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Understanding Investments

Course Guidebook

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Duke University



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Originally from Sioux Falls, South Dakota, Professor Fullenkamp earned his undergraduate degree in Economics from Michigan State University. In addition to receiving the Harry S. Truman Scholarship, he was named one of the university's Alumni Distinguished Scholars. He earned his master's and doctorate degrees in Economics from Harvard University, where he was also awarded a National Science Foundation Graduate Research Fellowship.

Professor Fullenkamp's areas of interest include financial market development and regulation, economic policy, and immigrant remittances. His work has appeared in a number of prestigious academic journals, including the *Review of Economic Dynamics*, *The Cato Journal*, and the *Journal of Banking and Finance*. He also does consulting work for the IMF Institute at the International Monetary Fund, training government officials around the world. He is a member of the IMF Institute's finance team, whose purpose is to train central bankers and other officials in financial market regulation, focusing on derivatives and other new financial instruments.

In recognition of his teaching excellence, Professor Fullenkamp has received Duke University's Alumni Distinguished Undergraduate Teaching Award as well as the University of Notre Dame's Mendoza College of

Business Outstanding Teacher Award. Along with Sunil Sharma, Professor Fullenkamp won the third annual ICFR–Financial Times Research Prize for their paper on international financial regulation. ■

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Understanding Investments

Scope:

Just about everyone can use some help when it comes to investing. There are thousands of different investments to choose from—with more appearing every day. The language of investing is full of technical terms and jargon that make it difficult to get straight answers to even the most basic questions. In addition, the financial markets often behave in ways that seem to defy common sense. Because of these reasons, it's not surprising that many people find the prospect of investing their hard-earned savings mysterious and intimidating.

This set of 24 lectures takes the mystery out of investing by giving simple and clear explanations of investments and the process of investing. You'll learn practical lessons about how to choose the best investments for your portfolio and how to plan for your financial goals. As you learn about investments, you'll also learn some of the most important lessons about how financial markets work. This course will help you make sense of the financial headlines so that you can make good investment decisions—or simply be better informed about what's happening in the financial markets.

In the first lecture, you'll learn about the important role that investing plays in the economy, and you'll encounter the main threats to investing success that keep many people from making the most of their investing opportunities. You'll also learn that there are sensible and effective ways to mitigate the main risks to your investments—even when one of the biggest threats to success is human nature.

The second lecture complements the first by asking one of the most important questions in all of investing: How do investors make money? In this lecture, you'll learn about the efficient markets hypothesis and its claim that it's impossible to beat the market. You'll learn why many believe that it is possible to earn market-beating returns, and you'll explore what it takes in order to achieve this. You'll also learn how to tailor your investing strategy, depending on whether you wish to match the market return—or try to do better.

Equipped with a better understanding of what you can achieve with investing, you will move on to learning about individual investments and investing strategies. The next set of lectures introduces the 4 most important investments that every individual investor should consider: stocks, bonds, mutual funds, and exchange-traded funds (ETFs). In these lectures, you will learn the basic characteristics of these instruments, how to invest in them, and why they deserve a place in your portfolio. After this introduction, you will take an in-depth look at how to choose the right stocks, bonds, mutual funds, and ETFs for you. You'll learn the main techniques—such as financial statement analysis and the method of comparables—that professional investors use to choose investments for their portfolios.

You won't just learn about the basic investments, however. Several additional lectures will introduce you to other opportunities that you'll want to consider. You'll learn why you should invest abroad, and you'll learn the safest ways to do so. Additionally, you'll learn several ways to invest in real estate without becoming a landlord, and you'll be enticed to consider investing in commodities like gold and oil. You'll even learn about derivatives and how call options can be used in surprisingly safe ways to increase the returns on your portfolio.

This course also introduces you to the most important investing strategies that all investors should understand, and it explains why some of these strategies should be avoided. For example, you'll learn how to use leverage and market-timing techniques, but you'll also learn why they are dangerous temptations best left to the professionals. You'll also learn why diversifying your portfolio is critical, and you'll discover how to make sure your investments are well diversified. Furthermore, you'll learn that selling off your investments can be difficult, but it's another essential skill that all investors should master.

In the final 3 lectures of the course, all the lectures will come together to focus on financial planning and taking charge of your investment portfolio. You'll learn the basics of time value of money, one of the most important tools in finance. Then, you'll put these ideas to work by learning how to do basic financial planning, focusing on saving for retirement. You'll learn

why you'll need to keep investing even after you retire, and you'll learn the fundamentals of annuities.

This course draws on economic theory, expert advice, and hands-on examples to help you become a better informed and more confident investor. ■

How to Stop Worrying and Start Investing

Lecture 1

In this course, you're going to learn the principles that successful investors rely on and how to use them to become a more confident investor. In this first lecture, you'll discover that the basic ideas behind investing are sensible and easy to understand. Understanding the main risks to investing is the first step toward managing them, and there are simple and effective ways to manage these risks. By the end of this lecture, any sense of frustration or dread that you associate with investing will hopefully start to fade—and may even be replaced with excitement.

What Is Investing?

- **Investing** is spending your money, time, or other resources to create or acquire assets. An **asset** is anything that holds onto its value over time. Buying an asset is a way to store resources you don't need now so that you can use them later. In other words, investing is a form of saving.
- **Financial assets** are documents that entitle their owners to receive something of value, generally a set of cash payments, from someone else. Another name for a financial asset is a **security**, which is written evidence of the extension of a loan.
- One of the distinguishing features of a financial asset is that it doesn't have any intrinsic value; it's either a piece of paper or, more likely, a collection of numbers stored on a computer.
- The value of financial assets comes from **real assets**, which are used directly in the production of goods and services. Some real assets are **storable commodities**, such as cotton or oil, but many real assets are what economists call **capital goods**—machines, buildings, factories, and the land that they sit on.

- Other real assets are invisible but are nonetheless real—such as ideas, knowledge, and skills. Economists call these assets **intangible assets**, and in the business world, they’re often called intellectual property. What they all have in common is that their value comes from their ability to make goods and services, and when they’re combined in new and creative ways, they can dramatically increase in value.
- Financial assets derive their value from real assets; however, the relationship is often complex. Financial assets are created whenever somebody borrows money in order to buy real assets.
- Financial assets make it possible for ordinary people to invest in real assets and enjoy the increase in value that can be associated with that investment. Additionally, financial assets can be divided into small amounts so that individuals can buy many different assets. Most real assets are so expensive that many households couldn’t afford more than one—if any.



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When a business borrows money to build a new factory, a financial asset is created.

- Furthermore, financial assets are extremely convenient to buy and sell. Real assets, such as factories, can sit idle for years until the right buyer comes along, but you can sell your stock in the company that owns the idle factory in a matter of seconds as a result of online trading.
- So the attraction of investing in financial assets is that it gives us a convenient way to participate—albeit indirectly—in the investment into real assets, which is where the value is created in our economy. This gives everyone the chance not only to store extra resources for later, but to have these resources grow significantly over time as well.

The Top 4 Threats to Investment Success

Market Downturns

- The danger that people most likely fear the most is the chance that an investment loses money because its value falls. The prices of financial assets typically move up and down frequently—sometimes almost violently—and these ups and downs are extremely difficult to predict, especially on a day-to-day basis.
- The first line of defense against losing money is simply to give your investment some more time. Even though financial prices constantly bounce up and down, the short-term bumps smooth out over longer periods of time and reveal a longer-term trend. If you invest in assets that really are creating value, the trend of prices will eventually show that value.
- The S&P 500 measures the stock prices of 500 of the largest companies in the United States. It's a pretty good indication of the overall value of the U.S. stock market, so most people use it to stand for the price of the entire stock market.
- During a market downturn, if you panic and sell off your investments, you'd lock in huge losses and miss out on the recovery. Time can be an effective defense against losses on your

investments—but you have to be patient, and you have to have the time to spare.

- A critical part of investing involves gradually shifting riskier investments to safer ones well before you actually need cash, which will cushion the blow from a market downturn.

Bankruptcy

- Another risk of investing is the risk of bankruptcy of the issuer of one of your investments. The party who promises to give the owner of a financial asset something of value is called the **issuer**, which can be a firm, the government, or a person, and all of these parties can go bankrupt.
- When the issuer of a financial asset that you own declares bankruptcy, it almost always means that your asset will lose value. Fortunately, it doesn't necessarily mean that you will lose all of your investment. In general, if you hold a loan or a bond, you'll probably get something, but if you hold stock, you'll probably get nothing—even if the company survives the bankruptcy.
- Fortunately, in most cases, there are plenty of warning signs that an issuer is losing financial strength and may be sliding toward bankruptcy. Companies and governments—who are most likely to be the issuers of the investments you hold—are required to make their financial information publicly available.
- By being alert and proactive, investors can take effective steps to limit bankruptcy risk in their investments. You can simply avoid investing in financial assets that come from financially weak issuers. Additionally, you can monitor the financial strength of the issuers of the assets you do hold so that if an issuer starts to weaken, you can sell the asset before the issuer is in serious danger of bankruptcy.

Inflation

- **Inflation** is a general increase in prices. There are many ways to measure inflation, but most people are familiar with the consumer price index (CPI), which measures the price of a set of goods and services that a typical household consumes.
- Inflation is a danger to investing because it drives up the prices of the things we want to buy with our savings so that we may not be able to afford the type of college education, vacation home, or retirement that we wanted.
- Whereas financial prices go up and down—hopefully a bit more up than down on average—the prices of everything else only seem to go up steadily. If inflation is low, we hardly notice it. However, over time, a small increase in prices each year amounts to a huge increase in prices over decades as a result of compounding.
- The other aspect of inflation that makes it dangerous is that it can differ greatly across different types of products. Some products experience low rates of inflation. The prices of technology-related products, such as computers, can even fall for long periods of time.
- Other products, however, experience very high rates of inflation. High-inflation products and services include tuition and health care. Because these may be the very things you're saving for, you need to be aware that inflation can be a serious enemy of successful investing.
- To combat inflation, find investments that keep up with inflation. Many assets will keep up with inflation, and stocks seem to be one of them. However, the assets that tend to do better at keeping up with inflation also tend to be the riskier ones.
- Even if you load up on assets that keep up with the general rate of inflation, you may still be burned by inflation in the price of something that you are saving for. Again, the best strategy is to look

for assets that keep up with the specific inflation you're worried about—but this can be a challenge.

- There is another way to protect against the ravages of inflation, but it's a difficult one: You could save more now—just to cover the amount of the increase in prices that you don't think your investments will match.

Human Nature

- The biggest threat to investing confidently and successfully is human nature. In many ways, our own psychology and emotions do far more damage to our investing success than market crashes do.
- Economists have noticed that investors tend to exhibit herd behavior, which involves joining the crowd and rushing into an investment without doing much, if any, research on it. The price gets pushed up by the herd but then plummets later.
- Another way that our unfamiliarity with financial instruments can lead to trouble is that it makes too many people easy victims for financial scams. We want to believe that there are some secret, surefire investing techniques waiting to be discovered, and this makes us easy to fool.
- **Behavioral economics** blends psychology and physiology with economics to gain a better understanding of how people's decision making goes wrong—especially in situations involving investing. Some of these behavioral quirks are fairly mild, but others can cause serious problems for your investments.
- An example of a mild type of behavioral impediment is called **confirmation bias**, which describes the tendency for people to only notice evidence that supports their beliefs and ignore evidence that contradicts it. A more serious type of behavioral impediment is our extreme aversion to losing and how it changes our behavior.

- Experiments that behavioral economists have done on gambling show that once people start to lose money, they become willing to try riskier gambles that have very little chance of winning—as long as the prize they get if they win will make up for previous losses. This applies to investors as well.
- The most interesting—and frightening—part of these behavioral quirks is that they are such a deeply ingrained part of us that most of the time we don't even realize that these are mistakes.
- The first step to making sure that we don't inadvertently sabotage our own investments is to become more familiar with investing, which includes learning some basic ideas about how the financial markets behave as well as learning how the main tools of investing really work. In addition, you'll need to learn some things about yourself so that you can figure out what kind of investing strategies and techniques you'll be comfortable with over the long term.
- The second step is making an **investment plan**, which is a set of decisions about how much to invest, which types of investments and strategies to try, and when to sell investments. All of the threats to investing will do the most damage to investors who haven't decided in advance how they want to handle these risks.

Important Terms

asset: Anything that holds onto its value over time.

behavioral economics: Blends psychology and physiology with economics to gain a better understanding of how people's decision making goes wrong—especially in situations involving investing.

capital good: A type of real asset that is involved in the production of goods, such as machines, buildings, factories, and the land that they sit on.

confirmation bias: Describes the tendency for people to only notice evidence that supports their beliefs and ignore evidence that contradicts it.

financial asset: A document that entitles its owner to receive something of value, generally a set of cash payments, from someone else.

inflation: A general increase in prices.

intangible asset: A type of real asset that is invisible but nonetheless real—such as ideas, knowledge, and skills.

investing: Spending your money, time, or other resources to create or acquire assets.

investment plan: A set of decisions about how much to invest, which types of investments and strategies to try, and when to sell investments.

issuer: The party who promises to give the owner of a financial asset something of value, including a firm, the government, or a person.

real asset: An asset that is used directly in the production of goods and services.

security: Written evidence of the extension of a loan.

storable commodity: A type of real asset that can be stored and retain value, such as cotton or oil.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 1.

Browning, “A Long-Term Case for Stocks.”

Shefrin, *Behavioral Corporate Finance*, chap. 1.

Questions to Consider

1. Go to the Bureau of Labor Statistics website and find their table on the annual Consumer Price Index and the associated annual inflation rates at <ftp://ftp.bls.gov/pub/special.requests/cpi/cpiiai.txt>. Look at the final 2 columns, which present the annual inflation rates. What is the highest inflation rate that you've experienced during your lifetime? How likely do you think it is that inflation rates will be that high or higher during your investing career?
2. One additional behavioral quirk that is relevant to investing is identified by the term "illusion of control." Do an Internet search using this term and read about how it affects people's trading behavior. As an investor, what are the things that you truly have control over? What things do you have no control over?

How Investors Make Money

Lecture 2

Do you think markets are highly efficient and can't be beat, or do you think that investors can beat the market by exploiting inefficiencies? If you think markets are highly efficient, then you shouldn't try to beat the market; instead, you should join it. If you think that the market can be beaten, then you have another decision to make: Are you willing to put in the time and effort that it takes to find those market inefficiencies? It is important to remember that you can reach your investment goals no matter what your opinion is about market efficiency.

Beating the Market

- Can anyone beat the market? If you can beat the market, how do you do it? These 2 big questions get to the heart of one of the most important, and enduring, controversies in finance. Professors and investors have been arguing about these questions for decades, and this issue has direct relevance for your investing.
- Each investor needs to decide whether it's possible to beat the market. Your answer to this question will become one of the foundations of your investment strategy—deciding whether to join the investors who want to beat the market or those who don't really try.

The Efficient Markets Hypothesis

- To reach an informed decision, you'll first need to grasp the basic elements of the **efficient markets hypothesis (EMH)**. The economist who is credited with developing the EMH is Eugene Fama, who outlined this theory in a paper published in 1965. The driving force behind the EMH is the intense competition among investors to find and exploit any advantages that will help them earn high returns.
- The ultimate source of any investment advantage is information. Risk and uncertainty are an inescapable part of investing, so any

information about an investment that reduces the uncertainty surrounding its future return is valuable. When new information about an investment is revealed to the market, this changes the price of the investment.

- You can potentially earn a big reward for being the first person to get a hold of some new information and then make an investment based on the information. This fact makes investors compete for information—but not just any information. Investors are only looking for information that would affect someone's decision over whether to invest in an asset.
- This highly desirable and profitable information is called **material information**, which affects the market price of an asset when it's revealed to the market. Because everyone wants to be the first one to find new material information and make an investment based on it, new information influences market prices very quickly—in fact, before most of the market knows the information.
- The United States and many other countries try to ensure that the competition for investment information is fair, and certain investors are explicitly forbidden from benefiting from material information they obtain as the result of an unfair advantage. Therefore, some countries, such as the United States, ban insider trading—even though some economists argue that this makes the market less efficient.
- The fierce competition to find material information and then make investments based on it leads to 2 consequences that are part of the efficient markets hypothesis. First, any material information about an asset that is known now is already incorporated into current asset prices. This includes anything you know or expect about the future because these things can also include material information. Second, new information is incorporated into asset prices extremely quickly, if not instantly.

- Often, people will summarize the EMH by stating a simple version of the first consequence: Market prices fully reflect all current information. However, many people object to the word “all” in this phrase. They agree that competition makes asset prices incorporate a lot of material information, but they disagree about the kinds of information that get incorporated into market prices.



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- This disagreement has led to the creation of 3 different versions of the EMH. The weak version states that the EMH is correct with respect to past financial prices. The semistrong version states that current market prices reflect all publicly available material information. The strong version states that current market prices incorporate all material information—whether it’s publicly available or private.
- **Private information** is information that is known only to a few people and isn’t widely distributed or shared. Private information includes inside information—such as an executive’s advanced knowledge of a merger deal—but it goes well beyond inside information.
- Private information that is not inside information usually combines observation with analysis. That is, investors often take publicly

Every investor dreams about beating the market, but only some believe that it is actually possible.

available information about a firm and perform their own analysis on it. This creates private information out of public information.

The EMH and Beating the Market

- If the EMH is correct—that market prices fully incorporate information that is known now and that new information is incorporated very quickly into market prices—then there's no way for anyone to predict future prices successfully or to benefit from the arrival of new information in the market.
- The unpredictability of future prices is devastating to your investment plans. How can you choose between different assets, let alone decide whether to buy or sell, if you can't predict prices? In this case, your best strategy is simply to buy a slice of the entire market and hold it. Some of the assets will be losers, but this is the only way to ensure that you also hold the winners. However, if you do buy a slice of the entire market, then your return on this investment will be the market return. You can't beat the market return.
- The EMH is controversial because if it's true, then anyone who is trying to beat the market is doomed to fail and there's no need for investment advisors, stock analysts, money managers, or anyone else who makes a living trying to forecast asset returns. As a result, most people in the financial services industry vehemently disagree with the EMH.
- Some of the most convincing evidence in favor of the EMH comes from simple statistics. Many studies have shown that less than 1/2 of all professional money managers beat the market over long stretches of time. In fact, from a statistical point of view, it may be difficult to judge whether the high returns that a money manager achieves in any given year are due to skill or to luck.
- People who don't believe in the EMH argue that there are at least a handful of money managers who did beat the markets for very long periods of time—if not over their entire investing careers.

For example, Warren Buffett, Bill Miller, and Peter Lynch earned above-market returns over decades rather than just a few years.

- People who don't believe that the EMH is true have found plenty of failings in the theory. For each version of the EMH, people have shown that there exist many different pieces of information that do help predict future market prices of stocks and other assets.
- Some of the most interesting evidence against the EMH comes in the form of anomalies, which are real-world examples of investment opportunities that shouldn't exist if the EMH is true. One of the most famous anomalies is the so-called January effect, which is a phenomenon in which stock prices tend to rise in January and is especially pronounced for small company stocks. Many professional investors have been able to earn good profits by purchasing stocks in early January and then selling at the end of the month.
- Defenders argue that even though some information does seem to be able to predict future prices, traders can't profit from these price changes because of trading costs and other frictions. Many people who support the EMH admit this but argue that the most important implication of the EMH holds true: You may be able to predict future prices a little, but you still can't use that information to beat the market.
- Supporters of the EMH argue that whenever anomalies are discovered, a large number of investors immediately try to exploit the anomaly. As they do this, their increased buying or selling will change market prices and will eventually drive the anomaly out of existence. Therefore, if the EMH is true, any anomalies will get weaker and will disappear as profit opportunities—and any meaningful violations of the theory, such as anomalies, will automatically be corrected by the market.
- Some people attack the EMH by taking a behavioral economics approach, arguing that the market can't be efficient because people

aren't fully rational. People constantly make investment mistakes based on their emotions or on other psychological biases, and these mistakes end up affecting the behavior of market prices.

- An extreme version of the behaviorist approach reaches one of the main conclusions of the EMH—but for a completely different reason. The argument is that if people really are highly irrational, then this would also make market prices difficult to predict, meaning that price changes would be unpredictable—which is one of the main implications of the EMH.
- There's a paradox at the heart of the EMH because it relies on a balance between efficiency and inefficiency to make it work. For markets to be efficient, some investors have to believe that markets aren't efficient—so that every day, they go out into the markets and try to find inefficiencies that they can exploit for their own profits. By doing this, however, they make sure that the markets stay mostly efficient. Whenever these investors find an inefficiency, they buy or sell the mispriced asset, which changes the market price of the asset until the inefficiency disappears.
- If these investors find inefficiencies too well, the market becomes highly efficient and profit opportunities disappear. Then, these investors stop trying to find inefficiencies, and the inefficiencies creep back into the markets.
- No matter what you believe about market efficiency, there are good investment opportunities for you. If you think that markets are very efficient, then you can simply be a passive investor. When you invest, you should aim to buy your own slice of the entire market and earn whatever return the market delivers.
- On the other hand, you may think that the markets are inefficient enough so that you can actually earn a higher return than the market. If you want to try to beat the markets, you have to put in the time and effort it takes to learn about companies and decide whether their market prices are right. Anyone is capable of building up

private information that they can use to become an active, market-beating investor.

Important Terms

efficient markets hypothesis (EMH): An economic theory that suggests that market prices fully incorporate information that is known now and that new information is incorporated very quickly into market prices.

material information: Highly desirable and profitable information that affects the market price of an asset when it's revealed to the market.

private information: Information that is known only to a few people and isn't widely distributed or shared.

Suggested Reading

Ball, "The Theory of Stock Market Efficiency."

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 8.

Lee and Verbrugge, "The Efficient Market Theory Thrives on Criticism."

Questions to Consider

1. Think about the effect of the rise of the Internet on market efficiency. In what ways could we argue that the Internet makes markets more efficient? In what ways might it make markets less efficient? What do you think the overall impact of the rise of the Internet has been on market efficiency—and why?
2. Do an Internet search using the term "stock market anomalies" and do some reading on the various stock behaviors that seem to violate the efficient markets hypothesis. Do any of them look like they may be a source of dependable investing profits? Why?

Starting with Stocks

Lecture 3

Although there are thousands of different financial products for you to invest in, most of them are made up of the same few basic types of financial instruments. This lecture serves as an introduction to the main building blocks of investments. You will learn some key facts about how stocks work and many important details about how stocks are traded. Some of these ideas will help you when learning about stock pricing in future lectures.

Stocks

- Stocks can be pretty risky investments, but they serve as a great model for learning about individual investments and how to use them because the basic ideas behind stock investing are clear and easy to understand. In addition, the stock contract itself is very simple. Furthermore, the details of stock investing are very similar to the details of other types of investing.
- Businesses are supposed to try risky but innovative and surprising new projects that have the chance to create valuable products and handsome profits. These projects always involve investments in real assets. To make something new, businesses need to buy machines, factories, land, ideas, and even entire companies.
- To do that, though, they need lots of money, and chances are, businesses don't have enough cash on hand to fund all the projects they want to pursue. They have to borrow the money from somewhere, and this is where financial assets come in.
- Financial assets are documents that describe the terms of a loan. The borrower gets money now, and the lender receives something of value in return. Usually, the thing of value is a promise from the borrower to make cash payments in the future—to whomever the owner of the document happens to be at the time.

- Additionally, there are other valuable things that a firm can offer in exchange for a lender's ready cash. One of them is an ownership stake in the business. There are several legal forms that this shared ownership can take, such as a partnership, but by far the most successful form of shared ownership has been the corporation, which uses stock.
- When a firm issues **stock**, it divides the ownership of the company into thousands—if not millions—of equal parts, which are the individual shares. Each **share** has an equal claim on the firm's profits and an equal say in the management of the firm. The more shares you buy, the bigger the slice of the company's profits you receive, and the more influence you have on company decisions.
- The basic skill of stock investing really boils down to finding companies that invest in successful projects. That's true when it comes to picking other types of investments as well.

Stocks in Practice

- When a company sells its shares to the public for the first time, in a special sale called the **initial public offering (IPO)**, it usually uses investors' money to expand its business and start new projects.
- Additionally, when one company buys another company, it often pays for this purchase by issuing new shares. Otherwise, firms are reluctant to sell shares; there are usually cheaper ways for firms to borrow from investors than selling shares of stock. Therefore, most investors buy their stock from other investors—not directly from firms.
- The term primary market describes the market for new assets that investors buy directly from the borrowers who issue them. The term secondary market describes the market for used—or, more accurately, preowned—assets. When you buy an investment in the secondary market, you're effectively taking over the loan from someone else.

- **Dividends** are the profits that companies pay out to their shareholders. While it's true that stockholders are entitled to a share of the company's profits, the company isn't under any obligation to actually pay them out.
- Many corporations—up to 40% or more, according to some estimates—don't pay any dividends. When a firm earns profits, it has a choice: It could pay the profits out to the shareholders or hold onto the profits and reinvest them into new projects. If the projects are really great and offer high returns, then shareholders should be glad to let the company keep the profits, reinvest them, and pay out even more profits later.
- If you buy a stock, you'll have to sell it sometime if you want to convert it to cash. A stock is technically a loan with infinite maturity, so the company won't actually ever pay back the loan. In reality, most companies come to an end eventually, but there are many companies that have lasted for 100 years or more. Furthermore, a stock may not ever pay out any cash dividends at all, so you may not get any interest on the loan either.

Trading Stocks

- Because firms don't sell much stock directly to investors and because you usually have to buy stock from someone else, trading is an essential part of investing in stocks.
- Stocks, and all other financial instruments, used to be physical documents that were traded in person. Today, we keep track of stock ownership through electronic records. Specialized financial institutions, called depositories, are the official storage places for most securities. The depository stores the shares electronically, keeps track of who owns the shares at all times, and effectively transfers ownership of shares when they change hands.
- Stocks, like most financial assets, tend to trade in organized markets. Most investors who buy and sell securities like stocks will have to go through an intermediary. There are 2 types of intermediaries

in the financial markets. One type is a **broker**, who simply helps buyers locate sellers—and vice versa—and arranges the sale.



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Most investors buy their stock from other investors—not directly from firms.

- A broker may also help buyers and sellers agree on a price. The buyer or seller (or both) pay a fee, or commission, to the broker for these services. One type of broker that most people have experience with is a realtor, who helps bring buyers and sellers of homes or other properties together, facilitates the sale, and collects a commission for doing all of that.
- If you want to invest in individual stocks, you'll need to set up an account with a broker. A brokerage account operates a lot like an ordinary bank account—except that in addition to cash, your account also contains the securities that you buy.
- When you buy stocks through a broker, technically the broker is registered as the owner of the shares in the securities depository, but the broker's internal accounts will show that you have a claim on your broker for those shares. This is done so that shares can be transferred very quickly, and brokers have to comply with many regulations that make sure they can't misuse the customers' money and securities.
- The main differences between brokers boil down to 2 questions. The first question is how much human contact you want from your broker. There are human brokers, and there are online brokers that

will let you do almost everything yourself, at your convenience—or you can have some kind of mixture.

- Besides the amount of human contact you want, you also need to consider the amount of services you want from a broker. All brokers provide the basic services of maintaining your accounts and executing the trades that you pay them to make on your behalf, but some brokers will provide additional services.
- The other type of intermediary is a **dealer**, who also connects buyers and sellers but does so indirectly. Dealers announce to the market that they'll sell a specified security to anyone who is willing to pay the dealer's asking price, or the **ask price** for short. At the same time, dealers also announce that they will buy a certain security from anyone who is willing to sell at the dealer's offering price, or the **bid price**.
- Because dealers are always ready to sell to you or buy from you, this method of trading stocks is more convenient than waiting for a broker to find someone for you to trade with. When the dealer buys a share of stock from someone and then sells it to you, he or she earns the difference between the ask price and the bid price, which is called the **bid-ask spread**.
- When you use a dealer to sell shares, the dealer pays you right away, but he or she may not be able to find a buyer for the shares very quickly. When you use a broker to sell shares, even though you may be paying less, you bear the risk of not being able to find a buyer as quickly as you want.
- Traditionally, brokers have been associated with **stock exchanges**, which are organized markets where people can meet and trade shares. However, you have to be a member of the exchange in order to be able to trade on the exchange, and to become a member, you have to pay a large fee.

- The members of the exchange earn money not only by trading their own shares, but also by trading shares on behalf of people who are willing to pay a fee for this service. Thus, the members of stock exchanges become stockbrokers.
- Not all stocks are traded on exchanges; many stocks trade in a dealer market, such as NASDAQ or the dozens of other online trading systems. Fortunately, stock trading has remained relatively simple and dependable for investors despite the increasing complexity of the stock market—mostly because you pay your broker to handle the trading for you.

Lot Sizes and Types of Orders

- We tend to buy things in standard quantities, called lots, and most financial investments have standardized lot sizes. For stocks, the size of a round lot is 100 shares. You'll get the best price, and the fastest trade, if you buy or sell in multiples of 100 shares.
- Additionally, there are several different types of orders you can submit to the market. A market order is an order to buy or sell at whatever the current market price is. The basic problem with market orders is that market prices can move very quickly. Electronic trading allows orders to be placed very quickly, but it also enables prices to move much faster.
- A limit order places an upper limit on the price you're willing to pay or a lower limit on the price you're willing to receive. Placing limit orders may mean that you don't end up buying or selling those shares. In addition, limit orders cost more than market orders, so you should be aware of the cost difference.
- A stop-loss order is an order to sell shares that is triggered once the price of the shares falls below a certain level. The problem with stop-loss orders is that once the price goes below the stop-loss level and the order is submitted, the price can keep falling quickly. Many traders think of a stop-loss order as a type of insurance, but it's not.

Important Terms

ask price: The price at which the dealer will sell a share of stock to you, or the asking price.

bid price: The price at which the dealer will buy the stock from you, or the offering price.

bid-ask spread: The difference between the ask price and the bid price.

broker: A type of intermediary in the financial markets who simply helps buyers locate sellers—and vice versa—and arranges the sale.

dealer: A type of intermediary in the financial markets who connects buyers and sellers indirectly.

dividend: The profit that a company pays out to its shareholders.

initial public offering (IPO): A special sale in which a company first sells its shares to the public; marks the transition from being a privately held company that only 500 or fewer people can own to becoming a publicly held company that anyone can own a part of.

share: An equal portion of a company's stock.

stock: A form of ownership that a firm issues that divides the ownership of the company into thousands—if not millions—of equal parts, or shares.

stock exchange: An organized market where people can meet and trade shares.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 3.

Brealey, Myers, and Allen, *Principles of Corporate Finance*, chap. 1.

Swensen, *Unconventional Success*, chap. 2.

Questions to Consider

1. Go to the website of an online brokerage such as E*TRADE, TD Ameritrade, or Scottrade. Compare the price of the trading commission for a market order through this broker with the trading commission for a limit order. When do you think it's worth paying the extra money to use a limit order?
2. Do an Internet search on the term "shareholder activism" and read up on articles that describe how these market players attempt to improve the performance of companies. Why don't shareholder activists simply try to take over poorly performing companies?

The Basics of Bonds

Lecture 4

In this lecture, you will learn the key features of bonds that make their returns more predictable and dependable than the returns on stocks. This lecture focuses specifically on how to pursue a buy-and-hold investment strategy in bonds. Although the returns on bonds might seem boring, bonds are actually very interesting. There is a diverse set of bonds that nonetheless has a high degree of safety and competitive returns. If you shop carefully among the many options, you'll find the right set of bonds that fit your desired mix of safety and yield.

Bonds

- The variety and dependability of bonds can make them a very useful investment to have in your portfolio. Bonds also enable governments to borrow, and they're the tool that central banks like the Federal Reserve use when they want to expand or shrink the money supply.
- Bonds are contracts in which a borrower—the issuer of the bond—promises to make a set of payments to the buyer of the bond. This sounds like a pretty simple arrangement, but bond contracts are actually extremely complex documents, running to dozens if not hundreds of pages.
- The buyer of the bond lends money to the issuer of the bond and wants to prevent the borrower from defaulting. Naturally, the buyer of the bond can't completely prevent the issuer from defaulting, but the buyer can make the issuer of the bond agree to a large set of terms and conditions, which are called **restrictive covenants**.
- Some of the covenants require the borrower to do things that make the borrower financially stronger and less likely to default. For example, covenants may require the borrower to keep a certain

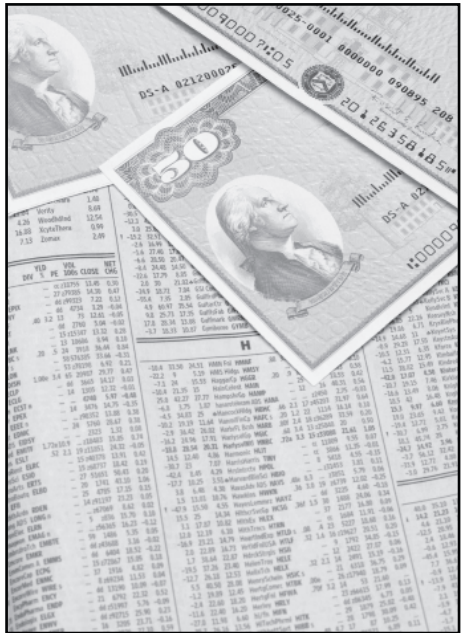
amount of cash in a reserve fund that can be used to pay off part of the loan.

- Other covenants require the borrower not to do things that make them financially weaker and more likely to default. An example of this type of negative covenant is one stipulating that the borrower can't take on any more debt.

Features of Bonds

- There are 3 main types of features that distinguish bonds from each other in ways that should matter to you as an investor: who issued the bond, whether the bonds are secured, and the timing of the payments.
- There are 3 main types of bond issuers: governments, companies, and individuals. Government bonds make up the largest share of the bond markets and are usually considered the safest types of bonds because governments have the ability to raise taxes in order to pay off the bonds.
- Each level of government—national, state, and local—can generally issue its own bonds. Bonds that come from local government units are called municipal bonds. A general term for foreign government bonds is sovereign bonds.
- Technically, the words “bonds” and “debt” can be used interchangeably. The term “debt” includes all borrowing that doesn't involve selling stock. Therefore, debt includes bank loans as well as bonds. However, when you sign a bank loan, you are issuing a bond to your bank.
- In addition to governments, companies issue large amounts of bonds, which we generally call corporate bonds, or private debt. The private bond markets are much smaller than the government bond markets.

- Finally, individuals can also issue bonds — though, generally, these investments are far too risky to be considered an attractive part of your portfolio.
- In addition to the issuer of the bond, the second feature that investors care about is whether a bond is **secured**, which means it is backed up by specific collateral. For example, a company may secure a bond by pledging a factory or perhaps a portfolio of valuable patents. If the company defaults on a secured bond, the lender gets to claim the specific assets that were pledged as collateral.



Bonds enable governments to borrow and central banks to expand or shrink the money supply.

- On the other hand, the owners of unsecured bonds have to stand in line with all the other lenders and sort out who gets what from the bankrupt issuer. This process takes a long time, and generally the bond buyers receive a lot less than they would have received if they had held a bond that was secured by some specific asset.
- The final characteristic of bonds that you should be aware of is the immense variety in the timing of bond payments. **Maturity** is the length of time until the final payment on the bond. The standard range of maturity available in the market runs from 1 day to 30 years or more. The wide range of maturities gives you the possibility of

investing in a bond that will mature very close to the day you need to receive the cash from your investment.

- There are 3 terms that categorize bonds by their maturity. **Bills** are bonds that mature in less than 1 year. **Notes** are bonds that mature in 1 to 10 years. An instrument known as the **medium-term note (MTN)** typically has 1 to 5 years of maturity.
- The fact that you can buy bonds on the secondary market, the market for preowned securities, greatly adds to the range of maturities of bonds that are available. On the secondary market, you'll find bonds with maturities of only 4 months, for example, which had been issued with much longer maturities but have many fewer months remaining to maturity.
- Another way that the timing of bond payments varies is in the number of payments and the sizes of the payments. Some bonds make a single payment, and these are called **zero-coupon bonds** because you get no interest payments, or **coupons**, between the time you buy the bond and the time that the borrower makes the payment to you.
- The downside of zero-coupon bonds is that you have to wait until the maturity of the bond to receive your interest. The benefit of zero-coupon bonds is that the price you pay for them is much lower than the payment they make to you at maturity.
- Most bonds make multiple payments to their holders between the purchase date and the bond's maturity. Generally, bonds make regular payments, but this depends on the agreement between the borrower and lender. Additionally, the payments may all be of a single size, or the size of the individual payments may vary.
- In the borrowing arrangement of a standard bond, which is also referred to as a straight bond, the lender gives the borrower a sum of money called the **principal**, or the par value of the bond. In

return, the borrower pays interest on the principal every 6 months and then returns the principal to the lender at maturity.

Investing in Bonds

- At least in the United States, bonds are mostly a dealer market because there are so many different bonds that it would be difficult to support a large enough pool of active traders in an exchange. In some developing economies, the governments force all bond trading to go through exchanges.
- Due to pressure from the U.S. Securities and Exchange Commission (SEC), as well as the development of the online discount brokerage business, information about bond prices has become widely available, so you can be confident that the price you pay for a bond represents a true market price.
- Going through a broker is the main way to buy a bond on the secondary market, but you will have to pay a commission to the broker and possibly a markup to a dealer that the brokerage works with.
- You can also buy many primary market bonds through a brokerage, including both private bonds and government bonds, but there is also a direct market in many bonds that may be cheaper and more convenient than using a broker.
- In addition, many large corporations sell notes and bonds directly to the public because it's a cheap way for them to borrow, and many investors like it because they earn higher interest than on their bank deposits, from a company they regard as safe.
- Bonds tend to have large lot sizes. That is, they have minimum investments that tend to be large. For example, most corporate bonds tend to have a minimum par value of \$10,000 and are only available in increments of \$10,000.

- The lumpiness of bonds potentially ties up a lot of money for a long period of time. If you buy a bond that matures in 20 years, for example, you won't get that \$10,000 back for 2 decades—though you will receive the interest every 6 months. The liquidity risk—the risk that you will have a sudden need for cash—leads most buy-and-hold bond investors to pursue a strategy called laddering.
- A **bond ladder** is a set of bonds that has one bond maturing every year, every quarter, or maybe even every month. As one bond matures, you can use the cash from the bond if you need to, but you can also buy a new bond to replace it. If you always buy the same maturity of bond, then you end up with a self-replenishing set of bonds that generates a steady stream of cash.
- One of the main risks of buy-and-hold bond investing is what economists call reinvestment risk. When you build your bond ladder, your bonds may pay an average interest rate of 5% per year, for example. Every 6 months, you'll get a set of coupons from your bonds and have to decide where to reinvest this money, but by this time, market interest rates may have fallen to 4%, for example, so you'll have to reinvest your interest at a lower rate, which will drag down the average return on your total bond investment.
- Reinvestment risk is usually more of an annoyance than a real risk of loss, and sometimes interest rates will rise, so the risk can work in your favor. However, if interest rates fall dramatically and stay there for long periods of time, then you may want to reevaluate your investment plan.
- One of the more serious risks to the buy-and-hold bond investor is inflation. If you are holding a bond with long maturity and inflation starts to rise, then the purchasing power of your investment will fall dramatically by the time you collect your final payment. Fortunately, the bond laddering strategy helps to mitigate the damage that inflation can do to your bond portfolio.

- If the price level falls, the purchasing power of the future payments on the bonds increases, but deflation is incredibly damaging to business. Significant deflation leads firms into bankruptcy because the prices they receive for their goods and services may fall below the costs of production.
- If you are holding corporate bonds, the likelihood of default increases dramatically when deflation occurs. However, deflation is usually associated with recessions, and during recessions, government revenues at all levels decline, so deflation can also cause governments to default.

Important Terms

bill: A bond that matures in less than 1 year.

bond ladder: A set of bonds that has one bond maturing every year, every quarter, or maybe even every month. As one bond matures, you can use the cash from the bond if you need to, but you can also buy a new bond to replace it. If you always buy the same maturity of bond, then you end up with a self-replenishing set of bonds that generates a steady stream of cash.

coupon: An interest payment.

maturity: The length of time until the final payment on a bond.

medium-term note (MTN): A bond that typically matures in 1 to 5 years.

note: A bond that matures in 1 to 10 years.

principal: The par value of a bond.

restrictive covenant: A large set of terms and conditions that the buyer of a bond can make the issuer of the bond agree to.

secured: Refers to a bond that is backed up by specific collateral.

zero-coupon bond: A bond that makes a single payment and that gives no interest payments, or coupons, between the time the bond is bought and the time that the borrower makes the payment to the buyer.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 2.

Swensen, *Unconventional Success*, chap. 2.

Questions to Consider

1. Go to the TreasuryDirect website at www.treasurydirect.gov and view the auction calendar, which shows when different government bonds are available for purchase. When is your next chance to buy a 10-year U.S. Treasury note? When is your next chance to buy a 30-year U.S. Treasury bond?
2. Go to an online brokerage website and look for corporate bonds rated A or higher that are available in the secondary market. What is a typical ask yield for a high-rated corporate bond that matures in the next year—or in 5 years?

Introduction to Mutual Funds

Lecture 5

In this lecture, you'll learn that mutual funds are one of several different types of pooled investments, or packages of instruments such as stocks and bonds. Mutual funds make stock and bond investing more convenient and affordable than buying and holding these instruments directly. For beginning investors, at least 2 types of pooled investments are worth considering: unit investment trusts and open-end mutual funds. Most of the lecture will be devoted to the most popular type of pooled investment, which is the open-end mutual fund.

Mutual Funds as Pooled Investments

- On the surface, **mutual funds** aren't very attractive investments because they're really nothing more than pools or packages of stocks, bonds, and perhaps other instruments. However, some people consider mutual funds to be the best starter investment because they offer a tremendous variety of products, low trading costs, and a high level of transparency.
- Mutual funds are just one type of investment from a broader category of pooled investments called collective investment schemes. In the United States, collective investment schemes are called registered investment companies by the SEC.
- Another type of collective investment scheme is a **unit investment trust**, which buys and then holds a fixed portfolio of assets. The portfolio could hold many types of securities, but usually the investments are stocks or bonds. The assets are held by a **trust**, which is a legal vehicle for holding property on behalf of someone. The trust divides the ownership of this large portfolio of assets into many small shares and sells these shares to the public—so it works like stock, in that respect. The shares are technically called redeemable trust certificates but are commonly called units.

- The holders of the units can sell them back to the trust at any time. The trust pays the holder of the unit the **net asset value (NAV)** of the unit, which is the market value of the portfolio on that day minus any liabilities of the fund divided by the total number of units. Unit investment trusts also have a set termination date on which the assets in the fund are liquidated and the proceeds of the sale are paid out to the shareholders.
- Unit investment trusts hold a static portfolio, which means that the assets in the portfolio don't change. Once the assets are purchased, they stay in the trust until they need to be sold off to pay off the unit holders, and no new assets are added. Unit investment trusts tend to be small, but they are still popular.
- The main difference between mutual funds and unit investment trusts is that mutual funds have dynamic portfolios, which means that the portfolios can and do change. Someone has to make these changes, and that job rests with a fund manager. The SEC refers to mutual funds as managed investment companies.
- An **open-end mutual fund** is always ready to issue new shares by selling them to investors and to redeem shares from investors. As with a unit investment trust, an open-end fund pays the holder of the shares the net asset value of the shares on the day they are sold. In fact, in the United States, the NAV is always determined by the market prices as of 4 pm Eastern time.
- The other type of mutual fund is called a **closed-end mutual fund**, which only issues shares once and doesn't redeem shares unless the entire fund is liquidated. Closed-end mutual fund shares are traded—just like stocks. In fact, shares in closed-end funds are usually traded on exchanges.
- Additionally, just like stocks, the shares of closed-end mutual funds can take on some fairly strange values. Closed-end fund shares tend to be above their net asset values when the shares are first issued, and then they tend to fall below their NAVs and stay there. Because

of this, closed-end funds only make up a very small part of the mutual fund market.

Open-End Mutual Funds

- Open-end mutual funds are by far the most popular type of pooled investment. An open-end mutual fund is an actual company with shareholders and a board of directors. The mutual fund investors are the shareholders, and the board of directors hires a team of advisers, who are the ones that make the investment decisions for the mutual fund.
- The sole purpose of the mutual fund company is to hold the investments selected by the advisers. A separate company, called a sponsor, sets up the mutual fund, takes care of all the administrative details, and handles the task of selling and redeeming shares. Mutual fund sponsors can be stand-alone companies like Fidelity or Vanguard, or they can be other types of financial institutions as well—commercial banks like Wells Fargo or brokerage firms like Merrill Lynch.
- Generally, you buy and redeem shares of a mutual fund directly through the sponsor, but some mutual funds also sell their shares through brokers and pay the broker a commission.
- To protect shareholders, the SEC places a large set of restrictions and requirements on open-end mutual funds. Most importantly, mutual funds are restricted to holding securities. Generally, they



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Mutual funds divide a large pool of stocks or bonds into smaller chunks that individual investors can afford.

hold stocks, bonds, or a mixture of the 2 in their investment portfolios, and they also hold cash or other highly liquid assets.

- Mutual funds have a lot of restrictions on the concentrations of their portfolios; the tax laws for mutual funds require a minimum amount of diversification. In addition, open-end funds are prohibited from borrowing unless they set aside more than enough assets to cover the debt—approximately 2 to 3 times the amount borrowed.
- One of the most important requirements that the government imposes on mutual funds is that they issue detailed prospectuses to their investors. A **prospectus** is a document describing the objectives, operation, and risks of the mutual fund. It's the best source of information on the mutual fund for prospective investors.
- In 2009, the SEC simplified the format and language of the mutual fund prospectus that investment companies are required to distribute. Mutual funds are now allowed to distribute an abridged version of the prospectus, called the summary prospectus, that contains only the most essential information for investors.

Standard Sections in a Summary Prospectus

Investment Objectives and Primary Investment Strategies

- The investment objectives statement is the first thing the summary prospectus tells you, and it is a general statement about what the fund is trying to accomplish.
- The primary investment strategies is the third piece of information that the fund is required to list, and it's a more detailed statement about how the fund will actually go about reaching its investment objective.
- Both the investment objective and the primary investment strategy statements are legally binding on the mutual fund. In addition, a mutual fund can't change its objective or strategy without the approval of the shareholders. Together, these 2 statements give you

most of the information about what the fund is going to do with your money.

- In the primary investment strategy section, you'll discover whether the fund is actively or passively managed. Actively managed funds buy and sell investments in an attempt to beat some kind of benchmark return or simply to earn the highest return possible. Passively managed funds buy and sell investments in order to match the return on some benchmark, such as the S&P 500 index, and are often called index funds for this reason.
- Another piece of information the fund must give you in the summary prospectus is a list of the fees the fund charges. One of the main fees that mutual funds charge are sales fees, which are also called **loads**. Some mutual funds charge a fee when you buy shares—usually a few percent of the value—called a front-end load. In addition, some funds also charge you a fee to redeem the shares, called a back-end load.
- Front-end and back-end loads directly reduce the value of your investment, which means that the managers need to earn even higher returns in order to make paying for the sales loads worthwhile.
- Since the early 1970s, investment companies have offered no-load mutual funds to American investors. In these mutual funds, you pay the net asset value and no more when you buy shares, and you receive the net asset value when you sell. There are hundreds of no-load funds, and they include both actively managed and passively managed funds.
- Unfortunately, managers of no-load mutual funds make up for the fact that there are no sales fees by deducting their expenses right from the value of your shares. The expenses that may be claimed and deducted include all the costs of operating the portfolio.
- Another type of expense that mutual funds are allowed to deduct from assets are 12b-1 fees, which are named after the SEC rule that

allows firms to charge them. These expenses are associated with the costs of marketing and distributing the mutual fund. However, rather than being unhappy that these costs exist at all, you should be looking for funds that deliver the best performance relative to the fees they charge.

- Investment companies offer different classes of shares. Although every share in a mutual fund owns an equal fraction of the assets in the fund, they don't share the expenses of the fund equally. Most mutual funds divide the shares into several classes, and each class pays a different mixture of expenses.
- Different classes of shares may have different front-end and back-end loads and different expense ratios. In general, larger investments are eligible to be put into classes with lower overall expenses. Having different classes of shares is good for the investment companies because it gives them a way to incentivize investors to invest more and keep their money in the fund longer.
- You should plan to grow one or more of your mutual fund investments quickly so that you can move it into a favorable share class as soon as possible.

The Risk and Return of the Fund

- The next 2 pieces of information in the prospectus that appear after the fee table and the primary investment strategy are the risk and return of the fund. The mutual fund must describe the main reasons that the fund might lose money or not perform as well as the managers expect it to, and it has to tell you that the fund is not FDIC insured.
- Additionally, the fund must present the past 10 years of returns in a bar chart, and it has to present the average annual total returns over the most recent 1-year, 5-year, and 10-year periods. This, on the other hand, is specific enough to be very helpful as you make decisions.

- The remaining information in the prospectus is good to have, but it isn't extremely important. It includes the name of the fund advisory company as well as the name of the portfolio manager. Then, the fund must tell you about the tax consequences of any trades that it does, followed by a statement of whether the mutual fund company makes payments to brokers and other intermediaries.

Important Terms

closed-end mutual fund: A type of mutual fund that only issues shares once and doesn't redeem shares unless the entire fund is liquidated.

load: A sales fee that a mutual fund charges.

mutual fund: A package of stocks, bonds, and perhaps other instruments.

net asset value (NAV): The market value of a portfolio on a particular day minus any liabilities of the fund divided by the total number of units.

open-end mutual fund: A type of mutual fund that is always ready to issue new shares by selling them to investors and to redeem shares from investors.

prospectus: A document describing the objectives, operation, and risks of a mutual fund.

trust: A legal vehicle for holding property on behalf of someone.

unit investment trust: A type of collective investment scheme that buys and then holds a fixed portfolio of assets.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 4.

Bogle, *Common Sense on Mutual Funds*, chaps. 4 and 5.

Questions to Consider

1. Go to the site of a mutual fund company such as Fidelity, Vanguard, or T. Rowe Price and find the summary prospectus of any mutual fund the company offers. Read the fund's investment objectives and primary investment strategies. Then, try to find a fund that seems as different as possible from the first one you picked—judging only by the names of the funds—and find the same information from its prospectus. Do the 2 funds really seem very different in terms of what they tell you about their investment objectives and strategies?
2. Suppose you are comparing 2 mutual funds you are interested in. You are currently comparing the returns each fund has earned during the past 10 years. One fund has earned returns of 12% during 3 years, but it also lost 5% during 3 years and earned returns of 4% during the other 4 years. The other fund earns a low but consistent return. How high would that low but consistent return need to be to convince you to buy that fund instead of the riskier one?

What Are Exchange-Traded Funds?

Lecture 6

In this lecture, you will learn how exchange-traded funds (ETFs) differ from mutual funds and how that gives them certain advantages over other investments. ETFs are especially attractive to investors who are making taxable investments and to investors who are looking for a broader set of investment opportunities than they can find in standard mutual funds. ETFs also come with a different set of potential risks, but the low cost and tax efficiency of ETFs make them great candidates for long-term buy-and-hold investments.

Exchange-Traded Funds

- In addition to stocks, bonds, and mutual funds, there's another investment that you need to be familiar with: **exchange-traded funds (ETFs)**, a relative newcomer to the world of investing. Even though this investment does share some of the features of mutual funds, it's completely different.
- The first ETF was introduced in 1993, and this type of investment has grown at an astonishing rate since then, making them the second largest type of pooled investment after open-end mutual funds. There are about 1000 different ETFs in the market, investing in stocks, bonds, commodities, currencies, and even futures contracts. Some people think that ETFs will eventually overtake standard open-end mutual funds as the most popular pooled investment.
- As the name suggests, exchange-traded funds combine some of the features of mutual funds with some of the features of individual stocks. The main feature they take from stocks is being listed and traded on an exchange.
- **Depository receipts** have been around for a long time, and until ETFs were created, the most common use for depository receipts was in trading shares of foreign stocks. The structure of a depository

receipt is simple: Somebody deposits an asset in a specialized bank that offers depository services. The asset stays in the depository, but the bank issues receipts—documents proving ownership of these assets—to the original depositor of the assets.

- The depositor can hold the receipts, of course, but the real reason to make this transaction is for the depositor to sell these receipts to other investors. Whoever holds the receipts are the legal owners of the assets. Depository receipts look and feel just like shares of stock—and they’re traded just like stocks.
- Depository receipts are convenient for a few reasons: They are priced in local currency, so they make it easy to trade foreign assets outside their home country, and they allow the original depositor to divide the value of the deposited asset any way he or she wishes, which enables the depositor to choose a size for the depository receipt that will make it attractive to small investors.

ETFs versus Mutual Funds

- Relative to mutual funds, the main source of attraction for ETFs is trading. ETFs can be traded at any time the markets are open, which is all the time (as a result of the Internet), instead of only at 4 pm Eastern time, which is the only time you can buy or sell mutual funds. An even bigger reason to like the flexible trading of ETFs is taxes; ETFs give you much more flexibility when it comes to incurring taxable income or capital gains.
- The U.S. tax code taxes the capital gains that investors make on their investments. A **short-term capital gain** is a trading profit that you make on an investment that you’ve held for 1 year or less. Short-term capital gains are taxed as ordinary income, so your rate depends on your marginal tax bracket.
- On the other hand, **long-term capital gains** are trading profits you make on investments you’ve held for longer than 1 year. Long-term capital gains are taxed at a rate that is generally much lower than the income tax rate.

- Because you choose when you're going to sell an ETF, you get to determine whether you make a short-term capital gain or a long-term capital gain. Additionally, you can choose which year you want to realize any capital gains on your ETF shares.
- Many investors don't realize that if you hold open-end mutual funds as a taxable investment, you will almost certainly owe capital gains taxes—courtesy of your mutual fund manager.
- Most open-end mutual fund companies don't pay taxes—which is good because it keeps expenses low—but, unfortunately, they pass all the dividend income and capital gains on to the investors. With this system, even if your mutual fund loses value during the year, you still might have to pay capital gains taxes.
- If you are going to hold open-end mutual funds in a taxable account, you need to pay attention to the turnover rate of the mutual funds you're considering. The **turnover rate** is the fraction of the total value of the mutual fund that the portfolio manager trades, or turns over, during the year. The higher the turnover rate, the more capital gains the shares are likely to report at the end of the year, so try to look for funds with lower turnover rates.
- There's a big difference between mutual funds and ETFs in terms of when you have to pay capital gains taxes. Because of the flexibility that ETFs offer, people say that ETFs are tax efficient relative to open-end mutual funds. This tax efficiency doesn't matter if you are talking about tax-deferred investments, such as IRAs and 401(k)s. In these cases, you don't pay any taxes until you withdraw money, so there's really no tax difference between having an open-end mutual fund or an ETF in your IRA.
- Another advantage of ETFs over mutual funds is that they generally have lower expenses and higher returns than identical mutual funds would. ETFs pay far fewer brokerage fees than mutual funds because technically the ETF isn't buying the assets that get put into the depository—some very wealthy investor is.

- Furthermore, mutual fund companies have to maintain individual accounts for their shareholders, but people hold ETF shares in their brokerage accounts, so there's no record keeping or account maintenance for ETFs, which also cuts down on expenses.
- Additionally, mutual funds always have to have some amount of cash on hand so that they can cash out investors who want to sell their shares on any given day. They try to minimize the amount they need, but holding cash necessarily delivers a lower expected return than the rest of the assets the mutual fund holds. By contrast, ETFs don't redeem shares. You cash out your ETF shares by selling them to another investor at their current market price—just as you would a share of stock.
- A final advantage of ETFs is that ETFs invest where open-end mutual funds either cannot go or don't go in as much depth. Also, because ETFs were limited to indexes for the first 15 years of their existence, they specialized in global, regional, and even country-by-country indexes. ETFs generally offer more opportunities to invest in foreign stock indexes than mutual funds do.

Disadvantages of ETFs

- The first potential drawback of ETFs is trading costs. Although you're free to trade ETFs at any time, trading isn't free. You'll have to pay commissions similar to those you pay for trading stocks, and the more you trade, the more these commissions will pile up and lower your return from investing in ETFs. Investors have to find some happy medium between not trading at all and trading too much.
- The next potential drawback of ETFs is their pricing. ETFs represent a particular pool of assets that is held by some depository, and the price of each ETF share should reflect the market value of the underlying pool of assets. The correspondence between the price of the ETF and the market price of the underlying assets is enforced by a process known as arbitrage.

- Although the price of a depository receipt could differ from the market value of the underlying assets, arbitrage should drive the prices together. For example, consider an ETF that invests in an equity index made up of the BRIC country stocks—that is, the stocks of Brazil, Russia, India, and China. If there's a sudden surge of demand for ETF shares in this BRIC equity index, then the demand could temporarily outstrip supply, sending the price of ETF shares up. The price of the ETF shares could potentially rise above the index value.



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The ticker symbol for one of the largest exchange-traded funds is GLD, which stands for gold.

- However, if this happens, then the process of arbitrage should come to the rescue. Other traders would notice that the ETF shares are more expensive than the index shares, and they would step into the market. They would buy the shares of the stocks that make up the BRIC index, deposit these shares with the ETF depository, and then take the depository receipts from the depository and sell them to the ETF investors.
- This increase in demand for the shares would drive up the prices of the shares in the BRIC index, sending the BRIC index up in value. Additionally, this increase in supply of the depository receipts or ETF shares would make the price of the ETF shares decline. Ideally, the prices of both the underlying stock shares and the ETF shares would change quickly and enable them to meet in the middle, and the prices would agree again.

- Even though the process of arbitrage generally works very well in financial markets, occasionally it will fail and allow the price of the ETF shares to differ significantly from the value of the underlying assets held in the depository—meaning that you run the risk of selling for less than full value when it comes time to sell or buying for more than the true value when you buy. For an open-end mutual fund, this is not an issue because they only buy and sell shares at the net asset value, which is based on the fair market value of their holdings.
- The next potential disadvantage of ETFs is leverage. The SEC doesn't allow open-end mutual funds to take on much leverage, but it does allow ETFs to use derivatives to effectively leverage up their portfolios through a process of financial engineering. ETFs that pursue this investment strategy usually promise to deliver 2 or 3 times the gains (or the losses) on some underlying index, such as the Dow Jones index.
- Fortunately, these ETFs always identify themselves as leveraged ETFs. In addition, ETFs are required to reveal the entire list of assets that they hold on a daily basis, so you can see whether they are in fact using financial engineering. In general, beginning investors should stay away from leveraged ETFs.
- One final potential disadvantage of ETFs is taxes, depending on the type of ETF that you buy. Although it's true that most ETFs will be more tax efficient than mutual funds, ETFs that hold alternative investments, such as commodities, still have tax issues. If you want to invest in an alternative-asset ETF—that is, one that isn't investing in stocks or bonds—then you should seek some advice about the tax consequences first.

Important Terms

depository receipt: A document that proves ownership of an asset that is in a bank's depository and is issued to the original depositor of the asset by the bank.

exchange-traded fund (ETF): A fund that combines some of the features of mutual funds with some of the features of individual stocks, including being listed and traded on an exchange.

long-term capital gain: A trading profit that you make on an investment that you've held for longer than 1 year.

short-term capital gain: A trading profit that you make on an investment that you've held for 1 year or less.

turnover rate: The fraction of the total value of a mutual fund that a portfolio manager trades, or turns over, during a year.

Suggested Reading

Malkiel, "Investors Shouldn't Fear 'Spiders.'"

Motley Fool Staff, "Exchange-Traded Funds."

U.S. Securities and Exchange Commission, "Exchange-Traded Funds (ETFs)."

Questions to Consider

1. Because ETFs are traded on exchanges, they have ticker symbols just like stocks do. Go to a free website that gives information about stocks and find a BRIC index ETF, such as the iShares MSCI BRIC Index Fund. You should be able to enter "BRIC" into the website's search window and find several ETFs. Find the ticker symbol for one of these ETFs and use it to look up the ETF. What exactly does the ETF invest in? What is the current price of the ETF, and what is the return on this ETF so far this year?
2. One of the drawbacks of ETFs is the commissions, or trading fees, associated with buying and selling ETF shares. However, some online brokerages offer commission-free ETFs. Go to one of the online brokers that offers commission-free ETFs and look at their offerings. Do you find the selection of commission-free ETFs offered by this broker

attractive? Which ones would you consider investing in if you were investing for a taxable investment account?

Financial Statement Analysis

Lecture 7

In this lecture, you're going to learn some skills that can help you choose the best investments from among the thousands of options through financial statement analysis. In order to do this, you'll have to learn some definitions from accounting. You'll also need to learn the overall structure of every company's financial statements, including what information is presented where. Then, you'll learn some of the most important ratios and what these numbers tell you about the condition or performance of the company—and of other similar companies—which will be helpful when selecting stocks or bonds.

Analyzing Financial Statements

- **Financial statement analysis** is the practice of forming ratios and other statistics using the numbers presented in a set of financial statements—that is, the firm's official accounts.
- Although the numbers in a borrower's financial statements already tell us a lot of information, we can learn even more about a borrower's financial condition and performance if we combine or compare these numbers in creative ways. This information will hopefully give us a clearer picture of which firms are more attractive investment opportunities.
- A company's financial statements try to show a concise yet complete picture of a company's finances. They consist of 4 main parts—3 different tables that correspond to the main financial activities of the firm plus a set of notes that explains many of the details that are omitted from the 3 tables for the sake of brevity. The 3 tables, or statements, are the income statement, the statement of cash flows, and the balance sheet.

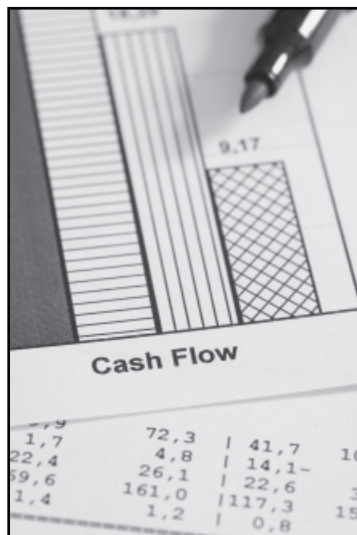
The Income Statement

- The income statement, also called the statement of earnings or the statement of operations, gives an overview of how much revenue the company brings in, how much it pays out as various expenses, and how much profit is left over—if any.
- As an example, let's analyze the financial statements of the Campbell Soup Company, which goes by the stock ticker CPB. To get this statement, go to the company's website and look for links to company information or investor relations so that you end up at the latest annual report.
- On the top of Campbell's income statement is **net sales**, which is sales minus returns. Campbell's sold nearly \$7.7 billion worth of products in 2010. Below the sales come all the expenses of running the company, including expenses for production, marketing, research and development, and administration.
- After subtracting those expenses, we have a rough statement of earnings, which goes by 2 names: operating income or **earnings before interest and taxes (EBIT)**. For Campbell's, the EBIT is about \$1.3 billion.
- If we take EBIT and subtract interest and then corporate income taxes, we get **net income** or net earnings. For Campbell's, this number was \$844 million in 2010. Net income tells a stock investor all the profits that could be paid out to the shareholders.
- The last thing an income statement does is calculate the earnings per share (EPS) of the firm. Campbell's earned \$2.42 per share in 2010. The income statement tells you what the accounting measures of profit are, but accounting measures of profit are not equal to cash. This is because most accounting is done under the principle of **accrual**, which refers to one particular set of procedures for recognizing revenue and expenses.

- Accrual is the most popular way to make sense of these transactions, but one of the costs of its flexibility and simplicity is that accrual-based measures of income and expenses are not equal to the actual cash payments going into and coming out of the firm.

The Statement of Cash Flows

- The purpose of the statement of cash flows is simply to give investors a clearer picture of how much cash the company is taking in and how it is using cash. Investors use the statement of cash flows primarily to see whether the company is bringing in more cash than it is spending.



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- Investors use a company's statement of cash flows to determine whether it earns more cash than it spends.
- On the statement of cash flows, the company's use of cash is broken down into operations, investing, and financing. One thing that is always worth checking is to see whether the company's operations—the things it is in business to do—are bringing in more cash than they use.
- For Campbell's, this cash flow from operations, or net cash provided by operating activities, is just over \$1 billion. Also, at the bottom of the statement, we can see whether the company as a whole increased or decreased its holdings of cash.
- Nearly all investors find 2 pieces of information particularly useful in the statement of cash flows. Depreciation and amortization attempt to keep every company honest about the fact that its factories and equipment are wearing out and will have to be replaced sometime.

Using up these real assets is a real economic cost—but not one that causes any money to change hands. Therefore, if a company reports a depreciation expense, its earnings fall, but its cash isn't actually affected.

- The second item on the statement of cash flows that most investors like to know is called free cash flow, which measures how much cash the firm could be returning to shareholders; it's the cash flow analog to net earnings on the income statement.
- Different analysts calculate free cash flow in different ways, but nearly everyone starts with cash flow from operations and subtracts **capital expenditures**, which is usually the first item in the section on cash flows from investing activities. Capital expenditures are purchases of real assets, such as equipment and factories.
- For Campbell's, cash flow from operations is \$1.057 billion, and just below it is an item for purchases of plant assets, which is \$315 million. Therefore, free cash flow for Campbell's is $\$1057 - \315 , or \$742 million.

The Balance Sheet

- The balance sheet is a snapshot of the company's assets, liabilities, and equity at a point in time. Assets are anything the firm owns, and **liabilities** are what the firm owes to other parties. **Equity**, or net worth, is the difference between assets and liabilities. Equity tells you what the entire company is worth.
- On Campbell's balance sheet, it had about \$6.3 billion in assets and just over \$5.3 billion in liabilities (as of August 1, 2010), which implies that Campbell's equity was \$929 million. Many investors refer to balance sheet equity as "book" equity—where the book in question is the company's accounting books.

Financial Ratios

- Liquidity ratios measure whether a company has enough money to pay all the bills that are coming due. A standard liquidity ratio

is the current ratio, which is defined as current assets divided by current liabilities. (The word “current” is an accounting term that means that it comes due within the next 12 months.) The current ratio determines how many dollars a company thinks it will receive in payment over the next year divided by the number of dollars of bills it will have to pay during the next year.

- Campbell's had current assets of \$1687 million and current liabilities of \$2065 million, which give a current ratio of about 81.7 cents. This means that Campbell's currently has about \$0.82 in short-term assets for each dollar of liabilities that it expects to have to pay during the next year.
- For manufacturing firms like Campbell's, the current ratio can be misleading because inventories make up much of the firm's current assets. Therefore, for many manufacturing companies, analysts also calculate a related liquidity ratio called the quick ratio, which is cash, securities, and accounts receivable divided by current liabilities.
- For Campbell's, cash and investments are \$254 million and accounts receivable are \$512 million for a total of \$766 million. Then, we divide \$766 million by the total current liabilities of \$2065 million, which gives us a quick ratio of 0.371 (37.1 cents) in cash, securities, and accounts receivable for every dollar in current liabilities.
- **Leverage** determines how much the firm is borrowing and is often expressed as total assets divided by total equity. Campbell's total assets are \$6276 million and their equity is \$929 million, which means that leverage is equal to \$6.76. This means that every dollar of equity supports \$6.76 of assets. In other words, for every dollar of equity the shareholders have contributed, the managers have borrowed another \$6.76.
- The next category of ratios is the profitability ratios. One of the profitability ratios that most investors look at is the operating

margin, which is defined as EBIT divided by sales. This ratio simply tells us what fraction of each dollar of sales goes to operating income, so it's clear that this is a profit margin. Campbell's EBIT is \$1348 million and its sales are \$7676 million, so the operating margin is 0.176. This means that 17.6 cents of every dollar of sales is operating profit.

- Efficiency describes how well a company utilizes its assets. One of the main efficiency ratios is called the asset turnover ratio, which is defined as sales divided by total assets. Many financial analysts use average total assets in the denominator of this ratio; using total assets is just simpler.
- Campbell's sales, which we just used in the margin calculation, were \$7676 million. The total assets, which we found in the leverage calculation, were \$6276 million. The asset turnover ratio, then, is equal to 1.24, which means that every dollar of Campbell's assets produces \$1.24 of sales per year.
- Finally, the ratios that every investor wants to know are return on assets and return on equity. These are performance ratios that attempt to measure the return that different investors would get by lending a dollar to the company.
- **Return on assets (ROA)** is defined as $(\text{EBIT} - \text{taxes}) / \text{total assets}$. The numerator measures the profits that are available to be distributed to both the bondholders and the stockholders of the company. In fact, ROA calculates the return you would earn if you finance a dollar's worth of the company's assets by buying both the company's bonds and its stock. Moreover, ROA assumes that you finance the company by buying its stock and bonds in the same proportions as the ones the company has listed on its balance sheet.
- For Campbell's, you are buying about \$5.76 of bonds for every dollar of stock. EBIT was \$1348 million, and taxes paid were \$398 million. This makes the numerator equal to \$950 million. Then,

total assets were \$6276 million, so the ROA ratio is $950/6276$, which is 0.154, or 15.4%.

- **Return on equity (ROE)** is defined as net income divided by equity. Campbell Soup's net income was \$844 million, and its equity was \$929 million, which makes the ROE ratio $844/929$, which gives 0.909, or 90.9%.
- By themselves, these ratios have very little meaning; they're really meant to be used in comparison with other firms' ratios. In order to use financial statement analysis to help you choose stocks, you need to select a set of similar firms (in terms of industry and size) and then compare ratios. You should also do research on how Campbell's is currently valued and is projected to be valued in the market.

Important Terms

accrual: One particular set of procedures for recognizing revenue and expenses.

capital expenditure: A purchase of real assets, such as equipment and factories.

earnings before interest and taxes (EBIT): Net sales minus the expenses of running a company.

equity: The difference between assets and liabilities, which tells you what a company is worth.

financial statement analysis: The practice of forming ratios and other statistics using the numbers presented in a set of financial statements.

leverage: Determines how much a firm is borrowing and is often expressed as total assets divided by total equity.

liability: What a firm owes to other parties.

net income: EBIT minus interest and corporate income taxes.

net sales: Sales minus returns.

return on assets (ROA): $(\text{EBIT} - \text{taxes}) / \text{total assets}$.

return on equity (ROE): Net income divided by equity.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 14.

Ittelson, *Financial Statements*.

Questions to Consider

1. Find and download the most recent annual financial statements from a company you might be interested in as an investment. You can usually find them by going to the company's website and then following links to information about the company that usually have labels such as "about the company" or "investor relations." On the financial statements, find the company's net income and equity for the most recent year. Using the numbers you find, calculate the return on equity (ROE) for this company.
2. DuPont analysis is a way of showing that a company's ROE is driven by profitability, efficiency, and leverage. For a firm you are interested in, calculate the net margin (net income/sales), asset turnover (sales/assets) and leverage (assets/equity) ratios. Multiply your numbers together and compare to the ROE you found in the first question.

P/E Ratios and the Method of Comparables

Lecture 8

In this lecture, you'll learn how to use the method of comparables, a type of valuation model, to price stocks. You can use the information from the 4 main ratios that you will learn about—P/E, price-to-book, price-to-sales, and PEG ratios—to help find stocks that seem undervalued. However, once you find a potentially undervalued stock, you still need to gather more information about the company to see whether it deserves its low ratio because of lackluster performance or whether it really is an overlooked and underappreciated company that has the potential to surprise the market.

Valuation Models

- **Valuation models** are extremely important to stock picking. Valuation models simply help us figure out what something is worth. Whenever we buy any product, we compare the price of the product to what it's actually worth to us. If we think something is worth the price, we buy it.
- Investing works the same way. By figuring out what we think a stock is worth, we can pick the stocks that we think are worth at least as much—and hopefully a lot more—than their current prices, and we can avoid buying stocks that are overpriced.
- In general, there's constant disagreement in the markets about what any given investment is worth, which is actually a good thing. It gives each of us the opportunity to pick stocks and try to beat the market.
- Your mission in using valuation models is to use them to help you find companies that you think most people have overlooked or underestimated; you want to find companies that you think are worth more than the market says they are.

The Method of Comparables

- The **method of comparables** is a valuation method that is based on using ratios, such as the price-to-earnings (P/E) ratio, to value stocks. This model is widely used in all kinds of financial markets—not just the stock market. In addition, it's the model that professionals overwhelmingly prefer to use because it's simple, fast, and reliable.
- The method of comparables starts with a very simple idea: Every asset has some features or characteristics that indicate or influence its value. These characteristics are called value drivers because they drive the value of an asset. Every asset has a different set of value drivers, and some are easy to measure, such as a company's earnings, while others are difficult to measure.
- The second idea behind the method of comparables is that if 2 assets are truly comparable, then they'll have a similar relationship between their price and any given value driver. The relationship between the price of some asset and its value drivers can be complex, so we allow the ratio between the price of the asset and its value to represent the relationship.
- Let's let P stand for the price of some asset and V stand for the value of some value driver that we think affects P. In addition, let's consider 2 comparable assets, asset A and asset B. The method of comparables says that if asset A and asset B really are comparable, then the ratio of each asset's price to its value driver should be the same for both assets: $P_A/V_A = P_B/V_B$.
- We use the ratio of one asset's price to its value driver, called a **valuation multiple**, to estimate the price of other assets. For example, if we were using the price-to-earnings ratio, then V_A would be the earnings per share for Company A and P_A/V_A would be the earnings multiple. We would multiply Company A's earnings multiple by Company B's earnings to get an estimate of Company B's price. Then, if the market price of Company B's stock is less than the predicted price, we would want to look deeper

into Company B to see whether there is more information about Company B that indicates it would be a good investment.

- The 3 most popular value drivers for stocks are earnings per share, book value per share—which is balance sheet equity divided by the number of shares outstanding—and sales per share. Therefore, the 3 most popular ratios that analysts look at are the price-to-earnings ratio, the price-to-book ratio, and the price-to-sales ratio.



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In choosing stocks, you want to find companies that you think are worth more than the market says they are.

- All kinds of other value drivers are possible, and the choice of value driver depends on the industry as well as on the state of development of the firms in the industry.
- The accuracy and reliability of the method of comparables relies heavily on finding truly comparable assets to compare to each other. When it comes to applying the method of comparables to stocks, we usually use companies in the same industry or subindustry as comparable companies.
- Of course, just because a company is listed as being in the industry, this doesn't necessarily make it comparable to the company that you are interested in. Other considerations are whether to include foreign stocks or companies of very different sizes in your list of comparable companies. Your choice will depend on the specifics of the company you're investigating and whether you can find many companies that are good matches for it.

- Using The Cheesecake Factory as an example, we will include other American casual-dining chains that also have fairly large total market values—about \$1 billion or more.
- In practice, valuation multiples are averages of the multiples for many different firms, so to value The Cheesecake Factory using the price-to-earnings ratio, form the earnings ratios for all the comparable firms on your list and then take a simple average of these multiples. Most free financial websites have several pages of summary statistics on each company where you can find all the prices and various company statistics that you need.
- Start by finding the prices of all the companies on your list. Then, find the earnings per share for each company. To find the P/E multiples for each company, divide each company's price by its EPS. Don't include the multiple for The Cheesecake Factory because you want to use the information from the rest of the market to price that company, but you should still collect The Cheesecake Factory's price and EPS.
- Calculate the average P/E ratio for the companies on your list, which is the average valuation multiple. For example, let's say that the value of the average multiple for a sample of 8 companies is 14.55. Now you can use this valuation multiple and the actual value of The Cheesecake Factory's EPS to estimate the price of the stock.
- To find a price for The Cheesecake Factory, take its earnings, which are \$1.67 per share, and multiply by the average earnings multiple for the comparable firms, which is 14.55. The answer, which is the estimated price of The Cheesecake Factory, is \$24.29. Then, compare this estimated price to the actual market price of The Cheesecake Factory. If the actual price is \$26.14, then the comparables estimate based on an earnings multiple is less than \$2 below the current market price of the shares.
- For The Cheesecake Factory, the method of comparables produces estimates of the price that are fairly close together. The earnings

multiple gives a value of \$24.29, the book value multiple gives a value of \$28.67, and the sales multiple gives a value of \$26.17. These estimates are not only close together, they're also pretty close to The Cheesecake Factory's actual stock price of \$26.14.

- For many other companies, however, there may be a large variation in estimated prices; this is true of Cracker Barrel. The valuation ratios are really saying that The Cheesecake Factory's multiples are about average—relative to these peer firms. This may indicate that the company is more or less fairly valued, and it doesn't look like there are any big opportunities for investors to profit from buying this firm.
- However, if you analyze Cracker Barrel in a similar manner, the variation in prices shows that Cracker Barrel looks undervalued according to EPS and sales—but overvalued according to book value. Further investigation will hopefully help you come to some conclusion about whether the company would be a good investment.
- One of the ways you can do this investigation is by digging deeper into the ratios. For example, stock analysts think that the P/E ratio is driven by the expected growth rate of the company's earnings. To understand this relationship, analysts take the P/E ratio for a stock, which is usually some number greater than 1 but less than 100, for example, and then divide this number by the forecast earnings growth rate, as expressed as a percentage. This is called the **PEG ratio** because it takes the P/E ratio and divides by the growth rate of earnings.
- According to investors, a fairly priced stock would have a PEG ratio of 1. An underpriced stock would have a PEG ratio less than 1, and an overpriced stock would have a PEG ratio of greater than 1.
- There's not necessarily any reason that a company's P/E ratio should be equal to its EPS growth rate, but it only matters what the people in the market think. The investors in the market have

established that the benchmark for the PEG ratio is 1, and people are making investment decisions based on this benchmark.

- This phenomenon points out a potential problem with the method of comparables: This method has been so successful that it has become more prescriptive than descriptive in many cases. For example, the P/E ratio is often used in a prescriptive way to talk about the overall value of the stock market. Investors pay a lot of attention to historic P/E ratios, and they use average P/E ratios to judge whether the entire market is overvalued or undervalued.
- One of the reasons that professionals like to use the method of comparables is their confidence that this method can't be easily manipulated; however, it's possible to bias a method of comparables valuation fairly easily.
- The key step in the method of comparables is to select the appropriate set of comparable firms to include in your valuation multiple. In general, the number of companies that you'll be using to estimate valuation multiples isn't very big—perhaps you'll use 15 to 20 firms in a large industry. Choosing the firms you include in a careful way can distort the valuation multiple that you end up with.
- Another matter of choice is the value drivers that you choose to use in your estimates. In many cases, companies will try to direct investors to modified measures of earnings or other value drivers in the hopes that the investors will plug these modified versions into their standard valuation multiples and be willing to pay higher prices for a company's shares.
- The other side of this problem of understating the P/E ratios is that the accounting rules that firms are supposed to follow require some investments to be counted as expenses. This lowers the amount of recorded earnings and, therefore, raises the P/E ratio, making firms look overvalued. One of the investments that is accounted for in this way is research and development costs.

Important Terms

method of comparables: A valuation method that is based on using ratios to value stocks.

PEG ratio: A ratio found by taking a company's price-to-earnings (P/E) ratio and dividing by the growth rate of earnings.

price-to-earnings (P/E) ratio: A ratio of a company's price to its earnings per share (EPS).

valuation model: A model that helps us figure out what something is worth.

valuation multiple: The ratio of one asset's price to its value driver.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 13.

English, *Applied Equity Analysis*, chap. 15.

Hough, "Peeling Back the Market's P/E."

Questions to Consider

1. General Electric (GE) is known as a conglomerate, meaning that it participates in many different lines of business that are not necessarily related. For example, GE makes and sells appliances, jet aircraft engines, nuclear reactors, and plastics among other things. What are some possible ways to find a company comparable to GE that you can use to base an earnings multiple on?
2. Many free financial websites report average P/E and PEG ratios for a company and also for the industry it is in. Choose a stock you are interested in and find its current P/E ratio and the average P/E ratio for the company's industry. Use the industry P/E ratio as a P/E multiple to value the company you are interested in.

Fundamentals-Based Analysis of Stocks

Lecture 9

In the last lecture, you learned about the main model that most professional investors use to help them pick stocks: the method of comparables. Once you identify a company that looks good, however, you still need more information about it. One way to do this is to use other stock-pricing models, such as the dividend discount model (DDM), which can offer insights into a company that help explain why it looks undervalued based on its valuation ratios. Models like the DDM are sources of additional evidence that help to confirm or contradict the information gained through the method of comparables.

The Dividend Discount Model

- In addition to the method of comparables, the **dividend discount model (DDM)** is a fundamentals-based stock-pricing model. Fundamentals-based models rest on 2 simple ideas: The price of any investment should depend only on the cash that it's going to pay you, and cash paid to you in the future is worth less to you than cash you receive now.
- The cash flows that investors receive from stock are the dividends, so fundamentals-based models of stock price note that the current price of a share of stock is equal to the present discounted value of the sum of all its future dividends. Technically, this represents an infinite number of future dividends.
- There's a surprisingly simple formula for the present value of the sum of all future dividends: $D/(r - g)$, where D is the next year's dividend, r is the expected return on the stock, and g is the growth rate of the dividend. This formula is called the dividend discount model.
- There are other fundamentals-based stock pricing models, but this one is the simplest and by far the most common. The main

assumption that this model makes is that companies try to make their dividends grow at a low, constant rate. In reality, dividends don't necessarily grow at a constant rate, so the g in the formula really represents the long-run, average growth rate of the dividend.

- In order to get a sensible number from the DDM, we have to assume that g is less than r . If g is greater than r , then not only does the formula imply a negative price for the stock, which is unrealistic, but a negative value would be the exact opposite of the true value.

Applying the DDM

- Let's apply the dividend discount model to the stock of AT&T, whose stock ticker symbol is T on the New York Stock Exchange. Applying the DDM is a matter of getting the 3 numbers you need for the formula: the amount of the next annual dividend, the expected return on the stock, and the growth rate of the dividend.
- Next year's dividend, the D in the formula, is the easiest number to find. Just about any free financial website that covers stocks will have an information page about the stock that lists the annual dividend, among many other pieces of information. AT&T's annual dividend is currently given as \$1.72 per share, for example.
- The next number is the expected rate of return on the stock, r . In the case of stocks, most people use a model of expected returns called the **capital asset pricing model (CAPM)** in order to estimate expected rates of return. When you look on most free financial websites, you'll find the information you need to use the CAPM to estimate a discount rate for a stock.
- The number you need in order to use the CAPM is called beta, and most financial websites list the stock's beta as well. **Beta** is a measure of the riskiness, or return variation, of a stock; in fact, it's supposed to be the number of units of risk in the stock, where one unit of risk is equivalent to the amount of risk, or return variation, in the overall stock market.

- According to the CAPM, the expected return on a stock rises about 7% for every unit of risk it contains, and if a stock has zero units of risk, then it's risk-free and should earn the risk-free rate of return, which is usually based on the rate of return of government bonds because they're as close to risk-free as any asset gets.
- To use the CAPM to estimate the expected return, or discount rate, on a stock, we use the following formula: $E(r_i) = r_f + \beta_i \times (E(r_m) - r_f)$, in which $E(r_i)$ is the expected return we want to find. The r_f is the risk-free rate, which we usually take to be the return on a 10-year Treasury bond, and β_i is the beta. The final term is the difference between the expected return on the entire market and the risk-free rate—called the market risk premium, or the compensation for bearing one unit of risk.
- We use 7% for the market risk premium, and we find the beta from the financial website. For AT&T, the current beta is 0.52, for example, which means that there is just over 1/2 a unit of risk in AT&T stock. To find the risk-free rate, we could just take the current market rate on the 10-year Treasury rate, but this rate fluctuates. A normal level for the 10-year Treasury rate, based on decades of experience, is around 4% to 6%. Let's use 4% in our example.
- When you plug all the numbers into the CAPM, you get $E(r_i) = 0.04 + 0.52 \times 0.07 = 0.0764$. Therefore, the expected return on AT&T stock is 7.64%. You can also interpret this as the discount rate used to find the present value of the dividends.
- We now have numbers for the dividend and the discount rate, so this just leaves g , which is supposed to be the average, long-term growth rate of dividends on the stock from now until eternity.

Calculating the Growth Rate

- There are many ways to calculate g , but there are 3 ways that capture the various ways of thinking about where the growth of a firm comes from. These different ways may lead to very different

price estimates, or only one estimate of g may give you a sensible answer for the price of the stock.

- The simplest way to estimate the long-term average growth rate of dividends is to look at past dividend growth and use that as your estimate. In fact, on most financial websites, you can find a link to statistics on the dividends a firm pays, and one of the statistics most sites list is the average dividend growth rate over the past 5 years. For example, you might find that this number for AT&T is 5.39%.
- Plugging in the numbers we have obtained thus far for AT&T, we get $D/(r - g) = 1.72/(0.0764 - 0.0539) = \76.44 . In other words, the DDM suggests that a share of AT&T should be priced at \$76.44, assuming that the historical growth rate of dividends will continue into the indefinite future.
- Stock analysts are able to forecast the earnings growth rate, and we are able to use this as an estimate of the growth rate of dividends. One of the implications of the DDM is that both earnings per share and dividends grow at the same rate: g . Therefore, we can assume that the dividend growth rate will be the same as the growth rate of earnings per share, or EPS.
- For AT&T, you might find that the mean of the analysts' long-term EPS growth rate forecast is 4.27%, which is not much different from the historical average growth rate of dividends. When you plug this estimate of the dividend growth rate into the formula with the same numbers for dividend (1.72) and expected return (0.0764) as before, you will get a price estimate equal to $1.72/(0.0764 - 0.0427) = \51.04 .
- This second estimate changed the dividend growth rate estimate by only a little over 1%, but it changed the estimate of the price by over \$20. This illustrates one of the main complaints about the DDM: The price estimates are very sensitive to small changes in the estimated dividend growth rate and to changes in the discount rate.

- The final method of estimating g depends on accounting data and allows us to think about where the company's growth comes from. If corporations want to, they can retain their earnings and reinvest them into new projects, creating growth for the firm.
- If a company takes all of its earnings and reinvests 100% of EPS back into the company, then the net earnings and EPS will grow at a rate given by ROE. However, in reality, only a part of EPS is reinvested; the rest is paid out to the shareholders as dividends.
- Analysts refer to the fraction of EPS that is paid out to shareholders as the **payout ratio** and to the share of EPS that is reinvested in the company as the **plowback ratio**, which is $(EPS - D)/EPS$, or $1 - (D/EPS)$. The payout ratio is D/EPS so that the payout ratio and the plowback ratio sum to 1.
- The fraction of EPS that is reinvested into the company makes net earnings grow at a rate given by ROE, but the fraction of EPS that is paid out doesn't cause any earnings growth for the company at all. Therefore, we can form a weighted average to find the implied growth rate of net earnings: $g = \text{plowback ratio} \times \text{ROE}$, where the plowback ratio is $1 - (D/EPS)$.
- We need 3 numbers to implement this estimate of g : the dividend, some measure of EPS, and ROE. The EPS forecast you might find for AT&T, for example, is \$2.38, which together with the dividend of \$1.72 implies that the plowback ratio is $1 - (1.72/2.38) = 27.23\%$. You might find that the ROE is 12.39%, for example, so the estimate of g is $0.2723 \times 0.1239 = 3.44\%$. This gives an even lower estimate of price than the other 2 methods. When we plug this g into the DDM formula, we get that the price is equal to $1.72 / (0.0764 - 0.0344) = \40.91 .

Conceptual Shortcomings

- There are several issues with all 3 models that make the estimates seem less reliable than we'd like them to be. First, the numbers on past dividend growth don't tell us anything about why dividends

were growing the way they did, so we have no idea whether the company can sustain this growth rate or whether it intends to maintain it in the future.

- Next, stock analysts are notoriously biased in the positive direction when forecasting future EPS growth, overstating the future growth of the companies they follow.
- With the accounting method of finding g , the main issue is that both the plowback ratio and a company's ROE are subject to change, and as they change, the estimated growth rate of dividends will change. Furthermore, in addition to the information in the DDM, specific information about a company's investment plans—which they do openly share—is what you need.
- In addition to these problems, there's an even larger practical problem with the DDM: Often, you can't apply the DDM at all. Many companies simply don't pay dividends. Additionally, many times, g will be greater than r .
- Despite the criticisms of the DDM, it is useful because it focuses our attention on information about dividend growth and its sustainability. However, the full explanation of dividend growth and sustainability has to come from in-depth information about a company's investment projects.

Important Terms

beta: A measure of the riskiness, or return variation, of a stock; the number of units of risk in a stock, where one unit of risk is equivalent to the amount of risk, or return variation, in the overall stock market.

capital asset pricing model (CAPM): A model that is used to estimate expected rates of return for stocks.

dividend discount model (DDM): A fundamentals-based stock-pricing model that is represented by $D/(r - g)$, where D is the next year's dividend, r is the expected return on the stock, and g is the growth rate of the dividend.

payout ratio: The fraction of earnings per share (EPS) that is paid out to a company's shareholders: D/EPS .

plowback ratio: The fraction of earnings per share (EPS) that is reinvested in a company: $(\text{EPS} - D)/\text{EPS}$, or $1 - (D/\text{EPS})$.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 13.

English, *Applied Equity Analysis*, chap. 14.

Questions to Consider

1. Choose a stock you are interested in that pays dividends and look it up on a free financial website. Find the dividend that the company is expected to pay this year. Then, find the company's beta and estimate the expected return r for the stock using a risk-free rate of .04 and an expected return to the market of .10. Then, find the analyst forecasts for earnings per share growth of this stock and use this as your estimate of g , the growth rate of dividends. Does your estimate of this company's price using the dividend discount model formula, $P = D/(r - g)$, agree with the current market price?
2. Choose a stock you are interested in that pays dividends and find its average dividend growth rate during the past 5 years. Then, compare this to the company's expected growth of earnings per share, which should also be equal to the dividend growth rate. Do the 2 numbers agree? If they are different, what do you think is responsible for the difference you observe?

Start-Up Companies and IPOs

Lecture 10

In the last few lectures, you've learned how to pick the stocks of established companies that have solid financial statements, long track records of paying dividends, and healthy earnings. However, one of the most exciting types of stocks comes from companies that often don't have those things—companies that are about to have their initial public offerings, or IPOs. There might be money to be made in IPOs, but the facts about who really makes the money and what that means for individual investors will surprise you. In addition, not every new company is going to be the next Google.

Initial Public Offerings

- The **initial public offering (IPO)** marks the transition from being a privately held company that only 500 or fewer people can own to becoming a publicly held company that anyone can own a part of.
- In most IPOs, the company hires an investment bank to underwrite the public offering of stock. On the day of the IPO, the company sells the entire public offering to the investment bank, and then the investment bank sells the shares to the general public.
- When they underwrite IPOs, investment banks are taking a big risk. If the company that is going public turns out not to be very interesting to investors, the investment bank will be stuck with a ton of shares that it can't sell, and it will probably end up taking a loss on the deal. Therefore, the investment bank's top priority is to make sure that it finds enough investors to sell out the IPO shares.
- Institutional investors—including pension funds and especially the big mutual fund companies—are the ones investing in IPOs. If they choose to participate in an IPO, the shares will be fully subscribed and the IPO will be a success, but if they don't, the investment bank may call off the IPO or at least scale it back severely.

- As a result, institutional investors have market power in the IPO process, and they use it. Before each underwritten IPO, the investment bank contacts big institutional investors and asks them about their interest in the IPO. Basically, the investment bank builds up a demand curve for the company's shares—a process called building an IPO book or **book building**.
- The institutional investors use their market power by understating their true interest in the IPO—that is, they underbid. They want to hold the IPO price down because this will increase the chance that any shares they buy will increase in value after the company's shares start trading. Furthermore, because the mutual funds and other institutions make up such a large fraction of the demand for shares, they almost always succeed in holding the IPO price down.
- The result of this behavior is the famous first-day pop, in which the price of the firm's shares rise by 10% or more on the first day of market trading. The IPO pop is the result of the systematic underpricing of IPO shares.

Implications of the Book-Building Process

- The investment banks control who gets the shares of hot IPOs, and they use these shares to reward their best retail customers. As a result, it's almost impossible for the average individual investor to get an allocation of a popular IPO from a brokerage firm.
- Additionally, institutional investors end up with a huge portion of the new company's shares, which means that your mutual fund company probably ends up with a lot of IPO shares, so you may be getting indirect access to a lot of IPOs without knowing it. Unfortunately, mutual fund managers make all the decisions about which IPOs to buy and what to do with the shares.
- After the IPO, the shares don't tend to earn very good returns over longer holding periods—on average. If everyone knows the IPO is underpriced, then people are eager to trade the shares on the first day to participate in the first-day pop. They keep buying on that

first day of trading and push the price even higher. However, after a while, somebody finally asks whether the company is really worth all this money, and the share price will tend to languish.

- Of course, for some firms, the pop lasts for quite a while, and in some cases, firms get a new burst of energy when lock-up periods expire. The lock-up period refers to a length of time after the IPO—usually about 90 days—during which the employees of the company are not allowed to trade their shares. In fact, the sum of employee shares and friends and family shares represents a significant fraction of the company.
- When the lock-up expires, there's a new supply of shares that comes into the secondary market, so in some cases, the arrival of these shares drives the price down. In other cases, the arrival of these shares presents a chance for those people who missed out on the IPO to buy shares, and some firms experience a revival of interest in their shares.



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Only about 100 IPOs come to market in the United States in an average year.

The Dutch Auction Method

- In the open IPO method, or the **Dutch auction method**, everyone who is interested in the IPO submits a bid for shares that tells what price they will pay and how many shares they'll buy at that price. The bids are then ranked by price offered, starting from the highest and running to the lowest.
- Each price also has a number of shares associated with the bid, so the shares that each bidder wants are then added. When the sum of the shares the bidders offer to buy is greater than or equal to

the number of shares the firm is offering to sell, anyone who bid at least the price offered by the last person whose bid was included gets shares, and everyone pays the last winning bidder's price. Therefore, everyone pays the lowest winning bid.

- For a while, Dutch auction IPOs were popular because they seemed more fair and promised to remove underbidding and first-day pops. However, investment banks enjoy the profits from book building and companies going public are averse to bearing the risk that their IPO won't raise much money, so the Dutch auction IPO remains a very small portion of the IPO market.

Evaluating Start-Up Companies

- The secret of trying to put a value on a start-up company is to project into the future and work backward. In the future, one of several things can happen: The company could be wildly successful and dominate its market; it could survive and be minimally to moderately successful, but nothing special; or it could collapse.
- In finance, this type of analysis is known as **scenario analysis**, in which a complex future is simplified to just a few possibilities that are regarded as the most likely ones. First, each scenario needs its own value. Then, choose a probability for each scenario, which should reflect your best guess about how likely each scenario is. To get the value of the company, multiply the value of the company in each scenario by the probability of that scenario and then add all these values.
- In order to construct these scenarios, you need to do your homework so that you can put numbers on these scenarios—and you'll have to make a lot of assumptions.
- For example, Skype was acquired by eBay in 2005 for \$2.6 billion. At the time, Skype was the main pioneer in the world of VoIP, or voice over Internet protocol, and millions were already using Skype's products. However, the company was still making losses in 2005, so how could it be worth \$2.6 billion?

- Using scenario analysis, you can start by simply thinking about the evolution of the market for voice over Internet and what the profit potential was. In 2005, there were about 200 million users of broadband Internet worldwide—mostly in the United States and Europe. Basically, the market consisted of all the broadband Internet users.
- Next, you can project the market into the future by estimating that by 2015, there might be about 1 billion users of broadband Internet worldwide. You could guess that broadband penetration would grow very quickly over the decade after 2005, especially in developed countries. After the year 2015, you might assume that the number of broadband subscribers would continue to grow at about the general rate of population growth, which is about 3%.
- Then, you should think about the profit potential of the market. In 2005, Skype was earning less than \$2 per user per year, and you might assume that this number is valid for all voice over Internet users. In addition, you might assume that this number would grow over the following decade—perhaps growing from \$2 per user per year to \$6 per user per year.
- The global profit market for voice over Internet in 2005 was only \$400 million, which is 200 million users multiplied by \$2 per user per year. However, this would grow to a market worth \$6 billion in the following decade—1 billion users multiplied by \$6 per user.
- Using scenario analysis, you could imagine 3 basic scenarios. In the first one, Skype became the dominant firm in voice over Internet and claimed 80% of the market, earning \$4.8 billion per year by the end of 2015.
- In the second scenario, competition would drive Skype to be a big player in the market but not dominant. If they held 35% of the market, they would earn \$2.1 billion in 2015.

- Finally, Skype could simply fade within the market or even fold—perhaps due to some technological innovation that could make the entire market disappear.
- In each scenario, how much would Skype be worth? One way to calculate this is to use the dividend discount model, $D/(r - g)$, by treating all of Skype's earnings as if they are one dividend—using the total value of earnings for D so that you can value the entire company.
- Assuming a discount rate, which is the r in the formula, of 20%, and assuming a growth rate of 3% after 2015, which is the g in the formula, Skype earns 4.8 billion per year in the first scenario, growing at 3% and being discounted at 20% each year. The DDM formula for this is $4.8/(0.2 - 0.03) = \$28.24$ billion, as of the year 2015. If Skype earns only \$2.1 billion as one of a few big players, we can apply the DDM formula to this and get $2.1/(0.20 - 0.03) = \$12.35$ billion. Of course, in the third scenario, Skype is worth zero by 2015.

Assigning Probabilities

- Using your best judgment, assign probabilities to each scenario. For example, you can use 30%, 50%, and 20% to the first, second, and third scenarios, respectively, which sum up to 100%.
- You can find the value of Skype as of 2015 by multiplying the value of Skype in each scenario by the probability assigned to each scenario. When you do the multiplication and add the products, you find that Skype's value in 2015 would be \$14.65 billion.
- Because you want this number to reflect 2005's terms, you might discount \$14.65 billion by 20%—as an example of a high rate—for 10 years, which results in \$2.35 billion. Remember that eBay paid \$2.6 billion for Skype in 2005, but it sold Skype to private equity investors in 2009 for \$1.9 billion. By that time, however, Skype was actually making money.

Important Terms

book building: The process of building up a demand curve for a company's shares that is carried out by an investment bank.

Dutch auction method: A method in which everyone who is interested in a particular IPO submits a bid for shares that tells what price they will pay and how many shares they'll buy at that price. The bids are then ranked by price offered, starting from the highest and running to the lowest.

scenario analysis: A type of financial analysis in which a complex future is simplified to just a few possibilities that are regarded as the most likely ones.

Suggested Reading

Benveniste and Wilhelm, Jr., "Initial Public Offerings."

Perkins, "IPOs Go Dutch, and Small Investors Gain."

Questions to Consider

1. Go to a free financial website and find the stock of one company that has had its IPO within the past year. Look at the graph of its price since the IPO. What has happened to the company's shares since the IPO? Why do you think this has happened?
2. Some companies are experimenting with alternative ways to attract investors, and one method has become known as crowd funding. Search for the term "crowd funding" on the Internet and read some of the articles you find. Would you participate in crowd funding as an investor? Why or why not?

Why Should You Care about Dividends?

Lecture 11

You may think of dividends as outdated, but in this lecture, you're going to learn why you should care about dividends. You may care about them for their own sake, but you'll also learn that there are plenty of other reasons to pay attention to dividends. In general, when you pick stocks, you should look for companies that maintain a high-dividend yield, that consistently increase their dividends over time, and that pay out a high proportion of their earnings in dividends.

Dividends

- As mentioned previously, a dividend is a part of the profits of a company that are paid out to the shareholders. The company doesn't have to pay out any dividends, and in fact, many companies don't.
- Companies that do pay dividends try to keep on paying them, year after year, and they try to make the dividends grow at a low but steady rate. If a company doesn't pay dividends, it's because the managers are reinvesting the company's profits on behalf of the shareholders.
- One of the reasons you should care about dividends is that they can give you a solid return in their own right. The statistic to pay attention to with a dividend-paying stock is the **dividend yield**, which is the annual dividend on the stock divided by its price.
- You can always be on the lookout for high-dividend-yield shares, but one of the best times to shop for them is during a stock market downturn. When share prices fall, this boosts the value of the dividend yield for many shares, giving you many more firms to choose from.
- Many people use the yield on the long-term government bond—for example, the 10-year note—as the hurdle rate, or the minimum

acceptable rate of return on an investment. To use the 10-year bond to choose stocks, find the stocks that pay a dividend yield higher than the interest rate on the 10-year note and choose from these stocks.

- One danger of selecting firms with high-dividend yields is that you may select firms whose share prices are falling for good reason. These firms have a high-dividend yield because they're not doing well but haven't cut the dividend yet. Even if the company doesn't cut its dividend if it runs into hard times, the share price may fall so much that the loss would offset the dividend yield if you had to sell the shares.



The low interest rates that bonds yielded after the financial crisis of 2008 reawakened many investors to the value of dividends.

- Once you do your homework and find a high-dividend-yield company you'd like to own, however, you shouldn't hesitate to buy the shares. Typically, high-dividend-yield firms attract dividend shoppers very quickly and experience rapid price increases that drive the dividend yield down.
- If you're really interested in collecting dividends, then an alternative you should consider is **preferred shares**, which are stocks that have a higher priority claim on the company's profits than the common shares do. A company can't pay a dividend on its common shares unless its dividend payments on its preferred shares are up to date.
- Additionally, preferred shares promise an explicit dividend; it's written into the stock contract. Therefore, preferred shares don't run

the risk of a dividend cut; however, they of course still run the risk of company bankruptcy.

- There are many variations on preferred shares, especially in terms of their maturity. Although there are many perpetual preferred shares, which the company intends to pay dividends on forever, other types of preferred shares have provisions allowing them to be repurchased by the firm at specific dates.
- The weakness of preferred shares is that the dividends are usually fixed, but the price of the shares can rise and effectively lower the dividend yield on them. Therefore, it's still important to not put off making a decision about whether to buy high-yielding preferred shares once you've identified an interesting candidate.
- If you're a long-term, buy-and-hold investor, then there's another reason to be interested in dividends: the **dividend reinvestment program (DRiP)**, which is a stockholding plan in which any dividends earned on the shares are automatically reinvested in the shares. Many companies offer DRiPs for their shares as a way to develop a solid base of long-term shareholders, and DRiPs can be great wealth builders.

Dividend Cuts and Increases

- A company's **dividend policy**—that is, the way a company chooses to pay out dividends and how it changes these payouts over time—reveal a wealth of information about the company. This information can be used by investors to improve their stock picking.
- Companies, and most investors, regard dividends as a long-term commitment. There seems to be an unwritten agreement—what economists call an implicit contract—that firms will only pay dividends that they think they can sustain for the indefinite future. Companies will do everything they can to preserve their dividends and to make them grow over time in a sustainable way.

- This agreement means that companies put off cutting their dividends, even after their earnings fall significantly. Companies that do cut their dividends generally do so only after they've exhausted all the cost-cutting possibilities—and maybe even only after they've run out of credit.
- The implication of all this is that a dividend cut is usually a strong signal that a firm is in big financial trouble. A company that has to cut its dividend will usually see its stock price fall by more than the dividend discount model would predict, for example, because of the very powerful negative signal that a dividend cut conveys to the market.
- On the other hand, a large dividend increase is a way that the managers of a company signal that the projects that the company will be undertaking in the future are going to generate great returns.
- The information contained in dividend increases is so reliable that there are investors and entire mutual funds devoted to finding firms that repeatedly increase their dividends by large proportions and to investing in those firms.
- Dividends don't necessarily have to be money payments. Anything of value that the company gives to its shareholders is a dividend. Sometimes these in-kind dividends are called shareholder benefits programs.
- One of the most common types of noncash dividend is the **stock dividend**, or stock split. When a company issues a stock dividend, it pays out part of a share instead of cash for each share that an investor holds. A company can pay out whatever amount it chooses as a stock dividend.
- Just like a significant increase in a cash dividend, a stock dividend is a signal from the managers of the firm to the general public that they expect high growth of earnings in the future. In most cases, these signals are followed by good news about successful projects

and increasing profits, so the prices of stocks that split start rising as soon as the split occurs.

- A company that has seen its share price fall may be in danger of getting kicked off a stock exchange, which leads to continued declines in value. It turns out that many stock exchanges have rules about the minimum price at which listed companies can trade, so a company that has experienced a big drop in its share price might resort to a reverse split, in which it issues one new share to replace several existing shares. This will distribute the market value of the company over a smaller number of shares and raise the price of the shares in the opposite effect of a stock split.

Dividends as a Form of Discipline

- In addition to sending strong messages to the markets about a company's future performance, dividends also send a strong signal to investors about a company's dedication to creating value by imposing discipline on managers' spending.
- Most companies prefer to pay for their new projects out of their current earnings, but companies have to be careful when they have high earnings because it's very difficult to find the few projects that will create real value for a company.
- When a company has plenty of cash flowing in, managers find that it's easier just to fund a bunch of new projects than it is to take the time to sort through them all carefully. In addition, there's also the danger that managers will waste earnings on pet projects, which are projects that boost the manager's status and image but don't really boost profits.
- For some companies, the answer to both of these problems is to pay out a high proportion of their earnings in dividends. This reduces the supply of earnings that could be reinvested in the firm, and that's the source of discipline. With less earnings to go around, managers have to put in the effort to choose only the very best projects to receive these scarce funds. In fact, this can set up a

beneficial competition for resources in the firm that leads to better choices for new projects, and managers' pet projects generally lose that competition.

- Several academic studies show that the higher the fraction of earnings a company pays out as dividends, the higher the growth rate of earnings tends to be over the next 10 years.

Stock Buybacks

- A **stock buyback**, or share repurchase, is a transaction in which a company goes into the stock market and repurchases, or buys back, some of its outstanding shares. This is a substitute for a dividend because the company has to pay cash for these repurchased shares, which returns cash to the company's shareholders.
- Stock buybacks have gone from being almost unknown to being one of the things that companies spend the most money on each year. One of the main reasons that buybacks have become a popular alternative to dividends is that, for companies, buybacks are more flexible than dividends. Buybacks give companies a way to pay out a short-term windfall to shareholders without creating any expectations.
- Another reason that repurchases have become more popular is the different tax consequences of buybacks versus dividends. When a company pays a dividend, the company chooses when the investor pays taxes, but in the case of a buyback, the investor chooses when to sell the shares and incur the tax liability for the capital gains.
- A third reason behind the surge in popularity of buybacks is the rise of stock-option compensation at many companies. Starting in the 1990s, companies issued billions of stock options, and they bought back billions of shares to sell to the option holders.
- The last reason that buybacks have become so popular is because the quality of the signal in stock buybacks seriously deteriorated over time. If the managers of a company signal to the market that

shares are undervalued, then investors may come running to buy the shares—which helps drive the price of the shares up. However, over time, this undervaluation story lost credibility, and companies that announced buyback programs often didn't follow through with them.

Important Terms

dividend policy: The way a company chooses to pay out dividends and how it changes these payouts over time

dividend reinvestment program (DRiP): A stockholding plan in which any dividends earned on the shares are automatically reinvested in the shares.

dividend yield: The annual dividend on a stock divided by its price.

preferred share: A stock that has a higher priority claim on a company's profits than a common share does.

stock buyback: A transaction in which a company goes into the stock market and repurchases, or buys back, some of its outstanding shares.

stock dividend: A common type of noncash dividend in which a company pays out part of a share instead of cash for each share that an investor holds.

Suggested Reading

Brealey, Myers, and Allen, *Principles of Corporate Finance*, chap. 16.

Hough, "Dividends."

Levinsohn, "It's Payback Time!"

Questions to Consider

1. Go to a free financial website and find the list of firms that have recently undergone stock splits. These are often found on links labeled “market calendar” or “events” that are posted on the websites. Take one of the companies that has undergone a stock split and look at a graph of its stock price over the past 2 or 3 years. Do you think it is worth investigating the company further—based on its recent stock price?
2. McDonald’s has a dividend reinvestment program (DRiP) called McDirect Shares (http://www.aboutmcdonalds.com/mcd/investors/mcdirect_shares.html). Visit this website—or the site of another company that offers a dividend reinvestment program—and look over the prospectus materials for this program. As an investor, what features of the program do you find attractive? Are there any features that you don’t like?

Using Leverage

Lecture 12

In the last lecture, you learned that dividends and dividend information are tools that every investor should understand and use. In this lecture, you'll learn about a tool that every investor should understand, but not necessarily use. You're going to learn about using leverage—both the tempting rewards of using it as well as the potentially harsh punishments. Individual investors, and companies, can use leverage to turn otherwise boring and predictable investments into more exciting ones, but perhaps the best way for individuals to use leverage is to invest in the companies that use it wisely.

Leverage

- Leverage is a term that we use to describe how much of the money used to buy an investment has been borrowed. We often calculate leverage by dividing the total cost of the investment by the amount that the investor pays out of pocket. The higher this number is, the more highly leveraged the investor is.
- If you have a mortgage, then you're a leveraged investor. Excessive leverage was one of the main culprits behind the global financial crisis of 2008. However, when used wisely, leverage is an important—if not essential—part of our investments. Leverage enables us to control and enjoy assets that we don't fully own and to enhance our investment returns as well.
- The main reason any investor would want to take on a leveraged investment in a financial asset is that leverage is a return multiplier; in other words, you can greatly increase your returns on investments by using leverage.
- Your leverage ratio tells you how many times the gross returns on the investment are multiplied when you use this amount of leverage. If your leverage ratio is 4 to 1, for instance, your gross returns will

be quadrupled. Your actual return will be less when you also factor in the interest and any fees you have to pay on the loan.

- The real danger of leverage is that a change in price can more than wipe out your investment. You could actually

end up losing more than what you paid out of pocket. However, most of the ways that investors are allowed to use leverage are set up so that it's very unlikely that the investor will lose more than the value of their investment. This protects both the investor and the institution that loaned the money to the investor.



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Leverage is calculated by dividing the total cost of an investment by the amount that an investor pays for it.

Using Leverage

- There are 2 ways that investors can use leverage directly. One of them is buying assets on margin, which involves borrowing part of the money you use to buy the assets.
- In order to buy shares on margin, you generally have to go through a broker, who will be lending you the money that you use to buy assets. Because the broker is also handling the asset purchase transaction, he or she can handle the leverage in a pretty seamless way so that it looks like a normal asset purchase to you.
- Brokers refuse to make margin loans on some types of highly risky assets, so not every asset is available for leveraged investing. The broker will also tell you the minimum stake that they will require you to hold in the asset, expressed as a percentage of the value of the asset.

- The government establishes limits for margin buying that also specify the minimum ownership stake that an investor must take in the assets they buy on margin. There are 2 types of minimum required ownership stakes, which are referred to as **margin requirements**. The word “margin” refers to the share of the asset owned by the leveraged investor.
- The first margin requirement is called **initial margin**, and it’s the minimum ownership stake you have to take in order to start a leveraged investment. For stocks, the Federal Reserve has currently set the minimum initial margin requirement at 50%, so when you buy stocks on margin, the most you will be able to borrow is 1/2 the value of the shares.
- If you borrow from a broker and buy assets on margin, then the margin will fluctuate with the market price of the asset. If the asset price rises, then your margin increases, and if the market price falls, your margin decreases.
- Your **margin** in an investment at any time is given by the value of your equity stake in the asset divided by the total value of the asset. The value of your equity stake is the net value of what you own, and it is calculated by taking the current value of the asset and subtracting the amount of the loan you took out to buy the asset.
- The second type of margin requirement is **maintenance margin**, which is the minimum level of equity that you have to maintain at all times after you make the initial leveraged purchase. Maintenance margin is usually set below the level of initial margin, and this allows the price of the asset to fall a bit without requiring the borrower to take any action, but it also protects the lender if the price falls too much.
- Generally, brokers will require a maintenance margin of 30% on leveraged purchases of stocks, so if the price of the stock falls so much that your equity in the shares—your margin—goes below 30%, you get a **margin call**, which is a request from your broker

to deposit cash or securities into your brokerage account in order to bring your equity in the shares at least back up to the maintenance margin level. If you don't make your margin call, the broker has the right to liquidate your position—that is, sell your shares—in order to pay off the loan.

- If you can't make the margin call and the broker liquidates your position, you may or may not still owe money, depending on how quickly the price of the asset continues to fall once you get your margin call. Suppose the broker liquidates your position, and by the time the broker is able to sell the shares, they've fallen in value to \$70 per share. The broker sells your 100 shares at \$70 each, raising \$7000, so there is enough to pay back the \$5000 loan principal—and probably enough to pay back the interest and any fees on the loan as well.
- This example clarifies why brokers want you to keep a fairly high level of maintenance margin on many of the assets that you can use leverage to buy: The maintenance margin gives the broker a cushion to protect their interests in case you can't meet your margin call, and it also protects you from having to come up with even more cash to repay the broker.
- A simpler way to make leveraged investments is to buy the shares of leveraged companies. Many high-achieving companies use fair amounts of leverage to maintain their high returns.

Borrowing Securities and Short Selling

- The main reason you'd want to borrow securities is to engage in what's called a short sale—in which an investor borrows securities, sells the borrowed securities immediately, and then hopes to buy them back later at a lower price. Investors borrow securities when they believe that their value will fall.
- When you borrow securities, the lender doesn't want to be repaid in money—the lender wants the securities back. This makes borrowing securities and short selling especially interesting and risky.

- The first step in borrowing stocks and selling them short is locating someone who is willing to lend you the stocks. Because of the extra risk involved in short sales, securities lenders are extremely particular about who they lend to.
- Short selling any security without having borrowed it first is illegal. This transaction is called a naked short sale, and in most markets around the world, it's prohibited.
- Once you borrow the shares, you still may not be allowed to sell them because many markets have special rules called **uptick rules**, which are regulations aimed directly at limiting the practice of short selling. It says that a short sale cannot take place while the price of the asset is falling. In other words, the last tick, or price movement, must be in the upward direction before a short sale can take place.
- If you manage to sell the shares you borrow, then you have to remember that if the shares pay a dividend, you have to pay any dividends earned on the shares to the person you borrowed the shares from. That person is the true owner of the shares, but you borrowed the shares and sold them to someone else. You have to pay those dividends to the lender out of your own pocket, and that further adds to the cost of short selling.
- Furthermore, the lender of the shares has the right to ask for them back at any time—so you can sell them short one day, and the lender may ask for them back the next day. If that happens, you either have to quickly arrange another loan of securities, or you have to go out into the market and buy the shares back. That transaction is known as covering your short position. The danger is that you'll have to cover your short position well before you're ready to, and in particular, before you've made any money.
- Additionally, because you're using leverage, you'll need to post margin to your broker. Your broker will hold on to all the cash generated by the short sale, and you'll also have to deposit more cash or government securities in order to put your own skin in the game.

- Just as in the case of buying on margin, when you sell something short, you have to establish an equity position in the trade. The margin requirements for short selling stocks are usually the same for short sales as they are for leveraged purchases—50% initial margin and 30% maintenance margin—but you calculate the equity in your account differently for a short sale than you do for a leveraged purchase.
- For a short sale, your equity in the trade at any time, as a percent of the value of the shares, is the ratio of the net value of what you own divided by the current value of the shares. The net value of what you own is the total cash held by the broker minus the current value of the shares you sold short. The total cash held by the broker is equal to the proceeds from the short sale plus the cash that you deposit for your initial margin.
- Just as with buying on margin, your margin will go up and down as the price of the shares does. Your big fear is that the price of the shares rises after you sell them short, which will lead to losses.
- You'll also want to know the price of the shares that will trigger a margin call from your broker. Again, if you get that call and don't have the resources to bring the equity in your account back up above 30%, then the broker will cover the short position and end the transaction.
- Our financial markets are skewed toward buying and holding—not short selling. Therefore unless you really know what you're doing, you should stay away from short selling. Those who make money by short selling are willing to take risks, and they do their homework.

Important Terms

initial margin: A margin requirement that is the minimum ownership stake you have to take in order to start a leveraged investment.

maintenance margin: A margin requirement that is the minimum level of equity that you have to maintain at all times after you make an initial leveraged purchase.

margin: The share of an asset owned by a leveraged investor; the value of an equity stake in an asset divided by the total value of the asset.

margin call: A request from your broker to deposit cash or securities into your brokerage account in order to bring your equity in the shares at least back up to the maintenance margin level.

margin requirement: A minimum required ownership stake.

uptick rule: A regulation that is aimed directly at limiting the practice of short selling.

Suggested Reading

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

Fasciocco, “Buying on Margin is a Double-Edged Sword.”

Questions to Consider

1. Visit the website of an online brokerage and find the interest rate that the brokerage charges when you purchase shares on margin. Do you think the interest rate charged on margin loans is commensurate with the risk of these loans?
2. Suppose that you purchased 500 shares of a \$30 stock on margin where the initial margin requirement was 50%. If the maintenance margin requirement is 30%, at what price of the share would you get a margin call?

Choosing Bonds

Lecture 13

There are a few major issues that can help you narrow down your selection of bonds as part of a buy-and-hold investment strategy. The decision you make about default risk is the first big decision you need to make as a bond investor. Then, you should consider how you want to handle inflation. Finally, if you're in one of the top income tax brackets, you may also want to think about investing in tax-exempt bonds. Your attitude toward these major issues will help narrow down your choices to a manageable set.

Investing in Bonds

- The first big issue that you need to think about as a bond investor is **default risk**—the risk that the borrower won't be able to pay back all the promised principal and interest payments. Most people assume that a default implies that the borrower won't make any more payments and that the bonds become worthless—but this is rarely the case. Sometimes, a default event is simply a missed bond payment that the borrower makes up after a while.
- In many cases, defaults lead to rescheduled payments—not a permanent stop in payments. Nonetheless, a default dramatically reduces the value of your bonds, and it can make it difficult to sell them because only specialized investors are interested in defaulted bonds.
- Companies called **rating agencies** specialize in evaluating bonds and give out ratings based on the likelihood of full and on-time repayment of interest and principal. There are many rating agencies in the markets, but there are only 10 that have been recognized by the SEC as nationally recognized statistical rating organizations (NRSROs). Out of these 10, there are 3 dominant players: Moody's Investors Service, Inc.; Standard and Poor's Ratings Services (S&P); and Fitch, Inc.

- The rating agencies use a system of letters, along with pluses and minuses, to distinguish among the different qualities of borrowers. Moody's uses a system of capital and lowercase letters while S&P uses all capital letters.
- It's important to realize that the ratings system is not intended to correspond to any specific probabilities of default; rather, these are overall indications of the likelihood of full and timely repayment of promised interest and principal. The rating agencies have verbal interpretations of what the ratings mean.
- At the top of the rating scale is the triple-A rating, which is denoted as AAA for S&P and Aaa for Moody's. S&P defines the triple-A rating as "extremely strong capacity to meet financial commitments." As you go down S&P's scale, the characterization of ratings goes to "very strong capacity" at double-A, "strong capacity" at single-A, and then "adequate capacity to meet financial commitments" at triple-B rating, which corresponds to a rating of Baa from Moody's.
- Because the triple-B rating is the lowest rating with at least adequate financial capacity, the triple-B bonds are regarded as the lowest so-called investment-grade rating. That means that institutional investors like pension funds, who are charged with investing in the best interests of their clients, are often prohibited from investing in any bonds with lower ratings than BBB or Baa.
- S&P refers to lower-rated bonds as speculative grade. This implies that anything rated double-B or lower needs at least a little luck in

Figure 13-1

Rating Scales	
S&P	Moody's
AAA	Aaa
AA	Aa
A	A
BBB	Baa
BB	Ba
B	B
CCC	Caa
CC	Ca
C	C

order to meet all of their financial obligations. Bonds rated double-B or single-B look OK for the short term but are vulnerable to a downturn in general economic conditions or in their own specific business. Bonds rated in the C range are dependent on favorable economic conditions in order to be able to make their promised payments, and below the C ratings is D, which stands for default.

- The **cumulative default rate** for corporate bonds is simply the fraction of all bonds in each rating category that have ever defaulted. As an investor, you will have to balance these default probabilities against the higher returns that lower-rated bonds promise, but building a bond ladder out of corporate bonds certainly isn't for everyone.

Commercial Paper

- **Commercial paper** is a special kind of corporate bond. It's unsecured, which means that it isn't backed by collateral, and it has very short maturity. However, commercial paper is a quite safe corporate bond. Only the largest and financially strongest firms are able to issue commercial paper, and defaults on the highest-rated commercial paper are extremely rare.
- However, because commercial paper is a very short-term instrument, it usually pays a very low rate of interest. In addition, the typical minimum size of a commercial paper lot is \$1 million, so this effectively puts direct investment in commercial paper out of the reach of most individual investors.
- There are 2 ways for you to get access to investments that are similar to commercial paper. One way is to look for the longer-term version of commercial paper, medium-term notes (MTNs), which can be found at most bond brokers' websites. MTNs are rated like bonds and will probably have the same default track record as bonds.
- The other way to get access to commercial paper is by investing in a money market mutual fund, which is a type of mutual fund that invests the shareholders' deposits in short-term, high-quality bonds

such as Treasury bills and commercial paper. These mutual funds earn interest rates that are usually significantly better than short-term bank deposit rates. Money market funds also offer the same types of conveniences as bank deposit accounts, such as access to ATM withdrawals and bill paying.

- The way that money market funds work is that investors buy shares in the mutual fund, where each share costs \$1. The money market fund's managers take the cash from investors and buy short-term bonds. As these bonds pay interest, the money market fund passes along this interest to the investors in terms of new shares in the mutual fund.
- Because money market mutual funds are not bank accounts, they're not federally insured like bank deposits are, but their safety is supported by 2 mechanisms. First, there are some clear and strict SEC rules about the types of assets that money market mutual funds are allowed to invest in.
- The second mechanism is an informal bailout commitment on the part of the managers of the money market funds. Because money market funds are what initially attract customers, managers of these funds need to make sure that the fund fulfills its obligations, even if they have to pay out of their own pockets to keep the fund on its feet.
- When you invest in a money market mutual fund, you need to be very careful about what the fund tells you about the types of commercial paper that it will invest in. If you are tempted by a money market mutual fund that is returning more than other funds, you need to investigate whether this is because the fund is investing in lower-rated commercial paper, which carries a high risk.
- The low returns on most money market mutual funds also mean that they are really a substitute for holding cash. This means that they are not really great long-term investments, but there are

circumstances where you might find yourself storing your cash in a money market fund for a longer period of time.

- For longer-term, fixed-income investments, however, you'll eventually want to find longer-maturity bonds that have the risk-return profile most attractive to you. Corporate bonds aren't going to be attractive to everyone, so you should consider the alternative: government bonds.

Government Bonds

- There is a surprisingly large and diverse set of government bond issuers. These days, even governments are rated by the major rating agencies, so you can use these ratings as a guide. The spirit of the ratings on government debt is about the same as corporate ratings, so it's OK to interpret them in about the same way.
- With high-quality government debt, like U. S. Treasuries, the risk of default is virtually zero, but you do have to consider inflation. The general term for a bond whose interest rate rises with inflation is an **indexed bond**, in the sense that the return is somehow indexed to inflation. In the United States, there are government bonds called Treasury inflation-protected securities (TIPS) as well as a series of inflation-indexed U.S. savings bonds.
- With TIPS, the principal of the bond is adjusted for inflation. The quoted interest rate on TIPS is the inflation-adjusted, or real, interest rate that the bond pays. Your total increase in value will depend on both the inflation rate as well as the inflation-adjusted rate the bond pays.
- In addition, the inflation is measured monthly with TIPS, and the interest adjustment happens twice per year. Even though deflation may decrease the interest payments you receive, the principal that you receive is protected against deflation. TIPS are actually quite affordable; unlike other government bonds, TIPS can be purchased in increments of only \$100.

- The potential downside to TIPS is that they are longer-term bonds—they are only available in maturities of 5, 10, and 30 years—so when the TIPS are issued in the market, the promised rate of interest is largely driven by fears about how high inflation will be over the next 5, 10, and 30 years.
- When a regular Treasury bond is issued, its interest rate is influenced by the amount of inflation that is expected to occur over the life of the bond. In fact, the **Fisher effect** captures this relationship by stating that the interest rate on any bond is the sum of the real rate of interest plus the expected annual inflation over the life of the bond.
- When you buy a regular bond that isn't adjusted for inflation, you're hoping that inflation will be less than or equal to what the market expects it to be—but if inflation rises unexpectedly, you'll lose value.
- With TIPS, on the other hand, you know that you'll get compensated for whatever inflation occurs during the life of the bond, but the price you pay for that certainty may be that the inflation-adjusted return is lower than the inflation-adjusted return on a regular Treasury bond. The problem is that you won't know for sure until the bonds mature, so you must decide the amount of risk that you are willing to take.
- Bonds are one of the few types of investments that receive potential tax exemption, and for some investors, this is an attractive feature. For example, interest on Treasury bonds is exempt from state and local income taxes; however, the interest is taxed by the federal government, and capital gains are taxable as well.
- Municipal bonds carry the biggest potential tax advantage because the interest payments on many issues are exempt from federal income taxes. Because of this tax advantage, the interest rates paid on municipal bonds are always lower than the rates paid on fully taxable bonds.

- To find out whether any bond that pays tax-exempt interest is worth investing in, take the interest rate promised on the tax-exempt bond and divide that rate by 1 minus the tax rate you would otherwise have to pay on the interest if it were taxable. The answer tells you the equivalent taxable interest rate that you're earning on the bond.
- Municipal bonds are most relevant to investors who are in the top income tax brackets. In addition, municipal bonds carry default risk even though most are highly rated, so you should pay attention to those ratings and do your homework on the borrower—just like you would for a corporate bond.

Important Terms

commercial paper: A special kind of corporate bond that is unsecured and has very short maturity but that is quite safe.

cumulative default rate: The fraction of all corporate bonds in each rating category that have ever defaulted.

default risk: The risk that a borrower won't be able to pay back all the promised principal and interest payments.

Fisher effect: A theory that states that the interest rate on any bond is the sum of the real rate of interest plus the expected annual inflation over the life of the bond.

indexed bond: The general term for a bond whose interest rate rises with inflation.

rating agency: A company that specializes in evaluating bonds and that gives out ratings based on the likelihood of full and on-time repayment of interest and principal.

Suggested Reading

Bogle, *Common Sense on Mutual Funds*, chap. 7.

Brealey, Myers, and Allen, *Principles of Corporate Finance*, chap. 24.

Questions to Consider

1. Suppose you purchased a Treasury inflation-protected security (TIPS) with a principal of \$1000 and held it for 2 years. During the first year, the total inflation was 4%. During the second year, the total inflation was 3%. What should the principal value be at the end of the second year?
2. Suppose that you know you will have to pay income taxes of 28% on any taxable interest income. A fully taxable bond is paying an interest rate of 6%. Suppose that a municipal bond that has the same characteristics as the fully taxable bond is offering an interest rate of 4.2%. The only difference between the 2 bonds is that interest payments from the municipal bond are tax-free. Which bond should you choose for your portfolio?

Bond School

Lecture 14

One of the things that discourages people from bond investing is the potentially confusing terminology associated with bonds, including how bond rates and prices are quoted. If you know these things, you'll be a much more confident bond investor—even if you never actually trade bonds. You also have to understand bond pricing and the relationship between price and yield. In addition, you'll need to know about riding the yield curve, a bond trading strategy that is so simple that you can pursue it even if you are primarily a buy-and-hold bond investor.

Bond Payments and Rates of Return

- There are many different rates of return associated with bonds, and all of the various rates of return on bonds are quoted using a special form of a return called a **stated annual rate of return**, which always contains 2 pieces of information if quoted properly: It tells you an annual rate of return and the number of times per year the rate is compounded. The convention in the bond market is to quote every rate of return that has to do with a bond as an annual rate compounded semiannually, which means that the interest on a straight bond is paid twice per year.
- The whole point of quoting rates of return as stated annual rates is to give you a shortcut to finding a semiannual rate of return, which is an interest rate for a 6-month period. To find a semiannual rate of return given a quoted bond rate, simply divide the quoted rate by 2. You should assume that every interest rate associated with a bond is an annual rate compounded semiannually—unless you're told otherwise.
- The coupon size is determined by the **coupon yield**, which is the value of the annual coupon amount divided by par. The standard practice is to set the coupon rate equal to the market rate of return for the bond at the time the bond is issued. The bond market decides

on an appropriate rate of return for the bond, based on the issuer's risk and market conditions, and this market rate is used for the coupon yield. Once the coupon yield is determined, it won't change over the life of the bond, so the size of the coupon remains fixed. After the bond is issued, however, the market rate of return will fluctuate according to market conditions and the financial strength of the borrower.

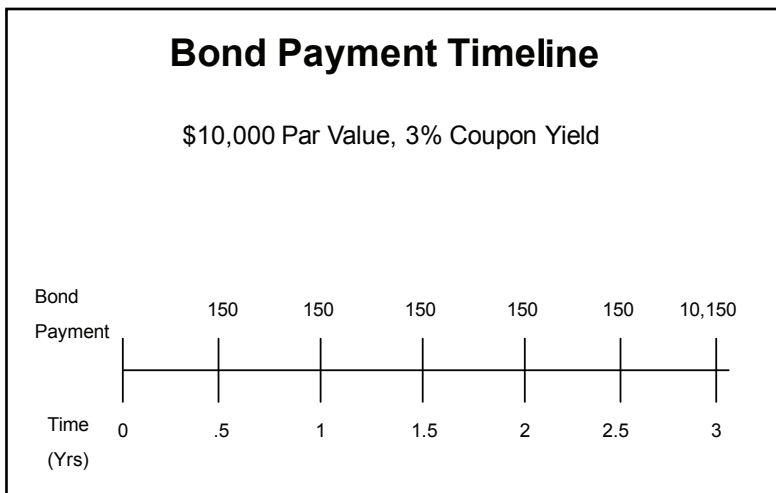
- The changes in the market rate of return on the bond will change the price of the bond. The price of a bond at any time is the present value of all its payments, and it depends on the relative sizes of the coupon yield and the market rate of return on the bond.
- The **current yield** is the annual coupon divided by the market price of the bond. The current yield expresses the rate of interest that the coupons represent if you buy the bond at the current market price.
- A **yield to maturity** is the average yield earned by a bond investor who buys the bond at the current market price and holds the bond to maturity. The market return on a bond is usually expressed as a yield to maturity.
- Even though we use the yield to maturity as if it's the return that you'll actually earn on the bond, there are 2 hidden catches in the yield to maturity: The yield to maturity is only exactly accurate if you actually hold the bond to maturity, and it assumes that when you receive the coupon payments from the bond, you are able to reinvest those coupon payments in a way that earns the exact same return as the market rate of return on the bond.

Bond Price and Bond Yield

- The amounts of the coupon payments on bonds are fixed when the bond is issued, and they don't change after that. Once the bond is issued, the market rate of return on the bond can and does change as market conditions and the financial condition of the borrower change.

- Dealers quote bond prices in percent of par, so to find the price of any bond, you take the quoted price and multiply it by the principal amount to get the actual dollar price you'd have to pay to buy the bond. The bond price is less than par when the market rate of return is higher than the coupon yield on the bond.
- When the market rate of return on a bond falls below the coupon yield, the price rises above its par value. Therefore, when the market rate is above the coupon yield, the price is below par. When the market rate is below the coupon yield, the market price is above par. When the market rate of return is exactly equal to the coupon yield, the price is exactly equal to par.
- This explains why most bonds set their coupons so that the coupon yield is exactly equal to the market rate of return when the bonds are issued; this makes it so the price of the bond is equal to its par value, which is really just done for the convenience of the borrowers and lenders by giving round dollar amounts.
- The relationship between yield and price is not linear, which means that there can be some very attractive opportunities for people who want to trade bonds actively. A small change in the market rate on the bond can translate into a relatively large change in price. Therefore, if you think you can predict changes in the market rate of return on a bond, you could make some very attractive returns as a bond trader.
- If you want to take advantage of the relationship between price and yield by trading, you may want to know that the longer the maturity of the bond, the steeper the yield-price relationship becomes. In other words, the price of a 30-year bond rises much more than the price of a 10-year note when the market interest rate falls by 0.5%. Therefore, people who are bond traders like to trade straight bonds that are 10 years or longer in maturity.
- However, if the market for a 10-year bond is much larger than the market for a 30-year bond from the same issuer, then trading the

Figure 14-1



10-year bond would probably make more sense because any loss in price sensitivity would be compensated by the improved ability to trade quickly.

- The chance to take advantage of large changes in bond prices as bond interest rates change is the big attraction of active bond investing. In order to be a successful bond trader, you need to predict correctly when bond interest rates will change, and you need to become very skilled at predicting when interest rates will fall, making any bonds you hold become more valuable.
- There are 2 basic reasons that a bond interest rate will fall. First, general economic conditions can change in a way that makes interest rates fall, or there can also be basic supply-and-demand reasons that bond interest rates fall.
- Interest rates are notoriously difficult to forecast, which explains why many bond traders prefer to make bets based on the second reason that bond rates might fall: A government or a company might have their bonds upgraded by a bond rating agency. This upgrade

will reduce the risk premium that investors demand in order for them to hold the bonds, so the interest rate on the company's bonds will fall, which will make the price of the bonds rise.

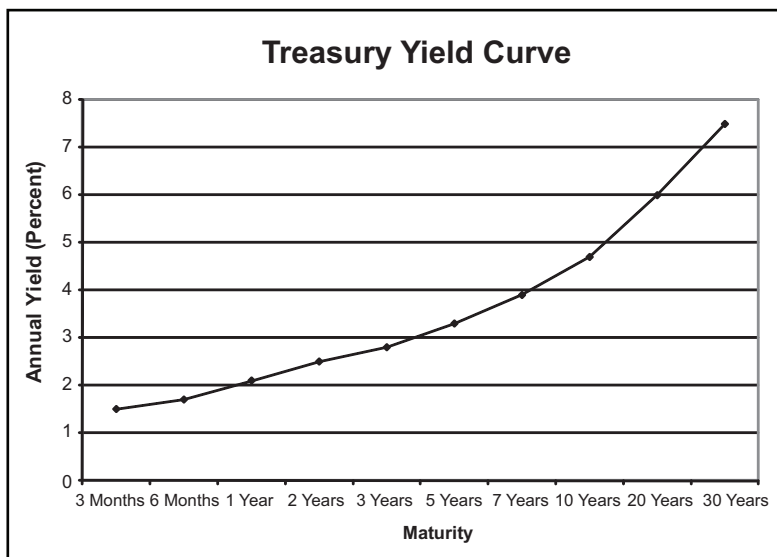
- Predicting that a company or government will experience a ratings upgrade depends on the same type of financial analysis that you learned about in the context of stocks. As with the efficient markets hypothesis, if you wait too long to make up your mind, other investors will buy the borrower's bonds in anticipation of the ratings upgrade, so the price of the bonds will rise even before the upgrade happens.
- Even though this type of bond trading is well within the ability of an individual investor who is willing to do some homework, it's still made risky by the fact that, in order to make good profits, you have to act early—in other words, when an upgrade is still highly uncertain.
- Nevertheless, some investors pursue this strategy. One of the most lucrative—and risky—areas of the bond market to try this is in the area of high-yield, or non-investment-grade, debt. This part of the bond market is also known as **junk bonds**.
- In the past, bonds became junk bonds because the companies or governments that issued them fell on hard times. The only bonds that could be issued to the markets were investment-grade bonds, but over time, some borrowers would weaken and their bonds would be downgraded. Bonds that start out highly rated but then get downgraded to junk status are often called **fallen angels**, and there are plenty of fallen angels in current bond markets.
- Starting in the 1980s, it became possible for companies and even governments to issue brand-new, non-investment-grade bonds to the markets, which were willing to take a chance on these borrowers because they were young firms or developing economies that could tell convincing stories to the markets about their future growth. In addition, the interest rates on these bonds were very attractive.

- This is a very risky investing strategy. Many of these young firms fell back instead of rising up, and the default rates on non-investment-grade debt are quite high. In many cases, it may be difficult for investors to get adequate information to judge the financial strength of the company, so although this market does have a lot of potential, it's best left to the professionals.

Riding the Yield Curve

- The idea of earning a high interest rate and a capital gain sounds like the ideal bond-trading situation. You can take advantage of relatively safe opportunities like this even while pursuing a buy-and-hold bond investing strategy through a trade called riding the yield curve.
- The yield curve is a graph that shows the relationship between yield and maturity for a certain type of bond—most often for government bonds, and especially for Treasuries. The yields are the current market rates of return, so the yield curve changes every day as market returns change.

Figure 14-2



- Most of the time, as the maturity of a bond increases, its yield increases. Therefore, a 10-year note pays a higher interest rate than a 5-year note. When we see this relationship in the market, we say that the yield curve slopes up—just like in the chart.
- You can make extra returns on bonds by buying longer maturity bonds than you actually intend to hold to maturity and selling them after a few years. This strategy is called **riding the yield curve**.
- Riding the yield curve generates the highest returns when interest rates are fairly high. There seems to be a set of long-run average interest rates that the economy tends to return to, so if interest rates are too high today, they will probably fall to normal levels in a few years. If they do, you not only get the benefit of big capital gains, but you also earn high coupon payments while you wait.

Important Terms

coupon yield: The value of the annual coupon amount divided by par.

current yield: The annual coupon divided by the market price of the bond.

fallen angel: A bond that starts out highly rated but then gets downgraded to junk status.

junk bond: A bond that involves high-yield, or non-investment-grade, debt.

riding the yield curve: A strategy that involves making extra returns on bonds by buying longer maturity bonds than you actually intend to hold to maturity and selling them after a few years.

stated annual rate of return: A special form of a return that contains 2 pieces of information if quoted properly: an annual rate of return and the number of times per year the rate is compounded.

yield to maturity: The average yield earned by a bond investor who buys a bond at the current market price and holds the bond to maturity.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 10.

Brealey, Myers, and Allen, *Principles of Corporate Finance*, chap. 3.

Questions to Consider

1. Suppose a bond has a par value of \$100,000 and it pays a coupon of \$2750 every 6 months. The market price of the bond is \$98,624.15. What is the coupon yield of the bond? What is the current yield of the bond?
2. How would a bond dealer quote the price of the bond described in the previous question?

Picking Mutual Funds

Lecture 15

Unless you are going to put your savings in a balanced fund and leave the decisions to someone else, you need to do the same kind of homework on mutual funds that you would do on stocks, bonds, and other investments. In this lecture, you will learn that neither passively nor actively managed mutual funds are perfect and that you'll probably be happy with a well-chosen mix of both. Whichever funds you choose, treat them like long-term investments; don't chase last year's high returns. Think carefully about what you want in your investments, and make the most of this opportunity.

Categorizing Mutual Funds

- One of the reasons for the large and increasing diversity of mutual funds and ETFs is that the markets are responding to investor demands for more choices in their investments. This is a positive development, but it means that you need to be very selective and careful when choosing the funds you want to invest in.
- Generally, we categorize mutual funds by the assets they hold and what goal they're trying to achieve. The vast majority of mutual funds focus on stocks and bonds as their main investments, but there are funds that include other securities in their portfolios as well, including derivatives. **Equity funds** hold only stocks while **bond funds** hold only bonds. **Balanced funds** are mutual funds that hold both stocks and bonds in their portfolios.
- Equity funds can be further broken down according to the specific types of equity and the investment goals of the fund. Many mutual funds invest in a certain size of firm, where firm size is measured by its market value, which is also known as market capitalization.
- In addition to the focus on large-cap, mid-cap, or small-cap firms, there is a distinction between 2 investment goals: growth and value.

- One of the most popular pairings of size and growth is large-cap growth funds, which invest in the Coca-Colas of the world. Other funds might be bargain hunters, looking for value investments that seem to be underappreciated.
- Another type of equity fund is called an **income fund** because its focus is on earning high-dividend income. This focus is different from growth or value, which are both more focused on earning high capital gains.
- You don't necessarily have to settle on just income, growth, or value. There are also many **blend funds**, which try to select equities based on 2 different investment objectives.
- A final type of equity fund that appeals to many investors is **sector funds**, which invest in the shares of companies that are in the same type of sector or industry. Sector funds are for investors who intentionally want to take on concentrated risk in a particular industry because they believe that the industry as a whole will earn high returns relative to other industries or to the rest of the market.
- There's also a lot of diversity in bond funds, but the distinctions between the types of bond funds usually follow bond characteristics such as maturity, the type of issuer, and credit rating of the issuer.
- What all bond funds have in common is that the prices of shares fluctuate a lot due to changes in interest rates, which makes holding bond funds different than buying and holding bonds to maturity. If you hold bonds to maturity, then you're insulated from the price changes—but because the bond mutual fund has to report its net asset value daily, and because it also has to continually replace bonds that mature with other bonds, you never escape this price risk with bond funds.
- Don't forget that a unit investment trust can make long-term, buy-and-hold investments in portfolios of bonds. This option is worth

considering if you want to buy and hold a piece of a well-diversified portfolio of bonds.

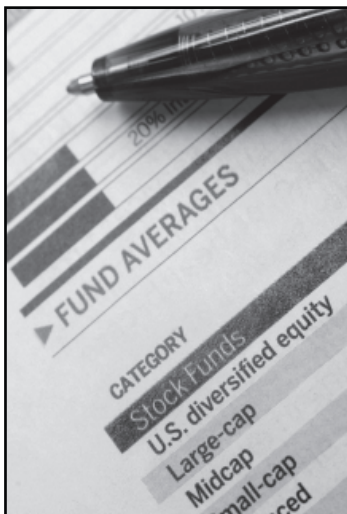
- Balanced funds put both stocks and bonds into the portfolio, and in many cases, this combination increases diversification and smoothes out the return on the fund. Also, if you move your investments from equity funds into balanced funds, this effectively places more of your portfolio into bonds and helps protect the value of your portfolio from sudden market drops as you get closer to your financial goal.
- There is a fairly aggressive investment that's related to the balanced fund called an **asset allocation fund**, which is switched by managers between bonds and stocks whenever the markets seem to favor one investment over the other. These large swings are fairly risky, and they generate a lot of portfolio turnover, which can increase the tax bill from your mutual fund. Therefore, it's important to investigate these funds carefully before investing.
- In order to protect American investors, the SEC is very strict about allowing foreign mutual funds to offer their shares in the United States. Consequently, most foreign mutual funds won't allow Americans to invest in them. Therefore, if you want to diversify your portfolio geographically, you'll either have to buy foreign securities yourself or invest in American mutual funds that do it for you.
- There is a small but important distinction between types of mutual funds that invest in foreign assets. Funds that invest only in assets from outside the United States are called **international funds**, but many funds will invest in American and foreign assets, and these are called **global funds**.

Locating Information about Mutual Funds

- In addition to a mutual fund's summary prospectus, there is more information, in a more detailed form, in other documents that investment companies are required to disclose to the public. When

you start getting serious about a mutual fund, you need to find these documents and read the following information.

- First, you should look at the full prospectus. This document contains much of the same information as the summary prospectus but at a much higher level of detail that can give you better insights about how the fund managers will make their investment choices.
- In fact, if you want a full listing of exactly what a fund's bylaws allow it to invest in, you can go to another document that a fund will publish called the statement of additional information, which is usually distributed with the fund's annual report.
- Each fund will tell you both the hard, or fundamental, rules that govern its investments and the nonfundamental rules that describe the fund managers' intentions. Fundamental rules can only be changed by shareholder vote, but nonfundamental rules can be changed by the fund managers at any time.
- Finally, there's no substitute for looking over the actual holdings of a mutual fund or ETF if you want to know what the fund is really doing with your money. The annual report of the mutual fund will give a complete list of the holdings of the mutual fund.



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Many funds are equity funds, which hold only stocks, while bond funds hold only bonds.

Actively versus Passively Managed Mutual Funds

- Thus far, it has been assumed that all mutual funds hire a team of professional stock and bond analysts and set off to beat the market,

but there are thousands of mutual funds that are passively managed. A passively managed mutual fund simply tries to mimic the return on some kind of benchmark asset. Usually, this benchmark asset is an index, such as the Dow Jones Industrial Average or the S&P 500. Generally, the managers of the fund simply buy and hold the assets that make up the fund, or they invest in futures contracts or other simple derivatives that directly substitute for holding the assets in the index.

- There are 2 big advantages of passively managed mutual funds. First, you pretty much know exactly what you're getting—as long as you understand what the benchmark asset is. In addition, generally, their expenses are much lower than those of actively managed mutual funds because the managers don't do nearly as much trading as active managers do.
- When deciding whether you should hold actively managed mutual funds, passively managed mutual funds, or both—and if both, how much of each—there are a few things you should consider. First, there's the issue of whether you should invest in all passively managed funds or all actively managed funds. This depends in part on how efficient you think the markets are. If you're a big believer in market efficiency, then you know that the best you can do as an investor is to buy a slice of the entire market, and passively managed mutual funds and ETFs give you a great opportunity to do that.
- On the other hand, if you think that the market isn't completely efficient, then there's room for skilled fund managers to earn market-beating returns over long periods of time. If that is the case, then you're passing up a great opportunity if you only stick to passively managed mutual funds. The problem with this view is that most actively managed mutual funds don't beat the market, but some do. The trick is to find those really gifted—or lucky—managers who produce long strings of market-beating returns.

- One potential downside to passively managed mutual funds is the explosion in the number and types of indexes that exist. On one hand, this gives us benchmarks to compare performance to, but on the other hand, the proliferation of indexes has introduced some of the problems of actively managed mutual funds to passively managed mutual funds. For example, it's easy to lull yourself into a false sense of security that you have a well-diversified portfolio when you really don't.
- However, the increase in the number of indexes means that actively managed mutual funds can generally find some index to compare their returns to that makes them look good. Therefore, you need to be skeptical of claims that actively managed mutual funds make about beating benchmarks. There's no substitute for looking at their actual returns, and risk, over time.
- There are a few popular but controversial active management strategies that might appeal to you when you're evaluating your preferences regarding mutual funds. Two of these are growth and value investing, and there's been a long-running debate over which one is the better long-term strategy. Both the growth and value strategies make sense and can be winners, but the question is whether the managers have both the skill to pick investments that really deliver and the discipline to stick to their investing program.
- Another mutual fund strategy that is becoming popular is the **socially responsible fund**, which is a mutual fund that pursues high returns but avoids investing in companies that engage in activities that some people find objectionable. The idea behind these funds is that investors may be willing to accept somewhat lower investment returns for the satisfaction of knowing that their savings don't support commercial activities that they object to.
- Beyond these ideas, there aren't any magic secrets to picking winning mutual funds. As with any other investment, you need to do your homework. Additionally, think about buying into a mutual fund as the start of a long-term, buy-and-hold investment. If you

keep moving your investments from one hot mutual fund to the next, you'll probably end up with a string of disappointing returns.

Important Terms

asset allocation fund: A type of mutual fund that is switched by managers between bonds and stocks whenever the markets seem to favor one investment over the other.

balanced fund: A mutual fund that holds both stocks and bonds in its portfolio.

blend fund: A type of equity fund that tries to select equities based on 2 different investment objectives.

bond fund: A mutual fund that holds only bonds in its portfolio.

equity fund: A mutual fund that holds only stocks in its portfolio.

global fund: A type of mutual fund that invests in American and foreign assets.

income fund: A type of equity fund whose focus is on earning high-dividend income.

international fund: A type of mutual fund that invests only in assets from outside the United States.

sector fund: A type of equity fund that invests in the shares of companies that are in the same type of sector or industry.

socially responsible fund: A type of mutual fund that pursues high returns but avoids investing in companies that engage in activities that some people find objectionable.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 4.

Bogle, *Common Sense on Mutual Funds*, chaps. 6 and 9.

Questions to Consider

1. Select the year you are most likely to retire and search for a target-date mutual fund—which is a mutual fund that automatically reshuffles the mixture of assets in its portfolio according to some future date—that most closely corresponds to your retirement year. Examine how the managers of this fund are allocating the fund's investments among different types of stocks, bonds, and perhaps other instruments. Does the mixture of investments seem attractive to you? Would you invest in the fund? If not, what don't you like about its holdings or management? How would you invest your retirement funds differently?
2. Go to a mutual fund company's website and find a global mutual fund and an international mutual fund. Find the annual report for each mutual fund and compare the stocks held by each. Which fund, in your opinion, is more geographically diversified?

Investing in Foreign Assets

Lecture 16

In the next few lectures, you're going to be introduced to assets other than stocks, bonds, mutual funds, and ETFs that you may want to consider. In this lecture, you'll learn more about foreign assets. There are plenty of amazing opportunities outside the United States, and they are all rooted in real assets. However, be sure not to overweight foreign markets because many of them have a lot of progress to make, but make enough room in your portfolio that you can benefit from their growth and development—as well as from the diversification protection that they offer.

Foreign Assets

- If you're holding well diversified mutual funds, or if you're covered by a pension, you probably already have some foreign assets in your portfolio. Bonds from foreign companies or foreign governments can offer safe and attractive returns.
- There are 2 main reasons that make the extra work of investing in foreign assets pay off. The first of these is diversification. One of your goals as an investor is to make sure that your portfolio is well diversified, and if you're an investor who believes markets are pretty efficient, then you'll want to own a slice of the entire market—and that means the global financial market.
- More countries are reaching the same level of economic development and sophistication as the United States and Europe. Many countries' financial markets are starting to have the same types of companies as the rest of the world, which is not good for diversification because diversification depends on different assets acting in different ways.
- Additionally, financial markets around the world have become a lot more tightly connected than they were even a few years ago. If the prices in globalized financial markets become more synchronized over time, then there's much less diversification benefit. The whole

point of being diversified is that when the U.S. market falls, another market somewhere else in the world is likely to be going up.

- Therefore, many people think foreign diversification is losing its benefit. Markets do seem to move together more today than they used to, but on average, there still seems to be plenty of room for a diversification benefit. There's also evidence that the synchronization of the global economy goes through cycles.
- The idea that many countries are still at an earlier stage of economic development leads to the second main reason to invest in foreign assets: to take advantage of higher economic growth in other countries. On a very large scale, someone who invests in the assets of rapidly industrializing nations—or even in the assets of countries that are already developed—is taking part in a global IPO for the entire country. Not every company in these economies is going to be a winner, but the overall growth of these economies means that many companies will be.

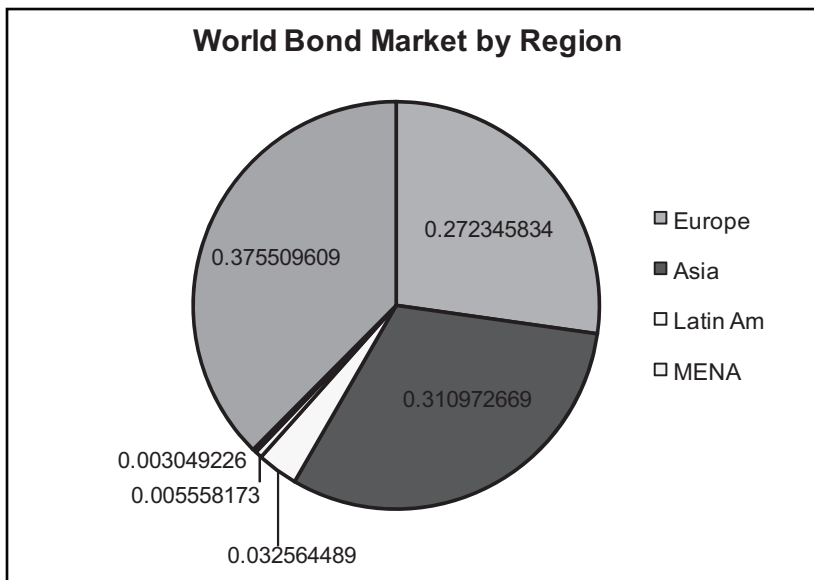
Allocating Foreign Assets

- The Bank for International Settlements (BIS) is an international organization that facilitates cooperation between central banks and bank regulators around the world. They collect data on the size of the global bond markets. As of the end of 2010, the world bond market had about \$67 trillion of bonds outstanding, and the United States had \$25 trillion of that total—or about 38%.
- That total includes both government bonds and private bonds. However, when you break it down, the total size of the global government bond market was \$39 trillion at the end of 2010 while the private bond market was \$28 trillion.
- According to the World Bank, which has data on the value of world stock markets, the global stock market was worth about \$55 trillion at the end of 2010, and the U.S. market was worth about \$17 trillion. When the stock market values are broken down by region of the world, the U.S. stock market is just under 1/3 of the entire

world market by value. In addition, Europe and Asia each have almost an identical share of the world stock market.

- The United States makes up 1/4 of the global government bond market, 1/3 of the global stock market, and about 1/2 of the private debt market. Europe and Asia both have large government bond markets and large private bond markets, but the rest of the world really doesn't yet. If you were to truly make your portfolio reflect the global market, you could use these weights as a starting point for shaping your portfolio.
- However, even though the rest of the world does account for a huge part of the financial market, foreign markets just don't adhere to the same standards of transparency, rules of law, and basic fairness that characterize the U.S. financial markets. This means that investor protections that we take for granted in the United States simply don't exist—or only exist on paper in many other countries.

Figure 16-1



- Additionally, the level of government involvement in the economies of many countries is far higher than in the United States, which means that companies may behave very differently in how they conduct business and how they treat their shareholders. It also may mean that governments will restrict foreign ownership of their domestic companies so that foreigners may end up paying inflated prices for shares of successful firms.
- Another thing to keep in mind is that the huge size of the rest of the world's markets also disguises a wide range of sizes. The size of many equity markets around the world is small enough so that they can be easily manipulated by local investors, so you have to be wary of plunging into these markets without doing a good amount of research on them first.

Investing in Foreign Assets

- In general, buying and holding foreign assets directly is expensive and inconvenient—and may even be dangerous. Many U.S. brokers will help you buy foreign assets directly through business partners in overseas markets, but this adds significantly to the trading costs you'll pay.
- On the other hand, it's possible to hold a foreign brokerage account, but this is not usually a good idea unless you have a truly compelling reason to do so. Holding foreign bank accounts or brokerage accounts can make the IRS wonder whether you're trying to hide income or assets overseas, so it usually attracts their attention.
- The biggest concern for holding foreign assets directly is the danger of losses from **foreign exchange risk**, which is the risk that any capital gains or other returns on an investment in foreign assets will be offset by unfavorable changes in the exchange rate.
- Changes in the exchange rate can also work in your favor, but adding the foreign exchange risk to the extra expense and hassle

of investing directly in foreign assets makes this option even less attractive.

- There are many good ways to invest in foreign assets—they're just less direct. A stock instrument called American depository receipts (ADRs) claim checks on foreign stocks that have been deposited in American banks. Similarly, some foreign governments and companies will issue bonds in the United States that are payable in U.S. dollars.
- By far, the best way to buy foreign assets is through mutual funds or ETFs. Mutual funds can hire experts who can navigate foreign markets, and they also have resources to manage the foreign exchange risk associated with foreign investing. They originated as a better way to invest in foreign assets.
- However, you should check the annual reports of the mutual funds and the ETFs you are interested in to see exactly what foreign assets are being held in these funds. You want to make sure that your global fund isn't just holding many U.S. companies and only a smattering of foreign assets. In addition, you can and should blend a mix of passive funds and active funds in your foreign portfolio.

Foreign Exchange

- The foreign asset that you should probably avoid investing in is **foreign exchange**, which is also known as foreign currency trading or forex trading. Foreign exchange can seem really attractive; it is one of the largest and most active asset markets on the planet.
- When you trade forex, you're betting on the direction of exchange rates. For example, since its introduction as a currency in the early 2000s, the price of 1 euro has fluctuated between roughly \$0.80 and \$1.70. If you think that the price of the euro in terms of U.S. dollars will go up, then you can buy euros in the hopes that the price of a euro will go up, and you can sell the euros later for more dollars than you paid to buy them.

- There are 2 major complaints with trading currencies as an investment strategy: Trading currencies is a very short-term investing strategy that requires a lot of active trading—which gets very expensive and can take up a lot of time—and exchange rates are some of the hardest financial prices to predict.
- Generally, forex trading is done with huge amounts of leverage, and that's the big danger. High leverage plus lots of price fluctuations lead to investors losing lots of money in short periods of time.
- There are 2 main ways that individuals usually trade foreign currencies. The first way is by using a **futures contract**, which is simply a standardized agreement in which an investor pays a price now, called the futures price, to be entitled to receive an asset on a later date specified in the contract.
- Buying a futures contract on an asset is really just a substitute for buying and holding the actual asset. The main reason that an individual investor would want to buy a futures contract is that it could be much cheaper than buying the asset outright.
- One of the main reasons that investors are interested in futures contracts is to take advantage of the low margin requirements—but low margins also mean high leverage. Therefore, unless you are an experienced investor who has studied the futures markets and really knows what you're getting into, you might want to leave the leveraged investing in futures to the professionals.
- The second way that individuals generally invest in foreign currency is through a broker using margin, and in the case of foreign exchange, the leverage that brokers will let investors take on is even higher than the leverage that is allowed in the futures contracts.
- If you really want to invest in foreign currencies, try ETFs. There are ETFs that directly hold foreign currencies, such as the euro. However, if you do this, make sure that the ETF isn't using leverage.

- Another way that people are investing in foreign exchange that is nearly as dangerous as these leveraged purchases of currency is a strategy called the carry trade, which is a way to take advantage of differences in interest rates between countries—but it relies on stable exchange rates to make it work.
- With the carry trade, an investor borrows a sum of money in a currency that has a very low interest rate. Then, the investor finds a country with relatively high interest rates, exchanges the currency for the high-interest-rate country's currency, and invests in the country's bonds.
- The part of this trade that makes it the carry trade is that the investors doing it are carrying, or holding on to, the risk that the foreign exchange rates will change—and they probably will—between the time that they buy the foreign asset and the time they sell the foreign asset and change the currency back to dollars.

Important Terms

foreign exchange: One of the largest and most active asset markets on the planet that involves betting on the direction of exchange rates.

foreign exchange risk: The risk that any capital gains or other returns on an investment in foreign assets will be offset by unfavorable changes in the exchange rate.

futures contract: A standardized agreement in which an investor pays a price now, called the futures price, to be entitled to receive an asset on a later date specified in the contract.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 19.

Bogle, *Common Sense on Mutual Funds*, chap. 8.

Prior, “Costly Currency.”

Questions to Consider

1. Websites such as Stock-Encyclopedia.com maintain extensive lists of ETFs (<http://etf.stock-encyclopedia.com/category/>) that you can browse to find opportunities for investing in single countries or in regions. Browse a list of international stock or bond ETFs and find one that interests you. Why did you pick this country or region? How has this ETF performed this year? Would you consider adding this ETF to your portfolio?
2. Select a major currency that trades actively against the U.S. dollar—such as the euro, pound, or yen—and search for a graph of the exchange rate that covers at least the past 2 years. (Most free financial websites will have such graphs.) Note the variation in the exchange rate during the past 2 years and how many times the rate bounces up and down. What do you think is the most likely direction for this exchange rate over the next year? Given the past exchange rates, are you confident enough in your prediction to buy or sell the foreign currency as an investment? Why or why not?

Options Are for Everyone

Lecture 17

Derivatives are specialized tools for advanced investors. They're usually bit players in an investment portfolio that are used for hedging certain kinds of risk. In this lecture, you're going to be introduced to one of the most interesting derivatives—options—and by the end of the lecture, you might be convinced that they have a place in your portfolio. You will learn that options are not just for hedging; they play a long-term, return-enhancing role that can help your money work harder for you. Best of all, the options strategies that you'll learn about have extremely low risk.

Financial Options

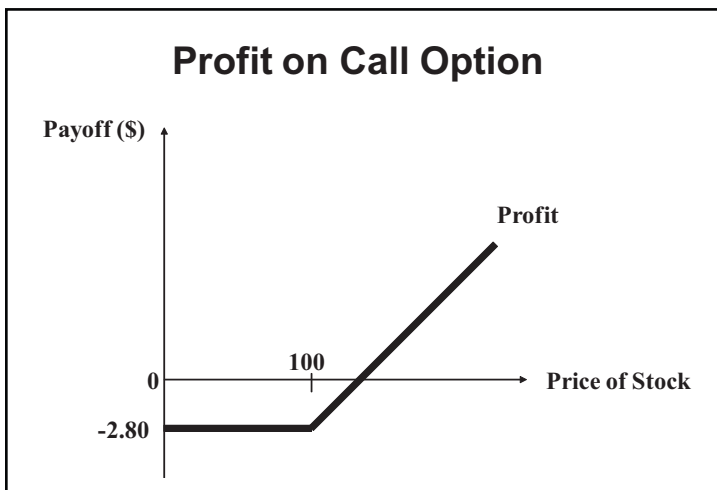
- An **option**, one of the most fascinating derivatives, is a contract that gives its buyer the right, but not the obligation, to take some action. Usually, the action involves buying or selling something. If you hold an option to do something, you'll only do it if it's in your best interest. If it's not, then you walk away, and all you've lost is the cost of the option.
- **Financial options** are the right to buy or sell a particular asset at a preagreed price on or before a certain date. The right to buy an asset is a **call option** on the asset while the right to sell is called a **put option** on the asset. If you exercise your right to buy or sell, you're exercising the option. The preagreed price is called the strike price of the option, and the last day that you're able to exercise this right is called the expiration date of the option.
- **Stock options** are rights to buy or sell shares of a particular company, and **index options** are options on futures contracts on stock indexes. Call options are the right to buy stocks or futures contracts on stock indexes while put options are the right to sell these assets.

- The main reason you'd want to invest in put options is to protect your portfolio from a fall in stock prices. However, using put options to protect your portfolio is so expensive that you probably shouldn't use them, especially in a long-term investing context.

Call Options

- Options are traded on exchanges—just like stocks—and the price of an option is also called the premium. Strike prices of option contracts cluster around the current market price of the stock, and there can be multiple contracts at the same strike price because the contracts can have different expiration dates. Most exchanges offer a rolling set of contracts that expire every 3 months.
- For example, if you pay the option premium of \$2.80 for Nike, then you own the right—but not the obligation—to buy 1 share of Nike at a price of \$100 on or before the expiration date in January. If you buy this call option, then you are hoping that the price of Nike shares rises above \$100 per share between September, for example, and the contract expiration in January.

Figure 17-1



- If the market price of the stock goes above the strike price on the call option, then your call options have gone into the money. This simply means that you can make a positive profit by exercising them. Of course, the higher the price of Nike shares goes before you exercise the call option, the higher your profit will be.
- What if the price of the stock stays below \$100 per share between September and the contract expiration in January? If you exercised the option, you'd have to pay \$100 per Nike share, but the market value of the Nike shares is below \$100 per share. In this case, instead of exercising the option, you'd let it expire. You've lost \$2.80 per option that you bought plus the commission and any other trading costs, but that's all you've lost—a fraction of the value of the stock.
- If the price of Nike shares rises above the strike price, your profit rises at a dollar-for-dollar rate. If the price of Nike stays below the strike price of the call option, you lose the price of the option—no matter whether the price of the shares rises to \$99.99 or falls to a penny per share. The existence of limited losses and the potential to enjoy gains leads to an asymmetry in your profits, which is the big attraction of options.
- Financial economists represent this asymmetrical behavior in your profits with a payoff, or profit, diagram, which has the price of the stock on the horizontal axis and the amount of profit from the option on the vertical axis.
- The prices of options are determined by supply and demand—just like in any other financial market—but many of the suppliers and demanders of options also know the theory of option pricing, and these theories lead to some easy-to-use option pricing formulas that give a ballpark estimate of the value of an option.
- A call option will give you a profit if the price of the stock goes above the strike price of the option, so option pricing is about the likelihood that this will happen. There are 5 things that affect this

probability in general, but the most important 3 are the strike price of the option, the time to expiration, and the amount of variation in the price of the shares.

- In general, the higher you set the strike price of a call option, the less likely it is that the stock price will rise above the strike price, so call option premiums fall as the strike price rises. Additionally, the more time you have until expiration, the better the chance that the stock price will wander above the strike price. Finally, the more the price of the stock bounces around, the higher the chance that it will bounce up above the strike price of the call option, so stocks with more variation in their prices will have more expensive call options.

Options Investments

- A **covered call** is a type of options investment that is a combination of a stock and a call option that you can use to enhance your returns on stocks that you own. People generally use this strategy on stocks that they intend to own for a long time but want to squeeze some income out of.
- The covered call strategy involves writing, which is another word for selling, call options on shares of stock that you currently own. The covered call strategy requires you to sell call options—and anyone can buy or sell call options.
- When you sell, or write, call options, you are selling to someone else the right to buy shares from you at a preagreed strike price. Therefore, when you write call options, you are creating an obligation for yourself to sell your shares—or to pay the buyer of the call options the difference between the market price of the shares and the strike price, if the price of the shares rises above the strike price.
- The covered call strategy is dangerous if you don't already own the shares, but what's so fascinating about the covered call is that owning the shares converts a risky transaction—selling call options—into an extremely safe investment.

- When writing call options, the trick is to pick a strike price for the options that is high enough that it seems pretty unlikely that the share price will rise that high before expiration. On the other hand, you need to set the strike price low enough so that the option premium makes it worth your while to do this trade. Therefore, there is a tradeoff at work, and you may not think that the tradeoff is worth it for all your shares all the time. This strategy tends to work well for popular stocks that also have active options trading surrounding them.
- Regardless of whether you exercise your call option or let it expire, there really isn't the possibility of losing money. In fact, you really only lose out on part of some really high returns—if the options do go into the money and get exercised. In that case, you'll have to settle for a smaller return—but never a negative one. Therefore, this strategy is an important one to consider: It's very safe and easy, and it can improve the return on any stock that has options traded on it.
- If you like the idea of using covered calls but are still hesitant to try this on your own—or if you don't think that you'll have the time to do this—then you can try the alternative: actively managed mutual funds that pursue covered call investment strategies.
- In addition to covered calls, there's another investment strategy that uses the power of options to offer a great opportunity to investors. The general name for these investments is structured products, and they often go by the name of bull CDs, as in bull-market CDs, or option-embedded CDs.
- There are hundreds of different types of **structured products**, which combine different financial instruments into a new one or slice the payments from a financial instrument in new ways.
- There is a type of structured product that is aimed at prudent individual investors and is available through many banks, brokerages, and other dealers that is commonly referred to as a CD—but it's a CD with a couple of special features.

- The first feature of these CDs is that instead of paying a flat rate of interest, they will pay you the return on some index—usually a stock index like the S&P 500. This is already quite different from an average CD, but it gets better. If the S&P 500 falls during the time that you own the CD, the CD will give you your initial deposit back, so you won't suffer any losses—except, of course, for the fact that you earned a zero return.
- Not only is this legal, but it's also pretty safe—for the buyer of the CD as well as for the company that offers it. The payoff of this special CD is a lot like an option payoff: You get to enjoy any gains in the S&P 500 index, but you don't have to suffer any of the losses between now and the maturity of the CD.
- Thanks to the power of options, banks and brokerages can offer investors a product that looks too good to be true: You get the appreciation of a stock index with very minimal risk of losing any of your principal. These CDs can be great products for investors who are highly risk averse or who want to try to improve the returns on their portfolio but simply can't afford capital losses.
- There are some bull CD products that promise twice the return on the index if the index rises—or possibly even more. These products work the same way as normal bull CDs, but they multiply returns by purchasing more call options. They can afford to buy more call options because they invest your deposit in much riskier loans. Therefore, you should stick with the plain products that simply offer the gain on the index with no multiplier, and never buy a bull CD that doesn't promise to return your full deposit if the index goes down.

Important Terms

call option: The right to buy an asset.

covered call: A type of options investment that is a combination of a stock and a call option that you can use to enhance your returns on stocks that you own.

financial option: The right to buy or sell a particular asset at a preagreed price on or before a certain date.

index option: Options on futures contracts on stock indexes.

option: A contract that gives its buyer the right, but not the obligation, to take some action—which usually involves buying or selling something.

put option: The right to sell an asset.

stock option: The right to buy or sell shares of a particular company.

structured product: A product that combines different financial instruments into a new one or that slices the payments from a financial instrument in new ways.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 15.

Hull, *Fundamentals of Futures and Options Markets*, chap. 10.

Wooley, “Squeeze Your Portfolio Harder.”

Questions to Consider

1. On a free financial website, find the price of a call option that expires in 2 or 3 months from now on a company that interests you. Compare the strike price of the call option to the current market price of the stock. Then, find a chart that shows how the price of the stock has behaved recently. (Most free financial websites will show such charts.) Given the behavior of the stock price, how likely do you think it is that the stock price will rise (further) above the strike price of the option?
2. Suppose you are currently holding 100 shares of a stock that has a current market price of \$50. Suppose you look up the options prices and find that there are call options trading on your stock that expire 3 months from now with a strike price of \$55. How large of an option

premium would it take for you to be interested in selling 100 covered call options on your stock if the stock has been trading between \$48 and \$53 for the past year? What if the stock price was \$40 a year ago but has been steadily rising during the past year?

Real Estate and Commodities

Lecture 18

In this lecture, you're going to learn about investing in 2 of the most popular tangible assets: real estate and commodities. As a result of this lecture, you might decide to look into using REITs, or mutual funds that invest in REITs, as a way to invest in real estate. The income-producing potential of real estate combined with its diversification benefits make it a great choice for everyone's portfolio. On the other hand, you should be prepared for a wild ride if you decide to add any commodities to your portfolio.

Mortgage-Backed Securities

- In the case of regular bonds, the payments on the bond come from the borrower's income. For example, companies pay their bond payments out of the money that they earn from operations, and governments pay their bond payments out of the tax revenues they raise. Corporations that issue mortgage-backed securities pay their bond payments out of mortgage payments that are made by homeowners.
- A **mortgage-backed security (MBS)** is a special type of bond that is issued by a special corporation that buys and holds hundreds or thousands of mortgages. Each month, the borrowers on these mortgages send in their mortgage payments, and these payments ultimately get sent to the corporation that holds the mortgages. This company then pays out almost all of the cash to the holders of the mortgage-backed securities—but at 6-month intervals, like the payments on a regular bond. The company organizing the mortgage-backed security keeps a small portion of the incoming mortgage payments to cover its expenses, which are small, and to compensate the owners of the company for their efforts.
- Therefore, holders of mortgage-backed securities are entitled to receive some slice of the mortgage payments of hundreds or

thousands of homeowners, and there are a couple of different ways that mortgage-backed securities transmit the cash to the holders of the securities. The simple way is called a pass-through security, in which the special corporation organizing the MBS simply passes the mortgage payments on to the bondholders—after taking out a small cut, of course.

- The other way to organize an MBS is to use the collateralized debt obligation (CDO) structure. The CDO divides its payments into several different sets, called tranches, which differ according to the priority of the claim that each one has on the mortgage payments and the share of the total promised mortgage payments that each tranche is entitled to.
- If you have the highest priority claim on the mortgage payments, which is called the AAA or supersenior tranche, then you get paid off first—and whatever is left after you've been paid is then paid to the next people in line.
- In the CDO, different investors receive different sets of payments while in a pass-through security, every investor gets the same thing. Additionally, in a CDO, the first people in line have an excellent chance of getting everything they're entitled to while the people at the end of the line are virtually guaranteed to suffer some losses.
- Beginning in 2007, mortgage-backed securities got a terrible reputation because many MBSs organized in CDO form were stuffed full of subprime mortgages that defaulted in record numbers.
- Not only is there a big difference between pass-through securities and CDOs, but there's also an equally big difference between so-called private-label MBSs and the MBSs that carry a guarantee from a government agency or government-sponsored enterprise.
- Pass-through mortgage-backed securities really can't hold subprime mortgages because the default rate on subprime mortgages is too high for most investors' comfort. Only CDOs, which concentrate

the default risk in the lower tranches, which are the last in line to receive payments, can work for subprime mortgages.

- Furthermore, there are plenty of mortgage-backed securities that carry a government guarantee. If you're looking for safety, the MBS that is arranged by Ginnie Mae, the Government National Mortgage Association, carries a double government guarantee. This means that the interest paid on Ginnie Mae's MBS is almost the same as the rate on government bonds of the same maturity.
- The safety of investing in government-guaranteed MBSs can take away some of the benefits of investing in real estate. The returns on these safe mortgage-backed securities are not going to rise and fall much with the property markets. This means that you'll not only miss out on higher returns, but you could also miss out on some potential diversification benefits.

Real Estate

- An investment that is more closely connected to real estate markets than government-guaranteed MBSs is the **real estate investment trust (REIT)**, which is similar in its organization to a closed-end mutual fund. It's a company that sells shares to investors once, at the beginning of the fund, and then uses the proceeds to invest in a portfolio of real estate assets. The shares of the REIT trade on stock exchanges—just as shares of closed-end mutual funds do.
- The main difference between REITs and closed-end mutual funds is that REITs are required to pay out at least 90% of their income as dividends to the shareholders. This means that REITs can be attractive for their dividends as well as for the possibility of capital gains. The capital gains on REITs have tended to be modest, so the returns on them have primarily been delivered through the dividends they pay.
- There are 2 main types of REITs that you should be aware of. The main type of REIT is the **equity REIT**, which invests directly in real estate—buildings and land. Equity REITs buy buildings

and manage them, or even develop real estate projects and manage them.

- **Mortgage REITs**, on the other hand, invest in mortgages and mortgage-backed securities. Either type of REIT investment is fine in principle, but mortgage REITs tend to be highly leveraged, and because of this, they also have to devote a lot of attention to hedging the interest rate risk that comes with being highly leveraged. Therefore, mortgage REITs are not recommended investments—unless you feel comfortable evaluating and monitoring highly leveraged investments.
- Usually, equity REITs use leverage as well, but they do so at much lower rates. One of the things that you need to check before you invest in an equity REIT is its leverage ratio: If a REIT has debt of more than $\frac{2}{3}$ of the value of its assets, then you should pass it up in favor of another REIT with a lower debt-to-assets ratio.



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Many people invest in real estate by buying and renting out residential properties.

- The other thing that you'll want to pay attention to is the type of property that the REIT intends to invest in. The type of property, and of course its location, will determine a lot about the returns on the REIT, so you need to do your homework by investigating what the REIT actually holds.
- In addition, you should keep in mind that the REIT is going to manage properties, and it will make money by collecting rent,

which will change as economic conditions change. Additionally, if a REIT owns buildings that have longer-term leases, then its income will be less sensitive to changes in the local economy where the buildings are located.

- If you're not excited about the prospect of researching a large set of REITs and trying to choose one or more, then you can invest in a mutual fund or ETF that buys REIT shares. In fact, this is not only a good way to go for U.S. REITs, but it's also probably the best way to go if you want to try some foreign real estate investments.
- Another interesting real estate investment is timberland. The attraction of timberland is very similar to REITs; it can offer an attractive dividend and diversification opportunity. Companies called timber investment management organizations (TIMOs) are big players in this business. Unfortunately, the minimum investments in many TIMOs are quite large—typically at least \$1 million. However, you can buy into a timber ETF that holds shares in many TIMOs.

Commodities

- Real estate isn't the only tangible investment. One category of physical investments that used to be only the realm of specialists is commodities. It's now easier than ever to invest in commodities, but ease of investing doesn't automatically make commodities a great investment.
- Stocks, bonds, and real estate all either promise explicit income to the investor, or they promise growth that leads to increased value in the future. However, commodities don't do either one of these things. For example, if you buy a million gallons of unleaded gasoline, it won't pay you any dividends or grow into more gasoline. Therefore, commodities shouldn't be a standard part of anyone's portfolio—unless there is a compelling reason to include them.

- There are 2 possibly compelling reasons that you'd want to invest in commodities. The first reason is that commodities could be an inflation hedge. When the general price level rises, this means that most prices rise—but not necessarily all of them. Therefore, if you're looking for an inflation-hedge investment, you need to find commodities that tend to rise right along with the price level.
- This tends to be the main problem with investing in commodities as an inflation hedge. The total picture seems to indicate that most commodities just don't have a close enough link to the price level to be considered great inflation hedges—outside of the times when inflation is already a problem.
- The second reason that you might want to invest in commodities is because you believe that there's a long-term trend toward higher commodity prices. This involves global economic growth, especially in emerging market economies such as Brazil, India, China, and many others. As these economies develop, they'll demand more energy and raw materials that go into producing goods and services, and as the people in these countries move up the income ladder, they'll demand more luxury goods that consume more commodities.
- Most international organizations that deal with economic development, such as the International Monetary Fund, predict that economic growth in emerging markets will be much higher than in the industrialized world for some time to come. This means that these economies will continue to increase their demand for commodities, which will push prices of energy, minerals, and other commodities higher and higher.
- If you think that long-term economic development will lead to increased demand for commodities, then you need to consider which commodities are especially likely to be in high demand and short supply over the coming decade or longer. This is tricky because when the price of a commodity rises significantly, everyone suddenly scrambles to figure out how to make more of

it, and supply will increase over time. Sometimes the increases in supply will overtake the increases in demand, and the commodity price will fall rather than rise.

- On the other hand, there may be tremendous opportunities for people who can anticipate how the tastes of people in emerging markets will change as they move up the income ladder.
- No matter which motivation you have for investing in commodities, if you want to invest in them, you're going to have to do a lot of research. If you think that commodities will give you good inflation protection, then you'll have to find the commodities that currently do the best job of keeping up with prices, and if you're going to invest in commodities as a bet on growth, then you'll have to keep up with the developments in the global markets for the commodities you'd like to invest in.

Important Terms

equity REIT: A type of REIT that invests directly in real estate—buildings and land.

mortgage-backed security (MBS): A special type of bond that is issued by a special corporation that buys and holds hundreds or thousands of mortgages.

mortgage REIT: A type of REIT that invests in mortgages and mortgage-backed securities.

real estate investment trust (REIT): A company that sells shares to investors once, at the beginning of a fund, and then uses the proceeds to invest in a portfolio of real estate assets.

Suggested Reading

Hough, “REITs, Don’t Fail Me Now.”

National Association of Real Estate Investment Trusts, “All about REITs.”

Pleven, “The Case against Commodities.”

Questions to Consider

1. The National Association of Real Estate Investment Trusts (NAREIT) maintains a directory of publicly traded REITs at <http://www.reit.com/IndividualInvestors/PubliclyTradedREITDirectory.aspx>. Go to this site, find one of the listed REITs, and find its real estate investment strategy as well as its current dividend information, including its dividend yield. Would you consider investing in this REIT based on this information?
2. Using a free financial website, find the ETF for a common investment commodity like oil, gold, gasoline, or natural gas. What exactly does this ETF invest in?

Cycles and Market Timing

Lecture 19

In this lecture, you'll learn about the role of economic cycles in financial markets and what they mean to you as an investor. You'll learn about 3 important cycles that affect the financial markets, and you'll learn whether the existence of these cycles means that you can—or should—try to time your investments according to these cycles. In fact, the markets will cycle, but the long-run trend moves steadily upward. In order to take full advantage of market cycles, the best strategy is to use dollar-cost averaging and to remain invested in the market over the long term.

Price Cycles

- Most financial markets seem to go through periods of generally rising prices and optimistic sentiment about future prices that are followed by periods of widespread decline in prices and investor pessimism. A **bull market** is a market in which bonds and other securities are rising in value; a **bear market** is a market in which bonds and other securities are declining in value.
- The existence of bull and bear markets leads investors to try to time their buying and selling of stocks and other securities. According to market timers, the best times to buy are at the ends of the bear markets and the beginnings of bull markets because at those times, the market prices are relatively low and are on their way up. The time to sell is at the end of the bull market when prices are peaking.
- The problem is knowing when a bull market is ending or a bear market is beginning. Prices don't rise smoothly during bull markets or fall smoothly during bear markets; they bounce up and down from day to day. While it's true that in a bull market the increases in price outweigh the decreases, even in the middle of a bull market, there can be some pretty big market losses.

- However, there is an investment strategy that tries to figure out whether price trends will continue or reverse called **technical analysis**, which uses information in prices as well as in the volume of trading to make predictions about future price movements. This strategy relies heavily on examining charts and graphs of stock prices.
- There are many different technical analysis tools, but there are 3 that are the most common. One of the hallmarks of technical analysis is the charts and graphs that analysts make. These charts and graphs often track moving averages of prices over time. Moving averages are tools that help reveal the trends in a set of data because they smooth out the short-term bumps. If the actual daily price rises above sets of moving averages, this is a bullish sign that the price will continue to rise; if the price falls below moving averages, it's a bearish sign.
- In addition to charts of moving averages, technical analysis uses data on breadth and trading volume. The breadth of the market is the number of companies that gain in value during some period of time minus the number of companies that lose value during that period. The stronger the breadth on the side of the gainers, the stronger the bullish signal is, and the stronger the breadth on the side of the losers, the stronger the bearish signal is.
- Finally, the traders' index (TRIN) is a ratio formed by taking the average number of shares traded of the companies whose prices fell and dividing this by the average number of shares traded of the companies whose prices rose. If the TRIN is greater than 1, it's a bearish signal to investors; if the TRIN is less than 1, it's a bullish signal.
- These technical analysis tools are intended to identify existing trends in prices and also to predict when the trends are about to reverse. The studies that find some benefit of technical analysis tend to find that the benefits are so small that they are more than

offset by the increase in trading costs that you would incur if you let technical analysis tell you when to buy and sell.

- One of the big problems with technical analysis is that its predictions always look better in hindsight. That is, once you see how the market actually performed, it's easy to find patterns in the prices. It's much harder to make a successful bet before you know whether there really is a trend or just a false signal of a trend.
- Another type of price cycle that would be beneficial to be able to detect is a price bubble. When an economist wants to test whether an asset price has a bubble in it, the economist first has to assume some fundamentals-based model of the asset's value.
- If an economist finds a bubble in the price of an asset, he or she can't be sure whether there actually is a bubble or whether his or her fundamentals-based model of the price of the asset is wrong. Because there aren't any reliable tests for bubbles, investors tend to use other measures of value as well as their own intuition about what's happening in the markets.
- If you really think there's a price bubble in some market, you should try to stay out of it until you're sure the bubble has burst or until you're sure you were wrong about the bubble. In the meantime, find other good investments for your savings.

Business Cycles

- The **business cycle** is the cycle of expansion and recession that characterizes our overall economy. The typical business cycle tends to last about 4 years, and we spend a little over 1/2 the time in expansion and the rest in recession.
- Regardless of the length of the business cycle, it has definite impacts on the markets for various investments. Stocks are especially sensitive to the business cycle because corporate earnings react strongly to the state of the overall economy. However, the flow of credit to business and the risk of default also depend on the state of

the business cycle, so bond returns also vary significantly over the business cycle.

- Many companies' fortunes are so strongly tied to the business cycle that they're referred to as **cyclical companies**. These are the manufacturers and distributors of big-ticket consumer items like cars, appliances, and furniture. Some investors try to move investments into these industries when the business cycle turns up and move investments out when the recession comes.
- A similar strategy involves luxury goods and lower-priced goods. During expansions, incomes are rising and people tend to buy more luxury goods or higher-priced name-brand versions of the products they buy every day—and this is reversed when the economy goes into a recession.
- During a recession, the rule of thumb is to sell off your investments in companies that make or market luxury goods or name brands and buy investments in companies that make middle-range or discount goods, store brands, and even generic products. When pursuing this strategy, make sure that your impression of a company and its products matches the reality of what people actually buy.
- It's also crucial to remember that stocks are priced based on future earnings and dividends, so stocks predict the turning points of the business cycle. Therefore, investors need to act ahead of time because stock prices recover and start to rise again before economic growth actually picks back up.
- Many investors who want to time the business cycle search for all kinds of interesting macroeconomic data that are hopefully the earliest leading indicators. The idea is that these special indicators can reveal business cycle turning points even before most companies experience them. If you can rearrange your portfolio before the rest of the market realizes what's going on, then you could generate good returns.

- Of the many indicators that exist, there are 3 that are especially interesting. First, there's the price of copper, which is still a staple good in most manufactured products because everything runs on electricity. Because of this, the price of copper rises and falls as businesses expand and contract their production. Additionally, because copper is an input, its price will start to rise well in advance of an upturn in the economy—and fall in advance of a downturn.
- A second indicator is the Job Openings and Labor Turnover Survey (JOLTS), which is published each month by the Bureau of Labor Statistics and gives a much more in-depth picture of the labor market than the unemployment rate does. Because of the unique data it gathers—including whether people are quitting or being laid off from work—the JOLTS can help people spot emerging trends in the labor market whose impacts won't be felt in the overall economy for a while.
- Finally, an indicator that shows just how arcane these indicators can be is the sales of corrugated cardboard boxes. The idea is that big-ticket merchandise is all shipped in large cardboard boxes and that the demand for cardboard boxes increases when companies anticipate that they'll be selling more of these items.



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The invasion of the real estate market by inexperienced investors might be a signal that a bubble has formed.

Interest Rate Cycles

- Interest rates tend to vary over the business cycle, but they march to a slightly different beat because of the large influence that our central bank, the Federal Reserve, has on interest rates and credit. The Fed is responsible for 2 things: to fight inflation and to help the

economy maintain high employment and robust growth. As a result, sometimes the Fed's actions are motivated by fears of inflation, and at other times, its actions are intended to stimulate the economy.

- When the Fed takes action in the financial markets, it does so in ways that raise and lower the cost of borrowing. This, in turn, affects the returns on other assets like stocks. Therefore, whenever the Fed takes strong action against inflation, borrowing costs go up rapidly and credit shrinks. On the other hand, when the Fed tries to stimulate the economy, interest rates fall and credit becomes easier to get.
- The influence of the Fed on the economy is always debated, but its impact on the financial markets is strong: When the Fed makes interest rates go up, prices of financial assets tend to fall, and when the Fed makes interest rates fall, asset prices tend to rise.
- The problem is that are thousands of professional investors who are already watching the Fed—and all the other economic indicators. Most importantly, these other investors are already adjusting their portfolios to reflect their beliefs about the future of interest rates and of the business cycle.
- Even though that there are some strong cycles in the financial markets, trying to use them to time the market isn't worth your trouble. The signals that these cycles give on a day-to-day basis aren't clear enough to be reliable.
- The best strategy to use, therefore, is **dollar-cost averaging**, which involves investing a certain amount of money each month and staying fully invested in the market at all times. If you do that, your investing will naturally tend to smooth out many short-term—and even long-term—bumps and dips in prices. The average cost of your investments will end up on the lower side of the range, which gives you a good chance to earn solid returns over the long term.

Important Terms

bear market: A market in which bonds and other securities are declining in value.

bull market: A market in which bonds and other securities are rising in value.

business cycle: The cycle of expansion and recession that characterizes our overall economy.

cyclical company: A company that is strongly tied to the business cycle because it is a manufacturer or distributor of big-ticket consumer items like cars, appliances, and furniture.

dollar-cost averaging: A strategy that involves investing a certain amount of money each month and staying fully invested in the market at all times.

technical analysis: A type of analysis that uses information in prices as well as in the volume of trading to make predictions about future price movements.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chaps. 9 and 12.

Zweig, “Why Buying on the Dips Isn’t All It’s Cracked Up to Be.”

Questions to Consider

1. One of the things that technical analysis is known for is finding meaningful patterns in price charts that supposedly predict price increases or decreases. One of the best known of these patterns is the head and shoulders formation. Do an Internet search for the term “head and shoulders formation” and read a few articles on this famous pattern. What is it supposed to predict? Do you believe that it works? If so, do you think you could identify such a pattern in time to benefit from it?

2. The National Bureau of Economic Research (NBER) is responsible for designating the start and end of business cycles. Its complete list of American business cycles can be found at <http://www.nber.org/cycles/cyclesmain.html>. Go to this website and look at the information about the most recent business cycle. Are we currently in an expansion or a contraction? Given that the average cycle is between 5.5 and 6 years long, are we due for a change from expansion to contraction or vice versa? How does the current phase of the business cycle affect your investment plans?

Deciding When to Sell

Lecture 20

In all the previous lectures, you've been learning about buying. However, once you buy various types of investments, you're eventually going to have to sell them—if for no other reason than needing to convert them to cash one day. Knowing when to sell an investment is just as important as knowing what to buy. It turns out, though, that making the decision to sell an investment can be difficult. In this lecture, you'll learn about the different reasons you'd want to sell your investments so that you can formulate a selling plan that includes setting targets and annual rebalancing.

Selling Assets: Falling Prices

- Behavioral economists have developed a special term for the main problem that people have when they should be selling an investment called the **disposition effect**, which states that people hate to sell losing investments—they'll hold on to them for years, hoping that some miracle will push the price back up to what they paid.
- Behavioral economists also say that people tend to sell winning investments too quickly, but it also seems likely that people are reluctant to cash out a big winner because it may still go up in value.
- Either way, it seems that our emotions can get the better of us when it comes to selling our investments, and the only effective way to mitigate this emotional influence is to have a plan in place that tells you when you're going to sell.
- The key to selling individual assets—as opposed to index mutual funds and ETFs—is to have a plan in place that provides discipline that you can live with. The guidelines that you should follow are based on the following principle: If you're going to buy and hold an individual asset, you should have a pretty compelling reason to hold it, and if you don't, you should sell the investment. The

way that you should implement this principle is to translate it into concrete numbers.

- There's a similar principle for actively managed mutual funds you may invest in. Presumably, you invest in an actively managed mutual fund because you expect it to deliver some kind of solid return over the long term—for example, 8% per year. As long as the mutual fund delivers this average return, you should keep holding on to it. If it doesn't, then you should sell your shares and move your money into a different investment.
- In general, however, don't rush to sell shares in a mutual fund just because of 1 year of bad performance. If the fund has 2 really lackluster years in a row or delivers inconsistent returns over several years, start your investigation. Sometimes the entire market isn't doing well, and your fund is actually doing better than others at holding on to its value; if that's the case, there's not much reason for selling.
- If you buy a stock because you think the price will go up—that is, because you expect capital gains from it—then set some kind of a target that would cause you to reevaluate the stock. For example, set a target of a 25% increase in price.
- For most stocks, if they increase significantly in a relatively short period of time, then they probably won't continue increasing in that manner. However, sometimes you'll find stocks that have a really large potential for continued appreciation, and you'll want to keep hanging on to those shares.
- In addition, you should set a target for reevaluating if the price falls. However, in this case, you should set the target at a smaller loss—10%, for example. At this point, you'll want to sell some investments, but you might continue to hold others if you really think the price will rebound—but if the price drops more, then you'll sell it.

- Some successful investors set targets based on the gains or losses in the overall market, rather than on their individual investments. The good thing about this strategy is that it imposes discipline on your buying and selling, but relying on the overall market is a bit too much like trying to time the market.
- In order to have the flexibility to hang on to investments that go on impressive runs, you have to be honest with yourself. It even helps to have a spouse or friend to bounce ideas off of and to defend your decisions to hang on to them.

Asset Allocation

- **Portfolio allocation** refers to the way in which you divide your investments across different investment categories. There are 2 dimensions along which you'll want to think about portfolio allocation. One dimension is the type of investments you want to hold. The second dimension is geographic—how much you want to invest in the United States, or your home-country market, versus other markets around the world.
- However you decide to divide your allocation choices, it's helpful to represent the options in a table: For example, let the rows correspond to the different geographic options and the columns to the different instruments. The key is to make your table as simple as you can while still reflecting the allocation options that are important to you.
- Once you have a table, you should fill in the boxes you've created with numbers that represent the share of your portfolio



An ideal portfolio does not exist; you should adjust your allocation goals to suit your needs.

you want to hold in each of the various assets. How you decide to allocate your portfolio across these 2 dimensions depends on your preferences and beliefs.

- The most important preference is risk aversion. The safest asset you can invest in is cash held in the United States, but there are plenty of very safe investments available. In other words, you don't have to put all your money into government bonds; there are ways to get the benefits of higher returns and diversification while still having a pretty safe portfolio.
- The belief that makes the biggest difference in how you invest is how efficient you believe the markets are. The more efficient you believe they are, the more of your portfolio you should be investing into broad indexes that mimic the makeup of the entire financial market.
- The financial market is composed of many different assets, and much of the market is held outside the United States. If you take market efficiency seriously, then you technically want your portfolio allocation to mimic the actual allocation of the entire global market.
- However, there are some good reasons not to do that. Remember that just because a foreign market is large, it doesn't mean that it's efficient or even safe for investing. This is mainly true for emerging markets, but even established markets in Europe and Asia have different practices and different degrees of efficiency.
- Many people miss out on great opportunities by allocating too little of their savings to foreign assets. There is tremendous growth potential in many emerging economies, which translates into great growth opportunities in their financial markets as well. Therefore, it might be a good idea to put up to about 1/3 of your portfolio in foreign assets.
- If you're not such a strong believer in efficient markets, then you can put more of your savings into individual assets and actively

managed mutual funds that you think will beat the market return. However, the more of these assets that you put in your portfolio, the more frequently you'll want to check them—and the more time you'll need to spend looking for the next round of investment candidates. This can be fun to a certain extent, but it can also become a huge chore.

- All investors should include at least some investments that they think will beat the market and at least some that track the market.
- The last asset allocation issue to keep in mind is the relative return. Although it's tempting to keep all of your savings in extremely safe investments, these investments tend to have very low average returns. Most investment advisors, therefore, recommend that everyone invest a significant portion of their savings into stocks because their average returns have tended to be much higher than the returns on bonds over the long run.
- Stocks deserve a large allocation in your portfolio—even if you're close to retirement—for 2 reasons. First, if you have enough time, then stocks will deliver significantly higher returns than bonds over the long run.
- In addition, there are many safer options for stock investments. There are ways to stay invested in stocks so that you can keep the chance for good capital gains but at the same time earn steady income, such as using covered calls to improve the return on stocks.

Selling Assets: Portfolio Rebalancing

- The first reason to sell assets is because your investment falls in price or otherwise fails to perform as you expect it to, and rebalancing is the second reason that you'll want to sell.
- As time goes by, some of your investments will have great returns and really grow in value; other investments will grow only a little, and some will even lose value. This means that, after as little time

as a year, the asset allocations that you spent time agonizing over are completely unbalanced.

- If you don't occasionally readjust your portfolio, then the differences in returns that you will receive over time will gradually reshape your portfolio into something you don't recognize. Your portfolio could increase its sensitivity to assets you don't want much exposure to, and it could become concentrated in a few assets. Both of those situations could lead to nasty surprises.
- Therefore, you should recheck your allocations at least once a year and rebalance your portfolio. This includes selling off parts of the investments that now take up a larger share of your portfolio than you like and using the money to buy more of the investments that have become underrepresented.
- When you rebalance your portfolio, you'll end up selling portions of the assets that have gained the most and buying more of the assets that have had the lowest returns. Therefore, if you're disciplined about rebalancing, then you don't have to feel as bad about giving up market timing.
- Economists have found that portfolio rebalancing can add a few tenths of a percent of return to your investing if you stick to it, and this small percentage can make a significant difference over the long run.
- Of course, your target allocation for your portfolio won't necessarily stay the same over time. In fact, most experts recommend that you change your allocation significantly as you get older and closer to your investing goals.
- In particular, everyone should increase the share of their savings in low-risk assets like government bonds as they get closer to needing the money they've saved. You don't want to be in a position where you need to spend cash tomorrow, but a market crash wipes out

your savings today. However, as always, what looks good on paper is much harder to do in real life.

- Each year, when it comes time to rebalance your portfolio, this is your chance to cash out some of the gains you've made from your investments and put that cash into bonds.

Important Terms

disposition effect: An effect that describes the notion that people hate to sell losing investments—they'll hold on to them for years, hoping that some miracle will push the price back up to what they paid.

portfolio allocation: The way in which you divide your investments across different investment categories.

Suggested Reading

Bogle, *Common Sense on Mutual Funds*, chap. 3.

Stewart, "Breaking Up Is Hard to Do."

Swensen, *Unconventional Success*, chap. 6.

Questions to Consider

1. Without looking at your actual investment portfolio, guess what its allocations are across asset classes and across geographic regions. To keep things simple, use only 3 or 4 asset classes such as bank deposits (and money market mutual funds), stocks (and stock mutual funds), bonds (and bond mutual funds), and other investments. Then, divide the geographic regions into the United States, other developed markets, and emerging markets. Draw a table or create a table on a spreadsheet and fill in the boxes to the best of your memory. Then, compare your table to your actual portfolio's allocations. How did you do? Does your memory reflect the ancient past of your portfolio, the current reality, or wishful thinking about the future of your portfolio?

2. Similarly, look through the recent performance of your investments for big gainers and for big losers. Is it time to sell one or more of your big gainers? If not, what is your compelling reason for continuing to hold each investment? Is it time to sell one or more of your big losers? If not, what is your compelling reason for holding on?

Risk, Return, and Diversification

Lecture 21

Everyone seems to think that as you bear more risk, you'll earn a higher return, but this really isn't true. In fact, it's an oversimplification of the true relationship between risk and return. The truth is that some risks, called systematic risks, are highly rewarded while others, called idiosyncratic risks, are worth nothing. In this lecture, you're going to learn how the risk-return relationship frames your investment choices. Additionally, you'll learn that diversification is the best way to ensure that you earn the expected returns you are entitled to, given the systematic risk you take on.

The Risk-Return Relationship

- Investments are risky because their returns are random—they're determined at least partially by chance. However, returns are one of the most important factors in our investment decision. We have to find some way of guessing what the return on an investment will be so that we can make a good decision about whether to buy it.
- Our best guess of an investment's future return is called the **expected return** because if it's really our best guess, it represents the return we truly expect the investment to deliver. There are several possible ways to calculate the expected return on an investment, but the most practical way is to use the average of past returns. The difficult part is deciding how much of the past you want to use in your average.
- The problem is that there are 2 opposing forces at work. Statistically, if everything else were equal, then you'd get the most accurate guess of future returns by using as many years of past returns as you can. However, everything else isn't equal. In particular, companies—and the entire economy—can change dramatically over time.
- We need to limit how far back we go in time when we calculate average returns. It's good to try to go back further than 10 years

into the past—perhaps even out to 20 years, over several different horizons—because using more returns in the average should allow the short-term ups and downs to cancel each other out, leaving a clear picture of the long-term average return over the full range of market and economic conditions.

- Once you've estimated an expected return, it's essential to realize that you can't think of the expected return like it's the actual return that you automatically earn every year. The expected return is an average return that you should expect to earn if you hold the investment over a long period of time.

Measuring Risk

- One way to sharpen our definition of risk is to say that it is the possibility of earning a negative return on our investment; it is the chance that our actual return will fall short of what we expect it to be.
- The actual return on an investment is the sum of the expected return and the unexpected return: $R_i = E_i + U_i$, where R is the actual return, E is the expected return, U is the unexpected return, and the subscript i references the type of asset that this is. The unexpected return could be positive or negative.



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- We now have a better picture of what risk is—**Financial economists have found that some risks are highly rewarded, but others are worth nothing.** getting a negative value for the unexpected return, U . However, we need to refine our measure of risk by adding in something specific about the size of the unexpected return, and we can do this in several different ways. An easy way is to use the range between the

highest and lowest returns within the set of annual returns to get a feel for the size of the unexpected return.

- By examining a list of annual returns, we can develop an idea of risk in terms of how bad things could get, but hopefully the really big losses are fairly rare. We'd also like to know what the average level of risk is in our investments—how big the unexpected return is when we have a bad year, but not a disastrous year, for one of our investments. This average level of risk, known as the **standard deviation of returns**, is how most professionals view risk.
- The standard deviation of returns is a useful concept that tries to measure the average size of the unexpected return, or in other words, how much the actual return could differ from the expected return on average. Most spreadsheets have a built-in function to calculate standard deviation, so if you have a list of annual returns, it's easy to calculate the standard deviation of the returns using this function.
- We can use the standard deviation of returns to form a range of average returns. To construct this range, we take the expected return and add the standard deviation of returns to it to get the top end of the range. Then, we subtract the standard deviation of returns from the expected return to get the bottom end of the range. Basically, 2/3 of all returns will fall within this range.

Diversification

- **Diversification** is the practice of investing in several or many different assets rather than only one or a few assets. One way that investors diversify is by investing in different kinds of assets—stocks, bonds, and real estate, for example. Additionally, there are great reasons to diversify geographically by investing in foreign stocks and bonds as well as domestic stocks and bonds.
- Diversification is fairly simple to implement in practice. You don't actually need to hold that many different assets to become fairly

well diversified. Additionally, there are many assets that already come prediversified—especially mutual funds and ETFs.

- Diversification isn't just about making sure that you limit your total loss by spreading out the risk; it actually reduces risk. For example, if the actual return is $R_i = E_i + U_i$ and you only have one asset—asset 1—then the actual return is going to fully reflect both the expected return and the unexpected return on asset 1.
- However, what if you added another asset, asset 2, to your investment portfolio? If you assume that $1/2$ of your savings are invested in each asset, then you can calculate the total return to your portfolio by adding the returns on both assets and dividing by 2. Then, your total return is given by this equation: $\text{portfolio return} = 1/2 \times (R_1 + R_2) = 1/2 \times (E_1 + E_2) + 1/2 \times (U_1 + U_2)$, where U_1 and U_2 are the unexpected returns from each asset.
- Each unexpected return may be positive or negative, or one may be positive and the other may be negative. When one is positive and the other is negative, then they tend to cancel each other out—at least a little. With only 2 assets, they will only cancel out part of their unexpected returns part of the time.
- The more assets you add, the more offsetting of unexpected returns you'll get. In other words, if you're holding many different types of assets, chances are that several of them have positive unexpected returns, but several others have negative unexpected returns. As a result, more unexpected returns will cancel each other out as you add more assets of different kinds to your portfolio, leading to actual risk reduction.
- However, there is a limit to diversification. Even if you have the most well-diversified portfolio, you will still experience unexpected returns because diversification reduces risk but can't eliminate it.
- There will also be problems if your assets really aren't as different as you thought. For example, if 2 companies seem different but

both companies' profits are heavily dependent on demand in China, then their returns could move together much more than you expect, including their unexpected returns.

- **Correlation** is the statistical term that describes this comovement. Diversification works better as the correlation between the assets' returns declines. This idea helps to explain the fact that even after you fully diversify, there will still be unexpected returns in your portfolio, driving the actual return away from the expected return. This is because there are 2 different types of risk in unexpected returns, and diversification only gets rid of one of them.
- The type of risk that diversification reduces, through this cancellation process, is called **idiosyncratic risk**, which is a risk that is specific to each particular asset and doesn't share anything in common with any other assets—it's not correlated across assets. When we increase the number of assets in a portfolio, we expect that, on average, the idiosyncratic risks will cancel each other out—that the actual return will get closer to the expected return.
- The other type of risk in the unexpected return is called **systematic risk**, which is a risk that is common across assets—meaning that when this risk creates a positive unexpected return in one asset, it's doing the same thing to all other risky assets. Systematic risk is risk that you can't get rid of through diversification.
- Economists still can't quite agree on what causes systematic risk. There are many ideas, but they all seem to be similar. Most theories about the sources of systematic risk involve risks to the overall economy, to the financial markets, or to both.
- Economists know that people are risk averse, but if you compensate them, they'll bear it. Additionally, if there's a risk that they have to pay to get rid of, they'll probably put up with at least some of it. However, if there is a risk that we can get rid of for free, no risk-averse person would pass up the chance to eliminate that risk.

- Diversification gets rid of idiosyncratic risk, and you don't have to pay extra to diversify your portfolio, especially if you choose a prediversified asset like a mutual fund. Therefore, there's no reason to expect compensation for bearing idiosyncratic risk.
- Systematic risk is the risk that you can't get rid of, so in order to induce a risk-averse person to hold an asset with systematic risk, they have to be compensated for that. The compensation comes in the form of a higher expected return from holding that asset—relative to an asset with no systematic risk.
- The relationship between risk and return is that higher systematic risk leads to higher expected return. You only get paid to hold systematic risk, not all risk, and you can only expect to get paid—you won't necessarily get all the compensation you demand. Of course, if you hold the asset long enough, then your actual compensation should come close to the expected return.
- There are many different theories about what determines investment returns, but they all agree that idiosyncratic risk is worthless while systematic risk is compensated. Furthermore, they all agree that any asset that has no systematic risk should earn the risk-free rate of return—the return on a government bond. Even an asset with a highly risky return should only earn the risk-free rate on average, if all the risk is idiosyncratic risk.
- Each different theory of returns is essentially a different story about systematic risk that explains what the sources of systematic risk are and how the risk is compensated. None of these theories has proven to do a much better job at estimating expected returns than using averages of past returns.
- Even though we don't know how much systematic risk is in any given asset, there's probably a fair amount of idiosyncratic risk in most investments. Therefore, it's imperative that investors take advantage of diversification. You'll earn nothing from holding

idiosyncratic risk in your investments, so try to get rid of as much as you can through diversification.

Important Terms

correlation: The statistical term that describes the comovement of 2 different companies' returns, including unexpected returns.

diversification: The practice of investing in several or many different assets rather than only one or a few assets.

expected return: The best guess of an investment's future return; represents the return that is truly expected to be delivered by the investment.

idiosyncratic risk: The type of risk in an unexpected return that is specific to each particular asset and doesn't share anything in common with any other assets; risk that you can reduce through diversification.

standard deviation of returns: A useful concept that tries to measure the average size of an unexpected return, or in other words, how much the actual return could differ from the expected return on average.

systematic risk: The type of risk in an unexpected return that is common across assets; risk that you can't get rid of through diversification.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 5.

Bogle, *Common Sense on Mutual Funds*, chap. 1.

Questions to Consider

1. Past returns may not give a good idea of the expected returns of a company if the company's business has changed dramatically. What companies can you think of whose businesses have changed dramatically in recent years? What are the sources of the changes? Do you think these companies' expected returns have increased or decreased as a result of the changes in their businesses? Why?
2. Diversification only works if the values of different investments move in different directions—that is, if the returns on different assets have low correlations. Do you think that correlations between different investments' returns change over time? Why or why not?

Time Value of Money

Lecture 22

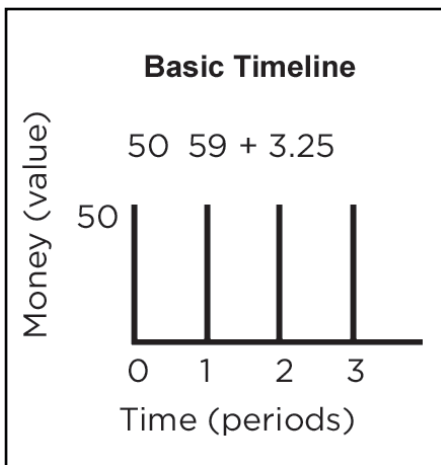
In the final 3 lectures of this course, you will be introduced to some essential skills that will help you turn your investing ideas into concrete actions. In this lecture, you'll learn 3 skills that are essential to making good decisions about investing: comparing returns across different investments, projecting the future value of an investment, and estimating a reasonable price for an investment. Additionally, you're going to learn to use time value of money tools—including the timeline, rate of return calculations, compounding, and discounting—that you'll need to take charge of your financial planning and investing.

Comparing Returns across Investments

- Suppose you buy a share of stock for \$50 and hold it for a while. One day, you check the price and see that it's gone up to \$59. In addition, the stock has also paid some dividends that you put in a bank account. The total value of the dividends is \$3.25, including interest, on the same day that you checked the stock price. Therefore, the total value of your investment when you checked the price is $\$59 + \$3.25 = \$62.25$.
- When you ask the question of what your return is so far, without caring much about how long you've been holding it, you're asking what the holding period return is on your investment. The holding period return, also called the **periodic return**, is the return you earn for holding an investment for 1 period, where the period can be any length of time. This is a very important way of calculating and quoting the rate of return on an investment.
- The first step in calculating the periodic return on your investment is simply to visualize what's going on. To help with this, we will apply a few of the most useful tools in investing that are called time value of money tools. The first tool we'll use is the timeline, which is simply a line you draw to show the amount and timing of income

and expenditures. It can also show how much something is worth at a point in time.

Figure 22-1



- Draw a line and divide it up into units of time—years, months, days, or whatever time period you want to use. We usually start the timeline at time 0, which we think of as now, or the start of some investment project that we’re considering. Time 1 is 1 period from now, and time 2 is 2 periods from now, and so on. You can number the periods below the timeline and write in the amount of money coming in or going out above the timeline.
- Start by assuming that you buy the stock at time 0, and check the value of the stock and the dividends at time 1. The length of time between time 0 and time 1 is completely arbitrary for now. Continuing with this example, you should have the value of \$50 at time 0, the stock price of \$59, and the dividend of \$3.25 all added together at time 1. The total value is the value of the stock plus any dividends.
- Because you want to be able to think about the general definition of the periodic rate of return, you can redraw this investment using P for the price of the share and D for the total value of the dividend, using subscripts to denote the time. For example, you buy the stock at price P_0 , and when you check the price of the stock at time 1, the price is P_1 . Also, the total value of the dividends that have been paid between time 0 and time 1 is D_1 .

- To calculate the periodic return, take the total value of your investment at the end of the period, which is \$62.25, and subtract what you paid for it: \$50. This gives you the dollar value of your periodic return, which is \$12.25.
- In general, the dollar value of the periodic return is $P_1 + D_1 - P_0$. Grouping the P 's together, you get $P_1 - P_0 + D_1$ as your dollar return. This rearrangement shows that the periodic return on any investment is the sum of 2 parts: the change in the price of the investment—called the capital gain, which can be positive or negative (capital loss)—and the income paid by the investment, which is the dividend.
- On the example stock investment, the capital gain is \$9, and the dividend is \$3.25. Therefore, the periodic return in terms of money is $\$9 + \$3.25 = \$12.25$. To express the return as a percentage of what you paid for the investment, first divide the dollar periodic return by your starting price to convert it to a decimal: $\$12.25/\$50 = 0.245$, or 24.5%.
- The fraction $(P_1 - P_0 + D_1)/P_0$ gives your return between now and time 1. This return is a periodic rate of return because it's the return over a single period of any arbitrary length. In general, you can measure the return between any 2 points in time, t and $t + 1$, by using the formula $r_{t+1} = (P_{t+1} - P_t + D_{t+1})/P_t$.
- If you plug the numbers from the example into the definition of the periodic return, the calculation is: $r_p = (\$59 - \$50 + \$3.25)/\$50 = 0.245$, or 24.5%—just as you found with the earlier equation.
- The advantage of the periodic rate of return is that it's the correct way to measure a return over any length of time. You can use periodic rates of return to calculate how much interest you've earned, or how much you owe, during any period. The drawback of periodic rates is that it's difficult to compare periodic rates of return to each other unless the periods are exactly the same length.

Projecting the Future Value of an Investment

- Suppose you want to know what this stock investment will be worth 5 periods from now, assuming that the periodic rate of return is 24.5%. To answer this question, we need to use another time value of money tool called **compounding**, which describes the fact that if you leave money in an investment, the interest earned during 1 period will start to earn its own interest in subsequent periods.
- To illustrate how compounding works, let's say that you put \$1 in a bank account today. Then, after 1 period, the account will be worth $1 + r$ dollars, where r is the periodic rate of interest paid by the bank. Compounding works for any number of periods: If you put \$1 in the bank today and leave it in there n periods, then the value of the account at time n —that is, n periods from now—is $(1 + r)^n$ dollars.
- **Future value** is the value of an investment, or a debt, at a future date n periods from the current time. If you know the periodic rate of return on an investment, you can forecast what its future value is by applying this compounding formula: $FV_n = (PV)(1 + r_p)^n$, where FV stands for future value at time n (that is, n periods from now) and PV stands for present value—which is what something is worth now, at time 0. The r_p is the periodic rate for whatever compounding period is used to calculate your returns.
- Using your original investment, you can apply the future value formula to calculate a future value, assuming that the investment keeps up the periodic rate of return of 24.5% for 5 more periods: $FV = \$62.25 \times 1.245^5 = \186.20 .
- Using the same numbers you started with, you can also calculate return in terms of years. For example, what's your return per year if the stock price went up from \$50 to \$59 and you earned a total of \$3.25 in dividends in 3 years?
- The present value of the investment is \$50, and the future value of the investment is \$62.25. You also know n , which is 3. You don't

know r_p , but you want to find it by using the future value formula: $62.25 = 50 \times (1 + r_p)^3$, which leads to $r_p = 0.0758$, or 7.58%.

- Because we're assuming that the length of the periods are measured in years, that means that r_p is an annual rate—but it's actually the average annual rate, or the compound average annual rate. The average annual rate of return is the rate of return that you effectively earn on an investment each year, assuming that this return stays the same and is compounded each year. Many people also call this an effective annual rate of return or a compound average rate of return.
- The equation $(1 + r_p) = (1 + r_{AAR})^n$ allows you to convert back and forth between periodic rates of return and the equivalent average annual rates of return. In this equation, n is the length of the period—measured in years. In other words, if r_p is the periodic rate for 1 day—a daily rate—then n equals 1/365.
- This formula is important for being able to compare rates of return between different investments. Although some investments will tell you their average annual rate of return—mutual funds, for example—many times you can't find that information directly, so you'll have to use the formula to convert the periodic returns to average annual returns and then compare the average annual returns.

Estimating a Reasonable Price for an Investment

- Suppose someone wants to sell you a bond that promises to pay you \$10,000 6 years from today. You know that the average annual rate of return on this bond is 4% per year. How much would you be willing to pay for the bond now?
- Because you know the future value and the rate of return but don't know the present value, you can use the future value formula, but you'll have to solve it for the present value: $PV = (FV)/(1 + r)^n$. To find the present value of an investment, divide by the compounded rate of return. This operation is called **discounting** because it shows

that the present value is going to be less than the future value of the investment—for any positive rate of return.

- Discounting is one of the most powerful tools in finance; it gives you a way to find the value today of something that is promised to you in the future. In finance, the price of any investment today should be equal to the sum of the present values—the discounted values—of all its future payments.
- To find the price of the example bond, you can use the discounting formula: $PV = \$10,000/1.04^6 = \7903.15 .
- If someone wants to sell you a bond that makes 2 different payments on 2 different future dates, you can find the present value of each payment separately and then add the 2 present values together. The sum will give you the total present value of the bond. The present value of a set of payments is always equal to the sum of the present values of each payment calculated separately.

Important Terms

compounding: A time value of money tool that describes the fact that if you leave money in an investment, the interest earned during 1 period will start to earn its own interest in subsequent periods.

discounting: A time value of money tool that is used to find the present value of an investment by dividing the future value by the compounded rate of return: $PV = (FV)/(1 + r)^n$.

future value: The value of an investment, or a debt, at a future date n periods from the current time: $FV_n = (PV)(1 + r_p)^n$, where FV stands for future value at time n (that is, n periods from now) and PV stands for present value—which is what something is worth now, at time 0. The r_p is the periodic rate for whatever compounding period is used to calculate your returns.

periodic return: The return you earn for holding an investment for 1 period, where the period can be any length of time.

Suggested Reading

Berk and DeMarzo, *Corporate Finance*, chap. 4.

Brealey, Myers, and Allen, *Principles of Corporate Finance*, chap. 2.

Questions to Consider

1. If you buy a share in a mutual fund for \$42 and 6 years later it is worth \$73.30, what is your average annual rate of return on this investment?
2. Suppose there is a 3-year bond that pays 6 \$150 coupons every 6 months and a \$10,000 principal payment at the maturity of the bond. If the market rate of return on the bond is 4.5%, then the price of the bond is \$9583.41, rounding to the nearest penny. Can you show, by discounting the 6 payments that the bond makes (\$150, \$150, \$150, \$150, \$150, and \$10,150) at the periodic rate of 2.25%—remembering that for bonds, you divide the quoted rate by 2 to get the periodic rate—per period, that this is the correct price of the bond?

Financial Planning

Lecture 23

In this lecture, you're going to use the time value of money tools you learned in the previous lecture to do some financial planning, which can help you answer some of the big financial questions you might have, such as how much money you should be investing now for retirement. The calculations you'll learn to apply in this lecture are the kinds of calculations that you'll want to do every so often to check on the progress of your investments—so that you can decide whether you need to make adjustments to your strategy.

Financial Planning for Retirement

- Financial planning is one of the key first steps that you need to take when you start investing. Good financial planning helps you see the full range of financial possibilities for your life.
- Financial planning comes down to one basic task: finding a balance between the amount of money you need to reach a particular financial goal and the value of your investments. There is an equation that is used to guide financial planning, which states that the amount of money needed at some point in time is equal to the value of the investments at that same point in time.

Basic Equation of Financial Planning

$$\begin{array}{ccc} \text{Amount of Money} & & \text{Value of} \\ \text{Needed at Time } t & = & \text{Investments} \\ & & \text{at Time } t \end{array}$$

- This equation expresses a condition for personal financial equilibrium that we're trying to satisfy. We know that we'll have a workable financial plan if we can find numbers that make this equation balance. Turning this basic equation into a tool that you can use to make decisions is the tricky part of financial planning.

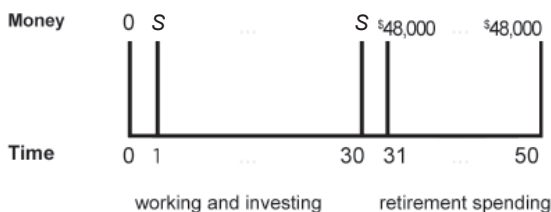
- First, we're going to focus on financial planning for retirement because it's something that everyone needs to do, and it's one of the more complex financial planning problems. You'll be able to apply everything from this lecture to other financial planning problems.
- Suppose you plan to retire at a certain age—65 or 70, for example—and after that time, your income will either be close to zero or much less than it is today. During the years that you work, you invest some funds each year, and these investments will hopefully grow into a large sum that will be enough to provide for your needs during retirement. The retirement planning problem is to find the right numbers that turn this general idea into a workable plan that you are comfortable with.
- First, draw a timeline and fill in information that describes this financial planning problem. Start by making a mark somewhere toward the right end of the timeline that represents the number of years from now that you'll retire. For example, let's say that you think your retirement is 30 years away from now. Put a 30 under the mark you made, which means that your retirement date is time 30.
- To keep things simple, you expect that during your retirement, you won't have any income from working; you'll be living off of the value of your investments and Social Security.
- Then, you'll need to estimate how many years you'll live during your retirement. You don't want to run out of money after you retire, so think carefully about how long you expect to live. Suppose you conclude that you expect to retire 30 years from now and live for another 20 years after that.
- The more difficult calculation you need to make is how much money you'll need during each year of retirement. Retirement experts tend to think about this question in terms of the fraction of your preretirement salary that you'll need to maintain your lifestyle. There seems to be general agreement that you'll want to spend about 70% of your preretirement salary each year during retirement.

- However, you'll want to make 2 adjustments to this number. First, forecasts indicate that Social Security payments will be about 20% of your preretirement salary, so we can use that number to reduce the amount that you'll have to pay out of your own investments.
- Then, you should adjust this number for increased costs during retirement, especially medical care. Assume that you'll need an additional 10% of preretirement salary to pay for the increased cost of medical insurance and medical care that isn't covered by insurance.
- If you assume that you need 70% of your preretirement salary and then subtract 20% for Social Security, that leaves 50%. However, you then add 10% for higher medical expenses, which means that, during retirement, you'll need to pay 60% of your preretirement salary out of your investments.
- Suppose you make \$80,000 per year currently. To estimate what you'll be earning 30 years from now, you need to take inflation into account. The simplest way to do this is to use inflation-adjusted numbers, which are adjusted for the average rate of inflation.
- You can use today's price as your guess of a future price, if you're willing to assume that this price goes up at the same rate as the general inflation rate. Using this strategy, you're also assuming that your raises, on average, will make your salary keep up with inflation. Remember to be consistent and only use inflation-adjusted prices and rates of return in all of your calculations.
- If you make the equivalent of \$80,000 the year before you retire, then you're spending 60% of \$80,000, or \$48,000, per year for each of the 20 years of retirement. On your timeline, put in \$48,000 starting at time 31 and ending at time 50. This set of expenditures represents your financial goal.

	A	B	C
1	Amount of Money Needed to Fund Financial Goal		
2	Number of Periods of Spending (n)	Amount Spent Per Period (C)	Return on Invested Funds (r)
3	20	48,000	.02
4	Amount Needed = $(C/r)(1 - (1/(1+r))^n)$		
5	\$784,868.80		

- Next, you can represent your investing on the timeline. Assuming that S is the amount of investing you do each year while you're working, put an S on top of your mark for each year, starting at time 1 and ending at time 30.

S = Investments while Working



- To solve the planning problem, you need to put this information into the financial planning equation. Start by finding the amount of money you'll need to have at time 30 in order to be able to spend \$48,000 per year for the next 20 years.

The Present Value of an Annuity

- Another time value of money formula is the present value of an **annuity**, which is a financial instrument that makes a fixed payment each period for a finite number of periods. Many financial instruments and investments are annuities—or are made up of annuities plus other payments.

- In an annuity, there are n payments of C each. To find the present value of the annuity, use this formula: $PV = C/(1 + r) + C/(1 + r)^2 + C/(1 + r)^3 + \dots + C/(1 + r)^n$. Then, factor out the payment, C , and do some algebra to simplify this equation to: $(C/r)(1 - (1/(1 + r))^n)$.
- In the annuity formula, C is the amount of the cash flow, or payment, n is the number of periods the cash flow is paid or received, and r is the rate of return you are earning. Because the time periods we're using are years, the rate of return is an annual rate—it's the average annual rate you are earning on your investments.
- Next, insert the numbers that correspond to C , n , and r from your retirement planning problem. The value of this annuity represents the minimum amount of money that you need to have at time 30 in order to afford this retirement.
- Assume that on your retirement date, you move most of your riskier, higher-yielding, long-term investments into less risky, lower-yielding investments. You'll be spending some of your accumulated investments each year, but the rest will still be invested, and it will be earning some lower but still nontrivial return.
- Because we're using inflation-adjusted rates of return, the rate we choose represents the extra return on top of inflation that we think our investments will earn. A solid long-term investment will probably generate about 2% more than inflation without taking on very much risk, so 0.02 would be the interest rate.
- You now have all the numbers you need to calculate the value of the annuity. The cash payment C is 48,000, the number of payments is 20, and the rate of return on the annuity is 2%, or 0.02. You can put these numbers into the formula, and then you can use a calculator or spreadsheet to find out what this value is.
- If set up properly, the spreadsheet can take the values from your assumptions about C , n , and r and use them to calculate the value of the savings needed with the annuity formula. When all the

	A	B	C
1	Total Value of Investments		
2	Number of Periods of Spending (n)	Amount Spent Per Period (C)	Return on Invested Funds(r)
3	30	S	.035
4	Value of Investments		
5	#VALUE!		

appropriate information is entered, the spreadsheet calculates that the amount of money you need to have at time 30 is \$784,868.80—so that you can spend \$48,000 per year for the next 20 years without running out, as long as the money you haven't yet spent is earning an inflation-adjusted return of 2% per year.

- Next, use the financial planning equation, in which you are investing S per year for 30 years. You can find the value of this annuity by assuming some rate of return. You should use a higher rate of return than you did before because you have more time to invest, which means that you can afford to be more aggressive with your investments. Assume that you can earn 3.5% more than inflation on average.
- To figure out what these numbers will amount to when you retire, you have to do a 2-step time value of money calculation. First, your investments form another annuity—a 30-year annuity that makes payments of S per year, earning 3.5% per year. Using the annuity formula, you can calculate the value of this annuity. However, the answer is the value of the annuity at time 0; the second step involves calculating the value of your investments as of time 30.
- You can use compounding to calculate the future value of any amount of money that is invested at some fixed rate of return by using the future value equation: $FV_n = (PV)(1 + r)^n$.

- The trick is to use the total value of the annuity at time 0 as the present value in this equation, which means that you'll compound the time-0 value of the annuity by 30 years at 3.5% in order to find the future value of the annuity at time 30.

	E	F	G	H	I	J
1	Value of Future Investments			Value of Past Investments		
2	Number of Periods of Investing (<i>n</i>)	Amount Invested Per Period (<i>C</i>)	Return on Invested Funds (<i>r</i>)	Current Value	Number of Periods Held	Return on Invested Funds
3	30	15203.95	.035	50000	30	.025
4	Value of Investments = (<i>C/r</i>)(1 - (1/(1+ <i>r</i>)) ^{<i>n</i>})(1+ <i>r</i>) ^{<i>n</i>}			Value of Past Investments = <i>V</i> (1+ <i>r</i>) ^{<i>n</i>}		
5	\$784,868.80			\$104,878.38		
6	Total Value of Investments					
7	\$889,746.98					

- Using the formula, you find that S equals \$15,203.95 per year. This is the amount that you'll need to invest this year if you want to reach your retirement goal. This number is inflation-adjusted, so this amount really is the number you need to invest today—at today's prices. You'll have to increase that amount each year to keep up with inflation.
- The calculations you've done so far all assume that you haven't done any investing yet. To account for this, you need to modify your financial planning equation slightly. You need to include that the value of your investments at a point in time is the sum of the value of your previous investments—that is, all the investments you made before now—plus the value of your current and future investments.
- The next step is calculating what the value of those previous investments will be at some point in the future. Hopefully, you

know the current value of your previous investments, or you can look them up by checking your account statements from banks, brokers, or mutual funds. Then, it's a straightforward matter of compounding at an appropriate rate of return for the correct number of years using the basic future value equation.

Important Term

annuity: A financial instrument that makes a fixed payment each period for a finite number of periods.

Suggested Reading

Bodie, Kane, and Marcus, *Essentials of Investments*, chap. 21.

Greene, "Don't Join the Ostrich Generation."

Questions to Consider

1. In addition to saving for retirement, people often have financial goals such as saving for their children's education or saving for the down payment for a vacation home. What is one of your other financial goals? Have you thought about how much money you will need to have saved and how far into the future you will need (or want) to have the money? Use a financial planning template to help you plan to meet this financial goal, especially the amount you will need to save each year in order to reach your goal.
2. The U.S. Social Security Administration sends periodic updates to everyone who has earned enough credits to qualify to receive social security benefits when they retire. These updates detail a person's social security earnings and make a projection of the payment that each contributor will receive upon retirement. You can also estimate your retirement benefits from social security at <http://www.socialsecurity.gov/planners/calculators.htm>. Find the current estimate of your monthly social security benefits from either source. Given the estimated size of your monthly benefits, do you believe that they will account for 20%

of your preretirement income? In other words, if you multiply this projected benefit by 5, do you think this is a good estimate of your preretirement income? If not, what fraction of your income do you think this benefit represents? How do you need to adjust your financial planning assumptions?

Taking Charge of Your Investments

Lecture 24

In this lecture, you'll learn about some of the practical issues that you'll encounter as you turn your financial plan into financial reality. You'll learn how to allocate your investments across tax-advantaged savings plans, how important it is to consolidate your investment information, and how to invest after you reach retirement. The 2 main things to remember about investing are to not invest in anything that you're not comfortable with and to keep saving and investing—even if you haven't found your ideal investments yet. After taking this course, you should feel prepared to reach your financial goals.

Savings Plans

- Over the years, Congress has created a number of **tax-advantaged savings plans** to encourage saving, especially for retirement. The proliferation of different plans means that there are special plans for people in various economic situations, and depending on your employer and income, you may be able to take advantage of more than one plan. On the other hand, the confusion level has definitely risen over the years as new plans have been introduced.
- Most of the savings plans that you're probably familiar with have the feature that contributions to these plans are not taxed. These plans include traditional IRAs and employment-related savings plans such as 401(k)s, 403(b)s for employees of nonprofits, SIMPLEs for employees of small companies, and SEPs for the self-employed. These plans are commonly called tax-deferred savings plans, which refers to the fact that you are deferring the income taxes on the contributions you make. However, you still have to pay Social Security and Medicare taxes on these contributions.
- Tax-deferred savings plans provide an incentive for people to contribute more money to these plans as they are working, and the investments in these plans will grow without being subjected to

income or capital gains taxes each year. However, eventually, you'll owe taxes on these savings. The withdrawals you make, when you make them, will be taxed as ordinary income. This seems like a good idea because most people will face a lower tax rate after retirement than they do while they're working.

- The federal government has what it calls mandatory withdrawals, in which once you reach the age of about 70, the government assumes that you are starting to withdraw money from your tax-deferred accounts and will charge you a minimum amount of tax based on this assumption—even if you don't actually withdraw any money from it.
- The other big category of savings plans tax your contributions but don't tax the withdrawals. The main example of this type of plan is the Roth IRA, which was introduced in 1998. If you invest in a Roth IRA, you pay income taxes on the contributions but not on the withdrawals—as long as the withdrawals have been held in the account long enough and you are older than about 59.
- If you leave your investments in the accounts long enough, and your investments deliver at least an average positive return, then you'll end up paying less tax on each dollar invested in a Roth IRA than you would in a tax-deferred savings plan. How much, of course, depends on many assumptions, and it might not necessarily be that large of a savings. However, because of the tax savings, many financial advisors urge people to put as much money as they can into Roth IRAs.
- Since 2005, it's been possible for everyone with a traditional deferred savings plan to move their savings from that plan into a Roth IRA if they choose. In order to do that, however, you have to pay income taxes on the accumulated savings in these plans. Consult a financial planner or tax advisor to help with this decision.

Employer-Sponsored Savings Plans

- Suppose your choice between savings plans boils down to an employer-sponsored tax-deferred 401(k) plan versus saving money in a Roth IRA. If your employer matches part of your 401(k) contribution, this can easily tip the scales in favor of the tax-deferred savings plan.
- Most employers contract with a few investment providers and give their employees a limited set of choices for their tax-deferred investments. Most employers will offer a set of options that try to cover a range of risk preferences, but they won't necessarily offer a very broad range of assets beyond American stocks and bonds.
- If your company's choices really don't deliver what you want as an investor, then you have to be more strategic. The first step is to figure out how much you want to invest in total to meet your financial goals.
- You should always take full advantage of your company's matching program—if it has one. Even if the investment options aren't the best ones for you, think of the matching contribution as extra return that you earn on these funds. Then, if you still want to save more, you should open a traditional IRA or Roth IRA to fill in the gaps in your company's offerings.
- The total amount that you can contribute to your IRAs is \$5000 annually. If you hit that limit, then you may want to go back to putting more money into your employer's 401(k) plan—just to take advantage of the tax break. Individuals can save up to \$16,500 per year through 401(k) or 403(b) plans before the employer match, so you probably have more capacity for tax-advantaged saving than you have money to save.
- Additionally, there are income limits that you must satisfy in order to be able to contribute to any kind of IRA. If your income is higher than these limits, then your effective contribution limit is currently \$16,500 per year—the maximum amount you can put in your

401(k)—and you may want to save more than that. In this case, take advantage of the employer match, if any, as well as any tax advantages you get through a 401(k)-type program, but you will want to be more strategic about what to keep in your 401(k) and what not to, keeping in mind that you need to be smart about taxes.

- Another factor that you should consider if you are choosing whether to do some of your saving through individual IRAs is behavioral economics.

One seemingly trivial advantage of company-sponsored programs that turns out to be important is that they're automatic, and once you enroll in the program, chances are that you won't be quick to pull out of it. If you intend to do part of your saving through an individual savings plan, you need to make sure that you can commit to making contributions.



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As you enter retirement, plan to stay invested in the market—in case you outlive the rest of your savings.

- A final issue with regard to your investment options within a 401(k) plan is what form the company's matching contributions take. In many companies, the matching contribution takes the form of stock in the company. The idea behind this is to improve employees' incentives to work hard as well as to keep the cost of the matching contributions low for the company. However, if you stay with an employer for a long time, then these matching contributions can really add up and your investments can become seriously overweighted toward your employers' stock.
- If your matching contributions do take the form of company stock, you need to look at the fine print of your company's savings

program to see whether, and under what conditions, you're allowed to trade in some of your shares in the company for shares in the other investment options in the 401(k) plan. To the extent that you can, you need to periodically convert some of these shares and invest in other assets so that your portfolio stays as diversified as possible.

- If you don't like the investment alternatives that your company provides, then talk to someone in the human resources department about it. Companies do respond to employee concerns about the savings plans as well as to the government's mandates about the programs.

Routine Maintenance

- Once you get started investing, the next practical issue is to do routine maintenance on your investments. Start by gathering the information on all your investments so that you can see where you stand. If you consolidate your investing information, you'll be able to see your total progress toward your financial goals.
- Setting up a spreadsheet won't take very long, and once you have it, you can update it once a year. There are some great personal finance software packages that will assemble all your data automatically if you don't want to do it yourself. Rebalancing your portfolio is important, including gradually moving your winnings into safe bonds and locking in the gains you made.

Post-Retirement Investing

- Eventually, it will be time to start spending the savings that you've accumulated. When you reach retirement, you may not have to worry about saving, but you do still have to worry about investing. Once you retire, you might even face the most difficult and confusing investment decisions because you need to find a way to make your savings stretch out over the rest of your life—and you don't know how long that'll be.

- Plan to keep a significant share—about 1/4 of your portfolio—invested in stocks, mutual funds, and other long-term investments because if you live to retirement age, then you can generally look forward to a very long retirement. Think of the money that you leave invested in the market as your insurance policy against outliving the rest of your savings.
- As for the rest of your savings, you should move it into safe assets like government bonds and TIPS by the time you retire so that you don't have to worry about a sudden crash in the prices of your investments.
- There are fundamentally 2 options for converting your holdings of bonds to cash so that you have a steady income stream: You can either manage the conversion yourself, or you can buy an investment product that will dole out money to you. These products are called annuities, but they're generally very different from the annuities that you learned about in the financial planning lecture.
- The standard annuity product differs from a regular annuity in 2 ways: The annuities that most retirees buy don't have a set ending date—they go on until you die—and they are variable annuities, which means that the payment from the annuity will fluctuate depending on the returns on some investment portfolio that the company offering the annuity invests in. The company will guarantee you a minimum investment return, but it could also pay you a higher return if its investments do well.
- As a result of the risks that the annuity company takes on—including your mortality risk and general investing risks—the annual payments the annuity company offers you are going to be a fairly small percentage of the total cost of the annuity. You need to be careful to investigate the details of the annuity and make sure that you're not giving up excessive fees to the annuity company.
- Your alternative is to set up a ladder of TIPS so that you collect some fraction of the total amount set aside for your retirement

income. Just as in the case of the choice between Roth IRAs and tax-deferred IRAs, the annuity decision is one where just about everyone could benefit from some professional advice.

Important Term

tax-advantaged savings plan: A plan that is issued by the government that encourages saving, especially for retirement, because income taxes are deferred on the contributions that are made. This type of plan includes traditional IRAs and employment-related savings plans such as 401(k)s, 403(b)s for employees of nonprofits, SIMPLEs for employees of small companies, and SEPs for the self-employed.

Suggested Reading

Hough, “Getting the Most from a Lame 401(k) Retirement Plan.”

Pearlman, “Annuities Provide Shelter in a Storm but Come With Their Own Risks.”

Ruffenach, “Do-It-Yourself Annuities”

Questions to Consider

1. One reason to continue to invest in a 401(k) retirement plan through your employer is the existence of matching contributions that your employer makes because this automatically increases your effective return on your investment. These contributions are usually capped at some maximum amount, however. If your employer does match your 401(k) contributions, what is the maximum amount that you can receive from your employer? How much do you need to contribute in order to maximize your employer’s matching contribution? Once you’ve maximized the matching contribution, what is your best retirement savings alternative: more investing in a 401(k), a Roth IRA, or some other plan?

2. If you are a homeowner, an additional source of postretirement income is your home. A product that enables retirees to use the value of their home to fund their retirement spending is the reverse mortgage. The U.S. Federal Housing Administration has a reverse mortgage product called the home equity conversion mortgage (HECM) that you can learn about at http://portal.hud.gov/hudportal/HUD?src=/program_offices/housing/sfh/hecm/hecmhome. Look at some of the information on this site regarding this product. Is this a product that you think you would be interested in?

Glossary

accrual: One particular set of procedures for recognizing revenue and expenses.

annuity: A financial instrument that makes a fixed payment each period for a finite number of periods.

ask price: The price at which the dealer will sell a share of stock to you, or the asking price.

asset: Anything that holds onto its value over time.

asset allocation fund: A type of mutual fund that is switched by managers between bonds and stocks whenever the markets seem to favor one investment over the other.

balanced fund: A mutual fund that holds both stocks and bonds in its portfolio.

bear market: A market in which bonds and other securities are declining in value.

behavioral economics: Blends psychology and physiology with economics to gain a better understanding of how people's decision making goes wrong—especially in situations involving investing.

beta: A measure of the riskiness, or return variation, of a stock; the number of units of risk in a stock, where one unit of risk is equivalent to the amount of risk, or return variation, in the overall stock market.

bid-ask spread: The difference between the ask price and the bid price.

bid price: The price at which the dealer will buy the stock from you, or the offering price.

bill: A bond that matures in less than 1 year.

blend fund: A type of equity fund that tries to select equities based on 2 different investment objectives.

bond fund: A mutual fund that holds only bonds in its portfolio.

bond ladder: A set of bonds that has one bond maturing every year, every quarter, or maybe even every month. As one bond matures, you can use the cash from the bond if you need to, but you can also buy a new bond to replace it. If you always buy the same maturity of bond, then you end up with a self-replenishing set of bonds that generates a steady stream of cash.

book building: The process of building up a demand curve for a company's shares that is carried out by an investment bank.

broker: A type of intermediary in the financial markets who simply helps buyers locate sellers—and vice versa—and arranges the sale.

bull market: A market in which bonds and other securities are rising in value.

business cycle: The cycle of expansion and recession that characterizes our overall economy.

call option: The right to buy an asset.

capital asset pricing model (CAPM): A model that is used to estimate expected rates of return for stocks.

capital expenditure: A purchase of real assets, such as equipment and factories.

capital good: A type of real asset that is involved in the production of goods, such as machines, buildings, factories, and the land that they sit on.

closed-end mutual fund: A type of mutual fund that only issues shares once and doesn't redeem shares unless the entire fund is liquidated.

commercial paper: A special kind of corporate bond that is unsecured and has very short maturity but that is quite safe.

compounding: A time value of money tool that describes the fact that if you leave money in an investment, the interest earned during 1 period will start to earn its own interest in subsequent periods.

confirmation bias: Describes the tendency for people to only notice evidence that supports their beliefs and ignore evidence that contradicts it.

correlation: The statistical term that describes the comovement of 2 different companies' returns, including unexpected returns.

coupon: An interest payment.

coupon yield: The value of the annual coupon amount divided by par.

covered call: A type of options investment that is a combination of a stock and a call option that you can use to enhance your returns on stocks that you own.

cumulative default rate: The fraction of all corporate bonds in each rating category that have ever defaulted.

current yield: The annual coupon divided by the market price of the bond.

cyclical company: A company that is strongly tied to the business cycle because it is a manufacturer or distributor of big-ticket consumer items like cars, appliances, and furniture.

dealer: A type of intermediary in the financial markets who connects buyers and sellers indirectly.

default risk: The risk that a borrower won't be able to pay back all the promised principal and interest payments.

depository receipt: A document that proves ownership of an asset that is in a bank's depository and is issued to the original depositor of the asset by the bank.

discounting: A time value of money tool that is used to find the present value of an investment by dividing the future value by the compounded rate of return: $PV = (FV)/(1 + r)^n$.

disposition effect: An effect that describes the notion that people hate to sell losing investments—they'll hold on to them for years, hoping that some miracle will push the price back up to what they paid.

diversification: The practice of investing in several or many different assets rather than only one or a few assets.

dividend: The profit that a company pays out to its shareholders.

dividend discount model (DDM): A fundamentals-based stock-pricing model that is represented by $D/(r - g)$, where D is the next year's dividend, r is the expected return on the stock, and g is the growth rate of the dividend.

dividend policy: The way a company chooses to pay out dividends and how it changes these payouts over time

dividend reinvestment program (DRiP): A stockholding plan in which any dividends earned on the shares are automatically reinvested in the shares.

dividend yield: The annual dividend on a stock divided by its price.

dollar-cost averaging: A strategy that involves investing a certain amount of money each month and staying fully invested in the market at all times.

Dutch auction method: A method in which everyone who is interested in a particular IPO submits a bid for shares that tells what price they will pay and

how many shares they'll buy at that price. The bids are then ranked by price offered, starting from the highest and running to the lowest.

earnings before interest and taxes (EBIT): Net sales minus the expenses of running a company.

efficient markets hypothesis (EMH): An economic theory that suggests that market prices fully incorporate information that is known now and that new information is incorporated very quickly into market prices.

equity: The difference between assets and liabilities, which tells you what a company is worth.

equity fund: A mutual fund that holds only stocks in its portfolio.

equity REIT: A type of REIT that invests directly in real estate—buildings and land.

exchange-traded fund (ETF): A fund that combines some of the features of a mutual funds with some of the features of individual stocks, including being listed and traded on an exchange.

expected return: The best guess of an investment's future return; represents the return that is truly expected to be delivered by the investment.

fallen angel: A bond that starts out highly rated but then gets downgraded to junk status.

financial asset: A document that entitles its owner to receive something of value, generally a set of cash payments, from someone else.

financial option: The right to buy or sell a particular asset at a preagreed price on or before a certain date.

financial statement analysis: The practice of forming ratios and other statistics using the numbers presented in a set of financial statements.

Fisher effect: A theory that states that the interest rate on any bond is the sum of the real rate of interest plus the expected annual inflation over the life of the bond.

foreign exchange: One of the largest and most active asset markets on the planet that involves betting on the direction of exchange rates.

foreign exchange risk: The risk that any capital gains or other returns on an investment in foreign assets will be offset by unfavorable changes in the exchange rate.

futures contract: A standardized agreement in which an investor pays a price now, called the futures price, to be entitled to receive an asset on a later date specified in the contract.

future value: The value of an investment, or a debt, at a future date n periods from the current time: $FV_n = (PV)(1 + r_p)^n$, where FV stands for future value at time n (that is, n periods from now) and PV stands for present value—which is what something is worth now, at time 0. The r_p is the periodic rate for whatever compounding period is used to calculate your returns.

global fund: A type of mutual fund that invests in American and foreign assets.

idiosyncratic risk: The type of risk in an unexpected return that is specific to each particular asset and doesn't share anything in common with any other assets; risk that you can reduce through diversification.

income fund: A type of equity fund whose focus is on earning high-dividend income.

indexed bond: The general term for a bond whose interest rate rises with inflation.

index option: Options on futures contracts on stock indexes.

inflation: A general increase in prices.

initial margin: A margin requirement that is the minimum ownership stake you have to take in order to start a leveraged investment.

initial public offering (IPO): A special sale in which a company first sells its shares to the public; marks the transition from being a privately held company that only 500 or fewer people can own to becoming a publicly held company that anyone can own a part of.

intangible asset: A type of real asset that is invisible but nonetheless real—such as ideas, knowledge, and skills.

international fund: A type of mutual fund that invests only in assets from outside the United States.

investing: Spending your money, time, or other resources to create or acquire assets.

investment plan: A set of decisions about how much to invest, which types of investments and strategies to try, and when to sell investments.

issuer: The party who promises to give the owner of a financial asset something of value, including a firm, the government, or a person.

junk bond: A bond that involves high-yield, or non-investment-grade, debt.

leverage: Determines how much a firm is borrowing and is often expressed as total assets divided by total equity.

liability: What a firm owes to other parties.

load: A sales fee that a mutual fund charges.

long-term capital gain: A trading profit that you make on an investment that you've held for longer than 1 year.

maintenance margin: A margin requirement that is the minimum level of equity that you have to maintain at all times after you make an initial leveraged purchase.

margin: The share of an asset owned by a leveraged investor; the value of an equity stake in an asset divided by the total value of the asset.

margin call: A request from your broker to deposit cash or securities into your brokerage account in order to bring your equity in the shares at least back up to the maintenance margin level.

margin requirement: A minimum required ownership stake.

material information: Highly desirable and profitable information that affects the market price of an asset when it's revealed to the market.

maturity: The length of time until the final payment on a bond.

medium-term note (MTN): A bond that typically matures in 1 to 5 years.

method of comparables: A valuation method that is based on using ratios to value stocks.

mortgage-backed security (MBS): A special type of bond that is issued by a special corporation that buys and holds hundreds or thousands of mortgages.

mortgage REIT: A type of REIT that invests in mortgages and mortgage-backed securities.

mutual fund: A package of stocks, bonds, and perhaps other instruments.

net asset value (NAV): The market value of a portfolio on a particular day minus any liabilities of the fund divided by the total number of units.

net income: EBIT minus interest and corporate income taxes.

net sales: Sales minus returns.

note: A bond that matures in 1 to 10 years.

open-end mutual fund: A type of mutual fund that is always ready to issue new shares by selling them to investors and to redeem shares from investors.

option: A contract that gives its buyer the right, but not the obligation, to take some action—which usually involves buying or selling something.

payout ratio: The fraction of earnings per share (EPS) that is paid out to a company's shareholders: D/EPS .

PEG ratio: A ratio found by taking a company's price-to-earnings (P/E) ratio and dividing by the growth rate of earnings.

periodic return: The return you earn for holding an investment for 1 period, where the period can be any length of time.

plowback ratio: The fraction of earnings per share (EPS) that is reinvested in a company: $(\text{EPS} - D)/\text{EPS}$, or $1 - (D/\text{EPS})$.

portfolio allocation: The way in which you divide your investments across different investment categories.

preferred share: A stock that has a higher priority claim on a company's profits than a common share does.

price-to-earnings (P/E) ratio: A ratio of a company's price to its earnings per share (EPS).

principal: The par value of a bond.

private information: Information that is known only to a few people and isn't widely distributed or shared.

prospectus: A document describing the objectives, operation, and risks of a mutual fund.

put option: The right to sell an asset.

rating agency: A company that specializes in evaluating bonds and that gives out ratings based on the likelihood of full and on-time repayment of interest and principal.

real asset: An asset that is used directly in the production of goods and services.

real estate investment trust (REIT): A company that sells shares to investors once, at the beginning of a fund, and then uses the proceeds to invest in a portfolio of real estate assets.

restrictive covenant: A large set of terms and conditions that the buyer of a bond can make the issuer of the bond agree to.

return on assets (ROA): $(\text{EBIT} - \text{taxes}) / \text{total assets}$.

return on equity (ROE): Net income divided by equity.

riding the yield curve: A strategy that involves making extra returns on bonds by buying longer maturity bonds than you actually intend to hold to maturity and selling them after a few years.

scenario analysis: A type of financial analysis in which a complex future is simplified to just a few possibilities that are regarded as the most likely ones.

sector fund: A type of equity fund that invests in the shares of companies that are in the same type of sector or industry.

secured: Refers to a bond that is backed up by specific collateral.

security: Written evidence of the extension of a loan.

share: An equal portion of a company's stock.

short-term capital gain: A trading profit that you make on an investment that you've held for 1 year or less.

socially responsible fund: A type of mutual fund that pursues high returns but avoids investing in companies that engage in activities that some people find objectionable.

standard deviation of returns: A useful concept that tries to measure the average size of an unexpected return, or in other words, how much the actual return could differ from the expected return on average.

stated annual rate of return: A special form of a return that contains 2 pieces of information if quoted properly: an annual rate of return and the number of times per year the rate is compounded.

stock: A form of ownership that a firm issues that divides the ownership of the company into thousands—if not millions—of equal parts, or shares.

stock buyback: A transaction in which a company goes into the stock market and repurchases, or buys back, some of its outstanding shares.

stock dividend: A common type of noncash dividend in which a company pays out part of a share instead of cash for each share that an investor holds.

stock exchange: An organized market where people can meet and trade shares.

stock option: The right to buy or sell shares of a particular company.

storable commodity: A type of real asset that can be stored and retain value, such as cotton or oil.

structured product: A product that combines different financial instruments into a new one or that slices the payments from a financial instrument in new ways.

systematic risk: The type of risk in an unexpected return that is common across assets; risk that you can't get rid of through diversification.

tax-advantaged savings plan: A plan that is issued by the government that encourages saving, especially for retirement, because income taxes are deferred on the contributions that are made. This type of plan includes traditional IRAs and employment-related savings plans such as 401(k)s, 403(b)s for employees of nonprofits, SIMPLEs for employees of small companies, and SEPs for the self-employed.

technical analysis: A type of analysis that uses information in prices as well as in the volume of trading to make predictions about future price movements.

trust: A legal vehicle for holding property on behalf of someone.

turnover rate: The fraction of the total value of a mutual fund that a portfolio manager trades, or turns over, during a year.

unit investment trust: A type of collective investment scheme that buys and then holds a fixed portfolio of assets.

uptick rule: A regulation that is aimed directly at limiting the practice of short selling.

valuation model: A model that helps us figure out what something is worth.

valuation multiple: The ratio of one asset's price to its value driver.

yield to maturity: The average yield earned by a bond investor who buys a bond at the current market price and holds the bond to maturity.

zero-coupon bond: A bond that makes a single payment and that gives no interest payments, or coupons, between the time the bond is bought and the time that the borrower makes the payment to the buyer.

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