 40-41 of chapter B.4. Strategists analyze and predict the future performance of stock and bond markets using a top down approach, rather than a bottom up approach involving individual companies. Instructors might wish to ask students to reread these pages before beginning to read chapter B.5, which contains a general discussion about predicting the market.

Questions 19-25 of the questionnaire provide the context for discussing the major generic behavioral issues in chapter B.5. Question 19 is a generic question about overconfidence, and augments the first two questions presented at the bottom of page 48. By asking ten general knowledge questions, instead of two, instructors can discuss the concepts of calibration and confidence intervals more clearly. A student scores a “hit” on

a question when the correct answer to a question falls within the student's low guess and high guess. Given that the question specifies a 90 percent level of confidence, well-calibrated students should expect to score 9 hits. In practice, most students tend to score in the range of 3 to 5.

The correct answers to question 19 are:

19.1. How old was Martin Luther King when he died? 39 years.
19.2. How long, in miles, is the Nile River? 4,187 miles.
19.3. How many countries were members of OPEC in 1989? 13 countries.
19.4. According to the conventional canon, how many books are there in the Hebrew Bible? 24 books.
19.5. What is the diameter, in miles, of the moon? 2,160 miles.
19.6. What is the weight, in pounds, of an empty Boeing 747? 390,000 lbs.
19.7. In what year was Wolfgang Amadeus Mozart born? 1756.
19.8. How long, in days, is the gestation period of an Asian elephant? 645 days.
19.9. What is the air distance, in miles, from London to Tokyo? 5,959 miles.
19.10. How deep, in feet, is the deepest known point in the ocean? 36,198 feet.

Instructors can announce the correct answers to each question in class, and ask students to record the number of hits they received. Instructors can then proceed to ask the class, by show-of-hands, to indicate the number of hits received. For example, instructors can ask whether anyone managed to achieve 10 hits? How about 9? 8? 7? And so on down to 0.

Question 19 is generic. Question 20 pertains to financial forecasting. The stock price charts in this question are figures 5-1 through 5-3 on pages 49-50 of chapter B.5. There are several lessons to be gleaned from this question. The first lesson is that most people are overconfident in their ability to predict stock prices, just as they are overconfident in answering difficult general knowledge questions. Instructors can announce the correct answers (found on page 50 of chapter B.5) and by show-of-hands, ask students to indicate their hit rate on each of the three series.

The additional lessons from question 20 are discussed on pages 51-52. The first of these lessons pertains to skewness in students' confidence intervals. Students often have negatively skewed confidence intervals for stock series 1, and positively skewed confidence intervals for stock series 2. Negative skewness means that their best guess lies closer to the high guess than the low guess. Positive skewness means that their best guess lies closer to the low guess than the high guess. Typically skewness arises as an anchoring effect, where the anchor is the initial (left) portion of the series. Instructors might ask students if they believe that skewness has any connection to the maxims put forward by Peter Lynch, as discussed on page 52 of chapter B.5.

The second lesson from question 20 is that people usually predict by extrapolating perceived trends. Therefore the average prediction for series 1 is that it will continue to rise, and the average prediction for series 2 is that it will continue to fall.

The third lesson from question 20 is that people are prone to framing effects. The issue arises in connection with the way that people forecast series 3 when answering question 21. As is mentioned on page 52 of chapter B.5, series 3 is derived from series 1, but the data is presented in the form of absolute changes rather than levels. Yet students'

predicted changes for series 1 are typically quite different from their predicted changes for series 3.

At this point, the instructor can point out that all three series are the S&P 500, at different periods of time, rescaled so as to conceal the identity. Therefore, the predictions for this question are market predictions. Instructors can then ask students to think about the comments made by strategists Biggs and Farrell on page 17 of chapter B.2. In particular, instructors might ask students to consider whether they perceive that question 20 has any relevance for understanding the quoted remarks on page 17 of chapter B.2.

As discussed on pages 51-52 of chapter B.5, Biggs' comments suggest being anchored by the earlier portion of the series. Farrell explicitly talks about regression to the mean. At this point, instructors may wish to ask students what they recall about question 3 (the GPA question). In particular, instructors may embark on a general discussion of gambler's fallacy at this stage, in line with the comments on pages 17-18 in chapter B.2. The point to emphasize here is that gambler's fallacy is regression to the mean gone overboard, not just predicting that an outcome will be closer to the mean than its predecessor (that being the concept of regression to the mean), but that it will cross the mean and lie on the opposite side. The autocorrelation in most financial time series is positive autocorrelation. With positive autocorrelation, it is not appropriate to forecast that the future value of the series will lie on the opposite side of the mean than its predecessor.

Having introduced the concept of gambler's fallacy, instructors may wish to discuss the manner in which the market predictions of Wall Street strategists exhibit gambler's fallacy. This discussion appears on pages 45-48 and pages xv-xvi of B.Preface.

Questions 22-25 involve coin tossing, the lessons of which are discussed on pages 55-57 of chapter B.5. The text mentions 100 coin tosses rather than the 15 in the question. (Students tend to find 100 tedious, although the results are more reliable when done seriously). As discussed on pages 55-56, at the heart of this question is the frequency associated with runs of various lengths. Instructors may wish to ask students to identify the runs in their two coin toss sequences, the imaginary runs in question 22 and the real runs in question 23. In analyzing their own responses, students should tabulate the number of runs of various lengths. How many runs of length 1, how many of length 2, etc.?

Two key questions that instructors may wish to put to students are the following: How many of you had more runs in your imaginary sequence than in your real sequence? For how many of you, was the longest run in your real sequence longer than the longest run in your imaginary sequence? Because people have poor intuition about randomness, their imaginary sequences tend to have more, shorter runs than their real sequences.

At this stage, instructors can ask students whether the bias in their imaginary coin toss predictions induces gambler's fallacy? As mentioned on page 56, the answer is yes. People predict reversals more frequently than is warranted by the laws of chance.

Pages 373-379 of chapter I.12 discuss technical analysis and fundamental analysis in the context of active portfolio management. Chapter B.5 contains some matching material for these topics. Instructors may wish to ask students to review these pages from chapter I.12 and then read pages 53-55 and the top of page 57 in chapter B.5. Instructors may wish to ask students whether they see any connection between the material on these pages of chapter B.5 and figures 12.2 and 12.3 on pages 374-375 of chapter I.12. In this

respect, instructors may ask students to examine the figure on page xiii of B.Preface to see if they can identify any patterns for the period January 1997 through June 2002. If so, then students can be asked what meaning a technical analyst would give to the existence of this pattern. (In the first week of July 2002, CNBC featured several technical analysts who pointed to the "head-and-shoulders" pattern in question, pointing out that if the market broke below the right-hand-shoulder, there would be a severe downturn thereafter. Instructors might ask students to investigate how the market did during July 2002, and the third quarter of 2002. Or instructors can just tell students that the S&P 500 fell by 7.5% during July and 17.3% during the third quarter. Then instructors may ask students how convinced technical analysts might be about the criticisms of technical analysis made in traditional textbooks such as the comments made in the paragraph in the middle page 377 of chapter I.12 that begins "An interesting question …).

The last item from chapter B.5 that instructors might wish to discuss is inflation, pages 57-58. In this respect, instructors may wish to relate the discussion on those pages to the concept of money illusion, described on pages 31-32. Question 16 from the questionnaire is central to this discussion. Inflation is an important issue for the discussion of bond yields below.

The discussion can then move to chapter B.14 and interest rates. Most of this chapter is dedicated to the bankruptcy of Orange County, the largest municipal bankruptcy in U.S. history, a bankruptcy that stemmed from the management of Orange County's bond portfolio. This case offers instructors with a good opportunity to discuss interest rates, bond portfolios, and a wide range of behavioral phenomena.

Instructors may wish to begin by focusing students' attention on pages 194-196, which reports the content of an interview that Orange County treasurer and bond portfolio manager Robert Citron granted to the *Los Angeles Times*. Instructors may wish to ask students if they can identify any behavioral phenomena in Citron's remarks, especially the comments that appear in the second half of page 196. A discussion of these remarks, in respect to gambler's fallacy, occurs on pages 197-198 of chapter B.14.

Pages 198-205 offer instructors an opportunity to reinforce prior discussion about a variety of behavioral phenomena: overconfidence, behavioral portfolio theory, underreaction, regret, hindsight bias, and confirmation bias. (For the discussion about regret, instructors might want to direct students' attention to questions 29 and 30 of the questionnaire. These questions are discussed on page 129 of chapter B.10.)

The general discussion on pages 205-212 of chapter B.14 identifies the main behavioral issues in respect to bond yields. The expectations hypothesis of the yield curve is discussed on pages 497-503 of chapter I.15, to be matched by the discussion on pages 208 of chapter B.14. Page 205 of chapter B.14 describes a "Citron strategy." Instructors may wish to ask student to examine the discussion of active bond management on pages 546-547 of chapter I.16, to see if the Citron strategy is described there in general terms. (The item is the "pure yield pickup swap," and instructors may wish to probe students about whether Citron's motivation is captured by the discussion of this item on page 548 of chapter I.16.)

Pages 208-211 of B.14 involve discussions about the yield curve, inflation, and underreaction by investors. Instructors might wish to begin by asking students to consider figure 14-4, which depicts the time series of CPI forecast errors. Instructors may ask students whether they believe these errors to exhibit any autocorrelation, and if so what

such autocorrelation means. As the discussion on pages 209-201 emphasizes, investors were slow to adjust their inflation forecasts as the rate of inflation changed. They underreacted. Instructors may then wish to ask students how this particular underreaction effect might manifest itself within the level of interest rates. The discussion of this point can then be followed by a discussion of how erroneous inflation *expectations* might bear on the dynamic behavior of the yield curve, in respect to the *expectations* hypothesis.

Estimated Time: Instructors should allow about two and a half hours of class time to discuss the contents of chapters B.5 and B.14.

Block 7: *This block* matches chapters 18 and 19 of *Investments* with chapters 16 and 18 in *BG&F*. The matched material is:

- Chapter I.18-I.19 – equity valuation and financial statement analysis.
- Chapter B.18, B.16, B.Preface, pages xvi-xvii – analysts' stock recommendations, earnings forecasts, and corporate takeover premiums

Chapters I.18 and I.19 form the core material for fundamental analysis. Chapter I.18 deals with present value techniques, and chapter 19 deals with the nature of information contained within a firm's financial statements. These techniques are the major tools used by chartered financial analysts, CFAs, who are certified in their ability to apply these techniques successfully.

The matching material concerns the nature of valuation analysis conducted by security analysts in respect to stock recommendations and valuations in corporate takeovers.

Instructors may wish to assign pages 257-263 of chapter B.18, along with page xvii of B.Preface, and ask students if they concur that the recommendation game has a "wink, wink, nod, nod character?" In this regard, instructors may wish to draw students out on the nature of the wink and the nod, asking them to use the cases of Atmel and Alteon discussed in the chapter to illustrate the main points.

The research findings discussed on pages 257-263 of chapter B.18 were well known long before the legal investigations described on page xvii of B.Preface. Instructors may wish to initiate a discussion with students, asking them what precipitated these investigations.

Instructors may wish to turn students' attention next to pages 263-269 of chapter B.18. In particular, instructors may wish to elicit students' perceptions about the character of the earnings game? To initiate this part of the discussion, instructors may wish to ask students if they can identify any behavioral elements in figure 18-2? Should students need to be reminded, instructors can ask them whether they see any similarities between figure 18-2 and the discussion about figures 5-1 and 5-2 on page 49 of chapter B.5.

When discussing the example involving Intel on pages 266-267 of chapter B.18, instructors may ask students to articulate the general issues in chapter I.18, that being equity valuation. Instructors can then refer students to the discussion at the bottom of page xvii and especially the top of page xviii. The point here is that not a single analyst report on Intel featured a discounted cash flow model.

When discussing chapter I.19 on financial statement analysis, instructors may wish to draw students' attention to the remainder of the discussion on page xviii and the top of page xix. This discussion focuses on the high profile cases of Enron and WorldCom, whose financial reporting was highly questionable. Instructors may also invite students to discuss the controversial issues involving pro forma earnings mentioned on page xix.

After completing the discussion about analysts' recommendations and forecasts, instructors may wish to turn the conversation to the valuations made by corporate executives, with the help of investment bankers, as they consider potential mergers. Instructors may find it useful to explain the term "hubris hypothesis" on page 227, and then lead students through the case of AT&T's acquisition of NCR, discussed on pages 228-233. In doing so, instructors may wish to elicit students' views of the key behavioral biases at work in the case, (as explained on page 229, the bottom of page 230 and top of page 231, and the bottom of page 232). In particular, students should be asked to focus on AT&T's valuation of NCR relative to the market value of NCR's equity, before, during, and after the takeover.

When discussing the general case on pages 233-236 of chapter B.16, instructors may wish to ask students to illustrate each of the general findings with something that occurred in the AT&T/NCR case. To reinforce the main points, instructors might follow up the discussion by asking students to consider the events described on pages xvi-xvii. A useful exercise might be for students to write reports that update the status of the various firms discussed on these pages.

Estimated Time: Instructors should allow about two to three hours of class discussion to discuss the contents of chapters B.18 and B.16.

Block 8: *This block* matches chapters 20 through 23 of *Investments* with chapters 19 through 21 in *BG&F*. The matched material is:

- Chapter I.20-I.23 – options, futures and swaps
- Chapter B.19-B.21, B.Preface, page xxvii – behavioral issues associated with options, futures and foreign exchange

After covering chapters I.20-I.23, instructors may wish to ask students to think about the behavioral issues that arise in connection with options, futures, and foreign exchange.

To begin the discussion, instructors may wish to ask students to review the material on covered calls that is found on pages 713-715 of chapter I.20. These pages can be matched with pages 273-277 of chapter B.19. Instructors may wish to begin the discussion by asking students how popular they thing covered call writing is with individual investors? Survey evidence suggests that it is the most popular option trading strategy.

Instructors may then ask students why they believe this to be the case. In this regard, instructors may draw students' attention to the quoted material on page 275, and ask them to identify the behavioral basis of the salesman's pitch. In this respect, instructors may wish to ask students to reconsider questions 10 and 13 in the questionnaire, and then identify any connections they see between the lessons to be

learned from this question and the framing of the covered call in the salesman's pitch. The connection is mental accounting, and the tendency of investors to segregate gains into separate components. After identifying the segregation/integration issue, instructors might then focus attention on covered call writing by professional investors, and ask students if the same issues apply there. One last issue that applies to individual investors is the discussion of reference points in connection with employee stock options. Instructors may wish to ask students how employees establish reference points when deciding whether or not to exercise call options. This discussion is found on page 277 of chapter B.19.

The next major topic involving options is implied volatility, as defined on pages 764-765 of chapter I.21. The matching behavioral material appears on pages 277-286 of chapter B.19. The key issue to be discussed is the extent to which implied volatility corresponds to historical volatility. As mentioned on page 279 of chapter B.19, the implied volatility of an option should not vary across different exercise prices. Yet, as figure 19-1 indicates, implied volatility tends to vary quite a lot across different exercise prices. This pattern is called a "smile," and its existence is counter to option prices being determined in accordance with the Black-Scholes formula. Instructors may wish to draw students' attention to the first full paragraph on page vvviii of B.Preface. That paragraph discusses comments made by Emanuel Derman, one of the first economists to write about the smile pattern. Instructors might wish to ask students whether any of the comments made in the passage quoted on page 284 of chapter B.19 might explain why implied volatilities vary across exercise prices? After discussing this passage, instructors can close the discussion by discussing the manner in which overreaction and underreaction manifest themselves within options prices. The relevant material can be found on pages 285-286 of chapter B.19 and the paragraph that begins at the bottom of page xxvii of B.Preface.

Figure 21.7 in chapter I.21, along with figures 19.2 and 19.3 in chapter B.19 all deal with the time series behavior of implied volatility (for at-the-money options) and actual volatility. Instructors may wish to ask students whether these figures suggest that implied volatility has provided an unbiased estimate of future volatility.

The final topic in chapter B.19 involves technical analysis. Instructors might wish to ask students how a technical analyst might use information about options trading to gauge the sentiment of the market. This question can frame the discussion about the use of the call-put ratio. Instructors may then ask how they would expect traders to use such a sentiment index, and ask whether figure 19.5 on page 287 does indeed suggest that this index has been predictive of future market movements.

Chapter B.20 is the behavioral match to chapter I.22, the focus being futures markets. Instructors might wish to approach this chapter by describing the characteristics of orange juice futures, on pages 289-291, up to but not including the section entitled "Commodity Price Volatility." After presenting the information on these pages, instructors can ask students how volatile they would expect the market in orange juice futures to be, if orange juice prices coincided with fundamental value? The answer should be not very volatile. Instructors can then ask students to read the four short case studies on pages 292-298, and point out in which cases prices appear to be much too volatile to coincide with fundamental value.

Chapter I.23 begins with a discussion of foreign exchange futures. Of special note is the discussion of interest rate parity on pages 822-826, and the discussion about using futures to manage exchange rate risk, found on pages 826-829. Chapter B.21 serves as matching material to these portions of chapter I.23.

As with chapter B.20, the key issue in chapter B.21 involves the nature of price volatility relative to the volatility in fundamental value. Instructors might wish to ask students to read 299-304 and comment on the expectations and trading decisions made by investors in the situations under discussion. In particular, instructors may wish to ask students to identify instances of heuristic-driven bias and opaque framing.

Instructors may then turn to a discussion of the general case, pages 304-307 of chapter B.21. Instructors may wish to raise questions about the relationship between expected spot rates and the current value of the forward premium (or discount). Students might be probed for their views on whether it makes sense to bet against the direction of the forward discount, and whether investors are good at forecasting future spot rates. This part of the discussion can center on figure 21.2 on page 307.

Estimated Time: Instructors should allow about three hours of class discussion to discuss the contents of chapters B.19-B.21.

Block 9: *This block* matches chapters 24 through 27 of *Investments* with chapter 15 in *BG&F*. The matched material is:

- Chapter I.24-I.27 – active money management
- Chapter B.15, B.Preface, page xxv – the money management industry

After having covered chapters I.24-I.27, instructors may wish to draw attention to one type of investor, the endowment fund described on page 942 of chapter I.26. As a prelude to discussing chapter B.15, instructors may reiterate key lessons pertaining to asset allocation (pages 883-884), style analysis (pages 886-889), and performance evaluation (pages 890-892).

Instructors may wish to begin the discussion of the associated behavioral issues by presenting the contents of pages 214-215 of chapter B.15. Instructors might then ask students how they imagine that investment committees making portfolio decisions for endowment funds think about

- diversification
- performance goals
- the mix between active and passive management
- risk tolerance; and
- fiduciary responsibilities.

After eliciting student responses, instructors might then discuss the contents of pages 216-219. A key question is whether investment committees think of diversification as variety in mental accounts, rather than as mean-variance efficiency? Instructors may ask students why the members of investment committees might strongly believe in active management, in contrast to the efficient-market based thinking of traditional textbooks such as *Investments*? Instructors may ask students whether they agree with the assertion at the bottom of page 217 of chapter B.15 that “opportunity costs typically receive much

less weight than out-of-pocket costs?" Another good question involves defining the "house money effect" (discussed on page 218), and asking students if they can identify, in the case, the manner in which the house money effect manifests itself in the behavior of the endowment fund?

At the bottom of page 218 of chapter B.15 is a section entitled "A Better Mouse Trap?" Instructors may wish to ask students to identify the behavioral issues in this section, especially the behavioral impediments to hiring active managers who claim to trade in order to exploit behavioral anomalies.

In respect to the section on page 219, entitled "General Findings," instructors may wish to ask students if they can identify which of the points made in this section are manifest in the specific case discussed at the beginning of the chapter.

The last section of chapter B.15 is entitled "Regret and Responsibility." Instructors may wish to review the questions in the questionnaire that deal with regret, those being questions 15, 28, 29, and 30. Students' attention can then be drawn to the 1.1% figure on page 223, and asked whether that figure can be interpreted as a regret premium?

Pages xxv and xxvi of B.Preface contain some additional discussion about the key points made in chapter B.15. Instructors can ask students what they imagine consultants, such as Cambridge Associates, believe about the active vs. passive management debate, and what advice they give to the members of investment committees? After eliciting students' views, instructors may wish to read the paragraph on page xxv that contains the comments of the director of research for Cambridge Associates.

In concluding the discussion of behavioral finance, instructors might wish to draw students' attention to the "Final Remarks" on pages 309 and 310 of *BG&F*. At this point, instructors may ask students for their views about the three bullet points on page 310. In this connection, instructors might ask students whether the inability of most portfolio managers to beat the market is the same thing as prices being equal to fundamental value. This distinction between these two concepts appears to be among the least understood aspects in behavioral finance. Instructors may wish to close by reiterating the point made in the first full paragraph of page xi of B.Preface. Additional risk, stemming from sentiment, accompanies the abnormal profit opportunities that stem from mispricing. Moreover, these abnormal profit opportunities are available to the smart money, and not all investors fall into this category. In particular, overconfidence can trump intelligence.

Estimated Time: Instructors should allow about one hour of class time to discuss the contents of chapter B.15 and reiterate the main points described in the previous paragraph.