

Chapter 8

8

- **Behavioral Finance and the Psychology of Investing**

8-1

"The investor's chief problem, and even his worst enemy, is likely to be himself."

— Benjamin Graham

"There are three factors that influence the market: Fear, Greed, and Greed."

— Market folklore

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Behavioral Finance, Introduction.

- Sooner or later, you are going to make an investment decision that winds up costing you a lot of money.
- Why is this going to happen?
 - You made a sound decision, but you are "unlucky."
 - You made a bad decision—one that could have been avoided.
- The beginning of investment wisdom:
 - Learn to recognize circumstances leading to poor decisions.
 - Then, you will reduce the damage from investment blunders.

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Behavioral Finance, Definition.

- **Behavioral Finance** The area of research that attempts to understand and explain how reasoning errors influence investor decisions and market prices.
- Much of behavioral finance research stems from the research in the area of cognitive psychology.
 - **Cognitive psychology:** the study of how people (including investors) think, reason, and make decisions.
 - Reasoning errors are often called cognitive errors.
- Some people believe that cognitive (reasoning) errors made by investors will cause market inefficiencies.

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Three Economic Conditions that Lead to Market Efficiency.

- 1) Investor rationality
- 2) Independent deviations from rationality
- 3) Arbitrage

- For a market to be **inefficient**, all three conditions must be absent. That is,
 - it must be that many, many investors make irrational investment decisions, **and**
 - the collective irrationality of these investors leads to an overly optimistic or pessimistic market situation, **and**
 - this situation cannot be corrected via arbitrage by rational, well-capitalized investors.
- Whether these conditions can all be absent is the subject of a raging debate among financial market researchers.

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Prospect Theory.

- Prospect theory provides an alternative to classical, rational economic decision-making.
- The foundation of prospect theory: investors are much more distressed by prospective losses than they are happy about prospective gains.
 - Researchers have found that a typical investor considers the pain of a \$1 loss to be about **twice** as great as the pleasure received from the gain of \$1.
 - Also, researchers have found that investors respond in different ways to **identical** situations.
 - The difference depends on whether the situation is presented in terms of losses or in terms of gains.

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Investor Behavior Consistent with Prospect Theory Predictions.

- There are three major judgment errors consistent with the predictions of prospect theory.
 - **Frame Dependence**
 - **Mental Accounting**
 - **The House Money Effect**
- There are other judgment errors that are also consistent with the predictions of prospect theory.

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Frame Dependence, I.

- If an investment problem is presented in two different (but really equivalent) ways, investors often make inconsistent choices.
- That is, how a problem is described, or framed, seems to matter to people.
- Some people believe that frames are transparent. Are they?
- Try this: Jot down your answers in the following two scenarios.

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Frame Dependence, II.

- **Scenario One.** Suppose we give you \$1,000.
Then, you have the following choice to make:
 - A. You can receive another \$500 for sure.
 - B. You can flip a fair coin. If the coin-flip comes up "heads," you get another \$1,000, but if it comes up "tails," you get nothing.
- **Scenario Two.** Suppose we give you \$2,000.
Then, you have the following choice to make:
 - A. You can lose \$500 for sure.
 - B. You can flip a fair coin. If the coin-flip comes up "heads," you lose another \$1,000, but if it comes up "tails," you lose nothing.

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Frame Dependence, III.

- What were your answers?
- Did you: choose option A in the first scenario **and** choose option B in the second scenario?
 - If you did, you are guilty of focusing on gains and losses, and not paying attention to what is important—the impact on your wealth.
 - However, you are not alone.
 - About 85 percent of the people who are presented with the first scenario choose option A.
 - About 70 percent of the people who are presented with the second scenario choose option B.

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Frame Dependence, IV.

- But, the two scenarios are actually identical.
- In each scenario:
 - You end up with \$1,500 for sure if you pick option A.
 - You end up with a 50-50 chance of either \$1,000 or \$2,000 if you pick option B.
 - So, you should pick the same option in both scenarios.
- Which option you prefer is up to you.
- But, if you are focusing on wealth, you should never pick option A in one scenario and option B in the other.
- The reason people do is that the phrasing, or framing, of the question causes people to answer the questions differently.

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Mental Accounting and Loss Aversion.

- **Mental Accounting:** Associating a stock with its purchase price.
- If you are engaging in mental accounting:
 - You find it is difficult to sell a stock at a price lower than your purchase price.
 - If you sell a stock at a loss:
 - It may be hard for you to think that purchasing the stock in the first place was correct.
 - You may feel this way even if the decision to buy was actually a very good decision.
 - A further complication of mental accounting is **loss aversion**.
- **Loss Aversion:** A reluctance to sell investments after they have fallen in value. Also known as the "breakeven" effect or "disposition" effect.
- If you suffer from Loss Aversion, you will think that if you can just somehow "get even," you will be able to sell the stock.
- If you suffer from Loss Aversion, it is sometimes said that you have "get-evenitis."

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Do You Suffer from "Get-Eventitis?" Part I.

- Consider the following two investments:
 - Investment One.** A year ago, you bought shares in Loss Enterprises for \$40 per share. Today, these shares are worth \$20 each.
 - Investment Two.** A year ago, you bought shares in Win Company for \$5 per share. Today, these shares are worth \$20 each.
- What will you do? Will you: (1) sell one of these stocks; (2) sell both of these stocks; (3) hold one of these stocks; or, (4) hold both of these stocks?

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Do You Suffer from "Get-Eventitis?" Part II.

- Suppose you are considering a new investment in Loss Enterprises.
- Does your rational analysis say that it is reasonable to purchase shares at \$20?
 - If the rational answer is no, then you should sell.
 - If the rational answer is yes, then you do not suffer from loss aversion.
- However, if you argued to yourself that if shares in Loss Enterprises were a good buy at \$40, then they must be a steal at \$20, you probably have a raging case of loss aversion.

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Do You Suffer from "Get-Eventitis?" Part III.

- There are Two Important Lessons from this Example.
 - **Lesson One:** The market says that shares in Loss Enterprises are worth \$20. The market does not care that you paid \$40 a year ago.
 - **Lesson Two:** You should not care about your purchase price of Loss Enterprises. You must evaluate your shares at their current price.
- How about the shares in Win Company?
 - Once again, the lessons are the same.
 - The market says that Win Company shares are worth \$20 today.
 - The fact that you paid \$5 a year ago is not relevant.
- Get-Eventitis can be destructive. Famous example: Nicholas Leeson causing the collapse of the 233-year-old Barings Bank.

Note Bene: For both investments, there will be tax effects. Your careful analysis should acknowledge the existence of taxes and transaction fees, and their impact on your net sale proceeds.

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The House Money Effect, I.

- Las Vegas casinos have found that gamblers are far more likely to take big risks with money that they have won from the casino (i.e., "house money").
- Also, casinos have found that gamblers are not as upset about losing house money as they are about losing their own gambling money.
- It may seem natural for you to separate your money into two buckets:
 - Your very precious money earned through hard work, sweat, and sacrifice.
 - Your less precious windfall money (i.e., house money).
- But, this separation is plainly irrational.
 - Any dollar you have buys the same amount of goods and services.
 - The buying power is the same for "your money" and for your "house money."

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The House Money Effect, II.

- Let us return to the shares of Loss Enterprises and Win Company.
- Suppose shares in both were to decline to \$15.
- You might feel very differently about the decline depending on which stock you looked at.
 - With Loss Enterprises, the decline makes a bad situation even worse. Now you are down \$25 per share on your investment.
 - On the other hand, with Win Company, you only "give back" some of your "paper profit." You are still way ahead.

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The House Money Effect, III.

- Thinking this way means that you are guilty of playing with house money.
- Whether you lose money from your original investment or lose money from your investment gains is **irrelevant**.
- There are two important investment lessons here:
 - **Lesson One.** There are no "paper profits." Your profits are yours.
 - **Lesson Two.** All your money is your money. You should not separate your money into bundles labeled "my money" and "house money."

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Overconfidence: A Significant Error in Investor Judgment

- A serious error in judgment you can make as an investor is to be overconfident.
- We are all overconfident about our abilities in many areas.
- Be honest: Do you think of yourself as a better than average driver?
 - If you do, you are not alone.
 - About 80 percent of the people who are asked this question will say “yes.”
- How does overconfidence affect investment decisions?

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Overconfidence and Portfolio Diversification

- Investors tend to invest too heavily in shares of the company for which they work.
- This loyalty can be very bad financially.
 - Your earning power (income) also depends on this company.
 - Your retirement nest-egg also depends on this company.
- Another examples of the lack of diversification is investing too heavily in the stocks of local companies.
 - Perhaps you know someone personally who works there.
 - Perhaps you read about them in your local paper.
 - Basically, you are unduly confident that you have a high degree of knowledge about local companies.

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Overconfidence and Trading Frequency, I.

- If you are overconfident about your investment skill, it is likely that you will trade too much.
- Researchers have found that investors who make relatively more trades have lower returns than investors who trade less frequently.
- Researchers have found that the average household earned an annual return of 16.4 percent.
- Researchers have found that households that traded the most earned an annual return of only 11.4 percent.
- The moral is clear: Excessive trading is hazardous to your wealth.

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Overconfidence and Trading Frequency, II. Is Overtrading “a Guy Thing?”

- Psychologists have found that men are more overconfident than women in the area of finance. So,
 - Do men trade more than women?
 - Do portfolios of men under-perform the portfolios of women?
- Researchers show that the answer to both questions is yes.
- Men trade about 50 percent more than women.
- Researchers show that both men and women reduce their portfolio returns when they trade excessively.
 - The portfolio return for men is 94 basis points lower than portfolio returns for women.
 - The portfolio return for **single** men is 144 basis points lower than the portfolio return for **single** women.
- Accounting for the effects of marital status, age, and income, researchers also show that men invest in riskier positions.

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Misperceiving Randomness and Overreacting to Chance Events

- Cognitive psychologists have discovered that the human mind is a pattern-seeking device.
- Humans conclude that there are causal factors or patterns at work behind sequences of events even when the events are truly random.
- The **representativeness heuristic**: Concluding that there are causal factors at work behind random sequences. Or, if something is random, it should look random.
- But, what does random look like?

8-23

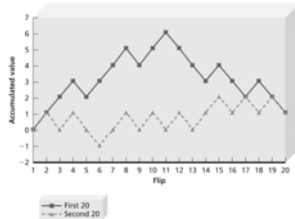
A Coin Flipping Experiment

- Suppose we flip a coin twenty times and write down whether we get a “head” or a “tail.”
- Then, we do it all over again. The results of our two sets of twenty flips are:
 - 1st 20: **T T T H T T T H T T H H H T H T H H H**
 - 2nd 20: **T H T H H T T H T T H T T H T T H H**
- Do these sequences of heads and tails both look random to you?
- Most people would say that the 1st Twenty and the 2nd Twenty somehow look “different.”
 - Both are random sequences.
 - Both have ten heads and ten tails.

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A Coin Flipping Experiment, Graphed

FIGURE 8.1 The Pattern of Two Different Sets of 20 Coin Flips



- Do you think the line labeled "1st 20" has a pattern to it, but the line labeled "2nd 20" appears to be random?
- If so, your mind saw a pattern in a random sequence of coin flips.

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The Hot-Hand Fallacy, I.

- Suppose we look at the recent shooting by two basketball players named LeBron and Shaquille.
 - LeBron: **has just made** two shots in a row.
 - Shaquille: **has just missed** two shots in a row.
- Assume both of these players make half of their shots.
 - LeBron: **has just made** two shots in a row.
 - Shaquille: **has just missed** two shots in a row.
- Researchers have found that if they ask **basketball fans** which player has the better chance of making their next shot:
 - 91 out of 100 will say LeBron.
 - They say this because they think LeBron has a "hot-hand."
- But, researchers have found that the "hot hand" is an illusion.
 - Players do not deviate much from their long-run shooting averages.
 - However, fans, players, announcers, and coaches think that they do.

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The Hot-Hand Fallacy, II.

- Cognitive psychologists have studied the shooting percentage of one NBA team for a season and found:

TABLE 8.2 Shooting Percentages and the History of Previous Attempts

Shooting Percentage on Next Shot	History of Previous Attempts
46%	Made 3 in a row
50	Made 2 in a row
51	Made 1
52	First shot of the game
54	Missed 1
53	Missed 2 in a row
56	Missed 3 in a row

- A detailed analysis of the shooting data reveals that, statistically speaking, all shooting percentages in this table are the "same."
- It is true that basketball players shoot in streaks. But, these streaks are within bounds for long-run shooting percentages.

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The Hot-Hand Fallacy, III.

- It is an illusion that basketball players are either "hot" or "cold."
 - If you believe in the "hot hand," you will likely reject this fact because you "know better" from watching shooters.
 - You are being fooled by randomness—randomness often appears in clusters.
- **Clustering Illusion:** Our human belief that random events that occur in clusters are not really random.
 - Example: If a fair coin is flipped 20 times, there is about a 50 percent chance of flipping four heads in a row.
 - If you flip four heads in a row, do you have a "hot hand" at coin flipping?
- Mutual fund investing and the clustering illusion.
 - Every year, funds that have had exceptionally good performance receive large inflows of money.
 - There is a universal disclaimer: "Past performance is no guarantee of future results." Nonetheless, investors chase past returns.

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The Gambler's Fallacy

- **Gambler's Fallacy:** Assuming that a departure for what occurs on average will be corrected in the short run.
- Another way to think about the gambler's fallacy: because an event has not happened recently, it has become "overdue" and is more likely to occur.
- Example: The odds on a US Roulette table never change.
 - For each spin:
 - There is an 18 in 38 chance for a red number to "hit"
 - There is an 18 in 38 chance for a black number to "hit"
 - There is a 2 in 38 chance for a green number to "hit"
 - You suffer from the Gambler's Fallacy if you think that it is more likely for a black number to "hit" after a series of red numbers have hit.

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Sentiment-Based Risk and Limits to Arbitrage, I.

- The efficient markets hypothesis (EMH) does not require every investor to be rational.
- All that EMH requires is that there are at least some smart and well-financed investors.
 - These investors are prepared to buy and sell to take advantage of any mispricing in the marketplace.
 - This activity is what keeps markets efficient.
- Sometimes, however, a problem arises in this context.
- **Limits to Arbitrage:** The notion that, under certain circumstances, it may not be possible for rational, well-capitalized traders to correct a mispricing, at least not quickly.

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Sentiment-Based Risk and Limits to Arbitrage, II.

- Strategies designed to eliminate mis-pricings are often risky, costly, or restricted. Three important problems are:
- *Firm-Specific Risk (the most obvious risk)*.
 - Suppose you believe that GM's stock price is too low, so you buy.
 - Then, some unanticipated bad news drives GM's stock price lower.
- *Noise Trader Risk (also known as sentiment-based risk)*
 - **Noise Trader:** Someone whose trades are not based on information or financially meaningful analysis.
 - Noise traders could act "together" to worsen a mis-pricing.
 - Noise trader risk is important because the worsening of a mis-pricing could force the arbitrageur to liquidate early (and sustain steep losses).
 - If noise trader risk exists, then this risk is another source of risk beyond systematic risk and unsystematic risk.

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Sentiment-Based Risk and Limits to Arbitrage, III.

- **Implementation Costs:** These costs include transaction costs such as bid-ask spreads, brokerage commissions, and margin interest.
 - In addition, there might be some short-sale constraints.
 - One short-sale constraint arises when there are not enough shares to borrow.
 - This means the arbitrageur cannot take a large short position.
 - Another short-sale constraint stems from the legal restriction that many money managers are not allowed to sell short.
 - pension fund managers
 - mutual fund managers
- When firm-specific risk, noise trader risk, or implementation costs are present, a mispricing may persist because arbitrage is too risky or too costly.
- Collectively, these risks and costs create barriers, or limits, to arbitrage.
- How important these limits are is difficult to say, but we do know that mispricings occur, at least on occasion.

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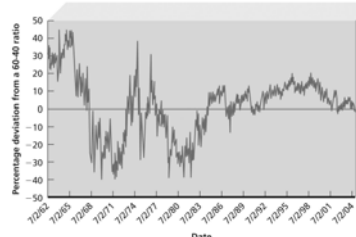
Sentiment-Based Risk and Limits to Arbitrage, IV.

- In 1907, Royal Dutch of the Netherlands and Shell of the UK agreed to merge and pay dividends on a 60-40 basis.
- So, if the stock prices of Royal Dutch and Shell are not in a 60-40 ratio, there is a potential arbitrage opportunity.
- The next slide contains a plot of the daily deviations from the 60-40 ratio of the Royal Dutch price to the Shell price.
 - If the prices are in a 60-40 ratio, there is no deviation.
 - If there is a positive deviation, the price of Royal Dutch is too high.
 - If there is a negative deviation, the price of Royal Dutch is too low.
- As you can see, there have been large (and persistent) deviations from the 60-40 ratio.

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Sentiment-Based Risk and Limits to Arbitrage, V.

FIGURE 8.3 Royal Dutch and Shell 60-40 Price Ratio Deviations, 1962 to 2004



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Useful Internet Sites

- www.behaviouralfinance.net (behavioral finance concepts)
- www.thedowtheory.com (information about Dow theory)
- www.elliottwave.com (information about the Elliott wave principle)
- www.stockcharts.com (select "Chart School")
- www.bigcharts.com (a wide variety of charts)
- www.incrediblecharts.com (also source for technical indicators)
- www.psychonomics.com (see research section on behavioral finance and building portfolios)

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Chapter Review, I.

- **Prospect Theory**
 - Frame Dependence
 - Mental Accounts and Loss Aversion
 - House Money
- **Overconfidence**
- **Misperceiving Randomness**
- **The "Hot-Hand" Fallacy**
- **The Gambler's Fallacy**
- **Sentiment-Based Risk and Limits to Arbitrage**
- **The Royal Dutch/Shell Price Ratio**

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Chapter Review, II.

- **Technical Analysis**
- **Dow Theory**
- **Elliott Waves**
- **Support and Resistance Levels**
- **Technical Indicators**
- **Relative Strength Charts**
- **Charting**
- **Fibonacci Numbers**
- **Other Technical Indicators**

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