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How the Stock Market Works

Course Guidebook

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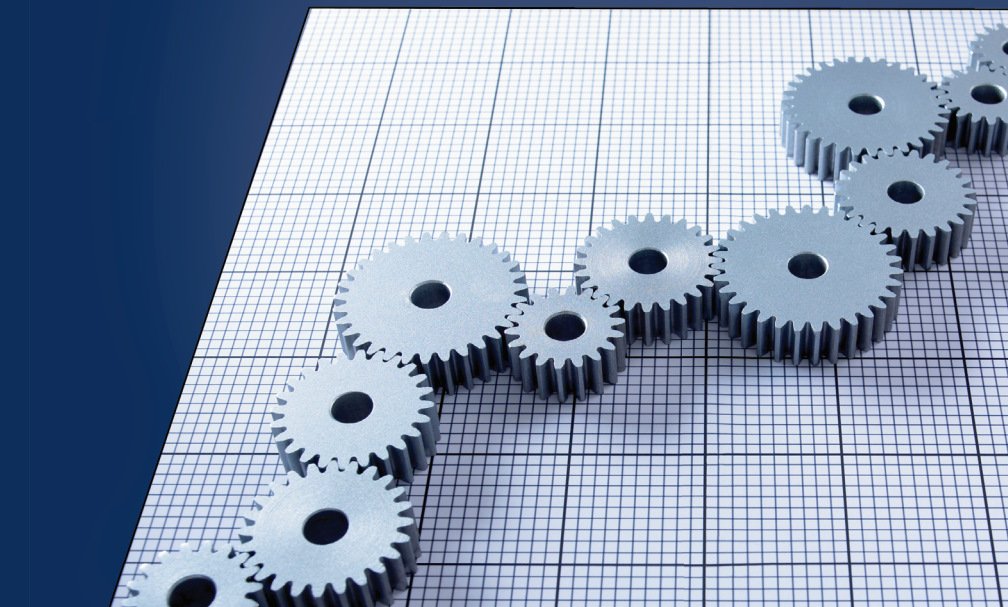

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Professor DeGennaro's current research involves investments, financial markets, and entrepreneurship. He has published more than 40 refereed articles on investments, financial market volatility, small-firm finance, the term structure of interest rates, financial institutions, and prediction markets. He also has written research reports, book chapters, book reviews, and several Federal Reserve publications. Professor DeGennaro is an associate editor or member of the editorial boards of *The Journal of Financial Research*, *The Financial Review*, the *International Journal of Business*, and *The Journal of Private Enterprise*. In addition, he is a member of the Academic Board of Directors of the Midwest Finance Association. He spoke at the prestigious Chautauqua Institution during the summers of 2011 and 2012 as an invited lecturer.

At The University of Tennessee, Professor DeGennaro has been nominated for the Allen H. Keally Outstanding Teacher Award, the John B. Ross Outstanding Teaching Award (three times), and the College of Business Outstanding Teaching Award. He has supervised student research at both the graduate and undergraduate levels, serving on dissertation committees and undergraduate honors projects.

Professor DeGennaro has presented original research at dozens of professional conferences in North America and abroad. He also has served

on the program committees of several professional organizations and is the recipient of more than 50 research and professional development grants. Professor DeGennaro consults in the areas of business valuation, investments, and financial management and is a Luminary Member of the Angel Capital Group. ■

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The financial information provided in these lectures is for informational purposes only and not for the purpose of providing specific financial advice. Financial investing carries an inherent risk that you will lose part or all of your investment. Investors must independently and thoroughly research and analyze each and every investment prior to investing. The consequences of such risk may involve but are not limited to: federal/state/municipal tax liabilities, loss of all or part of the investment capital, loss of interest, contract liability to third parties, and other risks not specifically listed herein. Use of these lectures does not create any financial advisor relationship with The Teaching Company or its lecturers, and neither The Teaching Company nor the lecturer is responsible for your use of this educational material or its consequences. You should contact a financial advisor to obtain advice with respect to any specific financial investing questions. The opinions and positions provided in these lectures reflect the opinions and positions of the relevant lecturer and do not necessarily reflect the opinions or positions of The Teaching Company or its affiliates. Pursuant to IRS Circular 230, any tax advice provided in these lectures may not be used to avoid tax penalties or to promote, market, or recommend any matter therein.

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Most of all, I am indebted to the scholars and authors whose research I tapped while preparing these lectures. The investing world would be poorer without their work.

—Ray DeGennaro

How the Stock Market Works

Scope:

Far too many people think that the stock market is a way to get rich quickly. They think that if they could only uncover the secret workings of the stock market, then endless riches will be theirs.

That's a nice dream, but that's all that it is—a dream. Even worse, trying to get rich quickly usually leads to expensive mistakes. In this course, we'll learn to avoid those mistakes. Instead of trying to get rich quickly, our goal is to become comfortably well-off slowly. That way, we can play the game with the odds in our favor.

The truth is pretty simple: There's no free lunch. If a deal sounds too good to be true, then it probably is. If a stock tends to have a big return, then you can be sure that it comes with a big chunk of risk, too.

Lots of brilliant people, backed by powerful computers and blazing communications networks, spend long hours looking for great deals. They don't miss much. In fact, we'll see that the time and effort they spend competing with each other keeps stock prices from getting too far out of line. That means that instead of just being our competitors, they are also our allies. Almost always, the millions of small investors like us get to buy and sell at fair prices.

We'll examine common myths and misconceptions about the way the stock market works. We'll learn what stocks actually are and how they are traded. We'll learn about the risks you'll take if you invest in stocks, and why you might find buying them attractive despite those risks.

Maybe you haven't even decided that you want to invest in stocks. This course is for you, too, because you'll learn what you need to know to decide. If the answer is yes, then you'll invest with more confidence and avoid mistakes. If the answer is no, then you'll understand why, and you won't lose any sleep worrying about what to do. If circumstances change

and you decide you want to invest after all, then you'll still be in good shape. That's because this course teaches you essentials that will still be true in 20 or 30 years. You'll learn how to think about investing so that when a new opportunity comes along—and it will—you'll be better able to decide whether or not it's something that fits your needs. ■

Is Investing in Your Blood?

Lecture 1

Just like every other walk of life, the stock market has been transformed by computer technology. Who would have thought, a few decades ago, that you could sit at home and trade stocks in your pajamas via the Internet? Of course, ordinary investors working in their pajamas are still not on equal footing with the big players in the market, but that doesn't mean you shouldn't play. You'll never beat the best of the best, but there's plenty of money to be made through investing. In this course, we'll develop the foundation that will equip you to get into the market, evaluate new opportunities, and continue to learn about the vast and changing investment landscape.

How Not to Invest

- Let's begin with some unexpected advice: Don't waste your time and money trying to beat the market. Year after year, most professional money managers aren't able to match the market return. Perhaps even more surprising, the managers who beat the market in one year usually aren't the ones who beat it the next year! It almost seems as if beating the market is just luck.

- There's a good reason that even professional money managers have trouble beating the market: competition. Thousands of investors are bidding to buy and sell stocks. If prices get too high, then sellers push them back down. If prices get too low, then buyers push them back up. That means that stock prices are usually very close to being fair, and that means that it's difficult to pick stocks that will be winners.

- Professor Burton Malkiel of Princeton University studied the returns of 358 stock funds from 1970 through 2012. Of those 358 funds, 266 were no longer in business. Of the 92 surviving funds, 42 had returns that were within 1% of the overall market's return, 18 funds beat the market by more than 1%, and 32 funds lagged

the market by more than 1%. Those findings reinforce the idea that if the price is usually fair—not too high and not too low—then it's difficult to find winners in the stock market.

- The idea that it's almost impossible to pick winners consistently is known as the *efficient market hypothesis*. We'll discuss this later in the course, but for now, all we need to know is that research shows that stock returns are close to random. They move up or down unpredictably.
    - Many people don't want to hear that. They want to make a quick profit, and every day, they hear about stocks going up. They think there must to be a way to tell which ones will go up tomorrow.

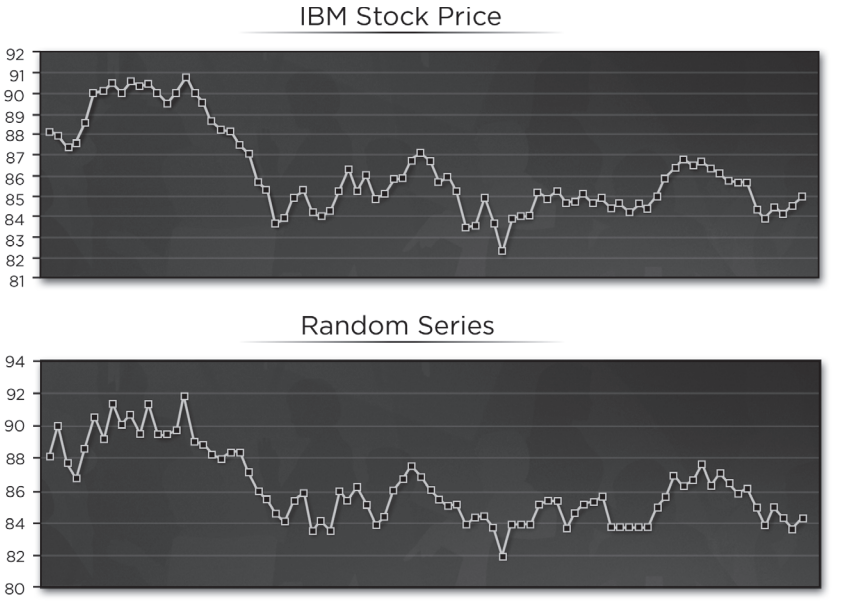
    - That perspective is understandable. Humans are hardwired to look for patterns. Uncertainty and randomness make us uncomfortable. If the stock market goes up or down for reasons we don't understand, the activity is sometimes attributed to "market psychology." But that doesn't help us make decisions about how we should invest.

    - It's better to be honest with ourselves and admit that we don't understand all the forces that move the market.

Searching for Patterns

- As we said, humans attempt to find patterns in almost any sequence of events. In his book *Fooled by Randomness: The Hidden Role of Chance in Life and in the Markets*, Nassim Taleb argues that the way we look at stock markets is no different. We instinctively try to find patterns in stock prices.

- Interestingly, a random number generator can be used to produce graphs that look as if they chart stock prices. In fact, prices from a competitive market with low transaction costs should resemble a random series. If a pattern really existed, such as "price increases tend to be reversed," then clever traders would sell as soon as prices



Stock prices should resemble a random series; otherwise, clever traders would quickly identify and act on patterns.

moved up. That would tend to keep the price from moving up in the first place. The result is an unpredictable series of stock prices.

- It's not the case that stock prices are perfectly random. There's some evidence that stock prices tend to overshoot the right value, and there's some evidence that they take too long to react to news. But the evidence is sometimes contradictory and far from conclusive. Ordinary investors are better off leaving these potential profit opportunities to experts who have the information sources, the technology, and the time to chase them. If stock prices do deviate from the fair price, it's usually by just a few cents per share anyway.

Fair versus Correct

- When deciding whether to buy or sell a stock, start with the assumption that the price is fair—not overvalued or undervalued.

Note, however, that even if the price is fair, it's most likely wrong. In fact, we're almost sure that within a matter of days, hours, or minutes, the price will be proven to have been wrong!

- How can the price be wrong but fair? The answer is that stocks are risky. We don't know what the price will be tomorrow.

- Think of flipping a coin. There's a 50/50 chance of landing on heads and a 50/50 chance of landing on tails. If the rules of the game say that I give you $1 every time the coin lands on heads, how much do you have to pay me to make the game fair?
    - The answer is 50 cents for each flip. Half the time, you'll win $1 from me, for a profit of 50 cents, and half the time, you'll lose your investment of 50 cents. In the long run, we're both probably going to be even. That's fair.

    - But unless the coin lands on its edge, we'll never be even on any one flip. One of us will win 50 cents. For each individual flip, the price is guaranteed to be wrong every single time. But the game is still fair.

- You should think of a stock price in the same way you think of that coin flip: The price is wrong, but it's fair. Some days, the stock price might be too high. Some days, it might be too low. It's almost never exactly right.

- A good deal of academic research shows that stock prices are almost always fair, and we're better off treating them as if they are fair. Remember, traders collectively can break even only by picking winners and losers.
    - If you pick a winner and buy my shares at a few cents less than they're worth, then you win and I lose. But between the two of us, we're even. And we paid transaction costs, including our time, to make the trade. That means that collectively, we actually lost by making the trade.

- Active traders are gambling that they'll be on the winning side. If you want to be an active trader, you need to understand that the competition is ferocious and heavily armed! It's one thing to invest in the market because the odds are in your favor. But it's different to gamble on beating the market when the odds are against you. You're probably better off with a different strategy—one that lets you take advantage of what you can do.

Getting into the Market

- Some people hesitate to get into the stock market at all. They've heard or read about the market's extreme ups and downs and worry about losing everything in a big crash. That's understandable; crashes sometimes happen, and they certainly receive the most attention in the news. But what you don't see reported in the news are the billions of stock trades that proceed normally. Given that kind of publicity, it's not surprising that many people think the stock market is nothing more than a casino.

- The stock market is indeed risky, but it's probably not as risky as you think. More important—and unlike a casino—we'll see that the risk you take by investing in stocks carries not just the chance of a profit but the expectation of a profit. You just need to temper your expectations and don't expect miracles.

- In this course, you'll discover whether or not investing in the stock market is something you'd like to do, and even if it's not, you'll gain many useful insights.
  - We'll explore the fundamental tradeoff between risk and expected returns. There is always an element of risk with stocks. We have good reasons to expect to make some money by investing in stocks, but it's not a sure thing.

  - We'll also see that there's no free lunch in the investing world, but we'll learn the closest thing to it: diversification.

  - We'll discover that saving and investing is like planting a tree, dieting, or exercising: The best day to start was 15 years

ago. The second best day is today. The main reason to start investing as soon as you can is that time is one of the three big factors that determine how much you have at the end of your investment horizon. The other two are how much you invest and the rate of return on your investments.

- We won't kid ourselves in this course. Instead of trying to get rich quickly, we will see how to become comfortably well-off at a rather slow pace but without having to stay up all night worrying about losing everything.

- Unfortunately, we won't learn how to avoid losing money on an investment. Even good investments can and sometimes do turn bad. What we want is to avoid something that most reasonably informed people would have said was a bad idea before we invested in it.

- This course assumes that if you're thinking of buying stocks, you've already taken the first step in your lifetime financial plan, that is, you already have the rest of your financial world in reasonable order. But even if your financial house is a mess, you'll learn concepts that you can apply once you clean it up and can start investing.

- At the end of this course, you may decide that you're not ready to buy stocks, but at least you'll know why you're not ready, and you'll be more comfortable knowing what you need to do before you do decide to invest. If, on the other hand, you decide that investing is right for you, this course will give you the knowledge to get started, or if you're already an investor, you'll become more knowledgeable about how the stock market works.

Suggested Reading

Malkiel, *A Random Walk down Wall Street*.

Schwed, *Where Are the Customers' Yachts?*

Questions to Consider

1. If I knew the secret to beating the market, why should I tell you about it? What would happen to my trading profits if enough people learned my secret?

2. If you lived in New York in 1800, do you think you could pick better English stocks than people living in London?

3. Some people don't realize that owning stocks means owning companies. Do you think that people's view of owning stocks would change if they realized that they are really owning companies?

Understanding Fundamental Securities

Lecture 2

For our purposes, we can think of a corporation as a collection of "goodies." Some of those goodies are tangible—things we can hold or kick, such as trucks or corn. Some of the goodies are intangible, such as a strong brand name or patents held by a company. Of course, economists use the term *assets* instead of *goodies*, but we'll see that the perspective of goodies can be useful to us in several ways. We'll also learn that shares of stock are a way of keeping track of who owns a company and who keeps the money the company earns.

The Sharing Rule

- To allocate a corporation's collection of goodies, we need a sharing rule. Stocks and bonds make up the sharing rule for goodies.

- Suppose you invest $10,000 of your own money to start a lawn care business, and you borrow $10,000 from your friend Lisa at 5% interest. You use this $20,000 to buy a lawn mower and a used truck—your goody bag.
    - After a year of hard work, you take in $150,000, but that's not all profit. From that total, you must subtract your expenses: say, $100,000. You're left with $50,000, and you still have the now-used mower and truck; that's your collection of goodies.

    - Some people might think that you and Lisa should each get half of the goodies because you each contributed the same amount. But Lisa loaned you money, which you then invested in the business. You owe Lisa $10,000 plus 5% interest, or $10,500. After you repay Lisa, you have $39,500 and your used mower and truck.

    - The sharing rule that you and Lisa agreed to use in advance is that Lisa would get the first $10,500 and nothing more. You get

nothing until Lisa is paid in full, and then you get everything that's left over. You are the *residual claimholder*.

- Economists would say that Lisa is a lender while you are an owner. Another way to say it is that Lisa is a *bondholder* while you are a *stockholder*.

- Lisa might not be happy with this outcome. After all, you both put $10,000 on the table, but Lisa's net is only $500 in interest while you got $39,500, a used lawn mower, and a used truck. But that was the initial deal: Lisa gets the first $10,500 (which includes her $10,000 loan), and you get the rest.

- It's important to note that Lisa's money was much safer than yours. If the year's revenues had been only $100,000 instead of $150,000, after deducting your expenses, you would be left with nothing but the mower and the truck. Unless you could raise outside money somehow to pay Lisa, you would have to sell those assets, and you'd most likely get less than you originally paid.

- This example simplifies the world of sharing rules by identifying only two kinds of financial claims: loans and residual claims, or ownership. The ownership claim is what's called *common stock*. The important point to remember here is that lenders get paid first; stockholders—the owners—get paid last.

Changing Risk

- As a company does business over time, the goodies in the bag that we call the corporation produce things, such as cars or mowed lawns. Sometimes, the goodies make money through production, and sometimes they lose money. As this happens, the pile of goodies gets larger or smaller, depending mostly on whether the company earned a profit or took a loss.

- But the sharing rule doesn't change. The bondholders get paid first, and the stockholders get paid last. If a company loses money, the

bag of goodies that backs the loan shrinks. If the company earns money, the bag of goodies grows. Unless the company borrows more money, though, the lenders don't get a bigger pile of goodies. They get the same fixed payout, and all the new goodies go to the owners. That can change the risk that lenders face.

- Let's suppose that instead of lending you money for 1 year, Lisa bought a 5-year bond from your company. The terms of the bond stipulate that Lisa will receive 5% annually on her $10,000, and she'll receive her principal back when the bond matures in 5 years.
    - Suppose the company makes a total profit of $100,000 over 4 years and uses the money to buy more lawn mowers and more trucks to cash in on the opportunities. The company is much bigger than it was when it started out, but it still owes only $10,000 to Lisa.

    - But if year 5 turns out to be a bad one and the company doesn't earn anything at all, then Lisa will still get paid.

- Over time, a company's debt ratio, or its total debt in proportion to its total assets, can change a great deal. This means that the risk of a company's debt can change over time, commonly because the company earned money and the pile of assets backing the bonds grew larger. Of course, if a company loses money, then the assets shrink, and the odds of the company being able to repay the loan also shrink.

New Investors

- Sometimes, firms issue new securities to raise money from new investors. Suppose your friend Karl wants to get into the lawn care business with you. You agree to sell him 20% of the business for $50,000, and your company issues new shares to Karl. Now, the pile of goodies has an extra $50,000 cash in it.

- Some people might think that this is unambiguously good because the company is now larger and has more cash. The problem is that

you no longer own the entire company. The pile of assets is larger, but the specific sharing rule has changed. Lisa still gets paid first and the owners still get paid last, but now there's another owner. After Lisa gets paid, you have to share part of what's left with Karl because he's also a common stockholder.

- Of course, large public companies sell millions of shares worth hundreds of millions of dollars or more. Your lawn care company isn't like that. The stock that you and Karl hold is called *private equity*. The two of you negotiated privately, and the general public wasn't invited. But the idea is the same. The newly issued stock represents an ownership claim on the company.

- When Karl buys 20% of your company for $50,000, the two of you effectively set a value on the entire firm of $250,000. That means that the bag of goodies that represents the firm must have more than just the lawn mowers and trucks that were worth about $100,000 a year ago; it now has intangible assets, such as a list of steady customers and a reputation for good service.

- Of course, if you're not planning to issue new shares anytime soon but Karl still wants to get into the lawn care business, you can sell him some of the shares you already own. In this case, the company doesn't receive any new funds. Instead, Karl gives you $50,000, and you give Karl a quarter of the company.
    - Why does Karl get 25% instead of 20%? The answer is that Karl's money is going to you personally, and you are giving Karl some of your existing shares.

    - The company doesn't issue new shares and doesn't have access to the money you got from Karl; it doesn't receive a cash infusion and isn't any larger than it was before you sold your shares to Karl.

- You don't have to sell part of the company to raise some cash from it. You own the assets, and you can choose to write yourself a check

if you like. If the company has $1000 more in cash than it needs for day-to-day operations and if it doesn't have any major purchases on the horizon, then it probably makes sense for you to use that $1000 somewhere else.

- A payment from the company to the shareholders is called a *dividend*. If you sold a quarter of the company to Karl (250 shares out of 1000 total shares), then we'd say that the company paid a dividend of $1 per share. Karl would get $250, and you would get $750.

- Companies may not pay dividends if they don't earn enough to cover their cash needs or if they've fallen on hard times.

- A *stock dividend* is simply a dividend paid in stock. For example, shareholders may be issued 1 extra share for every 20 shares they hold. This issue doesn't change the size or value of the company. Instead of owning 20 shares worth, say, $21 each, you own 21 shares worth $20 each. If the exchange ratio is large enough (for example, 1 for 1), then it's called a *stock split* rather than a stock dividend.

- Ownership offers more than just a residual claim on assets; it conveys control. As long as the stockholders meet the terms of the debt contracts, they decide what to do.

Corporations as Goody Bags

- It's helpful to think of a corporation as a bag of goodies and stocks and bonds as the sharing rule that says who gets the goodies. Legally, of course, it's not that simple. Corporations are entities created by or under the authority of law, with rights and responsibilities that are distinct from the shareholders. They also have a continuous existence independent of their specific members.

- Another way to structure a company is as a sole proprietorship, that is, a one-person business that hasn't incorporated. The biggest difference between sole proprietorships and corporations is that

The idea behind limited liability is that starting a business is risky enough without requiring entrepreneurs to gamble everything they own.

corporations have limited liability and sole proprietorships don't. This can be significant if the business goes bad.

- Another reason to think of a corporation as a bag of goodies is that this perspective helps us avoid confusing the managers who control the goodies with the goodies themselves. As we know, Bernie Madoff founded and headed Bernard L. Madoff Investment Securities LLC. Madoff pled guilty to defrauding thousands of investors of billions of dollars, but his securities firm isn't to blame.
    - Sometimes, politicians claim that they want to make corporations pay their "fair share" of taxes. But it's not true that if we tax corporations more, we can tax people less.

    - If the government taxes your lawn care business an extra $1000, then you and Karl wouldn't receive those funds as a dividend. Unfortunately, making a corporation pay more taxes is just another way of making people pay more taxes.

Suggested Reading

Bodie, Kane, and Marcus, *Investments*, chapter 2.

Brown, *The History of the Corporation*, vol. 1.

Davis, *Essays in the Earlier History of American Corporations*.

Jones, *Investments: Analysis and Management*, chapter 1.

Questions to Consider

1. What type of person might want to own shares of stock instead of bonds?

2. Why might a sole proprietorship decide to incorporate? What advantages would operating as a corporation offer?

What Is the Stock Market?

Lecture 3

In our last lecture, we learned about fundamental securities. We learned that stocks and bonds are really just a way of sharing the goodies that a corporation owns and the cash it produces. In this lecture, we'll learn about stock markets—the institutions that let people like us buy and sell securities. Although the technology is high-tech and becoming more sophisticated every year, as we'll see, the basics are similar to the markets we encounter every day, such as markets for groceries or cars.

Well-Functioning Markets

- According to one dictionary definition, a *market* boils down to "a meeting of people for the purpose of trade." Two or more people get together, perhaps in person or perhaps via computer link, and try to make a deal. Sometimes the goods are physically present at the market, and sometimes they're not.

- A market for houses is different from a grocery store in some ways. Apples at the grocery vary in quality, size, and price, but compared to houses, they're all almost the same. Houses differ in many more ways than apples, such as size and age. Such factors make a significant difference in the structure of the markets for apples and houses, but the bottom line is that these markets are still just a meeting of people for the purpose of trade. The same is true of stock markets; they are financial networks that allow people to trade shares of stock.

- Markets that work well share common traits, such as competition. If you're selling, you want many potential buyers, and if you're buying, you want many potential sellers. Nothing protects consumers better than competition.

- High trading volume is another plus. If many trades are being made every day, then another trade won't push the price very much in

either direction, which makes it far less likely that anyone will be cheated. The concept of *liquidity* refers to the ability of a seller to find a buyer and to be able to make a deal without any trades being done at very low or very high prices.

- Well-functioning markets require both parties to have confidence in the terms of the deal. Contracts are enforced by law in well-functioning markets. For the most part, goods and services should be as advertised, and warranties must be honored.

- Well-functioning markets also have low transaction costs or, at least, as low as possible. A realtor's commission can be tens of thousands of dollars on an individual home, but given all the factors involved in buying and selling homes, such commissions are probably as low as possible.

Information Problems

- Information problems can interfere with markets. George Akerlof gave the best example of this in his famous paper "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism."

- For some items, such as used cars, the seller knows much more about the item's condition and value than potential buyers. Does the car have a bad transmission or electrical system? Potential buyers don't know, but they may assume that something is wrong and will bid less.
    - This situation is acceptable for cars that really do have something wrong with them, but it means that someone who wants to sell a car that's in great shape has trouble getting fair value. Buyers still can't easily tell if something is wrong with the car, and they still know that the seller knows more about the car than they do; thus, they still bid less.

    - This information problem makes the market for good used cars break down; it's hard to sell a good used car at the right price.

- Information problems are most pronounced for things that are hard to value because they might have hidden problems. Stocks can fall into that category, but the problem isn't as bad as it is with used cars for a number of reasons.
    - First, there are millions, even billions of shares in some companies, and unlike cars, all the shares are identical.

    - In addition, some of those identical shares have been purchased quite recently, perhaps just a few seconds ago. And it's easy to see what other people think the shares are worth.

    - Further, if you want to buy or sell shares, all you need to do is go online or contact a broker, and the financial markets will make sure that many sellers or buyers see your offer. Those markets are set up so that sellers or buyers must compete to give you the best price.

Growth of the Stock Market

- The New York Stock Exchange (NYSE) originated on May 17, 1792, when 24 stockbrokers signed what became known as the Buttonwood Agreement. They set the rules for buying and selling the stocks and bonds that are fundamental to the financial industry.

- From that modest beginning, stock markets have undergone an explosion in their influence on our economy. The financial services sector made up just 2.8% of the U.S. gross domestic product (GDP) in 1950. Just before the financial crash of 2007, that sector had grown to 8.3%!

- Growth in trading volume is even more dramatic. For example, according to the World Federation of Exchanges, the dollar volume of stocks traded on the NYSE about doubled from 1997 to 2000, then tripled from 2000 to 2008!

- Increases in trading volume haven't been uniform around the world. In 1990, the NYSE was ranked first in trading volume, while the NASDAQ system (essentially a computerized trading system) was

ranked fifth. But by 2000, the NASDAQ system was second on the list, and by 2010, the Shanghai Stock Exchange was ranked higher than both London and Frankfurt.

Primary and Secondary Markets

- According to the World Federation of Exchanges, trading volume on the NYSE and its related exchanges totaled more than $33.5 trillion in 2008. Some people wonder what companies can possibly do with all that money. The answer is that they don't get the money.
    - Almost all of the trading volume is in what's called the *secondary market*, which is similar to the used car market.

    - If I sell my car to you, then you pay me, not the car manufacturer. The same is true of stocks. If I sell my Ford shares to you, you pay me, not Ford. Ford just changes its records to list you as the new owner. Almost all of the trading volume results in money moving from the pocket of one investor to another.

- The *primary market* is different. If Ford wants to raise money, then it can make a *seasoned equity offering* (SEO).
    - In an SEO, a company sells new shares, which increases the number of shares already held by investors. In that case, Ford does get the proceeds from the sale of the new shares.

    - Many people don't like to buy new shares directly from a company. The CEO of a company knows more about the company than just about anybody else, and if he or she decides that the company should sell shares, then some people don't want to buy. After all, the CEO is the person who makes the key decisions that help determine how much the company is worth!

Insider Trading

- Of course, trading on insider information is illegal. A notorious example is Paul Mozer, whom the Securities and Exchange Commission (SEC) fined $1.1 million for his role in a Salomon Brothers bond trading scandal in 1994.

- Stock markets haven't eliminated trading on insider information, but the SEC has a fairly good chance of catching it when it happens, and the penalties for getting caught can be stiff. The result is that most of the time, insiders disclose their trades.
    - John Cochrane of the University of Chicago points out that short sellers—people who are willing to bet that a stock price is too high—uncover far more financial fraud than the SEC. They often see fraud before the authorities do and sell their stock in anticipation of a price decline.

    - The same thing probably happens for insider trading, too. The playing field for trading stocks might not be perfectly level, but on major stock exchanges, it's pretty close.

Automated and High-Speed Trading

- Computers have made the process of buying and selling stocks much faster, much cheaper, and less prone to error. However, there are potential problems with automatic trading, including the

Large trading firms can lose enormous amounts of money in just seconds as a result of computer errors.

possibility of a massive computer glitch. Some people are also overwhelmed by the gigantic trading volume and incredible speed that computerized markets offer.

- A government report in the United Kingdom in late 2012 found that high-frequency trading could be beneficial by providing liquidity and what economists call *rapid price discovery*, meaning that if something happens that should affect prices, it does and quickly.
    - Obviously, we don't want to trade with someone who has private information that the current price is wrong. We'd rather have the price adjust to fair value as quickly as possible, even if ordinary investors, such as us, don't know just why it changed.

    - Most studies have found that high-speed trading and its cousin, high-frequency trading, lower the cost of trading for ordinary investors. With high-frequency traders operating in the market, it's easy to find a buyer or a seller, and the price can't get too far out of line. However, there's some evidence that high-frequency trading contributes to market volatility and is a tool for manipulating the market.

    - Mistakes can happen in high-frequency trading, too. For example, badly programmed computers placed numerous erroneous orders on May 6, 2010, contributing to what's now called the *flash crash*.

- As slow minnows among sharks, we can take comfort in knowing that the sharks are all competing with one another for our business. That keeps us from getting hammered during the trading process.

- It's also difficult to tell whether complaints about high-frequency trading from industry insiders are prompted by fear of new competition. If you're doing just fine as a trader without high-frequency trading and then someone starts beating you by using high-frequency trading, it would be easy for you to say that high-frequency trading is a problem.

- Every few months, someone seems to advance a proposal to limit high-frequency trading. The problem is that the proposals all pose difficult tradeoffs.
    - For example, some people want to impose a small tax on financial transactions, such as stock trades. The idea is that a fraction of a cent wouldn't be much to ordinary traders, but when multiplied over the vast number of trades that high-frequency traders make, it would be a significant deterrent.

    - This idea might offer some benefits, but it might also reduce the speed at which prices adjust to news. The problem isn't as simple as it seems. We need to remember that the inability to participate in high-frequency trading doesn't necessarily mean that it's bad.

Suggested Reading

Akerlof, "The Market for 'Lemons.'"

Tyson, *Investing for Dummies*, chapters 4, 6.

Questions to Consider

1. People who plan to be in business for a long time are less likely to try to take advantage of others in a deal. That's because they'll hurt their reputations and lose future business. How might this affect the prices of used cars sold through dealers compared to those sold by individuals?

2. Trading costs in markets with many transactions are usually lower than trading costs in markets with lower trading volume. What do you think causes this?

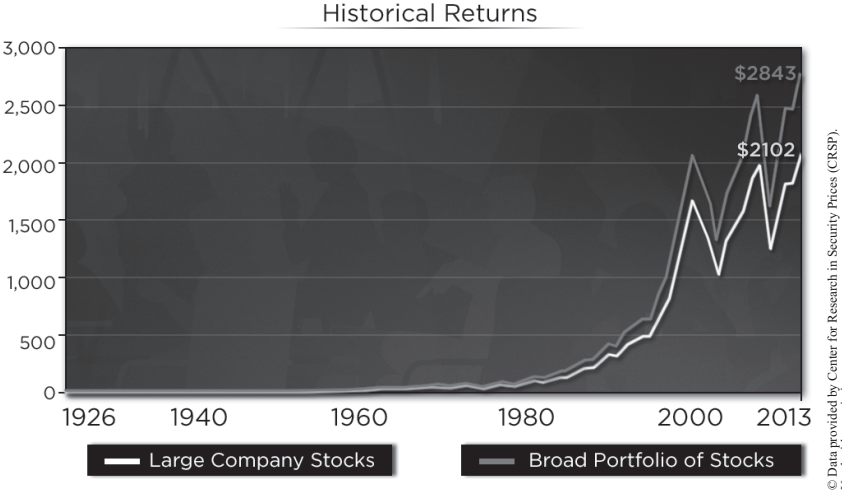
Historical Returns and Volatility

Lecture 4

In our last lecture, we learned what a stock market is. In this lecture, we'll look at the historical record. As we'll see, you can make a good deal of money investing in stocks, but we'll also learn that there's no free lunch. If you want to try to make money, then you have to take some risks. Keep in mind, too, that investment advisors always include a disclaimer: "Past performance is not necessarily indicative of future performance." We'll use some specific numbers to illustrate the points in this lecture, but the idea is not to worry too much about those numbers. We're looking for the big picture.

Reading the Historical Record

- The historical record tells us that you can make a good deal of money investing in stocks. If you had invested just $1 at the beginning of 1926 and reinvested all payouts, such as dividends, over the next 87 years, then you'd have done rather well. By 2013,



The historical record suggests that you can recover losses in stocks, but you need to stay in the market for quite some time to do so.

a $1 investment in a broad portfolio of stocks would have been worth $2843!

- The idea that you can make a lot of money investing in stocks doesn't change much if we look at different selections of stocks according to such characteristics as size. We do find differences by industry, especially for relatively short periods. For the most part, however, the historical record seems to say that you should stay in the stock market for a long time.

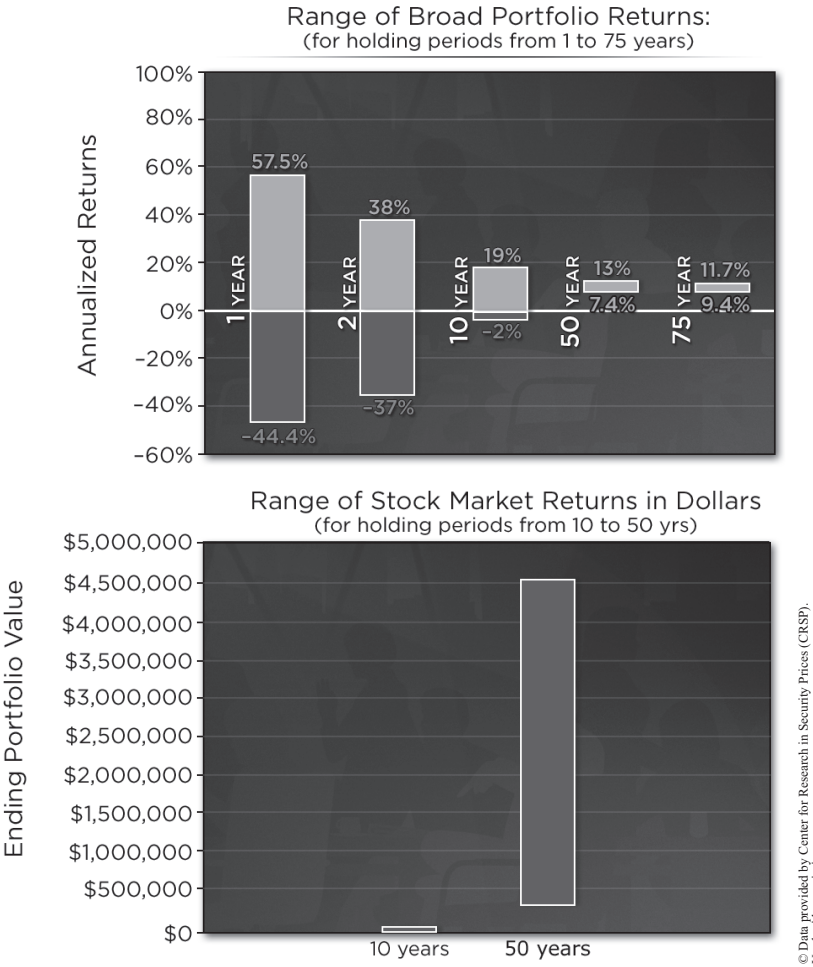
- Of course, it's also possible to lose a good deal of money in the stock market.
    - For example, if you needed the money from your 1926 investment back in 1933, you would have lost about two-thirds of your initial stake. True, your investment would have recovered by 1936 or so, but you wouldn't have gotten back to the break-even point permanently until 1943!

    - The story of losses doesn't change much either if we look at different selections of stocks according to such characteristics as size or different industries for relatively short periods.

- Just how good is a good year for stocks, and how bad is a bad year? The answer is either very good or very bad.
    - Between the years 1926 and 2012, the best 1-year return was in 1933, which checked in at almost 58%. The worst 1-year return was in 1931, a loss of more than 44.4%.

    - Don't make the mistake of thinking that the downside is less impactful than the upside. If you start with $100 and suffer a 50% loss, then you have $50. It takes a gain of 100% to make up for that 50% loss.

    - What these numbers tell us is that the worst year and the best year are reasonably similar in the sense that they almost cancel each other out.



Rates of return tend to converge over time, but dollar values don't.

Understanding Rates of Return

- Looking at historical rates of return over different time horizons tends to make people think that the longer you stay invested, the safer you'll be. For example, from 1926 to 2012, 1-year returns vary from a loss of about 44% to a gain of about 58%. For 2-year

returns, that range narrows from a loss of about 37% to a gain of about 38%. For 10 years, the range is from a small loss, 2%, to a gain of about 19%, and for 75 years, the rate of return is around 10%.

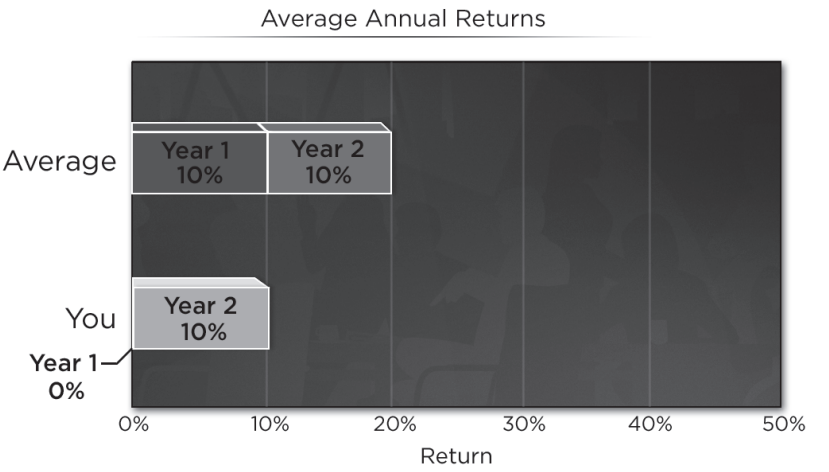
- Many people interpret this as showing that the longer you stay in the market, the safer you'll be, but that's wrong. The longer you stay in the market, the more risk you bear.

- The range of potential rates of return narrows over time, but the range of potential payoffs in dollars doesn't. The longer you're in the market, the greater the potential losses and gains in dollar terms.

- It may seem strange that rates of return tend to even out over time but dollar values don't. The idea here is that as the rates converge with time, you may miss by less each period, but you miss for a longer time period. Consider a more familiar analogy:
  - Suppose that you and your friend Lisa set out on a long road trip in separate cars. Lisa averages 60 miles per hour (mph) for the first hour but you average only 50. After the first hour, you're 10 miles behind.

  - During the second hour, both you and Lisa average 60 mph. You've pulled your average up to 55 mph, but Lisa is still averaging 60 mph, and you're still 10 miles behind her. Instead of falling 10 miles behind in 1 hour, you fell behind by an average of 5 mph for 2 hours. You're in the same place relative to Lisa either way you think of it.

  - If you had averaged 58 mph during the second hour instead of 60, you would have lost another 2 miles and have been 12 miles behind. But the difference between your average speed and Lisa's average speed would still have narrowed, even though you lost more ground. You gain in terms of average speeds, but you lose in terms of miles because you lost ground for 2 hours instead of just 1.



Remember that as rates of return converge over time, you may miss by less each period, but because you miss for a longer time, you can fall farther behind.

- Rates of return work in the same way.
  - Suppose that the expected return on stocks averages 10% per year, but in your first year, you earn 0; you're 10% below the average annual return.
  - The next year, you get the average return of 10%. Your 2-year average is 5%, which is closer to the true average of 10%, but you didn't gain anything relative to the average during that second year. You just held your ground.
  - Instead of falling 10% behind in 1 year, you fell 10% behind over 2 years, or an average of 5% for each year. You're in the same place relative to the 10% average either way.
  - Rates of return and dollars earned are like miles per hour and miles traveled. You may miss the target by less each period, but because you miss for a longer time, you can fall farther behind.

Historical Record of Dollar Values

- Even though the range for rates of return narrows with longer holding periods, the range of dollar values at the end of the holding period widens.

- If you start with an investment of $10,000, you'd have just under $57,000 after the best 10 consecutive years during the sample period, or about a 19% return per year. You'd lose a bit on average during the worst 10 consecutive years of the sample period, and you'd have only about $8100 afterward. That 21% difference between the best and the worst period turns into a $49,000 difference, or about five times your original investment.

- Over a 50-year horizon, the range of rates of return settles down quite a bit, but the range of dollar values explodes. The worst 50-year period returned 7.4% annually, which would leave you with about $360,000. The best 50 years featured an annual return of 13.2%, or more than $4.5 million.

- The best 75-year period yielded an 11.7% annual return, while the worst 75-year period yielded 9.4%. But the difference in dollars between these two rates is almost $33 million on a $10,000 investment!

Good Days and Bad Days

- A large portion of stock market gains over a long time occur on just a few days. For example, Goldman Sachs looked at the 20-year period from 1993 through 2012. If you were invested for all 5037 trading days during that period, you would have earned an annual return of 8.23%. If you had missed the 10 best days, your annual return would have dropped to just 4.54%, and if you had missed the best 40 days, your annual return would have been –1.95%.

- Bradford Cornell of the California Institute of Technology used data from the Center for Research in Security Prices to study the best and worst days on the New York and American Stock Exchanges and NASDAQ from 1988 to 2012.

- The biggest one-day move up or down occurred on Monday, October 13, 2008, when governments around the world promised to help bail out financially stressed banks. Stocks jumped 11.49% in one day!

- This fits with the oft-repeated idea that investors can't afford to be out of the market on the good days. It's important to note, however, that after the first two, the next five most extreme market reactions in Cornell's study were losses.

Movement in Stock Prices

- The value of a stock depends on three things: (1) how much money you expect to get from the stock (the more money you get, the more valuable the stock); (2) how long you expect to have to wait to get the money (the longer you have to wait, the less valuable the stock); and (3) the interest rate during the time you're waiting (the higher the interest rate, the less valuable the stock).
  - The idea behind the third factor is that if you had the money now, then you could invest it in an account, earn interest on it, and make money if interest rates are high.

  - Having to wait for the stock to pay off hurts when rates are high; thus, the stock is worth less.

- Given that these three factors determine the value of a stock, stock prices should move only if we get some news that changes the market's perception of them, but it's difficult to know what constitutes "news." The federal government's seizure of Fannie Mae and Freddie Mac in September 2008 should have been a significant event, but it wasn't because most of the market players already believed that a federal takeover was just a matter of time.

- Researchers have tried to analyze large one-day market moves to determine their causes but have been unable to find answers. Financial reporters often provide explanations that don't actually explain anything or provide answers based on psychological factors rather than underlying causes.

- One thing we know is that volatile days tend to group together, as do tranquil days. For example, during the 25 years from 1988 to 2012, almost half of the 50 largest stock price movements occurred in just one year, 2008.
    - When you hold stocks, you're holding risky assets that offer a particular mix of risk and expected return. Volatility clustering means that sometimes you're getting more or less risk than you bargained for, which means that you might want to increase your equity stake in periods of calm and decrease it during unsettled periods.

    - It's normal to feel a little nervous during volatile periods, and you might want to think about adjusting your portfolio if you're uncomfortable with the market's volatility. But this has nothing to do with prices being too high or too low. It's the amount of risk you're taking that might motivate you to take action.

Suggested Reading

Bodie, Kane, and Marcus, *Investments*, chapter 4, pp.127–133, 139–154.

Jones, *Investments: Analysis and Management*, chapter 6.

Questions to Consider

1. Do you think that the broad lessons of the U.S. stock market—that you can make a lot of money by investing in stocks and you can lose a lot of money by investing in stocks—hold for stock markets in other countries? Why or why not?

2. The historical evidence is that small stocks have returned more than large stocks over long time periods. Why do you think that's true?

Risk, Expected Return, and Diversification

Lecture 5

In the last lecture, we looked at historical stock returns and volatility. In this lecture, we'll try to understand and answer an investment advisor's favorite question: Do you want to eat well, or do you want to sleep well? We'll learn more about the tradeoff between the amount of risk you take and the amount of money you can expect to make. We'll also learn about diversification—the closest thing to a free lunch you'll find anywhere!

Coin-Flipping Games

- Let's illustrate the distinction between safe and risky with two coin-flipping games. In the first game, you get $1000 whether the coin lands on heads or tails. That's a safe game. In the second game, you get $2000 if the coin lands on heads and nothing if it lands on tails. This game is risky. How much will you pay to play these games?

- Your answer will depend on whether you like to eat well or sleep well. If you're like most people, you'd pay as much as $1000 to play the safe game, but you won't pay as much to play the second game. You might pay $800 for a very risky expected payoff of $1000. That's saying that an expected profit of $200 is just enough to entice you to take the risk.

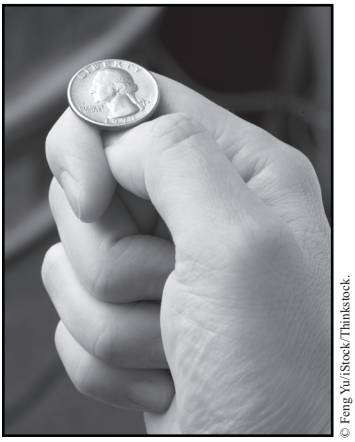
- This scenario illustrates one of the most important traits of financial markets: You can play safe, or you can try for big returns. Competition won't let you have both.
    - Suppose you decided to lower your bid for the first game to just $900, thus guaranteeing yourself a $100 profit after you collect your winnings of $1000. That's a great deal for you, but as the person running the game, I won't take your offer.

    - The second reason your strategy won't work is that even if I have to play the game, I don't have to play with you. If I offer

to play with a few more people, then someone will offer me just about $1000 for the guaranteed $1000 payoff. Competition protects me from having to take a bad deal.

Good Deals and Bad Deals

- The difference between a bad deal and a good deal that turned out badly is an important distinction in thinking about risk. If you and a friend both agree to pay $800 to play the risky coin-flip game, you both have exactly the same deal. No matter the outcome of the game, it can't be a bad deal for one of you and a good deal for the other one.



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As in a coin-flipping game, a good deal sometimes goes bad, but that doesn't mean it was a bad deal when you made it.

- Most of the time, we can't tell for sure whether you have a good deal or a bad deal on risky choices, such as buying stocks. Part of the reason we can't tell if a stock is a good buy or not is that we never get to see exactly what the market expects. Unlike in the coin-flipping game, with stocks, we don't know the odds, we don't know the payoffs, and we don't know when the payoffs will occur. We don't even know the consensus for the market's estimates of these numbers.

- Because we never get to see the market's expectations, we never get to see the true risk of a stock either. For that matter, not everyone agrees on the right measure of risk. Market participants seem to have settled on a reasonable estimate of how much extra they expect stocks to return than some safe asset, such as a U.S. government security or what you would earn in an insured bank account. This is called the *equity risk premium*.

Equity Risk Premium

- We can get a good estimate of the return on a safe asset just by looking at the rate on the Internet or calling a broker. The problem is getting an estimate of the expected return on the stock market itself.

- The following table shows estimates of equity risk premium. As can you see, during the period 1928–2011, stocks returned a nominal annual rate of 9.23%. The safest possible investment, treasury bills, returned 3.61%. The difference between the two—the risk premium—is 5.62%. Remember, these are the *ex post* amounts—the values that actually appeared, not necessarily the values people expected.

				Risk Premium	**Risk Premium**
Period	Stocks	T. Bills	T. Bonds	Stocks – T. Bills	Stocks – T. Bonds
1928–2011	9.23%	3.61%	5.14%	5.62%	4.10%
1962–2011	9.20%	5.19%	6.85%	4.02%	2.35%
2002–2011	2.88%	1.80%	6.49%	1.08%	–3.61%

- The stock returns and the risk premium we compute using them give us an estimate of what we want to know but not exactly what we want to know. And although they are among the best estimates we can find, that doesn't mean they're good estimates. But if the stock returns that were actually realized from 1928 to 2011 are close to what investors expected at the time, then the equity risk premium was 5.62%.

- An equity risk premium of 5.62% doesn't tell us what you'll get if you invest in the stock market today. It tells us that if the same circumstances hold today as held in 1928, then the market consensus is that stocks ought to return 5.62% more than safe investments over the next period. If, in fact, we get what we expect, then we'll earn that 5.62% plus whatever a safe asset pays over the next period.

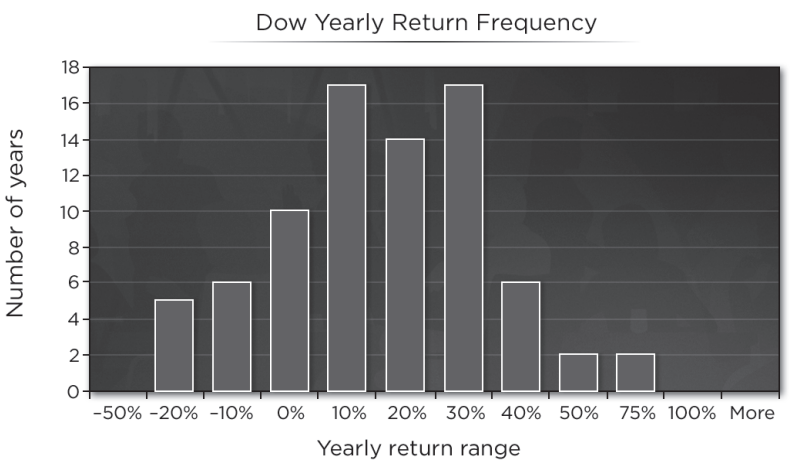
- There are a lot of "ifs" here, but we have a better idea of what to expect than we did before we calculated the estimate. We can also calculate different estimates using treasury bonds (with a 10-year maturity versus 3 months) or for shorter time periods.

- Note that a calculation using treasury bonds and just the years 2002 to 2011 yields a negative estimate of the equity risk premium. Investors probably weren't expecting to earn nominal returns of less than 2.9% annually for the period, but it was likely a bad 10 years for stocks. We don't always get what we expect.

The Black Swan Problem

- When we use historical data to make financial decisions, we encounter what's called the *black swan problem*. This is a rather elegant way to alert us to the realization that just because an event hasn't happened doesn't mean that it will never happen.

- If you look at a distribution of Dow-Jones stock returns over about an 80-year period, you'd see an approximately normal distribution, with most of the annual returns piling up between 10% and 30%.



The worst year in an 80-year period of Dow-Jones returns was very bad, but keep in mind, the stock market could do even worse!

- In the worst year, an investor would have lost about half of his or her investment. Still, you might decide you can handle that loss if that's the worst the stock market can do to you. But that's not the worst the stock market can do; it's only the worst we've seen so far.

Diversification

- Diversification is one of investing's most important concepts. Suppose you have $2000 to invest, and IBM and Coca-Cola are the only two companies in the world. You can put all your money in IBM, all of it in Coca-Cola, or some in each.
    - If you put all your money in IBM, and it goes up 20%, you have $2400, but if IBM declines by 20%, you have just $1600.
    - However, if you put $1000 into each stock and both increase or decrease by 20%, then you haven't gained anything relative to plunging in one stock, but you haven't lost anything either. You have the same 20% increase or decrease either way.
    - The benefits of diversification appear because IBM and Coca-Cola don't move together all the time. Your 20% gain on one will offset a loss on the other.
- Holding just two stocks instead of one decreases portfolio variation by about 25% on average, and holding three drops it about 40% on average. You'll capture most of the benefit of diversification by the time you're holding about 15 stocks.
- No matter how many stocks you hold, though, you can't reduce your portfolio's return variation to nothing. Even with 1000 stocks, your portfolio returns will still vary about 40% as much as a single stock because all stocks are subject to systemic risk, that is, risk inherent in the financial system. In contrast, unsystemic risk is unique to a specific stock. Diversification eliminates unsystemic risk because the events that affect one or two companies are likely to be canceled out by events at other companies.

- Companies in the same line of business tend to move together more than companies in different industries. Thus, if you're holding only two stocks, you're better off choosing them from different industries.

International Investing

- U.S. equities are only about a third of total world equities. Can international diversification help? The answer is yes, but only to a point. Studies show that the benefits of international diversification won't insulate you from major financial crises.

- International investing also brings complications, such as exchange-rate risk, political risk, information problems related to different accounting procedures and regulations, and restrictions on repatriating cash.

- Despite these problems, you may want to invest in a foreign company. One partial solution is to hold American depositary receipts (ADRs).
    - Here, a U.S. financial institution buys shares in a foreign company, then issues claims against them. As far as the foreign company is concerned, you're not an owner. The financial institution sponsoring the ADR program is the owner. The foreign company pays dividends to that institution, which sends them to you.

    - ADRs trade publicly on a U.S. stock exchange, and they're priced in U.S. dollars, allowing you to get in and out quickly and easily. ADRs carry extra fees of a few cents per ADR annually to cover the sponsoring institution's costs.

Eat Well or Sleep Well?

- As we said, the investment advisor's favorite question is: Do you want to eat well, or do you want to sleep well? Only you know the answer, and you'll probably find that your choice will change over time.

- There's no one best way to learn your risk preferences. Most investment advisory firms use a short survey that gives a snapshot of your profile. After you've completed the survey, you plug your total points into categories that range from "conservative" to "very aggressive."

- A good investment advisor understands that your financial position depends on more than just your investment portfolio. A high school teacher has more job security than most people; thus, he or she might be able to take more risks than a small business owner.

- Over the years, you'll probably find that your risk tolerances change. Younger people tend to have a longer investment horizon, and many decide to take more risks with their portfolios. Older people with shorter investment horizons tend to hold safer investments. If you don't mind a fund manager making your investment decisions, life-cycle or age-based funds can automate the process of choosing an investment mix for you.

Suggested Reading

Bodie, Kane, and Marcus, *Investments*, pp. 196–219, 863–892.

Jones, *Investments: Analysis and Management*, chapter 6.

Sortino and Satchell, eds., *Managing Downside Risk in Financial Markets*.

Questions to Consider

1. Suppose someone found a great investment that promised a huge return with very little risk. How do you think investors would respond to this discovery? If many investors bid on the great investment, will that change its price? If the price is bid up, will it still be a great investment at the higher price?

2. Not everyone thinks of risk in the same way. Some people think of risk as meaning the variation in returns. Others think of risk as the chance of losing money. Can you think of other definitions of risk?

What Determines How Much You'll Make

Lecture 6

So far, we've learned a little about the market and how it behaves. You might be starting to get excited about investing in the stock market. You might also want to know which company to buy or where to invest your money to get the best return. But those questions represent only about a third of what you need to know to make an investment decision, and it's the third that you least control. In this lecture, we'll learn what determines how much money you make over the life of your investment—whatever kind of investment that may be.

Compound Earnings

- The formula for compound earnings is as follows: Investment × (1 + Rate of Return)$^{\text{Time Invested}}$ = Terminal Value. This equation tells us that the terminal value of your investment—how much you'll have when all is said and done—is equal to the amount you invest multiplied by 1 plus the rate of return you earn, raised to a certain power. That power is the number of time periods that you stay invested.

- For example, if you invest $100 at 5% annually for 1 year, then the amount you'll have is equal to $100 × 1.05^1, or $105.

- This formula tells us that three factors determine how much you'll eventually have after you make an investment: rate of return, amount invested, and time invested. The formula also tells us that investing is similar to planting a tree: The best time to do it is 15 years ago. The second best time is today.

Numerical Examples

- Let's look at some numerical examples to see how the three inputs to the formula affect terminal value. First, we'll increase the rate of return from 5% to 15%. Tripling the rate of return seems significant, but if we plug numbers into the formula, we get: $100 × $(1 + 15\%)^1$ = $115, only $10 more than we earned at 5%.

- The lesson here is that for small investments and short investment horizons, the rate of return doesn't matter much in terms of the dollars that end up in your pocket.

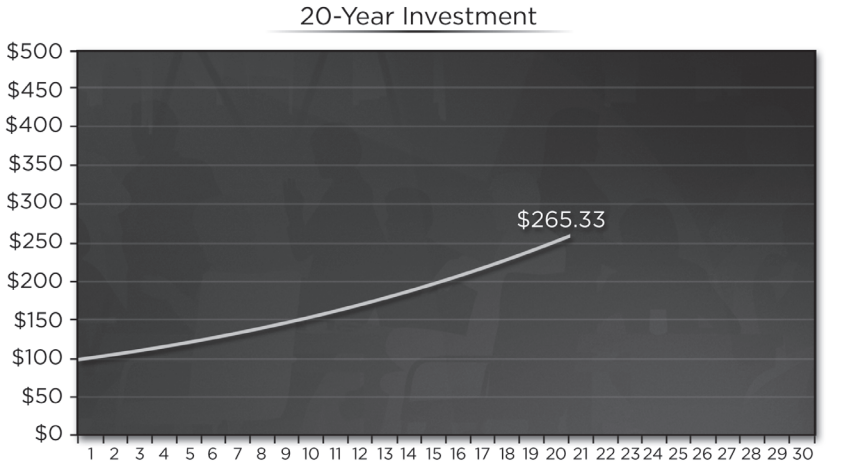
- This lesson is important for ordinary investors. Most people don't start investing immediately with large sums of money. High rates of return almost always involve high risk, and it doesn't make sense to take a lot of risk to chase a big return on a small amount.

- Instead of looking at what happens when we take risks to chase returns, let's look at the results of doubling the amount of our investment to $200. Plugging the numbers into the formula, we get: $\$200 \times (1 + 5\%)^1 = \$210$.
  - This example illustrates two points. First, the more you invest, the more you'll have at the end of the investment, at least with a positive rate of return. That's so simple that many people don't bother acting on it. Among the easiest ways to be sure you'll have more money later is to invest more now.

  - The second point is that investments are additive. If you double your investment and keep everything else the same, then you'll double the money you'll have later. If you cut your investment in half, then you'll have only half as much.

- What happens if you invest $10,000 at a higher risk that will pay off at 15% over the next year if things go well? Even with this investment, the lesson of short investment horizons and relatively small amounts comes into play. Even if you get 15%, you will have earned only $1500 at the end of the year, perhaps $500 more than a safer investment.

- Let's look at an example of varying the investment horizon. We've seen that at a rate of return of 5%, $100 becomes $105 in 1 year. If we change the time horizon of the investment to 10 years and plug the numbers into our formula, we get: $\$100 \times (1 + 5\%)^{10} = \$162.89$. For 20 years, we get $\$100 \times (1 + 5\%)^{20} = \$265.33$, and for 30 years,



After 20 years, $100 invested at 5% grows to $265.33, a total return of more than 165%.

we get $\$100 \times (1 + 5\%)^{30} = \$432.19$. For $10,000 invested over 30 years, we get $\$10{,}000 \times (1 + 5\%)^{30} = \$43{,}219.42$.

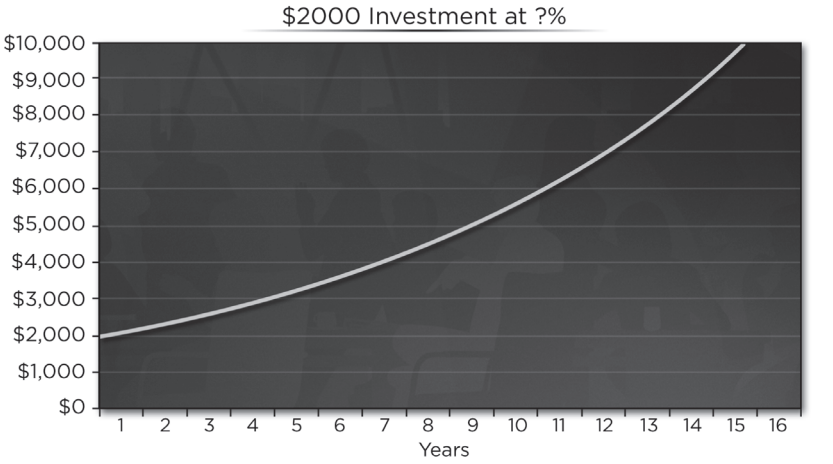
- These numbers make us seem as if we're investment geniuses, but we actually didn't take a lot of risks or pick a winner. We just stayed in the game for a long time and let compounding work for us.

Reaching a Target Value

- Suppose you need a certain amount of money—perhaps $10,000 for a dream vacation. How do the rate of return, initial investment, and investment horizon work to reach that target amount?

- Let's look at the scenario in which you invest $2000 for a period of 15 years. What rate of return do you need to reach $10,000? Now, the formula is: $\$2000 \times (1 + x\%)^{15} = \$10{,}000$. The answer turns out to be just over 11.3% annually.

- Let's say that you can earn only 9% instead of 11.3%, but you have $2500 to invest rather than $2000. How long will you have to let



Calculating the rate of return needed to yield a target amount of money puts you in a better position to reach that target.

the investment ride before you reach $10,000? The formula gives us an answer of a little more than 16 years. The larger investment almost—but not quite—offsets the lower return you expect to earn in this case.

- How much will you have to invest if you can earn only 6.5% and you have an investment horizon of only 12.5 years? Unfortunately, the answer is $4551.24.

- Of course, you can make repeated payments instead of just an initial payment. That's called an *annuity*. The formula for computing annuity values is more complicated than the one we've been using, but the idea is the same and the results look much the same, too. The same three variables affect the terminal value of an annuity: the size of the investment, the rate of return, and the time horizon.
    - The biggest difference between an annuity, with its multiple payments, and a single investment is that the terminal value builds much more rapidly with an annuity. That makes sense because making more investments as time goes on puts more money to work for you.

- If you can invest $250 a year, you need an annual rate of return of a little more than 11.5% to yield $10,000 in 15 years. Notice that this rate isn't far from the 11.3% we calculated with the one-time investment of $2000.

- The smaller payments may be easier to handle over time, but the total amount you need to invest to reach your goal is greater if you make a series of smaller investments because you don't have much money working for you during the early part of the investment horizon. In this case, the 15 annual payments of $250 total $3750—$1750 more than a one-time investment of $2000.

- We can do a similar calculation to find the investment horizon given the rate of return and amount invested. If you put aside $250 a year and earned 9%, you would reach $10,000 in between 17 and 18 years.

- The lesson we learn from all these calculations is this: When it comes to investing, you have no better friend than time—and no worse enemy.

Summing Up Compound Earnings

- As we saw earlier, the three factors that determine how much you'll have at the end of your investment period are the size of the investment, the rate of return, and the time horizon. The bigger the investment, the more you'll have. The higher the rate of return, the more you'll have. And the longer the time horizon, the more you'll have, as long as you earn something.

- Most people try to increase the factor that's the hardest to affect, the rate of return. Experts agree that it's hard to find investments that have the chance to pay off a lot without taking a lot of risk, too.

- Even if you do find an investment that promises a high rate of return, it doesn't mean much if you invest only a small amount of money or if the high returns don't last long. The street has a saying: "If you're early, you don't have to be smart."

- The technique we've been using to calculate the values of investments is part of a more general set of tools used by financial professionals. It's known as the *time value of money*.
    - For example, companies use the same concepts we've been using when they decide whether to build a new factory. A company may decide to invest money in a factory now in anticipation of the factory producing products that will be worth a certain amount of money later. The company uses the beginning value and the ending value to calculate the rate of return on the factory.

    - A mortgage is another example of the concepts we're using. The mortgage lender loans you enough money up front to let you buy a house in exchange for a series of payments over 15 or 30 years. The size of those payments depends on the interest rate you pay.

    - Life insurance and car leases also use time value of money ideas.

- In this lecture, we've seen three important factors that determine your investment success: how much you invest, how much you earn, and how long you invest. In the next lecture, we'll take a closer look at why—no matter what you may hear from investment advisors—it's almost impossible to find investments that promise high returns with little risk.

Suggested Reading

Drake and Fabozzi, *Foundations and Applications of the Time Value of Money*.

Hafer and Margetis, *A Student's Quick Guide to Understanding and Calculating Time Value of Money and Its Applications*.

Madura, *Personal Finance*.

Questions to Consider

1. How would you calculate the amount of money you would have at the end of your investment if the rate of return varies from year to year?

2. Suppose that instead of "If you're early, you don't have to be smart," investment professionals said, "If you're rich, you don't have to be smart." Which variable in the terminal value formula would they be discussing?

The Efficient Market Hypothesis

Lecture 7

In Lecture 1, we saw evidence that it's tough to beat the market consistently. In this lecture, we'll delve into that topic in more detail. Every year, some companies do much better than others. It may seem that if you do enough reading and watch the business news, you can identify these companies in advance or, at least, do a better job of identifying them than someone who doesn't do any research. But in this lecture, we'll see why it's almost impossible to find investments that promise high returns with little risk—no matter how much research you do.

An Information-Processing Contest

- The idea that enough research will allow you to do better in the market than the average investor fundamentally mischaracterizes the nature of market activity.

The stock market isn't a typical competition between two players or teams; in the market, your competition is the aggregate wisdom of the marketplace.

- People tend to think of picking stocks as a game with winners and losers, and in most games, the winner just needs a slight edge over his or her opponent to win.

- But investing is not a typical contest; it's an information-processing contest. The task is to gather information about a company, distill that information into a price, then buy the stocks with prices that are too low given the available information.

- What's more, the competition isn't between you and someone else. It's between you and the collective wisdom of the marketplace.

- According to Mark Rubinstein, a professor at the University of California at Berkeley, each investor, in buying and selling, unwittingly pushes prices to the point where they reflect that investor's information and analysis.
  - In this conception, the stock market is an enormous, continuously operating mechanism that records the opinions of millions of investors in continuously changing prices.

  - If we think of the market in this way, then it's silly to think that prices can get too far away from fair. After all, aggregating information from many individuals has a track record of finding the truth in other fields.

- The rules of stock trading also argue against the conceptualization of the market as a typical contest. The way the stock market is structured ensures intense competition between buyers and sellers. Buyers don't get to pick their sellers, and sellers don't get to pick their buyers. Buy and sell orders at the market price are matched; traders never know the identities of their trading partners.
  - If an order is for a price away from the market price, then it goes into the *order book*, which is a list of all standing orders at prices too high to attract a buyer or too low to attract a seller. Eventually, someone will submit an order to buy at the best offer price in the book or to sell at the best bid price in the

book. When that happens, the corresponding limit order on the book will be executed, and the trade will occur.

- For a moderately popular stock, there are hundreds or even thousands of orders on the book, and the gap between the highest bid price and the lowest offer price is, at most, a couple of cents. With that many orders outstanding, all grouped around the same price, it's hard to think that the actual trading price could be too far from being fair.

- It's true that the search for a way to beat the market boils down to a contest, but it's an information-processing contest, and your competition is the accumulated information that all the market's participants have discovered.

Market Anomalies

- Professors R. David McLean and Jeffrey Pontiff studied 82 return anomalies that at least suggested the promise of trading profits to investors who were smart enough to capitalize on them. McLean and Pontiff's new angle was that they looked at what happened to these anomalies after an academic study drew attention to them. They found that the anomalies decreased or vanished completely.

- Some of the 82 anomalies were just quirks in the data. If enough researchers study stock prices, then some of them will find trading rules that would have made money in the past. Trading strategies that fail, however, don't make the news; thus, we don't have a good way to gauge whether or not the ones that appear to be successful reflect real skill or whether they are just luck. We just have to wait to see if they continue to work over time.

- Another reason the apparent return anomalies declined after people learned about them is that easy money always attracts people who want a piece of the action.
  - For example, several scholarly studies published in the 1980s showed rather conclusively that Mondays tended to be bad

days for stocks. It didn't take long, then, for savvy traders to start selling on Friday and buying late on Monday or early Tuesday. All that selling on Friday drove prices down, which meant that Mondays no longer looked so bad.

- This *weekend effect* may have been a statistical quirk, or it might be traceable to real economic forces. Either way, once the savvy traders acted on the information, the weekend effect all but disappeared.

- This seems to be the case for several other market anomalies. Any deviations from the fair price tend to be small and vanish quickly as clever traders cash in.

Excess Returns = Extra Risks?

- Professor John Cochrane of the University of Chicago raises another subtle point about trying to beat the market: What looks like a way to earn excess returns might really be just a way to take extra risks that haven't been recognized.

- For example, there's some evidence that *value stocks* (stocks with low prices) tend to return more than the market, even after adjusting for traditional risk measures. It seems as if you should just buy a number of different value stocks to ensure that you're diversified, then sit back and beat the market in the long run.

- If you do that, however, you'll soon realize that you have a problem: All value stocks tend to rise and fall together. You're not as diversified as you thought you were, and you're taking more risk than you thought. It's not clear that you're really beating the market after allowing for the extra risk.

Market Efficiency

- Financial economists use the term *efficiency* to describe a market with prices that are fair given the information available at the time.

- Efficiency is a matter of degree. The market is obviously efficient with respect to old news, but most studies show that even recent and more subtle news won't give you an edge.

- Experts disagree about just how efficient modern stock markets are, but most agree that stock prices are almost always extremely close to being fair to both the buyer and the seller.

Money Manager Michelle

- There must be some money managers out there who can beat the market with reasonable consistency. Why not just have one of them manage your money? A smarter question to ask is: Why would someone who can consistently pick winners agree to manage your money and share his or her winnings? Wouldn't such a skilled investment manager charge high fees?

- Jonathan Berk of Stanford University and Richard Green of Carnegie Mellon University devised a scenario to explain why some managers are willing to pick winners for you, why they can charge high fees, and why—despite investing in winners—you don't beat the market after paying those fees. This scenario rests on the idea that it's possible for a few exceptional managers to pick winners, but there's a limit to how many winners they can find.

- Imagine that Money Manager Michelle can pick $1 million worth of stocks that will beat the market by 20% for the next year. She charges her customers an annual fee of 1% of assets under management.
    - Suppose that the market is flat over the next year. Michelle earns 20% of $1 million, or $200,000, in "abnormal" returns because she can pick winners, making the fund worth $1.2 million. Michelle takes her 1% of the $1 million that the fund started with, or $10,000, and the investors who hired her happily divide the remaining $190,000 in extra earnings.

- Other investors will want a piece of this action, and because Michelle gets paid more for managing a larger fund, she's happy to accept more clients. Let's say that the fund triples in size.

- The problem is that Michelle can still pick only $1 million worth of winners. With $3 million under management, Michelle's fund again generates $200,000 on the $1 million worth of winners she picks; she earns only the market return on the other $2 million. She takes 1% of assets again, which is now $30,000. That still leaves her clients with $170,000 in extra returns.

- This can continue until the fund has attracted $20 million. Michelle still generates an extra $200,000 by picking winners, but now she collects $200,000 in fees. Her investors are left with exactly the market return after fees.

- This story explains a number of things:
  - Returns to investors are about the same in active funds and passive funds.

  - Some funds earn extra returns by picking winners, but after fees, investors earn the market return.

  - Skilled managers capture the extra earnings they produce; anything in addition is mostly luck.

  - It still makes sense for investors to chase good past returns.

  - Large fees can persist in funds that don't offer more than market return.

  - Managers with a good performance history make a good deal of money.

Tailoring Your Investments

- Even if stocks are fairly priced, you still need to take a number of steps to ensure that your investments fit you. We've touched on some of these steps already.

- In Lecture 2, we learned about the two fundamental securities. Stocks are an ownership claim, while bonds are loans. Both of those might be fairly priced, but they are very different, and you want to be sure to get the one that's right for you.

- In Lecture 4, we learned about historical returns and the volatility of stocks. Stocks clearly offer the potential for hefty returns, but that comes at the cost of quite a bit of risk. You want to consider the amount of risk that's right for you.

- In Lecture 5, we learned that diversifying is one of the closest things to a free lunch you're going to find. That's important even in a perfectly efficient market!

- Finally, before trying to beat the market, you should also think about the risk of your job. If it's secure, you can probably take more risk, but you may want to buy stocks out of your line of business to ensure that in the event of a setback, your job and your portfolio don't suffer at the same time.

Suggested Reading

Bodie, Marcus, and *Kane, Investments,* chapter 11.

Malkiel, *A Random Walk down Wall Street*.

Samuelson, "Challenge to Judgment."

Questions to Consider

1. Most experts agree that it's easier to pick winners in the real estate market than the stock market. (It's also easier to lose a lot, but put that

aside for now.) What differences in the structure of the real estate market and the stock market make that possible?

2. What can a financial planner do to help you, even if he or she can't pick winners?

Choosing a Brokerage Firm

Lecture 8

In this lecture, we'll learn about working with brokers and brokerage firms. Many people say that Wall Street is motivated by greed and that brokers prey on defenseless consumers. It's true that the financial services industry has its share of scoundrels, but so does every other profession. Most brokers are honest, and most of the people who get scammed by allegedly greedy brokers are victimized because they're greedy, too. Of course, you don't need a broker to invest in stocks, but you do need some kind of brokerage account so that you can get brokerage services. In this lecture, we'll see how to choose the services that are right for you.

Scams and Fraud

- Distrust of Wall Street isn't new, but the fact is that most brokers are honest, and most people who get scammed are those who fall for a get-rich-quick scheme because they want to make money without having to work for it.

- A common ploy of con artists is to pretend that they're offering a special deal available only to a select group. If someone offers you an "exclusive opportunity," ask yourself why you have suddenly been chosen. Think about all the smart people backed by advanced technology who spend their whole careers trying to identify good deals. Is it really possible that an exclusive opportunity would bypass all those people to reach a small investor first?

- Most of us wouldn't fall for a scam that came out of the blue, but *affinity fraud* can be dangerous to almost anyone. With this type of fraud, you're approached by someone who's a member of group to which you belong—a school alumni organization or even a church group. Con artists know that you're much more likely to trust someone from an affinity group.

- When it comes to choosing a broker or financial advisor, don't be swayed by the siren song of exclusivity and superior returns.

Choosing a Broker

- You don't need a broker to invest in stocks, but you need some type of brokerage account so that you have access to brokerage services. These services might include performing research and offering advice or just placing orders. The type of broker you choose depends on whether or not you want additional services and whether you're willing to pay for them.

- Finding a broker you trust is no different from finding a trustworthy lawyer, doctor, or carpenter. Seek out recommendations from friends, find out how long the broker has been in business, and get information on fees and services.

- Several layers of protection—legal, industrial, corporate, and competitive—help ensure that financial service providers remain honest. These providers are subject to extensive securities laws and must hold certain licenses before they're allowed to engage in business. Further, most financial services firms safeguard their reputations; they wouldn't risk losing future business by taking advantage of current customers.

- Richard Ferri, a chartered financial analyst and founder of an investment management firm, offers a three-point approach to choosing a financial advisor. Ferri's first step is to determine what you want. Are you looking for a big-picture advisor or just a portfolio manager?
    - In the financial services industry, financial planners are generalists; they help with budgeting, insurance, taxes, and estate planning, as well as investing.

    - In contrast, portfolio managers may help you sketch out a plan, but their specialty is managing money, that is, investing your assets and handling trading activities according to your investment strategy.

- Financial planners usually hold one of two certificates: certified financial planner (CFP) or chartered financial consultant (ChFC). Portfolio managers and investment analysts are often chartered financial analysts (CFAs). Anyone who holds of any of these three credentials is bound by a code of ethics.

- The SEC and state securities agencies keep records on financial advisors that you can check to see if an advisor has a clean record.

- Ferri also recommends selecting someone who shares your investment philosophy. If you want a passive strategy, then choosing an advisor who thinks he or she can pick winners on a regular basis won't work for you. The advisor will provide too many recommendations that you're not interested in hearing. In contrast, if you want a more active strategy, then an advisor who leans toward buying a diversified portfolio and more or less sitting on it won't suit your needs.

- Finally, Ferri notes that you should find out how a prospective broker gets paid, which is typically in one of four ways.
  - Financial advisors may collect commissions, but if their compensation depends on selling particular products, of course, they'll focus on those products.

  - Advisors may also get paid hourly fees. This approach eliminates the incentive to push high-commission products, but you can't monitor the actual hours an advisor works.

  - Advisors who are on retainer charge an annual fee based on the amount of work that they expect to do during the year. One risk here is that you may not use all the services the advisor offers; in that case, you've wasted the retainer.

  - Finally, advisors may get paid a percentage of assets under management. These fees may range from 0.25% to 2%.

Investment Policy Statement

- Unless you plan to use a bare-bones brokerage account that doesn't offer anything beyond transaction services, then you may want to develop an investment policy statement (IPS), which is road map for your investment program. Questions to ask yourself as you develop this statement include the following:
    - What are your investment objectives?
    - Who will make your investment decisions, you or the financial advisor?
    - From your perspective, what constitutes a permissible investment, stocks only or other types of financial instruments?
    - Do you want to borrow funds to buy more stock and increase your equity stake?
    - How will you respond to good and bad outcomes?
    - What risks are you willing to take, and which ones do you want to avoid?
    - Which of your assets will your advisor have access to?
    - Do you want your advisor to consider your tax position?
    - How much trading will you tolerate?
    - What benchmarks will you use to identify acceptable portfolio performance?

- An IPS doesn't have to be complicated, but it's worthwhile to answer these questions for yourself, preferably before you formally agree to become an advisor's client. If you have an advisor already, you may want to develop an IPS with his or her input.

Financial Services Fees

- Choosing the right broker is much more important for investors who believe in active management than it is for passive investors.
  - Passive investors are mostly interested in the fees they're paying because their investment returns will depend almost totally on how the stock market behaves.

  - Active investors trade much more frequently, and the success or failure of those trades can swamp the fee structure. If active management adds 10% to your portfolio returns, then you won't be too unhappy if the trades cost you 2%. But if active management subtracts 10%, then you'll be angry. Incurring all those trading costs to be down 10% more than the market is difficult to take.

- As you know, commissions can be hefty. Some brokers charge more than $30 per trade! Others charge much less, and some even offer a limited number of free trades per month for investors with balances over some minimum amount, such as $20,000.

- Depending on the makeup of your portfolio, though, a minimum balance might be a hidden fee. If it takes a $20,000 balance to get free trades and you have that much in stocks, then the balance is not a problem. But if your account has $15,000 in stocks and $5,000 in cash, then you need to consider how much you're earning on that cash.
  - Most of the time, you won't earn as much on idle cash in a brokerage account as you would in a money market fund or bank account.

  - The difference is what economists call an *opportunity cost*. To hold the money in your brokerage account as cash to get free trades costs you the opportunity to earn more somewhere else.

- You'll also find account maintenance fees, fees for wire transfers or overnight delivery, fees for paper statements instead of electronic ones, and numerous other charges. Of course, fees are inevitable,

but you shouldn't pay for services you won't use, and you should be sure that you're comfortable with the ones you do pay for.

Opening a Brokerage Account

- Opening an account with a financial services provider is easy. You can usually do it online in about 10 or 15 minutes.

- To open an account, you'll need your Social Security number, a mailing address, employment information, and some general financial information, such as your income and net worth. As with any interaction you have over the Internet, be sure that you're using a legitimate website. Never provide sensitive financial information on any website that raises doubts or in response to an unsolicited email or phone call.

- Some of the information you use to open an account serves as a quick filter to make sure that the account is at least a reasonable match for your needs. For example, if you have an annual income

Ask potential financial services providers what questions you should be asking; you may identify important considerations you hadn't thought about before.

of $300,000 and a net worth of $30 million, then you don't want the student checking account. If you're a student with no income and a net worth of $10,000, then you shouldn't waste time applying for an account designed for wealthy clients.

- As an assignment, go online and look at application procedures. Then call a financial services firm and ask for an application. Tell the representative you speak to that you are only gathering information at this stage. Look for ads for brokers and financial services firms on television or the Internet to see how they present themselves and what approaches appeal to you. This kind of research will help you when you're ready to choose a provider to meet your investment needs.

Suggested Reading

Lewins, *How to Keep from Going Broke with a Broker*.

Tyson, *Investing for Dummies*, chapter 9.

Questions to Consider

1. What type of brokerage services do you want? Do you want to pay for your brokerage services with commissions or some other way?

2. What things might you want to include in your investment policy statement?

Trading and Investing Basics

Lecture 9

In this lecture, we'll learn some basic ideas and vocabulary that you might find useful when trading stocks. First, however, we need to learn some of the mechanics of stock trading, such as how trades are executed and cleared. We'll then explore different types of orders you can place, including market orders, limit orders, and stop-loss orders, to meet different needs. We'll close with a look at short selling. Should the practice be banned, or does it actually provide benefits for the market?

Executing Trade Orders

- A good deal of activity takes place behind the scenes in a stock market. Someone makes sure shares are available; someone handles special orders; and someone keeps track of who owns stocks and records transfers of ownership. We don't usually care about this behind-the-scenes activity, but it's important to have some understanding of it when you place orders with your broker.

- The completion of a trade is called its *execution*. After you place an order with your broker, it is executed by one of four methods.
    - It might be sent to the stock exchange to get matched with another order from someone who wants to buy (if your order is to sell) or to sell (if your order is to buy).

    - Your order might also go to a *market maker*. These are companies that stand ready to buy or sell at least 100 shares at posted quotes. The buy price of these companies is a little lower than their sell price to enable them make to a profit.

    - Your order might go to an electronic communications network (ECN), which automatically matches buyers and sellers who agree on price.

- Finally, your broker may internalize your order. This means that your broker's firm has the shares you need in its own inventory. The firm may make money on the spread—the difference between the quoted buy price and the quoted sell price.

- After your order works its way through one of these four routes and finds a counterparty, it is executed. The actual exchange of money and securities occurs later.

- The process of routing your order through the markets to find a counterparty is usually blindingly fast, but keep in mind that prices can change quickly, too. What's more, the price quote you see on your computer screen or receive from your broker is for a specific number of shares. Either the timing lag or the size of the quote can cause you to get a different price than you expected when you placed your order to trade.

Clearing Orders

- The second portion of a stock transaction, called *clearing*, occurs after the trade is executed. This term refers to recordkeeping and transaction services between the time you make your trade until settlement, which is when the money and securities officially change hands.

- Clearing involves reporting the trade to appropriate entities and confirming that the trade meets legal requirements. This process used to be much less efficient. In the early 1970s, the backlog of records on trades got so bad that the stock exchanges closed on Wednesdays to give harried back offices time to catch up. As volume increased, recordkeeping became increasingly difficult, and the risk of loss through theft or simple error was significant.

- This situation improved greatly with the advent of the Depository Trust Company (DTC) in 1973. The DTC, which later became a subsidiary of the Depository Trust & Clearing Corporation, combines two brilliant ideas for handling recordkeeping associated with the stock market.

- The first idea is *immobilization*, which emerged from the fact that stock certificates are just proof of ownership. As long as traders agree on a reputable organization to store the certificates, only changes of ownership need to be recorded. In other words, the certificate itself doesn't have to be physically moved.

- The second brilliant idea to resolve the paperwork backlog was *multilateral netting*. This system allows each brokerage firm to send or receive a single dollar amount to or from the central counterparty in a transaction rather than transferring money among all parties.

Types of Orders

- Market participants have developed several different types of buy and sell orders. They give the broker instructions about the timing of an order, acceptable prices, or the duration of the order.

- The simplest type of order is the *market order*, which tells a broker to buy or sell at the best available price immediately. Usually, execution takes place within seconds or minutes. Again, you can't be sure of the price, though, because the quotes may change between the time you place the order and time it's executed or because the size of the order doesn't match the size of the quote.

- Another type of bid is the *limit order*, which is an order to buy or sell at a specified price. You might use a limit order while you're on vacation to buy shares of a certain stock if the price drops below a specified amount or to sell shares if the price rises above a specified amount.

		Condition	
		Price falls below limit	**Price rises above limit**
Action	**Buy**	Limit buy order	Stop-buy order
	Sell	Stop-loss order	Limit sell order

Different types of orders fit different investing needs.

- A *stop-loss order* is an order to sell if a price falls below a specified target. The idea here is to limit your losses on a security holding. Some investors use limit orders as a way of deciding the biggest loss they can handle in advance. They place limit orders ahead of time because they don't want to risk making an emotional decision that they'll regret later.

- Limit orders have some drawbacks. First, they typically cost more than market orders. Second, short-term stock-price fluctuations can trigger a limit order, and such movements can't be predicted. A stock price might move just barely past the limit, allowing the order to execute, but then the price can reverse back under the limit again. Finally, a limit order becomes a market order at the limit price, and as we've seen, the execution price for a market order can differ from the quoted price at the time it's placed.

- Limits are a class of orders that specify a price. Another class specifies how long the order exists before it's canceled. Examples include day orders, good-'til-canceled orders, immediate-or-cancel orders, and all-or-none orders. You can also specify orders to be executed "at the open" of the market or "at the close" of the market.

Margin Accounts

- A margin account is a convenient way to borrow money to buy more stock. Because it enables you to own more shares, buying on margin magnifies your gains.

- The investing world uses two types of margin. The first is *initial margin*. That's the percentage of the stock price that comes from your own funds. The Federal Reserve sets minimum initial margins, usually at about 50%. That means you can buy $1000 worth of stock with $500 of your own money and $500 of cash borrowed from your margin account.

- The second type of margin is *maintenance margin*. As the name suggests, this is the minimum amount of equity you can have in your margin account without being required to deposit more funds.

Maintenance margin limits vary from broker to broker. The NYSE and the Financial Industry Regulatory Authority require a minimum of 25% equity relative to the total market value of the securities in the margin account, but brokerage firms commonly require 30% to 40%.

Short Selling

- Another way to trade with the help of borrowing is called *short selling*, but you don't borrow money for a short sale; instead, you borrow a share and sell it. Eventually, you have to return the borrowed share, of course. You win at short selling if you can repurchase and return the borrowed share at a lower price than you got when you sold it. When you sell short, you're betting that the share price will fall.

- The rules for shorting are fairly detailed. According to SEC regulations, short sellers can borrow from one of their brokerage firm's customers or from some other brokerage institution.

- After the sale, the short seller doesn't get access to the proceeds until he or she closes the position. The proceeds must be left with the brokerage firm that handled the sale as collateral to help guarantee that the seller will be able to buy the replacement shares.

- Because you don't own the stock you're short selling—remember, you borrowed it—you have to make good on any payments the stock made during the course of the short. For example, you have to turn over any dividends to the security lender. If the stock splits two-for-one while you hold the short position, then you'll have to return twice the number of shares.

- Short sellers are also subject to *margin calls*, or notifications to deposit more cash in their accounts.
    - Suppose you short a stock at $50. You must leave that $50 with your broker as collateral to ensure that you'll be able to replace the shares you borrowed when necessary.

- But if the shares rise to $100, you won't have enough money in the account to secure your promise to repurchase the borrowed shares. In that case, you get a margin call, and if you can't satisfy it, the firm will close your short position and you'll have to come up with any shortfall the firm incurred.

- *Short interest* is the number of shares of a company that have been shorted. Some people see short interest as an indication of whether investors think the share price is likely to fall. You can find short interest levels for stocks in financial publications or on the Internet.

- Some people believe that shorting should be banned, primarily because it can drive down stock prices to levels that are too low, and stocks that are underpriced relative to their fundamental values are bad for the economy. Companies with underpriced shares have difficulty raising capital and expanding. Further, resources may be inappropriately diverted to other companies or industries.

- In the end, banning short sales doesn't seem to be a good idea, for a number of reasons.
  - First, short sellers add liquidity to markets.
  - Second, evidence suggests that short sales tend to drive prices to the right values sooner rather than later.
  - Third, short sellers have been among the first to identify financial fraud.
  - Finally, bans don't seem to help markets, and they increase trading costs.

- Keep in mind, though, that opposing a ban on shorting is a far cry from suggesting that ordinary investors—people like us—should conduct short sales. We're looking to make money over a reasonably long period of time, certainly longer than people holding short positions. Further, short sales are risky, and we can

get a better expected return without taking that risk. We don't want to fight battles when the odds are against us.

Suggested Reading

Bodie, Marcus, and Kane, *Investments*, chapter 3.

Dimson, *Stock Market Anomalies*.

Jones, *Investments: Analysis and Management*, chapter 5.

Questions to Consider

1. What type of order to buy or sell stock do you think is the most common for investors who believe that markets are mostly efficient?

2. Almost all investment professionals agree that short selling is too risky for most individual investors. Why do they say that? Would a ban on short selling by individuals be a good idea?

Trading Strategies and Common Mistakes

Lecture 10

In Lecture 7, we learned about the efficient market hypothesis, and we saw that although the market price is almost certainly wrong, it's also almost certainly fair. It's as likely to be too high as it is to be too low. That's a recurring theme in several lectures. In this lecture, we will continue to discuss trading and investing strategies, but it's important to keep the key ideas about efficient markets in mind to help sort out good strategies from bad ones.

Odds of Coming out Ahead

- If you and I are the only two traders in the market, then anything you make above the market return must come from me. If you bought an underpriced security from me, that means I sold it for less than it's worth. However much you win, I lose exactly the same amount. If a friend joins the market, you might win from him or her instead of me, but it's still true that your winnings collectively come from the rest of the market players; thus, the entire market is still even.

- Active traders are gambling that they'll be on the winning side. What are the odds of that happening? Mark Hulbert of the popular Internet site *MarketWatch* reported the results of a study showing that 51 financial advisors out of more than 200 beat the market in the 10-year period ending April 30, 2012. Yet of those 51, only 11 outperformed the overall market the following year, and some of those 11 have since turned in below-average performance. Beating the market consistently is tough!

- Still, analysts earn their keep. Although they may not have good trading strategies to make you money, they know some bad ones that'll cost you. Examples include *churning*, or trading too much, which just incurs transaction costs, and failing to diversify, which

gives you extra risk with nothing in return. A good financial advisor can also help keep your risk levels where you want them.

Dollar-Cost Averaging

- The strategy known as *dollar-cost averaging* is a method of investing equal dollar amounts over specified time periods. The following chart shows how it might work for an investment of $100 per month.

Month	Investment	Share Price	Shares Purchased
January	$100	$20	5
February	$100	$10	10
March	$100	$25	4

- If you do the arithmetic, you'll see that the average share price over the period is $18.33, but you paid an average of only $15.79 per share. The strategy seems good: By investing the same amount every period, the math guarantees that you'll pay an average price per share that's less than the average share price over the period.

- But how can that be? If the price is fair in January, February, and March, how can three fair prices turn out to be better than fair? The problem here is that the average price per share purchased and the average price over the period are two different types of averages.
    - The average price over the investment period is an *equally weighted average*. We count January the same as February and March.

    - The average price per share purchased, though, is a *share-weighted average*. In our example, February's 10 shares count twice as much as January's 5 shares.

    - Both averages can make sense because they are telling different stories.

- Dollar-cost averaging doesn't seem to deliver on the promise that it allows you to pay a lower average price per share than the average share price, but it still has some appeal. If you use this strategy, you invest on a consistent, ongoing basis. In this way, dollar-cost averaging may lead to good outcomes but not for the reason that most people think.

Behavioral Finance

- The idea behind the field of behavioral finance is that people's emotions affect prices. Of course, everyone agrees that emotions affect people's decisions. For behavioral finance to make any difference in the price of stocks, though, we also have to assume that clever, experienced investors are restricted in the amount of trading they can do.

- The reason restrictions matter is that if clever investors are unfettered, then competition will protect emotional traders. Even if you panic and want to sell a stock at a low price, competition will ensure that you get a price around the stock's value at the time. That's why behavioral finance must limit the amount of trading that clever investors can do. Otherwise, the theory breaks down because emotional traders don't make any difference to prices.

- The most important contribution of behavioral finance may be its ability to help identify emotional patterns behind some of the mistakes we make. These patterns include *confirmation bias*, the tendency to favor evidence that supports what we already believe; *overconfidence bias*, the tendency to believe you have a skill or advantage that others don't; and *loss-aversion bias*, the tendency to avoid admitting a mistake or accepting a bad outcome.

Market Observations

- The stock market is fairly efficient, but we can still identify a few intriguing observations that can help us invest more wisely.

- For example, two sets of stock market experts, Professors Andrew Lo and Craig MacKinlay, as well as Professors Jennifer Conrad and

Gautam Kaul, found that over short horizons (a few weeks), stock market trends tend to persist. Good weeks tend to be followed by good weeks, and bad weeks tend to be followed by bad ones.

- Later, Professors Narasimhan Jegadeesh and Sheridan Titman demonstrated that portfolios of stocks that did well over a period of a few months to a year tended to do well over the next period, too.

- It's also true, however, that any short- or intermediate-term momentum typically reverses over longer periods of about 3 years.

- One approach to using this knowledge would be to buy the 35 stocks that performed worst over the last 5 years and sell the 35 stocks that performed best over the last 5 years, then hold that position for 3 years. Professors Werner DeBondt and Richard Thaler found that, on average, the losers beat the winners by a total of about 25% over 3 years.

- If you decide that you want to chase a little bit of extra return by playing short-term momentum and long-term reversal, you should realize that you have to make a rather dicey call on what constitutes "short term" and "long term."

- You might be able to make a little extra money relative to the market by playing this game with small, illiquid stocks, which show this pattern more reliably than the rest of the market.

- Another strategy that might earn a bit more than the market average is to buy *value stocks*, which have low market values compared to their accounting book values. Some studies have shown these stocks tend to do a bit better than traditional risk measures predict.

- Yet another idea is to buy the stocks of companies that repurchase their own shares as soon as you learn they plan to do so. There's some evidence that share repurchases foretell above-average returns.

- Buying stocks with low betas also seems to be a reasonable plan. *Beta* is a technical measure of how a company's stock price moves relative to the market. High-beta stocks tend to move more than the market. Low-beta stocks tend to move less. The average stock, by definition, has a beta of 1. You can find estimates of stock betas online, but these estimates are notoriously inconsistent and unstable.

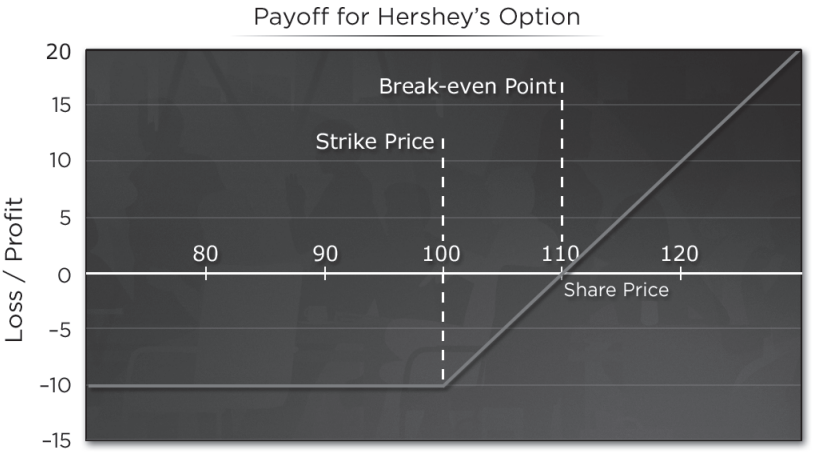
Options

- Options on stock come in two basic types: *call options* and *put options*. Owning a call option gives you the ability to buy shares at a predetermined price if you want to, but you don't have to make the purchase. A put option gives you the ability to sell shares at a predetermined price if you want to, but again, you don't have to make the sale.

- Options are bought or sold through an options exchange, such as the Chicago Board Options Exchange (CBOE), to which brokers have access. Subject to SEC rules, the option exchange has complete discretion to set the terms of the contract.

- These terms affect the option's value. For example, the predetermined price you'll pay if you decide to exercise your option and buy the stock is obviously important. An option that allows you to buy at $1 million per share isn't worth much because you'll always be able to buy the shares for less than that on the open market. The *exercise price*, also known as the *strike price*, is too high in this case.

- The longer the life of the option, the more valuable it is. If a stock is trading at $50 and the strike price is $60, then the option is "out of the money," meaning that if you exercise it, you'll lose. If the option is good for only 1 day, then the odds are that the stock won't reach $60 before the option expires. But if you have 90 days before expiration, there's a chance that the stock will rise above the strike price and be "in the money." If it does, then you can exercise the option to buy the stock at the strike price and make a profit.



On a graph, the payoff line is shaped like a hockey stick; it's flat until the share price reaches the strike price, then increases dollar for dollar with the stock price.

- Call options allow you to act on your confidence in a stock with a much lower investment.
    - If you believe that a stock will appreciate over the next 90 days, then you could buy low-cost call options on the shares instead of buying the shares themselves.

    - Then, if you're wrong and the stock stays close to the strike price or declines, you're out only the cost of the options plus trading costs. If you're right and those options end up in the money, you will make about as much money on each option as you would have if you had bought the share itself and with just a fraction of the initial investment. You don't pay the strike price unless and until you will make a profit.

Becoming a Better Investor

- Many financial advisors tell their clients to read the business news and pay attention to what the stock market is doing. That's good advice, but it's also important to think critically about what you read or hear. For example, a company's strong earnings may be good for

the company, but does that make the company a good investment, or is it already too late to cash in?

- Recognize that you'll never know enough. Investing is a gigantic field, and no one can pretend to know even most of it.

- When you see that a particular strategy seems to win or seems to lose, use your knowledge of how markets work to try to understand what's actually going on.

Suggested Reading

Bodie, Marcus, and Kane, *Investments*, pp. 381–391, 667–686.

Dimson, *Stock Market Anomalies*.

Questions to Consider

1. What types of stocks are less likely to be good fits for your portfolio, given your job and career path?

2. Suppose you decide that you want to try to squeeze a little more return out of your portfolio. Which of the trading strategies in this lecture fits you the best?

The Language of Financial Reporting

Lecture 11

Some investment guides advise you to learn how to analyze a corporation's financial statements, but that probably won't help you with your investing. Realistically, there's no way that most people will get good enough at analyzing financial statements to do even rudimentary financial analysis. Further, our goal is to find good investments, not good companies. A company with lots of debt and declining sales might be a good investment if the price is low enough. A great company with wonderful prospects might be a bad investment if the price is high enough. That said, it's useful to gain some familiarity with financial statements to help understand the language and concepts of financial reporting.

The Corporate Balance Sheet

- Jay Taparia, the founder of Sanskar, an investments and tax services firm, suggests that we think of corporate financial statements in terms of personal finances. We can compare a corporate balance sheet to a mortgage application, a corporate income statement to a personal tax return, and a corporate cash flow statement to a checking account statement. Let's look at these three financial statements in a little more detail.

- If you've ever applied for a mortgage or other loan, then you have a good idea of what a corporate balance sheet looks like. Your application was a snapshot of your financial position. Lenders want to see whether or not you'll be in over your head if they give you a loan.

- A corporate balance sheet is similar. It lists the company's assets on the left side and its liabilities on the right side (see below). The balance sheet answers the question that a company's owners and creditors always ask: What did you do with the money we gave you?

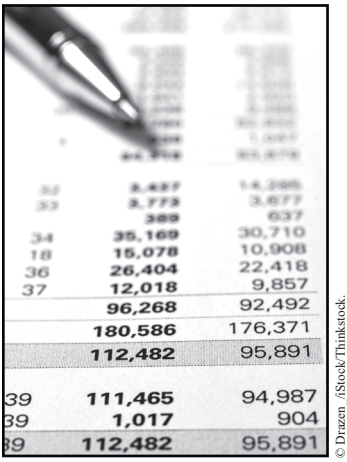
	Assets ($)	Liabilities ($)
Cash	1,000,000	1,000,000 Long-term debt
Long-term assets	3,000,000	3,000,000 Equity
Total assets	4,000,000	4,000,000 Total liabilities and equity

- Let's say that someone loaned the company $1 million, and someone else invested $3 million in the company's equity—an ownership claim. That's where the money came from. What did the company do with the money? The answer might be that it still has $1 million in cash and used the other $3 million to buy a long-term asset, such as an office building.

- The right side of the balance sheet, the liabilities side, tells us where the company got the money. The left side, the asset side, tells us where it went. Because every dollar that came into the company went somewhere, the two sides of the balance sheet have the same bottom line—they balance.

- It's important to note that constructing a balance sheet requires making several assumptions. After all, the idea is to capture the essence of a large company and distill it into information on a few pieces of paper or a small computer file. That task is impossible without making simplifying assumptions. The result is an estimate of reality, not reality itself.

- Let's look at some common entries on the asset side of a balance sheet.
  - Cash and equivalents: Equivalents must be assets that the company can convert



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Financial statements can teach us a tremendous amount about a company, but we must remember that they are based in part on simplifying assumptions.

to cash immediately, such as treasury bills or government bonds that are near maturity.

- Short-term investments: These assets are a little less liquid than cash and equivalents, such as bank CDs. The cutoff for short-term investments is 1 year.

- Inventories: Of course, inventories are the products on a company's shelf, goods in storage, and the like. Companies prefer not to have a large amount of funds tied up in inventory because those funds don't earn anything. If a company decides that some of its inventory has been damaged or has become obsolete, it will "write down" the inventory.

- Total current assets: This category includes assets the company owns that it expects to convert to cash within the next year.

- Property, plant, and equipment: This category includes administrative structures, manufacturing facilities, equipment, land, and so on.

- Accumulated depreciation: This line represents total depreciation of assets since they were acquired. It is often a rough estimate because accounting rules simply can't handle all the different ways that things can decline in value.

- Entries on the liabilities side of the balance sheet include the following:
  - Total stockholder equity/Total net worth: Total stockholder equity can change if, for example, owners put more money into a company or if the company earns a profit and plows the money back into productive assets.

  - Common stock: This item represents the owners' contribution to the company.

  - Retained earnings: This item represents money the company earned and reinvested in the firm.

The Corporate Income Statement

- The corporate income statement is the company's answer to the question: How much money did you make? If you're looking for a company's report card, you typically turn to the income statement.

- Again, Jay Taparia likened the income statement to a personal tax return. Sources of income (sales or revenues) are listed at the top; deductions, such as personal exemptions (business expenses), are then subtracted; and the result is taxable income (income before taxes).

- Notice that an income statement isn't a snapshot, as a balance sheet is. The balance sheet reflects a company's position at a specific point in time. A tax return or income statement spans a period of time, usually a year for a person but often a quarter for a company.

- Like the balance sheet, the income statement requires accountants to make numerous assumptions. For example, an income statement's figure for reported sales assumes that a certain amount of those sales will be returned and that a certain number of people won't pay for them at all. That assumption makes sense, because returns and bad debts happen, but that doesn't mean that the number on the income statement isn't an estimate.

- Some common entries on an income statement include the following:
    - Revenues/Sales: Revenues include sales and a few other sources of cash, such as payments received for royalties or patents. Sales represents the total proceeds from sales of the company's products.

    - Cost of goods sold/Cost of sales: The direct costs of selling or making a product.

    - Gross profit: The difference between revenues or sales and cost of sales.

- Operating income: The profits a company has earned from its regular business during the reporting period.

- Provision for income taxes: The accountants' best estimate of what is owed to the government.

- Net income: The "bottom line" of the income statement.

The Cash Flow Statement

- The cash flow statement is the equivalent to a checking account statement. It's the bridge between the balance sheet and the income statement.

- The cash flow statement usually has three parts: cash flow from operating activities, cash from corporate investing, and cash from financing activities.

- The idea behind the cash flow statement is to track changes in the company's cash position. To accomplish that task, accountants and analysts start with net income, then adjust it for factors that affect net income but don't affect cash, such as depreciation.
  - To understand this idea, think of depreciation on a car. You might buy a car for $20,000, but after a year, it's worth only $18,000. That decline in value means that you lost $2000, but it didn't come out of your pocket. Your income for the year is down $2000, but your cash position didn't change because the car depreciated in value.

  - Depreciation expenses for a company reduce income, just like the depreciation on your car did, but they don't affect cash. On the cash flow statement, accountants add depreciation back into income to compensate.

  - The same idea applies to employee stock options when they're granted but not exercised. This usually appears in a line labeled "Share-based compensation." Because stock options are a real

cost to the company, they have to be deducted from income, but they don't affect cash.

- The line labeled "Net cash from operations" is the total of net income and all the adjustments.

- The second part of the cash flow statement handles investing activities. These are investments at the firm level, such as building a new factory, as distinct from financial activities, such as issuing stock. In this part of the statement, you might see line items for additions to property, plant, and equipment; capital expenditures; and asset sales. Adding all these items yields net cash from investing activities.

- The third component of the statement, financing activities, includes such items as debt repayment, dividends paid, and proceeds from stock sales.

- Adding all three components of the cash flow statement yields the net change in cash holdings.

- Although most people tend to focus on accounting profits, cash flow is what matters. Accountants will be the first to tell you that what they report as "earnings" doesn't really reflect the amount of money that the company produced for its shareholders. In other words, despite the accountants' best efforts, accounting earnings don't always reflect reality.

Other Factors for Analysis

- Analysts get a feel for how much debt a company carries with the debt ratio, which is total debt divided by total assets. But analysts don't agree on whether a firm should have a lot of debt or a little because there are so many other factors involved. In general, a rapid increase in debt is seen as bad.

- Analysts also check gross and net margins. Gross margin is gross profit divided by revenues (or sales). This figure shows how much

of each sales dollar is left to cover the costs of running the rest of the company and to go toward profits. Gross margins can vary tremendously, depending on the type of business. Net margin is net profit divided by revenues (or sales). This figure is the part of each sales dollar that remains after such deductions as research and development, administrative expenses, and so on.

- Earnings per share (EPS) is another factor that analysts study. EPS is the profit the company earned for each outstanding share of stock. In general, a high EPS is better than a low one, and analysts like to see steady EPS growth from year to year.

- Finally, the dividend yield is the percentage of the stock price that a company pays in dividends. A high dividend yield tells us more about the nature of the company's growth than it does about whether or not the stock is a good deal. Mature companies tend to have higher dividend yields because they don't have many growth opportunities and, therefore, aren't reinvesting their profits in new ventures. In contrast, growth companies need to plow their earnings back into the company to take advantage of opportunities.

Suggested Reading

Bodie, Marcus, and Kane, *Investments*, chapter 19.

Jones, *Investments: Analysis and Management*, chapter 18.

Questions to Consider

1. Generally accepted accounting principles (GAAP) is a set of guidelines that accountants follow. Accountants know that GAAP can force them to put numbers on financial statements that just don't reflect reality. Why would they do this?

2. Instead of just studying financial statements and ratios in isolation, analysts also compare these values to those of other companies in the same industry. Why would they do this?

Corporate Analysis and Valuation

Lecture 12

Getting a handle on a corporation's value is an inexact science that depends on many assumptions. Consider what this task entails: trying to boil down to a dollar value a huge entity that may operate on five continents, control assets worth hundreds of billions of dollars, employ tens of thousands of people, compete with dozens of similar companies, and have new products under development! Reaching an accurate valuation depends on many assumptions and isn't easy, but by understanding what drives corporate value, we'll understand why businesses make some of the decisions they do, and we'll understand the limits of our knowledge.

Valuation Techniques

- Valuation techniques are numerous, and it's rare that they agree on how much a company is worth. Most analysts use one of two approaches to estimate the value of a company's stock: *discounted cash flow* or *relative valuation*.

- The discounted cash flow approach has three steps: (1) Forecast any of several values, such as dividends, earnings, and cash flow, for the next few years; (2) estimate how much those streams of value are worth today; (3) add the "secret sauce"—perhaps an emphasis on growth over the market's consensus or a focus on management quality. Every analyst has his or her own secret sauce.

- In the relative valuation technique, analysts calculate a set of ratios that they think distills a company's value in the best way possible. Common choices for these ratios include the price/earnings ratio (P/E), price-to-cash-flow ratio, and price-to-book-value ratio. Then, analysts compare those ratios to those of competing firms in the same industry.
    - For example, on July 11, 2013, Lowe's was trading for about $43 or $44 per share. Its earnings over the last year were about $1.75. That works out to a P/E ratio of $24.92. Investors were

paying almost $25 for each dollar of earnings that Lowe's produced. Home Depot's P/E at the time was about the same, $25.30.

- We can see the appeal of this approach. Two similar companies should have similar P/E ratios, and if they don't, then we can make the case that one is overvalued relative to the other.

Discounted Cash Flow Valuation

- Let's look more closely at the discounted cash flow valuation model. We'll use dividends as the variable of interest.

- On July 11, 2013, when Lowe's P/E ratio was about 25, its annual dividend was $1.56. The next step is to estimate those dividends going forward. Let's say that Lowe's dividend grows about 1% faster than the rate of inflation, and let's guess that inflation will be about 2% annually. That would mean a dividend increase of about 3%. If we're right, then next year's dividend will be $1.61. From there, we'll use the common assumption that dividends will grow at a constant rate.

- The next step is to estimate how much those dividends are worth today. Analysts attack this step through the process of discounting, which involves an algebraic transformation of the terminal value equation we learned in Lecture 6.
  - The formula for determining compound interest is: Terminal Value = Investment × $(1 + \text{Rate of Return})^{\text{Time Invested}}$.

  - Transforming that equation for discounting is easy, but finding the interest rate to use for discounting is difficult. Most analysts add a risk premium to the rate on government securities. This amount can range from 3% to 10%, but we'll use 6%. Adding that to the rate on government bonds on July 11, 2013 (about 2.5%), we get 8.5% for the discount rate.

- Notice that we've already made three significant assumptions. We assumed a dividend growth rate and a discount rate, and we assumed

that the discount rate would be constant. Using these assumptions, the calculation can be collapsed into a simple expression. To find the formula, do an Internet search for "dividend growth model."

- In this case, the answer turns out to be $29.21. That's about $14 or $15 less than Lowe's price on July 11, 2013. If our calculations are correct, then we should sell Lowe's before the market notices its mistake.

- We didn't quite pull those numbers out of thin air, but we definitely need to realize that our estimate is just that. Further, small changes can make a big difference. For example, if dividends grow at 5% instead of 3%, then our estimate of Lowe's stock price jumps to $46.80, and we should buy Lowe's at $45! We should also buy if our estimate of the dividend growth rate is just 1% higher and our estimate of the equity premium is just 1% lower.

- We used the dividend for our discounted cash flow example, but some analysts use earnings or cash flow. If you calculate those estimates, then you'll find that the market price doesn't agree with them either. The market price may be too high or too low to make the stock a fair investment, or more likely, our estimates may be too high or too low.

Relative Valuation

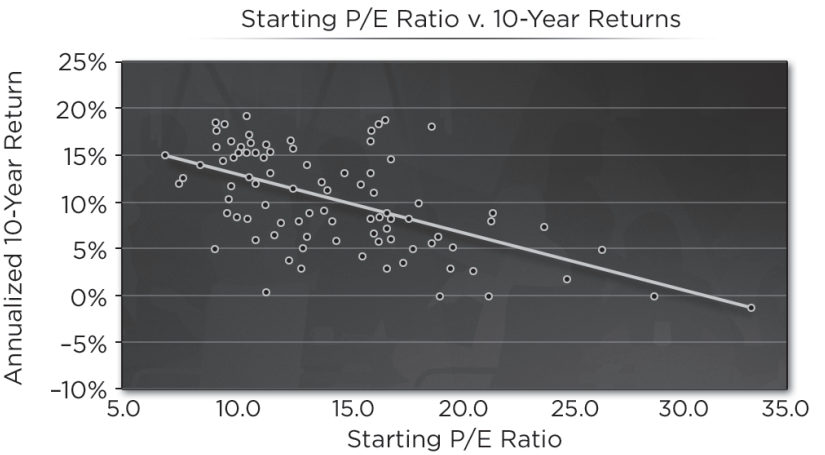
- The idea with the relative valuation technique is to look at the relationship between the stock price and various determinants of value for similar firms.

- We've already mentioned the P/E ratio, which is calculated by dividing the company's stock price by earnings per share. Like other tools in corporate analysis, the P/E ratio has its share of problems. One is that generally accepted accounting principles allow a good bit of flexibility in accounting earnings.

- P/E ratios are helpful, but you must evaluate them critically. For example, in November of 2013, McDonald's P/E ratio was 17.7,

while Wendy's was 247. You might conclude that McDonald's was underpriced relative to Wendy's or that Wendy's was overpriced relative to McDonald's. Or you might think that Wendy's sold at a relative premium to McDonald's because its future earnings were likely to grow much faster than those of McDonald's. Probably the smartest conclusion here is that you need to study these stocks further.

- Although P/E ratios are sometimes taken too seriously, there is some evidence that they can predict stock returns. The correlation isn't perfect, but over a long period of time, buying low-P/E stocks tends to be a good strategy. As we saw in Lecture 4, however, there's a relationship between risk and expected returns: In the long run, you'll tend to earn more if you take more risks. It may be that low P/E ratios come with higher risk.
    - Interest rates and P/E ratios tend to move in opposite directions. Interest rate increases roughly correspond to declining P/E ratios, and interest rate decreases roughly correspond to rising P/E ratios.



Evidence suggests that investors can do better in the long run by buying low-P/E stocks and selling high-P/E stocks.

- That makes sense because high interest rates tend to be associated with risky times. If we look at the data through that lens, then we see that stocks tend to do well in risky times, while they don't do as well during safe times.

- In risky times, investors collectively look at earnings and think, "Those earnings look shaky to me. I'm not sure those companies will be able to grow or even maintain those earnings. I'm not buying unless the stock price is low enough to compensate for the risk." That thinking translates into a low P/E ratio.

- Flipping the argument around, if the world looks reasonably safe, then investors collectively look at earnings with more confidence: "Those earnings look solid. I'll even pay a high price because the odds are good that the companies will be able to continue to show good earnings." That thinking translates into a high P/E ratio.

- Viewed in this way, the strategy of buying when P/E ratios are low and selling when they're high is completely consistent with an efficient market. You tend to earn more when P/Es are low, but you have to take more risk to earn it.

Other Valuation Techniques

- The P/E ratio may be the most popular of the relative valuation techniques, but it's far from the only one. Others include the price-to-cash-flow ratio; the price/dividend ratio; and the price/book value ratio, or market-to-book ratio. The idea behind these is the same as for the P/E ratio. For example, the price/cash flow ratio reflects the amount that the market will pay for a dollar of cash flow.

- Analysts know that using book values has numerous problems. First, book values are based on historical values of assets and liabilities, which may not reflect current values. Further, some assets, such as brand names, may not appear on the balance sheet.

- Some people think that book value represents the floor for the market price of a stock, but that's a mistake. You can always find several companies with market prices below book value.

- Despite its flaws, book value is often used by analysts because it's the only information they have. Privately held companies don't trade often, and when they do, the price isn't set in an open auction on an exchange but through negotiation.

- Using ratios of publicly traded companies also has limitations. For example, many publicly traded companies have negative earnings, which means that the P/E ratio is negative and can't be used for valuation. For companies with no current earnings, analysts fall back on other approaches, such as the discounted cash flow technique, but every approach has its own problems.

Understanding Valuation

- If there are so many problems with valuation techniques, why should we bother using them? If you plan to sell your share of a small, privately held business or if you plan to buy a supplier or a competitor's business, you need to use some type of valuation technique to give you an idea of the right price as a starting point for negotiations. But for ordinary investors in the stock market, it's probably not necessary to use valuation techniques.

- Still, a good reason to learn about valuation is to understand what drives corporate value—earnings and cash flows, as well as the discount rates that analysts apply to them.

- You can access some corporate data for calculating valuation using the SEC's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. Other helpful online sources include *Value Line* and *Yahoo Finance*.

- The next time you listen to the news or check the Internet for financial information, you'll encounter some of the terms covered in this lecture. As always, take a moment to think about whether what

you're hearing makes sense. Ask yourself: Have the commentators picked the right tools for the difficult job of distilling a company into just a few concepts and numbers?

Suggested Reading

Bodie, Marcus, and Kane, *Investments*, chapter 18.

Jones, *Investments: Analysis and Management*, chapters 10, 15.

Questions to Consider

1. Why are there so many different "secret sauces" in securities analysis?

2. Why do you think stocks with low price/earnings ratios tend to return a little more than stocks with high price/earnings ratios?

3. Why do typical financial ratios in one industry differ from those in another?

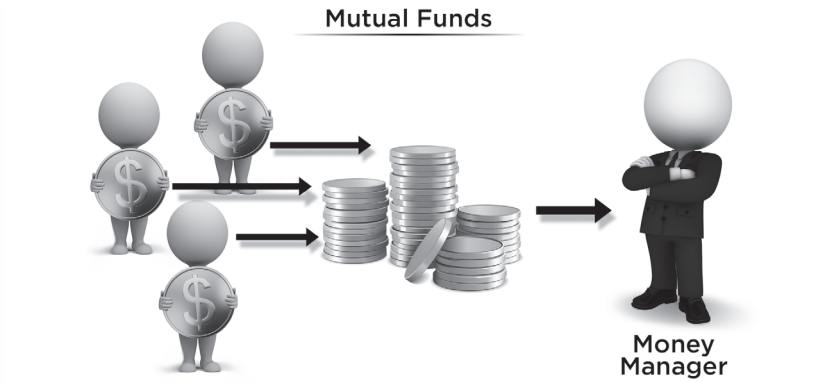
Mutual Funds and Other Investment Companies

Lecture 13

Mutual funds and other investment companies have great appeal for ordinary investors. They offer diversification at low cost and they're convenient, especially for people who are just getting started on building their portfolios. The idea behind mutual funds is simple: A number of investors pool their funds to buy stocks. They each contribute to management, administrative, and recordkeeping fees, and they share the proceeds, depending on how much each contributed. Benefits include the ability to diversify; reduced commissions, transaction costs, and fees; and simpler recordkeeping.

History of Mutual Funds

- The idea of pooling funds to allow diversification can be traced back to a Dutch merchant and broker named Abraham van Ketwich, who started a trust called Eendragt Maakt Magt ("Unity Creates Strength") in 1774. Holland had suffered a financial crisis during the previous 2 years, and Van Ketwich's goal was to give small investors a way to diversify and spread risk.



The idea behind mutual funds is that pooling funds allows investors to do more with their money than they could do individually.

- This idea of pooling funds to buy a diversified portfolio didn't appear in the United States until 1893, with the establishment of the Boston Personal Property Trust.

- During the Great Depression, the federal government began to regulate the mutual fund industry. The SEC was formed in 1934, and mutual funds were required to register with it and provide a prospectus. The regulatory web got tighter with the Investment Company Act of 1940, which added more disclosure requirements and attempted to reduce conflicts of interest.

- In 1971, William Fouse and John McQuown at Wells Fargo Bank established a $6 million fund for the Samsonite Corporation's pension program.
    - Their revolutionary idea was that this fund wouldn't try to beat the market; instead, they wanted to match the market return while paying rock-bottom expenses.

    - Fouse and McQuown simply invested an equal dollar amount in each of the 1,500 or so stocks on the NYSE. That way, they earned what the market earned and paid lower transaction costs than other funds paid. Investing hasn't been the same since.

Classifying Mutual Funds

- Mutual funds can be classified along several dimensions. Our primary focus is on stock funds. These can be further divided into domestic and international funds.

- Mutual funds can also be classified by their investment policy, which relates to the amount of risk they'll take in search of higher returns. Among the most popular categories are income funds, which tend to hold mature companies that pay large dividends but don't offer much hope for large price increases; growth and income funds; growth funds; and aggressive growth funds, which are the riskiest.

- Mutual funds can also be classified as taxable or tax-exempt. Most tax-exempt funds hold a number of municipal securities. You won't

find a tax-exempt stock fund, but some explicitly state that they make an effort to minimize tax bills.

- Mutual funds are either closed-end or open-end.
  - Shares in a closed-end fund are bought on a stock exchange or on NASDAQ, just as shares of a company are bought. Investors can't buy shares from the fund because it's closed. The mutual fund isn't involved in purchase transactions, other than recording ownership changes on its records.

  - With open-end funds, shares aren't traded on an exchange but are bought from, and redeemed by, the fund.

  - Today, most funds are open-end, at least in part because open-end funds can easily grow by simply issuing new shares in exchange for new funds.

  - The price for open-end funds is set according to the net asset value, which is essentially a weighted average of the prices of the securities in the fund. Funds calculate the net asset value every business day, and all purchases and sales are at net asset value at the end of the day.

Index Funds

- Of all the ways to classify mutual funds, perhaps the most important is by the way they're managed. Some funds are actively managed, meaning that professional money managers research stocks to try to find undervalued securities to buy for the fund, and they sell stocks they think are likely to be underperformers.

- Passively managed funds are built around the efficient market hypothesis we discussed earlier. The idea is that if stock prices are fair bets, then there isn't much point in spending time and money trying to find winners and losers. Investors in passively managed portfolios agree that trying to pick winners is a bad idea; thus, they choose a fund that's designed to replicate the performance of an index, such as the S&P 500.

- The idea behind these *index funds* is simple: The goal is that the investors in the fund take the average return, less the costs of running the fund. But those costs are much lower than for an actively managed fund because an index fund doesn't need security analysts and doesn't run up large transaction costs. The data show that over long periods, benchmark indexes beat about two-thirds of active managers.

- Critics assert that index funds focus on big firms and, therefore, lack diversification. That's partly true, but it's also unfair. Index funds reflect the actual market, which is dominated by big firms.

Mutual Fund Fees

- Mutual funds are subject to several different types of fees. Among the most visible are load charges. You pay a front-end load when you buy shares in the fund and a back-end load when you sell them. Back-end loads are often called *redemption fees* or *deferred sales charges*. It's common for deferred sales charges to decline or vanish if you hold the shares long enough.

- When you're investigating funds, the best approach is to add up all the fees and find out how much that total is as a percentage of assets. All else being equal, you want that number to be as low as possible, because fees come out of returns. If the fees don't lead to higher returns to cover their cost, then you don't want to pay them.

- Fees for actively managed funds look small as a percentage of assets, perhaps less than 1%. But compared to annual stock returns of, say, 6% or 7%, that 1% fee is about 15% of your portfolio returns.
    - Professor Burton Malkiel argues that the correct comparison is between fees and the extra returns that active managers earn through shrewd investing. If a manager earns an extra 2% by picking the right stocks, then a 1% fee still leaves you 1% ahead, and you wouldn't mind paying it.

- But the problem is that these extra returns seem to be quite small. Viewed that way, the extra expense of active management is mostly a loss to investors.

- The gross returns on mutual funds are just about the average return for the entire market. After deducting the costs of operating the funds, they fall a little short of the overall market.

- If you compare the performance of the average actively managed mutual fund against an index fund designed to track the overall market from 1970 through 2008, you'll find that the active fund wins maybe 15 times and the index fund wins a few more than 20 times, with the rest too close to worry about.

- It's not surprising that we continue to see mediocre results from actively managed funds. As in any field, only a small number of fund managers are really good. Further, Malkiel has shown that there is little consistency in terms of which managers achieve superior results in any given period. The manager who beat the market by a lot this year probably didn't beat it by a lot last year, and the odds are good that he or she won't beat it by much next year either.

- In fact, according to most research, whatever consistency we find across time is that funds with high fees generate fairly persistent bad results. Nobody seems to be able to pick enough winners over even just a few years to overcome high fees.

Exchange-Traded Funds

- Toward the end of the 20th century, an upstart began to crowd into the mutual funds' territory: the *exchange-traded fund* (ETF). Like an index mutual fund, an ETF is designed to match the returns of an index, but unlike a mutual fund, it is bought and sold on an exchange, just like an ordinary stock. Since the introduction of ETFs in 1990, their growth has been phenomenal.

- ETFs offer most of the advantages of a low-cost index fund, plus a few other benefits that mutual funds can't match.
    - First, ETFs allow a small investor to buy a highly diversified asset that is almost guaranteed to bring the market return while offering extremely low expense fees. Some ETFs track a broad market index. Some target narrower industries, trading diversification for the chance to take greater risks if an investor wants to bet on a specific niche.

    - An investor can also buy a leveraged ETF, which is similar to buying on margin. Some ETFs are designed to move twice as much as their indexes or even more. That means that a 1% increase in the S&P 500 will result in a 2% or 3% increase in the ETF. Of course, losses also get multiplied; a market loss of 1% will mean a 2% loss for investors.

    - ETFs often outperform index funds because they have reduced levels of *cost of flow*, that is, the expense of providing shareholder liquidity by moving mutual fund shareholders into and out of the fund. Academic research shows that cost of flow can hurt mutual fund performance by as much as 0.5% or more annually. ETFs don't incur the costs of fund redemptions. Investors simply buy or sell their shares on the open market.

    - Because ETFs trade like equities, investors can use some of the trading tools we discussed in Lecture 9, such as stop-loss and limit orders, short sales, and margin purchases. Some ETFs even offer options trading!

    - ETFs might have a lower tax bite, too, because they usually distribute capital gains less often than mutual funds.

- ETFs have some drawbacks. For example, buying or selling ETFs costs more than getting into and out of a mutual fund because it usually involves paying a brokerage commission or a bid-ask spread.

- To find out more about ETFs or mutual funds, check *Morningstar*, the Investment Company Institute, or *Yahoo Finance* on the Internet. If you're interested in a specific fund, ask for the prospectus, preferably in an electronic version that allows you to search for key words.

Suggested Reading

Bodie, Marcus, and Kane, *Investments*, chapter 4.

Bogle, *Common Sense on Mutual Funds*.

Sharpe, "The Parable of the Money Managers."

Questions to Consider

1. Why do investors with small portfolios tend to buy mutual funds or ETFs instead of individual stocks?

2. Active traders prefer to trade individual stocks rather than mutual funds. Why do you think this is so?

Minimizing Transaction Costs and Taxes

Lecture 14

Along with diversification, minimizing taxes and transaction costs is the easiest way to increase that third variable that we're all looking to maximize on our investment returns: the rate of return. As we'll see, transaction costs can make a significant difference in how much you earn over the long haul. To avoid these costs, the best approach is to do nothing; don't trade your stocks unless you have a good reason to do so.

The High Cost of Trades

- In 2000, a paper written by Professors Brad Barber and Terrance Odean for the *Journal of Finance* got the attention of money managers and investors around the world.
  - The professors studied the trading patterns of more than 62,000 households and individual investors with discount brokerage accounts. The researchers found that these investors trade an average of more than 75% of the stocks in their portfolios every year!
  - The professors also calculated the cost of *round-trip trades*, or buying today and selling later. They found that round-trip trades involving more than $1000 cost 3% in commissions plus 1% in bid-ask spreads.
  - The magnitude is lower these days because transaction costs have fallen, but the point of Barber and Odean's paper is the same: The more you trade, the worse you do.
- The relationship between trading frequency and stock returns is strong. Barber and Odean grouped the 62,000 households and individual investors into five equal-sized groups based on how often they traded.

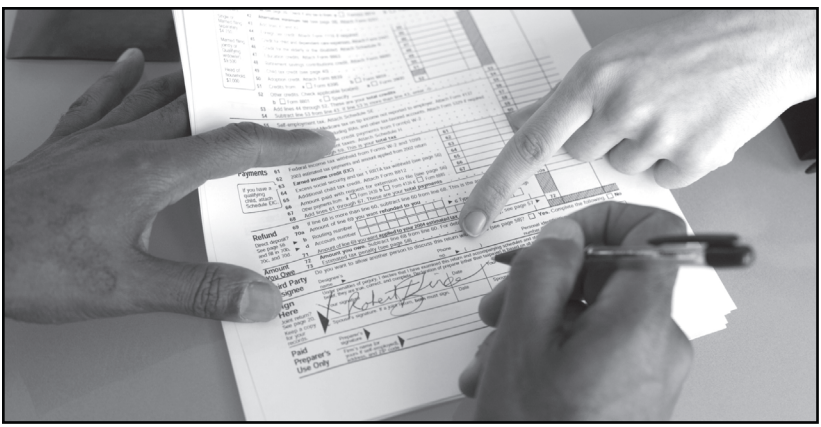
- The low-turnover group had gross portfolio returns—returns before trading costs—almost exactly equal to the returns on the S&P 500.

- In the group with the highest turnover, trading costs ate up about one-third of the gross returns. Investors who traded the most surrendered 6 or 7 percentage points every year!

- In a 2013 article in the *Journal of Economic Perspectives*, Professor Burton Malkiel of Princeton observed that, for actively managed funds, fees and other expenses have risen substantially—not just in total but even as a percentage of assets managed. Of course, investment advisors incur legitimate expenses, but those expenses should decline as a percentage of assets if a fund grows. However much it costs to analyze the general market, it shouldn't cost twice as much if the size of the fund doubles.

Tax Basics

- The U.S. tax code is vast and complicated and gets more so every year. Even most small investors can benefit from a tax advisor. Tax services are relatively inexpensive for most straightforward returns.



Tax services usually charge relatively low fees for commonly filed forms, such as the 1040, as well as forms and schedules associated with basic investments.

- If you want to lower your tax bill, the first thing you need to understand is the *basis*. A stock's basis is usually just the price paid per share when purchased, plus any commissions paid on the purchase.
    - The reason the basis is important is that if you sell, your tax depends on the difference between the proceeds of the sale and the basis. For example, if the basis of your shares is $50 and you sell for $75, according to the IRS, you have a capital gain of $25.

    - If you sell for $40, then you have a capital loss of $50 basis minus the $40 proceeds of the sale, or $10. Your tax deduction is based on the loss, not the sales price.

- The second important element to know to lower your tax bill is the *holding period*. With rare exceptions, the holding period is how long you owned an asset. For IRS purposes, a capital gain is short term if you held it for a year or less and long term if you held it for more than a year. Unless you're a professional trader, the tax rates applied to long-term capital gains are almost always lower than rates on short-term gains, which are taxed as ordinary income.

Selling Losers and Letting Winners Ride

- A basic rule for minimizing taxes on investments is this: Sell your losers and let your winners ride. The reasoning behind this rule is that the IRS allows you to take a tax deduction for losses.
    - For most ordinary investors, the IRS cares only about *realized gains and losses*. In other words, the IRS doesn't need to know about fluctuations in your portfolio value unless you sell. By selling the losers and letting the winners ride, you get to harvest your tax losses and defer paying taxes on your earnings.

    - Some people have trouble following this strategy because they think that you have to sell a financial asset to do well or poorly.

    - With a car, people understand that you don't have to sell to take a loss. If you crash a car into a tree, you know that the loss

occurred when you hit the tree, not when you sell the car for scrap and parts. The same applies if your stock portfolio crashes.

    - You may argue that unlike a wrecked car—which can't fix itself—the price of stocks can rebound. But the truth is that if your stock crash turned $30,000 worth of stock into $1000, it won't return to $30,000 anytime soon. At most, that $1000 worth of stock will fluctuate perhaps 10% up or down. The price of car parts and scrap metal can fluctuate that much, too.

- Here's another way to see that sticking with a loser in the hopes that you'll get your money back is the wrong approach: Suppose your friend Christy, who held the same stock you did and also lost all but $1000, decides to realize the loss and invest the proceeds in a different stock. Now, you and Christy both own $1000 worth of stock that's fairly priced, but Christy also has a tax advantage over you because she can use the tax loss to offset gains on other stocks.

- The flip side, when the price of an asset rises, seems to cause some people the same kind of trouble. They think they have to sell to make a profit on their stock, even if they have to pay a large tax bill. They believe that the price will fall, and they'll lose the opportunity to make a profit. But if the price is fair, then it's just as likely to continue to rise as it is to fall.

- Suppose you bought one share of Samsung at $40 and another share at $60, and today's price is $50. You have two shares worth a total of $100.
    - If you sell the share you bought for $40, then you have one share left, and it's worth $50. If you sell the share you bought for $60, then you still have one share left, and it's still worth $50. No matter which share you sell, you've taken a loss on one share and earned a gain on the other. Whether you sell or not doesn't change that.

    - If you sell the share you bought for $40, then you realize a gain of $10 for tax purposes. You'll still have one remaining share

worth $50, but you'll pay capital gains taxes on $10, so you'll have less than the $50 sales price in your pocket.

- If instead you sell the share you bought for $60, then you realize a loss of $10 for tax purposes. Instead of paying capital gains taxes, you'll get to take a tax deduction, so you'll have more than $50 in your pocket. Plus, you'll still have your one share worth $50.

- You can also use a capital loss against up to $3000 of ordinary income each year. If you have more losses than that, then you can net realized gains from one investment against those losses and cancel the tax on the gains. You can carry losses forward into following years, too.

- What if you think Samsung is a good long-term prospect? Is there a way to harvest the tax deduction and still keep your investment in Samsung?
  - The answer is a qualified yes. You can always buy more shares of Samsung to replace the ones you sell.

  - The qualification is the *wash sale rule*. The IRS won't let you claim the tax loss if you replace shares that you sell at a loss within 30 days before or after the sale.

- Besides selling losers, another good time to sell is before tax rates rise. For example, many people sold winners late in 2012 because the tax rates went up in 2013. If they liked the long-term prospects of the company whose shares they sold, they just replaced the shares, often within minutes. They didn't have to worry about the wash sale rule because that applies only to losses, not gains. They also reset their basis in the stock to the new, higher value, which will help reduce taxes later.

- You want to avoid all taxes if you can, but you really want to avoid paying the short-term capital gains tax because it's so much higher

than the long-term rate. Some people go so far as to trade options to lock in the gain without realizing taxable income. The goal is to transform the short-term gain into a long-term gain.

Taxes on Dividends and Mutual Fund Earnings

- Usually, cash dividends are taxed at a lower rate than ordinary income, but avoiding taxes on dividends is harder than avoiding capital gains taxes because you can't control the timing of the dividend. You get the dividend when the corporation decides to pay it, not when you decide to sell.

- The investment implication here is that all else being equal, you should buy low-dividend stocks. Low-dividend companies tend to be either growth companies, which need to reinvest their cash, or companies that have fallen on hard times.

- Remember that stock dividends aren't the same as cash dividends on stocks. If a company sends you cash, that's a cash dividend, and it's taxable. A stock dividend just divides the claims on the firm into smaller pieces. You might get 1.1 shares for every share you currently hold. Stock dividends are generally not taxable.

- Mutual funds aren't immune to taxes. You'll get a statement every year reporting your dividends and capital gains from the fund. Actively managed funds generate more realized gains than passive funds, which, of course, means a larger tax bill.

Suggested Reading

Bogle, *Common Sense on Mutual Funds*.

Kimmel, "How Expense Ratios and Star Ratings Predict Success."

Malkiel, "Asset Management Fees and the Growth of Finance."

Questions to Consider

1. Why do you think that some investors are reluctant to realize losses on their stock portfolios, even though they would get a tax deduction for doing it?

2. Mutual funds that do well in any one year tend to do just about average in later years, but funds that do poorly in any one year tend to do poorly again in later years. How can an efficient market with transaction costs and fees explain this?

Tax Shelters—Roths, IRAs, and 401(k) Plans

Lecture 15

This lecture is devoted to tax shelters that will help you keep more of your investment earnings. First, we'll look at individual retirement accounts (IRAs). In essence, an IRA is just a label that we apply to certain investments; what's special about it is that investments with this label, including stocks, receive tax breaks. The same goes for a specific type of IRA, a Roth IRA, or a 401(k) account. You can put an IRA label on most of the assets you typically hold, including stocks, bonds, mutual funds, and ETFs, and they'll earn the same returns they would outside of the IRA. Of course, the difference is that assets in an IRA or 401(k) have major tax advantages.

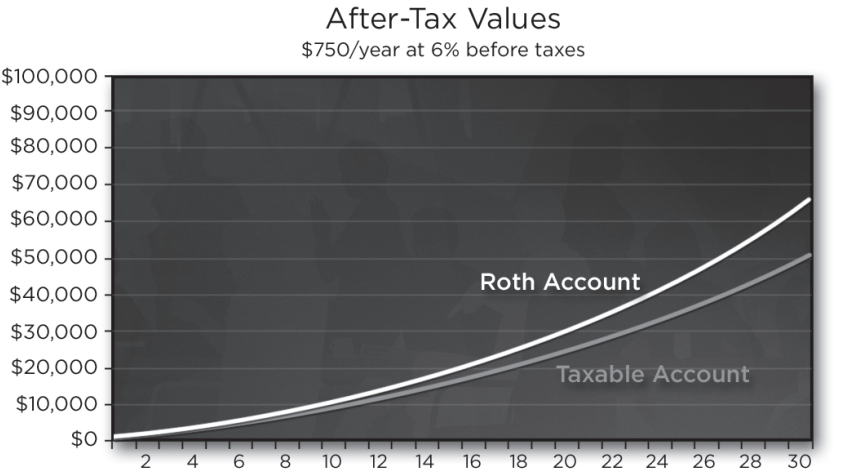
Understanding IRAs

- According to the Investment Company Institute, an IRA is a trust or custodial account set up in the United States for the exclusive benefit of an individual or an individual's beneficiaries.

- With a traditional IRA, investors receive the tax break upfront as a deduction. If you invest $5000 in a traditional IRA and comply with some IRS rules, you get to deduct $5000 from your taxable income. If your marginal tax rate is 25%, you will save $1250 on your tax bill!

- The tax break on a Roth IRA doesn't come in the form of a tax deduction. Instead, the funds placed in a Roth are taxed, but subject to IRS rules, the earnings on that investment are tax free!

- Congress authorized IRAs to ease the tax burden on retirement savings, and there are penalties for withdrawing funds from an IRA before you're old enough to satisfy the law. Also, you can contribute only up to certain limits to either a traditional or a Roth IRA each year.



For most people, the tax savings on even a small investment in an IRA can be significant over time; an annual contribution of $750 results in a savings of about $15,000 over 30 years.

- IRAs are an excellent way to improve your investment returns. For a taxpayer with a 25% rate, a 30-year investment of $750 annually in an IRA or Roth IRA earning 6% is almost $63,000. The same investment put into a taxable account earning the same rate, such as a bank account or a CD, is about $47,000, a difference of more than $15,000.
    - Note that if the tax rates during the accumulation phase are the same as at withdrawal, then a Roth and a traditional IRA yield the same amount; the upfront tax deduction on the traditional IRA offsets the tax exemption on the Roth's earnings.

    - The two types of IRA won't deliver the same amount if tax rates on the funds you invest differ from the ones in effect at withdrawal. If the tax rates are lower while you're withdrawing, then the traditional IRA will be worth more, and if the tax rates are lower while you're saving, then the Roth will be worth more. When comparing a Roth IRA with a traditional IRA, you want to take the tax hit when it will cost you the least.

- Just about anyone can open a traditional IRA. You must have earned income during the tax year of the contribution, and you must be younger than 70½ years old by the end of the year. To the IRS, earned income includes wages, salary, fees, commissions, and for the most part, self-employment income; investment income doesn't count. There are some income restrictions that limit the tax advantages of IRAs, and those who exceed certain income limits cannot make a contribution directly to a Roth IRA at all.

- Once you've opened an account, you fund it with cash—a check or an electronic transfer, for example. You can't put stocks directly into your IRA. Of course, once you've made your contribution, then you can use it to buy other investments, including stocks. People invest the biggest chunk of IRA assets in equities and equity mutual funds.

IRA Rules

- Like all tax shelters, IRAs have rules; these boil down to income restrictions, contribution limits, and withdrawal terms.

- For a traditional IRA, the income restrictions are fairly messy. They depend on whether you're covered by an employee retirement plan, such as a 401(k), and whether you file as a single or married taxpayer. What's more, those income limits change almost every year.
    - For example, in 2013, for married taxpayers filing jointly, the income limit for deducting the entire contribution was $95,000. At that point, the deductibility began to phase out until it vanished at $115,000. For single taxpayers, the limits tend be 30% to 40% lower.

    - These income limits apply to what the IRS calls *modified adjusted gross income*. Essentially, this consists of money you've earned as wages, tips, salaries, bonuses, and the like.

    - For a Roth IRA in 2011, the income limits were $107,000 for people who filed as "single, head of household" or "married filing separately." The IRS reduces the allowable contribution as your income increases, and above $122,000, direct contributions

to a Roth account were forbidden. For those filing jointly, the limits were about $50,000 higher. Roth limits can change, too, so be sure you check before you make your contribution.

- Contribution limits tend to creep up with time, too. In 2013, combined contributions to traditional and Roth IRAs couldn't exceed $5500. If you're over age 50, you can contribute an extra $1000.

- IRAs also have associated time limits. People whose tax year matches the calendar year (which is most people) can make a Roth contribution anytime from the beginning of the tax year through April 15.

- When you withdraw money from your IRA, you're taking a *distribution*. With a traditional IRA, taxes are deferred until the money is withdrawn. The rules for distributions depend on your age.
  - If you're younger than 59½ years old, you'll pay federal and state taxes, of course, but you'll also pay a 10% penalty. This penalty on early distributions can be avoided under certain circumstances, such as for certain education or unreimbursed medical expenses.

  - After you turn 59½, you won't pay a penalty when you take a distribution, but you'll pay federal or state taxes. The tax break comes on the front end of a traditional IRA.

- Qualified distributions from a Roth IRA are simpler. First, the account must be "seasoned" for 5 years before it is eligible for favorable distribution rules. Second, you must be 59½ before you can begin to withdraw funds from a seasoned Roth with no restrictions. As with a traditional IRA, there are some exceptions to the penalties for early withdrawal.
  - With a Roth, if you don't meet the withdrawal criteria, you get hit with taxes on your earnings and a 10% penalty. But you can remove contributions from a Roth IRA without penalty.

- If you have a short-term cash need, you can tap the funds from a Roth IRA temporarily and repay those funds within 60 days with no penalty.

- Before 2010, if you made more than the income limits, then you couldn't deduct your contribution to a traditional IRA, and you couldn't contribute to a Roth at all. However, since 2010, you can fund a Roth through the back door in two steps.
  - First, you contribute funds to a traditional IRA. Because of the income limits, you can't deduct your contribution.

  - Second, you convert the traditional IRA to a Roth IRA and pay the taxes on the converted value—because, as we saw earlier, Roth IRAs must be funded with after-tax dollars. Thus, you've made a perfectly legal Roth contribution, despite being over the contribution limit. Your broker or mutual fund company should be able to handle these transactions for you.

  - The ability to convert traditional IRA contributions to Roth contributions or vice versa is especially valuable to people whose income fluctuates. However, if you convert an existing traditional IRA to a Roth, you will incur a tax liability.

Choosing an IRA

- Traditional IRAs are still the most common type. Based on expected tax rates only, most investment advisors recommend traditional IRAs over Roths, assuming that you qualify for both. The idea is that you'll withdraw the funds after you retire, when your income is lower. That should translate into lower tax rates for most people.

- That makes sense if tax rates stay about the same as they are now, but many people look at the growth in U.S. government debt and believe the rates will increase. If that's correct, then your taxes could be higher at retirement than they are now, even if your income is lower.

- From a tax perspective, the best approach is to have both types of accounts. A Roth IRA will pay off handsomely if tax rates increase because you paid the taxes upfront. A traditional IRA will pay off if they don't increase because you'll pay the taxes at withdrawal.

401(k) Plans

- Many U.S. companies offer their employees 401(k) retirement plans, which work in much the same way as traditional IRAs. Both the investment and the investment earnings are taxed at withdrawal, but from investment through withdrawal, nothing is taxed.

- For several years, 401(k) plans have been gradually replacing pensions as the primary source of retirement income in the United States. According to the Investment Company Institute, in 2012, 401(k) assets were about $3.5 trillion, or about 18% of the U.S. retirement market. Investment allocations for IRAs and 401(k)s are similar. Stock mutual funds are the most popular choice, with about 40% of 401(k) investments in that category.

- It makes sense to put an investment that is taxed heavily in a tax shelter. If you decide to invest in stocks, then put high-dividend stocks in your IRA or 401(k) and keep low-dividend stocks outside.

- The best thing about some 401(k) plans is the employer match. If this benefit is offered, it's usually a relatively small amount, perhaps 2% or 3% of your salary. The IRS limits employer matching contributions, usually at around 6% of an employee's annual salary. The employee also faces an annual contribution limit, but the employer's contribution doesn't count toward that limit.

- Most 401(k) plans don't vest all contributions immediately. If workers leave before a specified vesting period, they don't get to keep any of the employer match. Employees also face the same sort of early withdrawal penalties with a 401(k) as with an IRA.

- Finally, many companies allow employees to buy company stock for the 401(k) plan at a discount. Keep in mind, though, that you

don't want to hold too much of any one stock, especially your employer's stock. The best strategy is probably to buy as much of the discounted stock as you can, but sell most of it. Reinvest the proceeds in some other asset so that you don't have all your eggs in one basket.

Suggested Reading

Great-West Retirement Services, *401(k) Answer Book*.

Solin, *Smartest 401(k) Book You'll Ever Read*.

Questions to Consider

1. Why are 401(k) plans gradually replacing traditional pension plans in the United States?

2. Why do employers sometimes require a vesting period for matching contributions to 401(k) plans?

Making Sense of IPOs

Lecture 16

As we've seen earlier in the course, most of the time, we treat the market price of stock as being fair. It's not the right price, but it's the fair price. It's just as likely to be too high as it is to be too low. With an initial public offering (IPO), though, all bets are off! The pricing of IPOs and their expected returns and risks are nothing like those of securities that are already trading. Understanding how and why companies go public will help you better assess the benefits—and risks—of investing in IPOs.

Defining IPOs

- An IPO is the first sale of stock by a privately held company to the public. Usually, the company is a smaller firm, often relatively new and looking to grow more rapidly than it could without tapping a new source of funds.

- Why do companies go public? One reason is that the owners or founders have a large stake in the company and want to cash out, either to diversify their holdings or to raise cash for a lifestyle change.

- Another reason firms go public is to make it easy to offer many employees a stake in the company's future. When a company is small, its owners can sell a small part of their holdings to employees, but that can be expensive and time-consuming. Further, when a company grows to more than 500 shareholders, it must start filing documents with the SEC. Once they have to incur that cost, some private companies decide that they might as well go public.

- Probably the main reason for going public is to raise funds and have better access to capital markets going forward. An IPO also attracts the attention of analysts and helps a company gain some credibility with customers, suppliers, and employees.

- However, going public has drawbacks, including the need for expensive legal work. The total direct costs associated with taking a firm public are about 7% to 10% of the amount of money raised, and that doesn't include indirect costs, such as management time diverted from other corporate needs.

The Role of Investment Banks

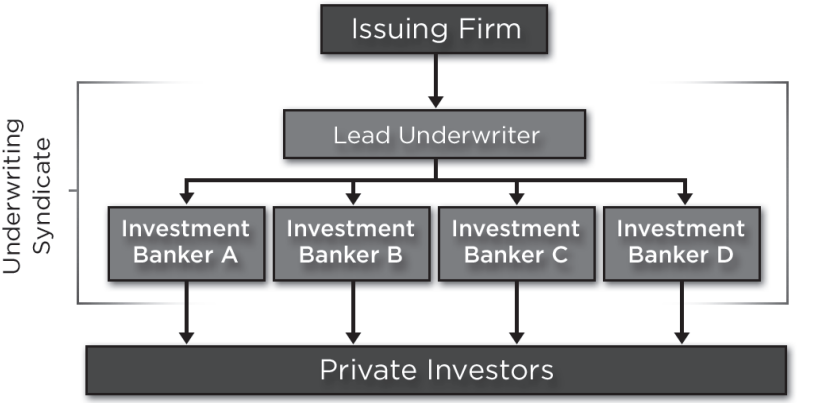
- In principle, going public doesn't sound too difficult, but in fact, a company can't just issue shares and sell them. First, the government requires companies to follow certain legal and regulatory rules. Second, as we saw in Lecture 12, it's extremely difficult to arrive at an appropriate corporate and share valuation.

- An investment bank is a financial institution that serves as an intermediary between the securities issuer and the investing public. Investment banks help determine the size and timing of the issue and decide the best offering price.

- Investment banks also engage in a process called *underwriting*. Members of underwriting syndicates usually take the responsibility for selling the shares a company allocates to them at a specific price.

- Because IPOs are plagued with information problems, investment banks also serve as intermediaries between company owners and potential investors.

- For smaller issues, a single investment bank may be used, but for larger issues, an *underwriting syndicate* is usually formed. This is a collection of investment banks that pools resources to sell new securities to investors.
    - The lead underwriter in a syndicate might be a large firm, such as Goldman Sachs, and other participants might include Citigroup, Bank of America, or Merrill Lynch or smaller firms, such as SunTrust or Raymond James. The underwriting syndicate's job is to get the securities into the hands of investors and to get the proceeds from the sale into the issuing company's coffers.



The lead underwriter in a syndicate does the heavy lifting, analyzing the company's financial statements, projecting its future earnings, and determining the size and price of the offering.

- The lead underwriter analyzes the company's financial statements in light of current market conditions, projects its future earnings, and with the help of potential investors, determines the number of shares to be sold and the offering price.

- Investment banking is difficult, highly skilled work; it's also boom-and-bust work. During the boom near the end of the 1990s, investment bankers were working incredibly long hours and making significant sums of money. But when the market collapsed in 2007 and 2008, even the best investment banking firms struggled mightily and many failed.

- Much of a syndicate's work isn't financial but legal. For example, the company issuing an IPO often files several iterations of its registration statement, known as the *red herring*. This document describes the new issue of stock and takes a guess at how the issuing company will perform in the future.

- Investment bankers also engage in what they call *road shows*. They travel around the country, delivering presentations designed

to drum up interest, answering questions from potential investors, and gathering information to get a feel for what the offering price should be.

- Eventually, the investment bankers decide that they have enough information to set a range for the offering price and settle on the number of shares to be offered. They'll incorporate this information into the red herring and make a few other changes; the resulting document is the *prospectus*. The SEC requires that this document contain the information needed to make an informed investment decision about the stock offering.

- Before the underwriting syndicate takes the shares to the public, it will sometimes have a *pre-IPO placement*, selling some shares to private investors—typically, big players in the equity markets—just before the IPO takes place. These investors usually get a discount from the offering price because they buy in quantity, but they must sign a contract with the underwriters—a *lock-up agreement*—that they will not resell their shares at the offering price within a specified period of time, usually 6 months.

- Underwriters may enter into various agreements with issuing companies. For example, they may enter a *firm commitment* agreement and purchase all securities directly from the issuer for sale to the public at the price specified, or they may choose a *standby* agreement to buy all unsold shares at the subscription price.

Case Study: CDW

- CDW is a technology products retailer. In its IPO on June 28, 2013, the company had to cut the offering price of its shares to $17 from its expected range of $20 to $23 per share right before the IPO. CDW also reduced the number of shares offered by about 3.5 million. Coupled with the price reduction, the IPO proceeds fell short of expectations by somewhere between $150 million and $240 million.

- Documents prepared by CDW's underwriting syndicate estimated that the IPO would net about $370 million. The documents noted that CDW would use $344.2 million to redeem two debt issues and would pay accrued interest on other securities. Informing investors about how you plan to use the proceeds of a security issue allows investors to decide whether or not they want to participate.

- Reports filed shortly after the IPO showed that CDW used three lead underwriters: Barclays Capital, Goldman Sachs, and J.P. Morgan Securities. The rest of the underwriting syndicate also contained some familiar names, such as Bank of America and Merrill Lynch, as well as several smaller players.

- CDW's transfer agent was American Stock Transfer & Trust Company. A transfer agent records people and institutions that own a company's stocks and bonds. Usually, companies outsource this to a specialist in the business. American Stock Transfer & Trust is one of the major players in this arena.

- CDW's documents also indicate that no current shareholders sold shares as part of the IPO. That's good because insiders usually know more than others about the value of their company. In general, if insiders are selling, you may not want to buy.
    - However, sales by existing shareholders are less important for IPOs than when a public corporation sells additional shares.

    - In those *seasoned equity offerings*, the share price tends to fall more than 3% because the market sees that the current shareholders want out.

- The documents for an IPO also list the number of shares outstanding after the offer and contain two additional bits of industry jargon: the *lock-up period* and the *quiet period*.
    - The lock-up period in CDW's case was 180 days; shares sold in the pre-offering phase could not be resold during that time.

- The quiet period, during which SEC forbids the company from engaging in promotional publicity, lasted until 40 days after the offering. The SEC imposes the quiet period to eliminate the possibility that companies might hype their stock to drive up the price.

- CDW and its underwriting syndicate seemed to do most everything right, but the offering still can't be called a rousing success. CDW had to scale back the size of the issue and the offering price. In hindsight, it seems that CDW went public at a bad time.

Summing Up IPOs

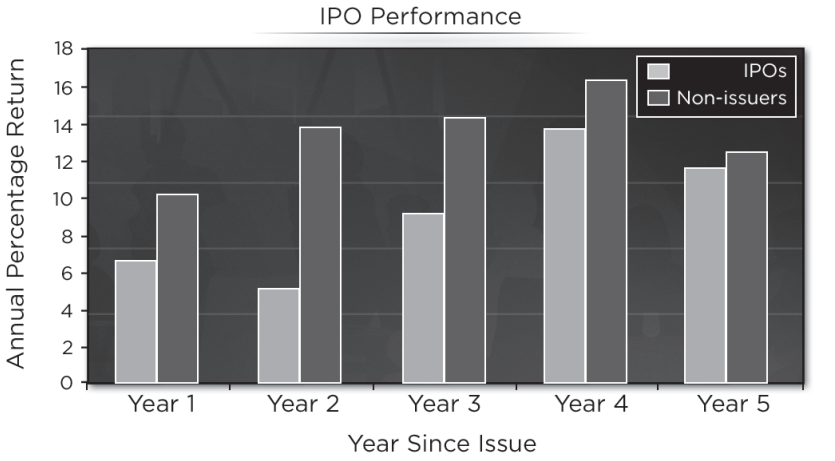
- Unlike normal stock transactions, involving thousands of traders, IPO prices are set by negotiations. That means they can be off by a significant degree.

- For example, Facebook's IPO was the third largest in U.S. history when that company went public on May 18, 2012.
  - It turned out that Facebook's offering price of $38 was a little too high based on the first day. It closed at $38.23, but it managed that only because the underwriters bought Facebook's stock after the offering to keep it from falling below the offering price.

  - Facebook went into a long slide almost immediately and was between $20 and $25 per share for most of the time from August 2012 through the end of the year. By that measure, the offering price was too high.

- Professor Jay Ritter studied returns on more than 7000 IPOs that took place during the years 1980–2012. Some IPOs had bad first-day returns, but the average IPO had a positive first-day return relative to the offering price for every single year. The average of those IPOs returned 18.6% on the first day. It seems, then, that a good investment strategy is to get in at the offering price.

- If you use that strategy, though, get out soon. IPOs have a strong tendency to underperform the market during the 3 years starting the



Data confirm that the best strategy for investing in an IPO is to get in at the offering price and get out quickly.

day after the IPO. For smaller firms in Ritter's study, the 3-year returns were more than 35 percentage points worse than the market. For larger firms, the average return was still 2.5 percentage points worse than the market.

Suggested Reading

Bodie, Marcus, and Kane, *Investments*, pp. 59–63.

Miller, *The Facebook IPO Primer*.

Westenberg, *Initial Public Offerings*.

Questions to Consider

1. Why are IPO returns so different from the returns on stock that is already traded publicly?

2. Companies must clear many regulatory hurdles to have an IPO. Do you think that makes sense?

The Stock Market and the Macro Economy

Lecture 17

Some factors that affect a company's stock price are out of their control, but we still need to be aware of them. For example, there's a fairly consistent relationship between economic recessions and declines in stock prices. That makes sense when we consider that a *recession* is defined as two consecutive quarters of declining GDP: If a nation produces less, then people earn less and buy less. Companies sell less and earn less. Given that stocks are claims on company earnings, it's not surprising that investors won't pay as much for those claims during bad times. In this lecture, we'll see how we can use information about the macro economy to make investment decisions.

Predicting Economic Activity

- In order to take advantage of a recession, we would need to be able to forecast turnings of the economy. Then, we'd need to sell before other investors recognize the coming of the recession and start buying again before other investors see the end of the recession.

- There are some reasonably good predictors of economic activity. The Conference Board Leading Economic Index®, more commonly called the Index of Leading Economic Indicators, is the best known. This index is a composite of about 10 factors, such as consumer expectations, initial unemployment claims, and new orders for consumer goods.
    - The problem with using this index to call market trends is that the information it uses is available to all market participants, who can make their own guesses and act at least as quickly as we can.

    - This means that any decline in stock prices as we head into a recession should begin before the recession, and in fact, that's what tends to happen. Investors see the economic contraction coming.

- Why, then, don't we just wait for stocks to signal a recession, then sell before the onset of the recession itself?
    - History shows us three problems with this plan. First, since at least 1950, stocks have always declined during recessions, but every decline hasn't signaled an imminent recession. Cynical analysts often say that the stock market has successfully predicted 16 of the last 9 recessions.

    - Second, we don't have a good way to tell how long the stock market downturn will last. John P. Hussman, the president of Hussman Investment Trust, has found that serious market declines (*bear markets*) that occur during recessions last longer than what he calls *standalone bear markets*. But we still don't know how long a downturn will last, which means that we can't tell when to get back in to the stock market.

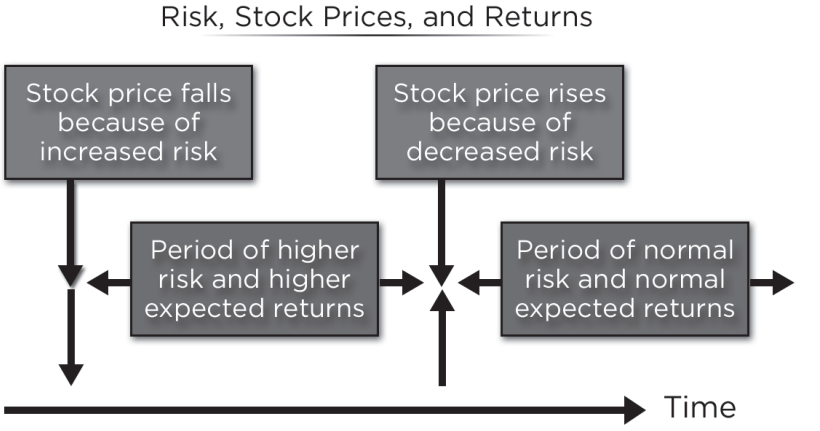
    - Third, we haven't specified what we mean by a decline in stock prices: Do we mean a 5% drop or a 10% drop and over what time period?

- The bottom line is that it's almost impossible to call stock market turning points at the right time, even if you can call recessions and recoveries with reasonable accuracy.

Business Cycles and Risk Premiums

- We know that business cycle changes affect risk premiums on stocks. Donald Keim and Robert Stambaugh, writing in the *Journal of Financial Economics*, found that the difference between the yield on risky bonds and safe bonds signals higher expected stock returns. The idea here is that a large spread between the two bonds suggests that times are risky, and we've already seen that stocks tend to return more during risky times.

- The timing of the economic forces driving these stories is a little tricky. Stock prices should fall at the onset of increased risk, which is then reflected in higher dividend yields. Bond spreads widen. That's unexpected bad news, and stocks take a hit.



Business cycles have a somewhat complicated relationship to risk premiums on stocks.

- But once investors are aware of the risky situation—stock prices have fallen and risk premiums have increased—from that point on, we expect higher returns during the risky period itself. That might seem counterintuitive, but it makes sense. Stocks fall on the bad news that increases risk, but after prices have fallen, the expected returns from then on are higher.

- Let's reverse the situation. If investors see more normal times ahead, they are willing to bid more for stocks. Stock prices increase, a reaction that is reflected in more normal dividend yields, and risk premiums decline. From then on, during the safe period, we expect normal stock returns during the period of normal risk.

Managing Risk

- The inability to make investing profits by observing the macro economy doesn't mean that understanding the economy is a waste of time. With these observations, you can try one of two strategies to help manage risk.
    - First, you might want to take a little money off the table when the market is unsettled. Remember, you're managing risk with this strategy, not trying to make a profit.

- Second, you might stick with your holdings without making any changes at all. As we've said, increased risk is likely to lead to higher expected returns. Risk itself isn't bad, as long as you expect to get paid for taking it!

- It's also worth noting that some industries and companies are more susceptible to business cycles than others. Consider, for example, Ford Motor Company and Colgate.
  - Compared to Ford, Colgate is relatively immune to economic downturns. If the economy isn't doing well, people may postpone buying a new car, but they always need toothpaste.

  - If the economy picks up, people feel more comfortable making a car purchase, but they won't buy any more toothpaste than they would otherwise. Colgate is less susceptible to the up and downs of business cycles than car manufacturers, but because it's safer, it tends to return less.

The Federal Reserve System

- In 1913, President Woodrow Wilson signed into law the Federal Reserve Act, creating the Federal Reserve System.

- The Federal Reserve System has three primary functions. First, it serves as the nation's banker; it is the bank of bankers and the federal government. Second, it is one of the country's bank regulators and supervisors, with the job of ensuring that people have confidence in the banking system as a whole. Third, the Fed devises and implements monetary policy.
  - *Monetary policy* refers to the Fed changing the supply of money in the U.S. economy. If money is plentiful, then credit is easier to get, and interest rates tend to fall. The idea is that this induces people and firms to borrow money to spend and to make investments. That should boost the economy.

  - It's not that simple, of course. Lower interest rates affect the income of lenders, too. People who buy bonds or other debt securities have loaned money to the bond issuers. The lenders

have less income when rates are low. That means they tend to spend less, and that slows the economy. Economies are complex, and trying to fine-tune them is a tough job.

- Moreover, economists have many different definitions of *money*. Not all economists even agree on which of them affects the economy the most.
  - *M1* includes all coins and currency, plus demand deposits, which are mostly checking accounts.
  - *M2* adds savings deposits and certain small deposits with withdrawal restrictions, plus money market accounts not held by institutions and some important bank funding tools.
  - *M3* is the broadest measure of the money supply. It equals *M2* plus all large time deposits, institutional money-market fund assets, and other larger liquid assets.

- The Fed changes the money supply in three ways.
  - First, it can change the *discount rate*, which is the interest rate the Fed charges banks on short-term loans. In practice, the discount rate is more important as a policy signal than as a way to change the money supply. It's a way for the Fed to tell the world where it thinks interest rates should be.
  - The Fed also changes the money supply by changing reserve requirements. The reserve requirement is usually around 10%, but if the Fed wants to tighten the money supply, it can raise the requirement to, say, 12%. In practice, the Fed doesn't change reserve requirements often.
  - Less disruptive is to conduct *open-market operations*; here, to increase the money supply, the Fed buys securities in the financial markets. The Fed may also reverse the process, selling securities from its inventory.

- By law, the Fed has twin goals: to achieve full employment and stable prices. That boils down to asking the Fed to fine-tune the economy.

- Do investors need to care about the actions of the Fed?
  - On the one hand, Fed actions affect the economy and the stock market. In particular, monetary tightening operations (which usually raise market interest rates) tend to reduce domestic activity and cause share prices to fall; monetary easing operations tend to increase domestic activity and cause share prices to rise.

  - On the other hand, you shouldn't expect to make money by trading on Fed actions unless you can outguess the experts.

- The Federal Reserve System is a great source of information about the economy and the stock market. All of the regional banks have good websites. Particularly helpful are the Cleveland Fed's Economic Commentary series, economic and financial highlights on the Atlanta Fed site, and the St. Louis Fed's economic data series, known as Federal Reserve Economic Data (FRED).

Foreign Economies

- The stock market is also affected by what happens to foreign currencies. Not every country uses U.S. dollars, of course, and changes in the value of those currencies in relation to the U.S. dollar can influence the economy.

- For example, the countries belonging to the European Union use the euro as their national currency. The number of countries currently using the euro is around 20, including major economies, such as Germany, France, and Italy, and a host of smaller economies, such as Estonia and Malta.

- You can buy foreign currencies just like you can buy foreign cars. And just like the price of foreign cars, the price of foreign currencies varies. People usually use the term *exchange rates* rather than *prices* for currencies.

- Since the late 20th century, the dollar/euro exchange rate has fluctuated from a low of around 0.85 to 1 to a high of about 1.6 to 1. That variation can affect U.S. stock prices, as well as an individual company's sales and profits.

- Using a single currency, such as the euro, in multiple nations has both advantages and disadvantages. A single currency certainly eases transactions, especially for those who live near the border between two countries. But a common currency also makes it easier for economic problems in one country to affect others.

- Information about currency trading and historical and current exchange rates is also available online.

Suggested Reading

Bodie, Marcus, and Kane, pp. 548–561.

Jones, *Investments: Analysis and Management*, chapter 13.

Questions to Consider

1. Do you think that stocks from different industries would respond differently to monetary policy changes?

2. Wall Street professionals often say, "Don't fight the Fed." What do you think that means?

Investing with Confidence

Lecture 18

We've covered a lot of ground in this course, and we now have a good understanding of stocks and the stock market. In this final lecture, we'll see how you can apply some of this knowledge to your specific financial situation. The first step is to list all your assets, liabilities, income, and expenses. Then, you'll set a financial goal and determine how much you have to save each month to reach that goal. We'll then look at asset allocation, that is, deciding what portion of your wealth you should invest in stocks, bonds, real estate, and so on. Finally, we'll close the course with some advice for taking your first steps into the world of investing.

Your Financial Position

- The first step in analyzing your financial position is to list all your assets, liabilities, income, and expenses.
    - Assets include bank accounts, real estate (your home), bank CDs, bonds, 401(k) savings, and credit union accounts.
    - Liabilities include the remaining principal of loans, such as a mortgage or car loan; other recurring fixed payments; credit card balances; and other unpaid bills, such as property taxes.
    - Under income, list salary, interest income from assets, alimony payments, income from rents, and so forth.
    - Finally, to identify your expenses, you may need to look at past credit card and bank statements. Estimate monthly payments for upcoming major purchases, such as a new car.
- Once you know your inflows and outflows, you'll be able to estimate your monthly savings. If you find that more money is going out than coming in, you need to fix that situation before thinking about investing in stocks. Your choices are either to spend less or to earn more.

Setting Financial Goals

- The next step is to establish your financial goals, keeping in mind that you may need to revise them later. Let's say that your only goal is to retire in 30 years with $500,000. If you earn nothing on your investments, you'll need to save $500,000 ÷ 360 months = $1389 each month to reach that goal.

- Fortunately, you have 30 years to accumulate your goal amount of $500,000, and we know that time is a powerful ally when we save. Let's plug some numbers into the formula for calculating annuities mentioned in Lecture 6 and see how much you need to save monthly to reach that goal.
  - If you can earn 6% annually after taxes on your investments, the formula tells us: $\$500{,}000 = \$x \times (1 + 6\%)^{30}$, or about $500 a month in savings.

  - If you can earn 8% on your investments after taxes instead of 6%, the formula tells us: $\$500{,}000 = \$x \times (1 + 8\%)^{30}$, or about $335 a month.

  - Better yet, if you put your investment in a Roth account, you'll earn tax-free income; based on historical averages, a 10% expected return would be reasonable. Plugging in these numbers, we get: $\$500{,}000 = \$x \times (1 + 10\%)^{30}$, or about $220 a month.

- If you can't manage to meet those savings goals, then you may need to make a lifestyle change, such as getting a second job or planning to work an extra couple of years, or you may need to reduce the size of your planned nest egg. Whatever you decide, you can still do yourself a favor by acting now. Remember, the best day to start investing was 15 years ago; the second best day is today.

Asset Allocation

- Deciding to invest in stocks is part of a larger investment decision called *asset allocation*. Choosing your asset allocation means

deciding what proportion of your wealth you invest in stocks, bonds, real estate, and safe assets, such as treasury bills.

- One famous study of 82 pension funds found that more than 90% of the variability of returns could be traced to the funds' asset allocation. That leaves less than 10% that depends on the specific stocks and bonds the funds held. The main reason for this is that stock returns are more variable than bond returns and vastly more variable than treasury bill returns. If returns on bonds and bills vary just a little while stock returns vary a great deal, then almost all of the variation depends on how much you have in stocks.

- The goal of asset allocation is to choose a portfolio that gives you the best combination of risk and expected return for your financial needs. If you play it too safely, then you might not have enough money to retire when you want to, even if things go well. But if you take too much risk and things go wrong, retirement might become an impossible dream.

- A good part of asset allocation is diversification. It's true that you can diversify your portfolio of stocks and eliminate as much as 70% of the risk you'd take if you held just one stock. Still, that leaves 30% of the risk—the market risk—that you can't eliminate. If you hold stocks, then you'll hold market risk.
    - That's a reason to hold some bonds; they tend to be safer than stocks, and their value doesn't move in lockstep with the market.

    - The same holds true for real estate. The value of housing doesn't move in lockstep with stocks or bonds. Some of us, though, have more than enough of our wealth invested in real estate already.

- To find tools to help with asset allocation decisions, search on the Internet for "asset allocation calculator" or "portfolio allocation tools." Keep in mind, however, that these tools often recommend you invest a large portion of your wealth in stocks, and you

Most people who own their own homes already have enough money invested in real estate.

shouldn't necessarily follow those recommendations to the letter. The goal here is to test out the asset allocators to get a feel for the factors used in determining asset mix.

Investment Clubs

- One way to learn more about investing is to join an investment club—a group of people who get together to share opinions about the stock market or make collective investments.

- Investment clubs can't pick winners any better than you can, but members can provide advice and help you discipline your investing. You can also enjoy the social benefits of getting together with other people who share your interest in investing.

- Sometimes, investment clubs pool their money to make investments. These clubs can be beneficial for people who have trouble making decisions or taking action. If you decide to join such a club, visit at least a couple of groups to find one that makes you

comfortable. Members of successful clubs share the same general investment philosophy.

- Note that the paperwork can get messy for clubs that actually make investments on behalf of members.
  - The simplest way to manage investments is for all members to put the same amount of money into the club and all to share equally in the returns. However, this *equal-share system* can't handle partial withdrawals and closes the club to new members.

  - In the *unit-value system*, membership in the club is based on the purchase of units. For example, if a club has four members, and they all start by investing $5000, then they each hold 50 units, with each unit worth $100. If the market price of securities in the club portfolio rises by 10%, then the members still hold 50 units each, but they're now worth $110 apiece.

  - The unit-value system makes it easy to change the club's membership. New members simply buy units, and the club then decides how to invest the additional cash. This system also allows members to increase their stake in the club or cash out.

- Look for more information on investment clubs and resources for participating in one on the Internet. Some organizations offer educational aids, including software that makes it easy for investment clubs to calculate unit values. You can also find active online communities, webinars and publications, and sample partnership agreements.

- Keep in mind that a club that actually invests money must register with federal and state authorities as a business entity and must file tax returns.

First Steps

- If you've decided that it's time for you to start investing in stocks—or almost time—take the first step by doing something toward that goal today. Look for a brokerage firm that makes you comfortable

and open an account. Starting small is fine. You can always invest more as time goes on, and even small amounts can grow your investment if you keep with it. Remember the three variables that determine terminal value: rate of return, amount invested, and time invested. Make those last two work for you.

- Look for a low-cost index fund, perhaps one with a minimum investment of around $3000. With an index fund, you'll get diversification, and you'll guarantee that you'll earn about what the average investor in stocks earns. In fact, you'll beat most of them because most investors pay more transactions costs than you will.

- Most financial experts recommend that small and new investors follow simple strategies. You don't need to know everything about an asset before you invest, but if you can't explain it to someone in a couple of sentences, then you probably want to leave that particular investment to the experts.
    - Understanding your investments is good advice, but there's a difference between understanding an investment, such as a stock, and understanding a stock in a specific company, such as J.P. Morgan Chase.

    - Before you invest in J.P. Morgan Chase, you should know that it's a large financial firm that has operations around the world. But that's really all that small investors need to know about the company.

    - What's more important than understanding the details is understanding the idea that owning stock in J.P. Morgan gives you a claim on what the company earns after paying interest on its debts and paying taxes.

- Let's close with two final tips: First, investing isn't a contest; your goal isn't to beat your friends and coworkers. Second, never worry about the one that got away. Tomorrow, the stock market will go up or down. Either way, there's money to be made, and unless you

have all your money in the market and make all the right trades, then you could always have done better.

- Although the technology and details of trading may change, the general principles outlined in this course should be true for at least the next 50 years. As we've seen, there's no free lunch; there's always a tradeoff between risk and expected return; and it's next to impossible for ordinary investors to beat the market. Keep these general principles in mind to stay grounded as you make your first foray into the market.

Suggested Reading

Jones, *Investments: Analysis and Management*, chapter 21.

Madura, Casey, and Roberts. *Personal Financial Literacy*, chapter 4.

Questions to Consider

1. What are some concerns you have about investing in stocks? What are some small steps you can take to address those concerns?

2. Which trait of investment clubs do you find most attractive? Which is least attractive?

Bibliography

Akerlof, George A. “The Market for ‘Lemons’: Quality Uncertainty and the Market Mechanism.” *The Quarterly Journal of Economics* 84 (3; Aug. 1970): 488–500. The famous “Lemons” paper, showing how information problems can cause a market to break down. It’s technical and analytical, but feel free to skip the math.

Bodie, Zvi, Alex Kane, and Alan J. Marcus. *Investments*. 9th ed. New York: McGraw-Hill/Irwin, 2011. Among the more popular investment textbooks for undergraduate students. Some of the material is overly technical, but it contains plenty of worthwhile nuggets.

Bogle, John C. *Common Sense on Mutual Funds: Fully Updated 10th Anniversary Edition*. New York: Wiley, 2010. John Bogle is among the biggest proponents of passive portfolio management and indexing.

Brau, James. “Why Do Firms Go Public?” In *The Oxford Handbook of Entrepreneurial Finance*, edited by Doulas Cumming. New York: Oxford University Press, 2012. A comprehensive summary of current research about why companies go public; also contains an extensive list of references.

Brown, Bruce. *The History of the Corporation*, vol. 1. Sumas, WA: BF Communications, 2003. A comprehensive history of the corporation from its inception to the present; more of an overview than a detailed treatment.

Crovitz, L. Gordon. “‘Outsider’ Trading and Too Much Information.” *The Wall Street Journal*. October 26, 2009. A short article about the case of Raj Rajaratnam, who was accused of “outsider trading.”

Davis, Joseph Stancliffe. *Essays in the Earlier History of American Corporations*. Cambridge, MA: Harvard University Press, 1917. Among the earliest accessible studies of the American corporation. As such, the style is dated, but it’s exceedingly comprehensive.

DeGennaro, Ramon P. "Angel Investors: Who They Are and What They Do. Can I Be One, Too?" *The Journal of Wealth Management* 13 (2; Fall 2010): 55–60. Discusses a specific form of private equity designed to finance startup firms. This type of stock is very different from that of highly liquid securities of major public companies. The angel investor's favorite way to cash out is through an IPO.

———. "Market Imperfections." *Journal of Financial Transformation* 14 (August 2005): 107–117. Describes how market imperfections affect financial markets.

———. "Asset Allocation and Section 529 Plans." *International Journal of Business* 9 (2; 2004): 125–132. Section 529 plans allow investors to save for education expenses without paying taxes on earnings. This article discusses which investments make the most sense for such plans.

———. "Direct Investments: A Primer." Federal Reserve Bank of Atlanta, *Economic Review* 88 (1; 2003): 1–14. Dividend reinvestment plans allow investors to invest directly in companies without using a broker.

———. "Angel Investors and Their Investments." In *The Oxford Handbook of Entrepreneurial Finance*, edited by Douglas Cumming. New York: Oxford University Press, 2012. A summary of angel financing, which is often the earliest outside funding a company raises.

DeGennaro, Ramon P., and Chanaka P. Edirisinghe. "Market Risk." In *Investment Risk Management*, edited by H. Kent Baker and Greg Filbeck. New York: Oxford University Press, forthcoming. Market participants call the tendency of stock prices to move together "market risk." This paper discusses how current academic research tries to explain the underlying forces that affect market risk.

DeGennaro, Ramon P., and Deborah L. Murphy. "The Expanding Role of Defined Contribution Plans in the USA: Benefits, Restrictions, and Risks." *Pensions*: *An International Journal* 9 (4; June 2004): 308–316. Defined contribution plans continue to grow, mostly at the expense of defined benefit plans. This article explores the advantages and disadvantages of such plans.

DeGennaro, Ramon P., and Cesare Robotti. “Financial Market Frictions.” Federal Reserve Bank of Atlanta, *Economic Review* 92 (3; 2007): 1–16. This paper describes how frictions, such as transaction costs, affect the way financial markets work.

Dimson, Elroy. *Stock Market Anomalies*. Cambridge; New York: Cambridge University Press, 1988. Stock prices are almost always fair, and it’s hard to pick winners in the stock market, but a few puzzling exceptions seem to crop up now and then. This book identifies these anomalies as of the publication date. The problem for investors is that we can’t tell whether these strategies represent real profit opportunities or whether they are just sources of risk that we don’t yet understand.

Dimson, Elroy, Paul Marsh, and Mike Staunton. *Triumph of the Optimists: 101 Years of Global Investment Returns*. Princeton, NJ: Princeton University Press, 2002. The authors analyze investment returns for equities, bonds, treasury bills, currencies, and inflation. They use data from 16 countries spanning more than 100 years and provide numerous diagrams and other visual aids.

Drake, Pamela Peterson, and Frank J. Fabozzi. *Foundations and Applications of the Time Value of Money.* Hoboken, NJ: John Wiley & Sons, 2009. The authors provide a thorough treatment of time-value-of-money concepts. Lots of examples and a good glossary.

Dwyer, Gerald P., and Rik. W. Hafer. “Are National Stock Markets Linked?” *Federal Reserve Bank of St. Louis Review* 70 (November/December 1988): 3–14. The authors study the links among stock indexes in the United States, Japan, Germany, and the United Kingdom. They find that they are indeed linked but that the links are relatively weak.

Dwyer, Gerald P., and Cesare Robotti. “The News in Financial Assets’ Returns.” Federal Reserve Bank of Atlanta, *Economic Review* 89 (Q1 2004): 1–23. The authors answer two questions: First, is there a good way to extract information about future economic activity from asset prices? Second, what do financial asset returns tell us about economic activity over the next five years?

Edirisinghe, N.C.P., and X. Zhang. “Portfolio Selection under DEA-Based Relative Financial Strength Indicators: Case of U.S. Industries.” *The Journal of the Operational Research Society* 59 (2008): 842–856. This paper uses data envelopment analysis to generate a new measure of financial strength. Highly technical.

———. “An Optimized DEA-Based Financial Strength Indicator of Stock Returns for U.S. Markets.” In *Applications of Management Science*, vol. 14, edited by K. D. Lawrence, pp. 175–198. Bingley, UK: Emerald Publishing, 2010. This highly technical paper uses data envelopment analysis and accounting data to predict the stock returns of public firms.

Evanoff, Douglas D., George G. Kaufman, and Anastasios G. Malliaris. “Asset Price Bubbles: What Are the Causes, Consequences, and Public Policy Options?” *Chicago Fed Letter* (304; November 2012). The global financial crisis that began in 2007 forced policymakers to review their approach to asset price bubbles and develop alternative policy options.

Federal Reserve Bank of Atlanta. *Research and the Economy*. http://www.frbatlanta.org/research/. Links to publications ranging from short articles for a general audience to highly technical research.

Federal Reserve Bank of Chicago. *Chicago Fed Letter*. https://chicagofed.org/webpages/publications/chicago_fed_letter/index.cfm. Concise and lucid articles about the economy.

Federal Reserve Bank of Cleveland. *Economic Commentary*. https://www.clevelandfed.org/research/research_publication.cfm?id=25. Papers containing thorough yet lucid analyses of current economic and financial issues.

Federal Reserve Bank of St. Louis. *Federal Reserve Economic Data*. http://research.stlouisfed.org/fred2/. Contains more than 150,000 economic series!

Great-West Retirement Services. *401(k) Answer Book*. New York: Wolters Kluwer Law & Business, 2014. Comprehensive reference manual for 401(k) plans. Also compares 401(k) plans with other types of retirement plans. Covers plan design, taxes, and reporting disclosure requirements.

Green, Clifton T., and Jeffrey A. Busse. “Market Efficiency in Real Time.” *Journal of Financial Economics* 65 (2002): 415–437. How fast do stock prices react to news? Visit Professor Green’s website at http://www.bus.emory.edu/cgreen/cnbc.htm to find out what happens when Maria Bartiromo reports on a stock.

Hafer, Rik, and Speros Margetis. *A Student’s Quick Guide to Understanding and Calculating Time Value of Money and Its Applications*. Mason, OH: Thomson South-Western, 2007. This book covers time-value-of-money concepts and how they help us understand the macroeconomy. An undergraduate textbook supplement for economics and finance majors.

Haubrich, Joseph G. “The Future of Inflation.” *Economic Commentary* (2011-20; October 5, 2011). The consumer price index measures inflation but does not help investors predict future inflation. The author uses a measure that incorporates past inflation rates, surveys of expected inflation, and interest rates to predict both expected inflation and real interest rates.

———. “Why Are Interest Rates So Low?” *Economic Commentary* (2013-04; April 11, 2013). Interest rates were very low by historical standards for several years beginning about 2008. The author explains why this was so and gives insights about future interest rates.

Investopedia. www.investopedia.com. An encyclopedia of investing terms, with definitions and examples of use in context. Extensive cross-references.

Jones, Charles P. *Investments: Analysis and Management*. 12th ed. New York: John Wiley & Sons, 2013. This is among the more popular investment textbooks for undergraduate students. Some of the material is too technical, but it also contains a great deal of useful information for a lay audience.

Kamstra, Mark J. “Pricing Firms on the Basis of Fundamentals.” Federal Reserve Bank of Atlanta, *Economic Review* (Q1 2003): 49–70. Discusses a new approach to valuing firms. The author explores the dot-com bubble of the late 1990s and uses specific stocks to illustrate the method.

———. "Reduced Daylight and Investors." *Canadian Investment Review* 18 (4; Winter 2005): 15. Seasonal affective disorder (SAD) affects as much as 10% of the population, causing symptoms of sadness, fatigue, and even loss of interest in sex, generally during the winter months. A growing body of evidence suggests that reduced daylight during these months can also affect a person's willingness to bear risk, which can, in turn, affect stock prices through changes in the equity risk premium.

Kamstra, Mark J., and Lisa A. Kramer. "Time Variation in the Market Return." In *Encyclopedia of Complexity and System Science*, edited by Bruce Mizrach. New York; London: Springer-Verlag, 2009. A very challenging article that addresses the concept of variation in expected stock returns.

Kamstra, Mark J., and Robert J. Shiller. "Trills Instead of T-Bills: It's Time to Replace Part of Government Debt with Shares in GDP." *The Economists' Voice*, 7 (3; 2010). The authors propose that the U.S. government issue a new security that pays a floating rate equal to one-trillionth of the U.S. GDP. This would offer investors the chance to purchase a rough equivalent to common stock in the U.S. economy while allowing the Treasury to raise funds without issuing more debt.

Kimmel, Russ. "How Expense Ratios and Star Ratings Predict Success." http://news.morningstar.com/articlenet/article.aspx?id=347327. 2012. Expense ratios have been known to predict mutual fund performance. Morningstar ratings help, too!

Lewins, Richard A. *How to Keep from Going Broke with a Broker: A Guide to Opening, Maintaining and Surviving Your Brokerage Account*. Minneapolis, MN: Bascom Hill Publishing Group, 2010. Provides guidance on how to choose a stock broker and outlines what advice and recommendations you can expect from one. Includes danger signals that could mean you have the wrong broker and what to do if you believe your broker has misbehaved.

Madura, Jeff. *Personal Finance*. 5th ed. Upper Saddle River, NJ: Prentice Hall, 2014. A popular book for people who want to understand their personal finances, covering such topics as credit cards, mortgages, and budgeting. It offers an overview of investments from an individual's perspective.

Madura, Jeff, Michael Casey, and Sherry Roberts. *Personal Financial Literacy*. Upper Saddle River, NJ: Prentice Hall, 2014. Chapter 4 gives an overview of personal balance sheets and how readers can estimate their net worth.

Malkiel, Burton G. *A Random Walk Down Wall Street: The Time-Tested Strategy for Successful Investing*. 10th ed. New York: W. W. Norton & Co., 2012. Probably the most famous investing book of all time. The author provides evidence that stock returns are unpredictable. This means that picking winners is at best very difficult and probably impossible for almost all investors.

———. "Asset Management Fees and the Growth of Finance." *Journal of Economic Perspectives* 27 (2; Spring 2013): 97–108. Great analysis and summary of the value of asset management and the fees it entails.

MarketWatch. http://www.marketwatch.com/. Market news website known for its broad coverage of companies and the economy.

McMillan, Michael G., Jerald E. Pinto, Wendy Pirie, and Gerhard Van de Venter. *Investments: Principles of Portfolio and Equity Analysis.* Hoboken, NJ: Wiley, 2011. Among the most comprehensive guides to investment analysis and portfolio management available. Covers market structure, apparent pricing anomalies, and regulation. Also describes different asset classes and order types.

Miller, Nancy. *The Facebook IPO Primer*. eBookIt.com, 2012. Uses a collection of stories to explore Facebook's IPO.

Morningstar. www.morningstar.com. Popular stock research site best known for its stock ratings. Portions of it require a subscription, but a good part is free.

MSN Money. http://money.msn.com/. Market news website known for its broad coverage of companies and the economy.

National Association of Investors Corporation. *Better Investing*. www.betterinvesting.org/. Lots of information about investing clubs and other tools.

Samuelson, Paul A. “Challenge to Judgment.” *The Journal of Portfolio Management* 1 (1; Fall 1974): 17–19. Samuelson doesn’t say that it’s impossible for portfolio managers to pick winners, but he thinks the evidence suggests that they can’t.

Schwed, Fred. *Where Are the Customers’ Yachts? or A Good Hard Look at Wall Street.* New York: Wiley, 2006. Perhaps the most entertaining book ever written about investing, this timeless classic exposes the less appealing side of Wall Street.

Sharpe, William F. “The Parable of the Money Managers.” *The Financial Analysts’ Journal* 32 (4; July/August 1976): 4. Excellent investing advice from the land of Indicia in just a few hundred words.

Shiller, Robert J. *Irrational Exuberance*. 2nd ed. New York: Crown Business, 2006. Perhaps the best book on how the forces underlying behavioral economics may affect asset markets, including stock markets. See the accompanying website, http://www.irrationalexuberance.com/.

Solin, Daniel R. *Smartest 401(k) Book You’ll Ever Read: Maximize Your Retirement Savings ... the Smart Way!* New York: Penguin Group, 2008. Some readers love this book. Others see it as being guilty of the same things the author attributes to the financial services industry.

Sortino, Frank A., and Stephen E. Satchell, eds. *Managing Downside Risk in Financial Markets: Theory, Practice and Implementation.* Oxford; Boston: Butterworth-Heinemann, 2001. Traditional portfolio theory treats all portfolio volatility as risk. The downside risk approach considers only the chance of an outcome below some target value to be risky. This is a highly technical handbook for implementing a downside risk strategy.

Taleb, Nassim Nicholas. *Fooled by Randomness: The Hidden Role of Chance in Life and in the Markets.* New York: Random House, 2004. The author is perhaps the most influential and best-informed skeptic of conventional Wall Street wisdom.

Todd, Walker F. “The Problem of Excess Reserves, Then and Now.” Levy Economics Institute of Bard College, working paper no. 763, 2013. This paper examines excess bank reserves in a historical context and discusses whether they are a policy problem for the Federal Reserve system. The author considers the possibility that excess bank reserves cause inflation in the United States.

Tyson, Eric. *Investing for Dummies*. 6th ed. Hoboken, NJ: For Dummies, 2011. This edition covers investment options, retirement planning, tax laws, and real estate for novice investors.

U.S. Securities and Exchange Commission. http://www.investor.gov/. SEC site that offers news and alerts for investors, tools, access to publications and research, and more.

———. http://www.sec.gov/edgar.shtml. SEC site related to the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. EDGAR contains the documents that public companies must file with the SEC.

Value Line. http://www.valueline.com/. Popular stock research site. Portions of it require a subscription, but a good part is free.

Vanguard. https://investor.vanguard.com/. Website for the largest mutual fund organization in the world. Vanguard operates about 175 mutual funds with assets of more than $2 trillion.

Wall, Larry D. “Some Lessons from Basic Finance for Effective Socially Responsible Investing.” Federal Reserve Bank of Atlanta, *Economic Review* (January/February 1995): 1–12. The author studies three questions about socially responsible investing in common stocks: (1) What can socially responsible investors do to influence firms’ behavior? (2) What is necessary for investors to have such influence? (3) What returns will investors who adopt socially responsible investment practices experience?

Westenberg, David A. *Initial Public Offerings: A Practical Guide to Going Public.* 2nd ed. New York: Practising Law Institute, 2013. A comprehensive

handbook for going public. Includes advice for planning and completing an IPO; filled with case studies and checklists.

Yahoo! Finance. http://finance.yahoo.com/. Probably the most comprehensive free Internet site related to finance and investing. Includes articles, historical and current price quotes, financial statements, and much more.

Zacks. www.zacks.com. Popular stock research site. Portions of it require a subscription, but a good part is free.