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Financial Literacy: Finding Your Way in the Financial Markets

Course Guidebook

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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 also was 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 International Monetary Fund (IMF) Institute for Capacity Development, 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.

Professor Fullenkamp's other Great Course is *Understanding Investments*. ■

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Financial Literacy: Finding Your Way in the Financial Markets

Scope:

Everyone should strive to improve his or her financial literacy. Better financial literacy will make you more confident when it comes to taking out a mortgage or investing your retirement savings. And it will help you understand what the developments in the financial markets mean for your job or business. But improving your financial literacy is tough to do on your own. The financial system is vast and complex, which makes it virtually impossible to know where to begin learning or where to go next. And the language of finance is often confusing.

This set of 24 lectures supplies the guidance that most of us need to reach a higher level of financial literacy. The course takes a logical and insightful approach to finance that is comprehensive without being overwhelming and explains everything in plain language. You will not only learn about the major financial instruments, markets, and institutions, but you will also learn about all of the jobs that the financial markets do for society. You will learn why the financial markets work the way they do and why they sometimes have big problems. This course will help you see how the financial system fits into the overall economy, and it will also raise your comfort level with the many financial decisions that everyone faces.

In the first lecture, you will explore whether the financial system really creates value for society. You will learn that every transaction in the financial markets performs one of six simple but important jobs that make people better off or make the economy more productive. You will also learn that the financial markets are anchored to the rest of the economy, thanks to financial contracts. You will see that every financial asset, such as a share of stock, is connected to a real asset, such as a company, by a financial contract.

Another way to see how much value the financial markets create is to measure financial wealth. In the second lecture, you will learn how much

value is stored in financial assets and why the amount of money moving through the financial market is the key determinant of the amount of wealth. You will learn who lends out the money coursing through the financial markets and who ends up with the wealth that the markets generate.

To complete your introduction to the financial system, you will learn about one of the most important ingredients that goes into every financial product: information. You will see how information is a scarce resource that limits how well the financial system can perform its six jobs for society. You will learn about two fundamental problems caused by limited information and how the financial system can mitigate but never quite solve them.

You will build on this introduction to the financial system by examining the function of borrowing and lending, one of the most important tasks in the financial system. Over the course of several lectures, you will learn about the lending process, the main lenders in the economy, and the main instruments used for borrowing and lending. You will learn how lenders decide whether to accept a loan application, and you will review the details of loan contracts. You will take an in-depth look at the main lending institution—banks—and learn why they dominate most countries' financial systems.

You will also learn about the many ways that borrowing and lending take place without banks. For example, you will learn how bonds and stocks each represent a special kind of loan. You will explore a huge but often overlooked lending market called the money market. And you will also look at lending from an international angle, which often involves foreign currencies and the foreign exchange markets as well. To complete your tour of this topic, you will also learn how financial instruments like stocks and bonds make it into the hands of investors, with the help of investment banks.

Once you have learned how financial instruments like stocks and bonds get into the market, you naturally think of the next step: trading. You will learn about the different ways that trading can take place and the diverse set of markets that various financial instruments are traded on. You will also learn about the traders themselves, including a comprehensive look at two of the most famous kinds of trading companies—mutual funds and hedge funds. And no discussion of trading is complete without mergers and acquisitions.

You will learn how entire companies are traded on the so-called market for corporate control.

The discussion of trading also presents the perfect time to discuss how financial prices and returns are quoted and calculated. Then, you will move to one of the toughest questions in finance: Who or what actually determines the prices of all these instruments? Of course, information has a big influence over prices, so this course will devote several lectures to the major sources of information that move the financial markets. You will learn which information reported by companies is the most valuable to the markets as well as which economic indicators are the most anticipated.

Interest rates are another type of financial price that you will learn about. Not only are they interesting in themselves, but you will see that they also contain a wealth of information about the market. A discussion of central banks like the Federal Reserve complements the lecture on interest rates. You will learn about the important role that central banks play in the financial system, focusing on how they influence the financial markets because of their power over interest rates and the money supply.

The course also includes several advanced topics that rely on the ideas developed earlier in the course. You will learn about the main financial risks that all players face and the main strategies for managing these risks. You will learn about the process of securitization and Fannie Mae's role in it. You will also learn why the financial markets need regulation and who is supplying that regulation. In the final lecture of the course, you will use what you have learned throughout the course to think about the future of the financial markets. You will learn about two major trends that are likely to change how you will use the financial markets in the future—and how the markets will affect you as well.

This course provides a foundation of knowledge that will enable you to work independently to keep improving your financial literacy. ■

Feeling at Home in the Financial Markets

Lecture 1

This course aims to show you that the financial market, although seemingly complex and unpredictable, plays by the same economic rules that apply to every other market. This does not mean that you or anyone else will ever be able to predict what the markets are going to do next, but in this course, you will learn the concepts and connections that will help explain why things happen in financial markets. You will also learn about the main financial instruments that everyone needs to be familiar with, including instruments that will help you make sense out of all the apparent confusion.

What Do the Financial Markets Do for Us?

- An excellent breakdown of what financial markets do was created by the financial economists Robert C. Merton and Zvi Bodie, who describe six basic but essential jobs that financial markets perform for our economy. They refer to these jobs as "functions." Every financial transaction or product is trying to do at least one of these jobs or functions, and in many cases, a single financial product will be doing more than one of these six jobs (as follows) at once.
  1. Transferring resources across time and space.
  2. Pooling resources and sharing ownership.
  3. Discovering financial prices.
  4. Dealing with information problems.
  5. Clearing and settling payments.
  6. Managing risks.
- The first job of the financial markets is transferring resources across time and space. This function includes many of the most basic

activities in the financial markets, such as borrowing, lending, saving, and investing. Individuals and businesses alike often need to transfer resources like money across time so that they can afford to buy expensive items now rather than having to wait and save up the money.

- When you borrow, you're moving some of your future income to the present. You're able to buy something now, but in the future, that part of your income that you would have saved will belong to the person who loaned you the money today. That's why we say that the financial markets are transferring resources across time.

- In order for you to be able to transfer money across time, somebody else has to lend you the money now. That's why we also say that resources are transferred across space: The people who lend you the money may live across town or in places like Germany, Australia, or Brazil.

- Another big reason for needing to transfer resources across time is that our income and our expenses don't usually match up exactly. For example, most of us plan to retire by the time we reach age 70, or earlier. After we retire, our income will be a lot lower than it is while we're working, so we want to transfer some of our income to our future retired selves. Because of the financial markets, we can deposit the money in a bank or buy other kinds of investments that will hopefully earn a good return.

- Businesses and governments have exactly the same need to transfer resources across time as individuals do. They want to make big investments now, like building factories and roads, but don't have enough cash on hand to pay for them. They also have big mismatches between revenues and expenses.

- Without the ability to transfer resources across time and space, people and businesses have to save up on their own resources for any big projects they want to invest in. Piles of money will sit around in homes and offices, doing nothing but gathering dust and

attracting trouble. This slows down economic growth, because everyone has to wait for weeks, months, or years before they have enough money on hand to start a new investment.

- In addition, everyone runs the risk of going bankrupt simply because their incomes don't exactly match their expenses at all times. Without financial markets, the only defense against this problem is to accumulate sacks of money and keep them on hand. Again, this slows down economic growth and forces everyone to waste money on keeping their own money safe.

- The next big job that financial markets do is pool resources and share ownership among groups of people. This job is critical for the modern economy, because the factories and equipment we use to make our goods and services are incredibly expensive. In the old days, most businesses were family owned and operated. A single family could afford to buy the tools and equipment it needed to start a business or even build a small factory. And the profits from the business were often enough to enable the business to expand as needed.

- But as the economy grew, and products became more sophisticated, fewer families could afford to build the larger factories or buy the expensive machines that were needed to produce products efficiently. They had to pool their funds with other people in order to start a business or afford the investments that would keep them in business. Today, the only way that our society can afford to build a new billion-dollar microchip factory is for thousands if not millions of people to pool together their savings and invest in it as a group.

- When we invest with other people as a group, we need some kind of an arrangement that spells out who owns what and how the profits or losses from the investment will be shared. Stocks, bonds, and other financial instruments serve as these written arrangements.

- The third job that financial markets do is price discovery. The financial markets discover—or set—prices. All markets set prices,

so which ones do the financial markets set, and why is that such a big deal? The financial markets need to find the right prices for the jobs that they do for us.

- Think about using a bank loan to transfer resources across time. One way to think about the interest rate on the loan is that it's the price of having the bank make that transfer for you. We need to find the right price for this service so that neither too much nor too little of it is produced. The financial markets find that right price. And for some types of financial products, they do it in pretty much the same way that other markets do—supply and demand, with the producers of the service playing the role of suppliers and the users of the service playing the role of demanders.

Tools of the Financial Market

- By far, the most important tool in the financial market is the contract. When people lend money to each other, or buy stocks, or engage in just about any financial transaction you can think of, there's an agreement involved: a contract. For simple transactions, the contract may be informal, such as a quick verbal agreement. But in general, there's going to be some written agreement—a written contract—behind every type of financial transaction.

- Making contracts and trading contracts are the concrete ways that the financial markets carry out all the jobs we need them to do. And making contracts means that people who have conflicting agendas have to negotiate and compromise in order to reach an agreement.

- Unless the lender and borrower make some compromises, they won't be able to make a contract, and the loan won't get made. Just about every financial contract embodies some significant compromises between the two parties. The lack of ability or willingness to compromise on the part of borrowers and lenders can be a huge obstacle to financial market development.

- Behind every financial instrument lies a contract. In many cases, the financial instrument is the contract. In the case of a bank loan

Sometimes, contracts are verbal and informal, but most of the time, they are written and formal.

or a bond, the instrument is the contract. In some other cases, the instrument isn't the contract, but it's connected to a contract.

- A security is written evidence of the extension of a loan. This evidence is often the contract itself, as in the case of a bank loan or a bond, but the written evidence may take some other form as well. A contract is nothing more than a set of promises. Each party to the contract promises to do something for the other. In financial contracts, the promises often have to do with making payments.

- Another aspect of financial contracts is that they're assets. An asset is anything that serves as a store of value. There are physical assets, such as land, gold bars, buildings, and factories. There are also assets that are intangible but nonetheless real—such as ideas or a person's knowledge, skills, and experience—which economists refer to as human capital. All of these things are stores of value.

- Financial instruments—securities, the written evidence of the extension of a loan—are also assets in their own right. They enable people to store value for later; that's what saving is all about, and most people save, at least in part, by buying financial instruments like bank deposits and mutual funds. We use the term "financial assets," which distinguishes them from real assets, because they differ from real assets in a fundamental way.

- Real assets have value because we can use them to make things, but financial assets are just contracts—pieces of paper or computer digits that have no value of their own. Financial assets derive their value mostly from some real asset or assets that they're connected to. Financial assets, because they're based on contracts, are promises to pay money to the person holding the asset, and that money has to be earned by some real asset that the financial asset is connected to.

Financial Fraud

- A lot of financial crime takes place when a person falsely claims that they've discovered some magical real asset that generates returns that are too good to be true. The people running these schemes never divulge exactly which real assets are generating their returns—because there aren't any. This is the case in just about every fraudulent investment scheme, like the one operated by Bernard Madoff, who ran the world's largest pyramid scheme.

- In a pyramid scheme, one person's investments are simply passed on to pay off other people who invested in the scheme earlier. Madoff's pyramid scheme collapsed, like they all do eventually, because it ran out of new investors to pay off the old ones. Madoff went to jail, and his investors lost nearly all of their money.

- Even when you understand the connection between a specific financial asset and the set of real assets that give the financial asset its value, it's still difficult to know for sure what a financial asset is worth. That's because the real assets that give the financial asset its value are themselves hard to put a price tag on. But we do it in

the same way we find prices for everything else—we let the market do it.

Suggested Reading

Chami, Fullenkamp, and Sharma, "A Framework for Financial Market Development."

Merton and Bodie, "A Conceptual Framework for Analyzing the Financial Environment." Chapter 1 in *The Global Financial System*.

Questions to Consider

1. In this lecture, you learned about three of the main jobs that financial markets perform—borrowing and lending, sharing ownership, and price discovery. Which of these jobs do you have experience with? Which ones are you most involved with, and why?

2. In this lecture, you learned a simple definition of what an asset is and where assets get their value. What are your two most valuable assets, and where does their value come from?

Where the Money Goes

Lecture 2

In this lecture, you will learn why the financial markets are worth so much money. Every time a dollar works its way from a saver to a borrower, it can create several dollars' worth of financial assets, thanks to the chains of lenders and borrowers that move the money through the market. Therefore, the huge size of the financial markets really isn't an illusion; every financial asset that's created is a store of value for a different person and should be treated as a distinct entity.

The Worth of Financial Markets

- According to data from the Federal Reserve, the total amount of debt outstanding in the United States at the end of 2011 was 54.2 trillion dollars—and that isn't even the total value of the financial market in the United States. This number only includes the value of the loans in the economy.

- The main thing that this number leaves out is the value of the U.S. stock market. According to the World Bank, which keeps track of this information for just about every country with a stock market, the U.S. stock market was worth about 15.6 trillion dollars at the end of 2011. When we add the stock market's value to the value of all the loans, then we get an astounding number of almost 70 trillion dollars.

- A benchmark we usually use to measure the size of the financial market is gross domestic product (GDP), which is the total value of all the final goods and services that are produced in an economy in a year. Strictly speaking, GDP only tells us the size of the goods market, but when we think about how big the economy is, we usually use the GDP number to tell us. In the United States, the GDP has grown from about 10 trillion dollars in 2001 to about 15 trillion in 2011.

- The stock market alone is worth more than the entire U.S. economy, and the value of the entire financial market is almost five times the U.S. GDP. In addition, according to the Federal Reserve, the entire money supply of the U.S. economy—that is, cash plus short-term bank deposits that are close substitutes for cash—was just shy of 10 trillion dollars. So the financial market is seven times as large as the money supply.

- The financial markets are worth a lot of money, but there's not really that much money in them. Of course, it's actually the same story in the goods markets as well. The money itself is always in motion—or at least it should be. Money is constantly traveling though the financial market, just as it travels through the goods and labor markets, facilitating the transactions that people make. And as the money travels through the financial market, it leaves its mark. Each time money changes hands within the financial market, an asset is created, or the value of an existing asset changes.

- An important aspect of the financial markets—or, rather, an aspect of the data we have about the financial markets—is that there's a lot of double counting, in the sense that each time the same money is borrowed and loaned out again on its way from the first lender in line to the last borrower in line, another asset and another debt are created. For example, if a bank deposit of 10,000 dollars gets loaned out and then reloaned three more times, there will be at least four assets of 10,000 dollars noted in the statistics and four debts of 10,000 as well.

- When we look at the numbers that describe the size of the financial markets, we have to take them with a grain of salt. The big numbers that we see for lending and borrowing, as well as the numbers we see for the total values of financial assets and debt outstanding, include a lot of double, triple, and even higher-multiple counting.

- That doesn't mean that there's not a lot of money passing through the financial markets, though; trillions of dollars of cash still flow through these markets on a daily basis. And it also doesn't mean

that we should just cancel out all of these assets and liabilities; each asset is a separate store of value held by a different person or business that counts on it to be there for them.

- Each asset should be earning some kind of return, too. If there are 70 trillion dollars of total financial instruments outstanding, each one percent of interest on these instruments generates 700 billion dollars of interest income per year. Now we can start to see why people say there's a lot of money to be made in the financial markets.

- This double counting phenomenon means that the more complex the path that money takes to get from the original lender to the ultimate borrower, the bigger the financial system will appear to be. That's not necessarily a bad thing, especially because sometimes the only way for money to get to some borrowers is to follow a fairly complex path.

- Having many possible ways for money to get from lenders to borrowers is generally thought to be good for two reasons. It means that the financial system has backups, in the sense that if one lender can't function for some reason, other lenders can take over that role and make sure that money gets moved to the ultimate borrower. It also means that there's more competition between lenders, which should lower the cost and improve the quality of financial services.

The Flow of Money

- The money flowing through the financial market ultimately goes into real assets, such as machines, buildings, and ideas. And as we learned in the previous lecture, every financial asset is connected—somehow—to a real asset. So the numbers we're learning about now are a way of measuring these connections.

- To understand how the flow of money through the financial markets into real assets affects the numbers we've been learning about, you first need to understand the difference between what economists call stock and flow variables. The numbers used for the size of the loan and stock markets are what economists call stock variables,

which simply tell us how much we have of something at a point in time.

- To measure the size of the economy, on the other hand, we need GDP, which is what economists call a flow number or variable. Flow variables measure activity—how much you made during a period of time.

- Many stock and flow variables are connected by an economic relationship. In one type of economic relationship, the activity measured by the flow variable contributes to a related stock variable. Another type of economic relationship is one in which a stock variable produces a related flow variable.

- The second type of relationship is the one that exists between the financial market numbers and the GDP numbers, and it's the reason why the financial market should be larger than the economy. The financial market numbers are stock variables that tell us how much wealth we have right now.

- To determine who owns the stocks of financial assets at the end of the day, we trace the savings that flow into these stocks of assets. The people who participate in the financial markets can be divided into three groups: households, businesses, and governments. Each of these three groups is a potential source of the money that funds all of the borrowing, lending, and trading in the financial markets. Therefore, they're all potential owners of financial assets.

- The money that goes into the financial markets ultimately comes from savings, and all three of these groups can potentially save. Savings is the money that's left over from income, after all expenses are subtracted. In other words, it's the leftover income that isn't being used right now to pay for some kind of good or service, so it is value that needs to be stored—by putting it into assets, which are stores of value. Savings is the income that's available to be put to work in the financial market.

According to the Federal Reserve, in 2011, U.S. households acquired over 800 billion dollars' worth of financial assets.

- Households earn income by working at some job and may have leftover income that they save. Similarly, if any kind of a business earns a profit, part or all of this profit can be saved. Finally, if governments take in more taxes and other revenues than they spend—that is, if they run budget surpluses—then they can potentially save these surpluses as well.

- In reality, the households group is the most willing and able of the groups to save. Households have many reasons for saving—retirement being one of the biggest reasons—and if they want to save, buying financial assets is usually the best way to do it.

- Governments may want to save, but they generally have a hard time keeping their spending under control. And if they do have leftover funds, they usually have investment projects that they'd like to spend the money on, such as building roads and bridges. So

governments usually don't want to hold lots of financial assets over long periods of time.

- Businesses are in a somewhat similar position to governments. They don't always have profits, which are the funds that could be saved; sometimes they make losses. And when they do have profits, businesses also have many investment projects that they'd like to undertake. They want to develop and introduce new products, upgrade and build new factories, and even buy other companies. A business that wants to stay competitive always has a long list of investment projects that it wants to undertake.

- Thus, many nonfinancial businesses fund a big share of their investments out of their own profits. The profits that are kept inside a company and used by the company, rather than being paid out to the company's owners, are called retained profits or earnings.

- Using retained profits to pay for new investments, in turn, is called internal financing, which is a leading source of funding for business investment. Even though businesses do generate profits that could be saved, they don't usually spend these profits on financial assets. They buy real assets instead.

- Households are the largest and most dependable source of savings in the economy; households ultimately supply all of the money that goes through the financial markets, either directly or indirectly.

- We get an even clearer picture of who really supplies the money in the financial markets if we look at the stock numbers that measure the total value of all financial assets held by each of the groups. That's because these numbers show how much each group has managed to accumulate over the years. If one group saves a lot one year but is forced to dip into its savings the next year, then they won't have very much left in savings at the end of the two years. If a group holds a lot of financial assets now, then it must be the case that they've managed to save a significant amount each year, and they've used their savings to buy financial assets.

Suggested Reading

Friedman, "Is Our Financial System Serving Us Well?"

Teplin, "The U.S. Flow of Funds Accounts and Their Uses."

Questions to Consider

1. Many of the numbers discussed in this lecture came from data collected by the Federal Reserve called the Flow of Funds tables. These tables show the value of all assets and liabilities held in the United States, as well as how much these assets and liabilities change over time. Go to http://www.federalreserve.gov/releases/z1/Current/z1r-5.pdf to look at the current set of balance sheets for the U.S. economy, which begins with U.S. households. Use the numbers in the table to estimate the share of wealth that the "typical" household has in real estate, deposits in banks, and other financial assets (like stocks and bonds). Do your own personal assets match this breakdown? Have you thought about why or why not?

2. Take a few minutes and estimate your own net worth by adding up the current market value of your assets and then subtracting the value of your debts. Where do you fall within the distribution of wealth that we learned about in this lecture? What would happen to your net worth, and your position in the wealth distribution, if you paid off one or two of your biggest debts?

Financial Markets Run on Information

Lecture 3

This lecture completes your introduction to the financial markets. You have learned about the main jobs that financial markets do for society and visualized how money flows through the markets as it carries out these jobs. In this lecture, you will learn how information affects everything that happens in the financial markets. Together, these basic ideas will help you understand the details of how the financial system works as you progress through the rest of the course.

Asymmetric Information Problem: Adverse Selection

- One of the six basic jobs that the financial markets do for us is to deal with information problems—both in the financial markets and in other markets as well. The first lecture introduced the six jobs that financial markets do. The fourth of those jobs is mitigating information problems.

- The information problems that you will learn about in this lecture generally can't be completely resolved, and in many cases, they still cause a lot of trouble in the financial markets. That's because the underlying causes of information problems—the scarcity and the uneven distribution of information in the economy—are themselves impossible to fix. Also, the mechanisms that we use can only do so much.

- We will focus on problems caused by asymmetric information—the uneven and unequal distribution of information across the parties in a financial transaction. Economists have identified and described two main types of problems that are caused by asymmetric information.

- The first of the two main asymmetric information problems is called adverse selection. Unlike natural selection, with adverse selection, people who have characteristics that are not well suited

to the demands of the market are actually favored by the economic situation. And when that happens, it can destroy a market.

- Adverse selection is also called the problem of hidden type, as in hidden identity, or the problem of counterfeiting. The idea behind adverse selection is that some important characteristic of a person—such as their trustworthiness—is known to the person, but it's at least partially hidden from the rest of the world, so it can't be observed directly by anyone else. Therefore, there is asymmetric information.

- Adverse selection becomes a problem whenever this hidden characteristic differs between people and is important for some economic outcome. Suppose that there were two types of borrowers: good borrowers, who take their financial commitments very seriously and always try their hardest to repay their loans, and bad borrowers, who don't take their financial commitments seriously and don't try all that hard to repay their loans. And suppose that each type of borrower knows what kind of borrower he or she is, but nobody else can observe his or her type.

- The problem is that in the financial markets, low-quality borrowers will pretend to be good-quality borrowers, and they'll try to trick lenders into lending to them. The lenders are fully aware of this problem, so what do they do?

- One possibility is to try to adjust the interest rate on the loans they make. If some potential borrowers say they are good borrowers when in fact they're bad borrowers, then this will raise the average risk of the loans one makes. Suppose that a lender plans to charge good borrowers an interest rate of 5 percent and bad borrowers an interest rate of 20 percent and that the lender believes that about half of all the borrowers out there are good and half are bad.

- For 10 borrowers, for example, why doesn't the lender just charge an average interest rate of $((5 \times 0.05) + (5 \times 0.2))/10 = 0.125$, or 12.5 percent, because this will give the lender the same average return as if he or she charged each one the right rate based on their

true type? If the lender raises the interest rate charged on the loans, the good borrowers will leave and only the bad borrowers will still want to borrow, which effectively selects the bad borrowers (adverse selection).

- If lenders can't use the rate on the loan to compensate for adverse selection, what do they do? First, because the underlying problem is that the lender has trouble telling whether a potential borrower is a good borrower or a bad borrower, the lender will invest resources into trying to gather better information. In other words, the lender will try even harder to tell the borrowers apart.

- We see the result of this every time we apply for a loan. For example, there is a tremendous amount of information and paperwork that goes into applying for a mortgage. This is the lender's attempt to overcome the adverse selection problem by attacking the ultimate root of the problem—the asymmetric information. Even with the

Nobody makes a move in the financial markets—including making and trading financial contracts—without first gathering and analyzing a lot of information.

most advanced tools used to screen borrowers, it's still impossible for lenders to tell the good borrowers from the not-so-good ones all the time.

- But lenders have other tools as well, and these tools rely on a different strategy. Instead of trying to get more information, the lenders can try to create incentives for borrowers to reveal their true type to the lender. A very common incentive tool is collateral, which is something of value that a borrower pledges to give to the lender if the borrower defaults on a loan.

- The idea behind collateral is that the borrower will lose the collateral if he or she can't or won't pay back the loan. In other words, it makes sure that the borrower has something to lose if he or she defaults on the loan. Economists call this risk sharing.

- Using collateral won't bother good borrowers because they intend to pay the loan back in full and don't intend to lose the collateral, but requiring bad borrowers to post collateral will discourage them from taking out a loan. Because they aren't as serious about repaying, they would probably lose the collateral, so they won't be interested in taking out the loan.

- Down payments are often used together with collateral. A down payment is the part of a large purchase that you pay for out of your own pocket. It's essential to require a significant down payment from a borrower whenever his or her collateral is the same thing that they bought with the loan they took out. Otherwise, the incentive effect of collateral goes away.

- Adverse selection is one of the defining problems of making loans, but this problem isn't limited to lending; it's also a huge source of fraud in the financial markets. Since the advent of the Internet and online financial services, a tremendous adverse selection problem has been created by so-called Internet phishing, in which people send out emails pretending to be some financial institution in an

attempt to acquire your account information to then withdraw your money from your accounts.

Asymmetric Information Problem: Moral Hazard

- The second main type of asymmetric information problem is known as moral hazard, which is also known as the hidden action problem. Ever since the creation of insurance, people have noticed that once someone is covered by an insurance policy, they become less careful. For example, people who have automobile insurance don't drive quite as carefully as those who don't have car insurance. The reason is because it takes a lot of effort to be really careful. Why should I put all that effort into being careful when the insurance company will pay for my car accident?

- The key is that the insurance company can't observe what you're doing at every moment, and they can't really measure your effort very well. This hidden action, which benefits one party in a financial transaction at the expense of the other party, is the essence of moral hazard.

- Moral hazard and its hidden action problem are common features in many other financial relationships. For example, moral hazard is a big problem in lending. One classic example is the so-called asset substitution problem. Suppose that you're a borrower applying for a business loan and that you tell the lender that you're going to use the money to fund a low-risk project that has a high probability of paying off the loan in full—but that it won't generate the most exciting profit for you. The bank likes the safety and reliability of the project and agrees to make the loan.

- Once you have the money in your bank account, though, you have an incentive to use it to fund a different project—one that has higher risk and a lower probability of earning enough to repay the loan. But if it does work, you make a really nice profit. Because the lender can't observe exactly what you do with their money—that's the hidden action—you can go ahead with the riskier project, and

if it fails, you just tell the lender that you had some really bad luck with the safer project.

- Again, the lender is completely aware of this danger, so the lender will try to take steps to lower the chance that the borrower will take advantage of them in this way. One way is to try harder to monitor the borrower. In fact, the lender will often require the borrower to give the lender periodic updates about the business. If the news doesn't look good to the lender, they reserve the right to require the loan to be repaid in full—and immediately.

- Incentives also play a role in limiting this behavior. As in the case of adverse selection, lenders find that borrowers who have more to lose will resist the temptation to engage in asset substitution. Therefore, collateral and down payments also have important incentive effects to mitigate the moral hazard problem.

- Another strategy that lenders will use is to lend for only short periods of time. If the borrower proposes a five-year project, for example, the lender may only lend for two years—but promise to make another two-year loan if the borrower behaves well. Because the borrower wants to keep the project funded, he or she has a big incentive to do what was promised, rather than playing the asset substitution game.

- The picture that has been painted about the role of information in financial markets seems pretty grim, but there is actually a positive side to the lack of information in the financial markets—opportunity. People who have better information have a competitive advantage in the financial markets. If you're a lender, you can make better decisions about whom to lend to and at what interest rate, if you have better information about borrowers. If you're an investor, you'll have a better idea of what a stock is really worth if you're better informed about companies and the economy.

- In other words, information has tremendous value in the financial markets, so people are always trying to uncover new information

and use that information to help them make profits. When some clever person finds new information, or figures out a better way to piece together existing information, they'll put that information to work in the market—lending or borrowing, buying or selling. If their information really is better, then they'll be rewarded by making more profits than their competitors.

Suggested Reading

Cecchetti and Schoenholz, "The Economics of Financial Intermediation," Chapter 11 in *Money, Banking, and Financial Markets*.

Varian, "Asymmetric Information."

Questions to Consider

1. Asymmetric information plays a big role in "insider trading" in the stock markets. If you're not familiar with the specifics of insider trading, look up its description on Investopedia or another financial website. Economists disagree about whether insider trading should be illegal. Some claim that the gains that people make from insider trading represent the market value of the private information the insiders have, and the markets are more efficient if insiders have the incentive to "sell" their information through insider trading. Do you agree or disagree with this argument? Are there other considerations as well?

2. Think about whether you agree with this statement: When we make loans to close friends or family members, we may be reducing the adverse selection problem but making the moral hazard problem worse.

Giving Credit Where Credit Is Due

Lecture 4

This lecture focuses on borrowing and lending by explaining what information lenders really consider when you apply for a loan and how they use that information in a process called credit analysis. Lenders use the term "credit analysis" to describe the process of gathering information and using it to come to a decision about whether to lend to a borrower—and if so, what terms and conditions they should also put on the loan. In this lecture, you will learn about how credit analysis works.

The Five Cs of Credit Analysis: Capacity

- The traditional system of credit analysis is often referred to as an expert system—because it relies on a human expert, like a loan officer in a bank, to use his or her analytical skills and experience to judge whether a potential borrower is creditworthy.

- One of the oldest and best-known expert systems is still the heart of much of the credit analysis that gets done, even by the fastest computers running the most advanced software. This system is referred to as the five Cs of credit analysis: capacity, conditions, collateral, capital, and character.

- The term "capacity" has more than one dimension, but financial capacity is a borrower's capacity to take on debt and to make the payments on any loans they might take out. One of the main ways to measure a borrower's financial capacity is in terms of his or her income because just about every borrower intends to repay the loan out of his or her future earnings.

- A lender will examine not only how large a borrower's income is now, but the lender will also spend a lot of time analyzing how dependable this income is likely to be in the future. The dependability of income is critical, because many loans are paid back over a long time.

- For individual borrowers, the dependability of future income is related to the type of job a person has and how long he or she has been in that position. For businesses, the lender has to forecast how much the business will earn in coming years, which depends not only on how well the business itself is run, but also on what the competitors in the market are doing and where the whole industry is headed. This is very challenging.

- The lender's estimate of a borrower's capacity to make payments on their loans is largely driven by his or her prediction of the borrower's income. Over time, lenders have learned that there is a limit on the share of income that borrowers can devote to making their loan payments. For individuals, for example, that limit is usually about one-third of their income.

- There's not really a universal income limit on business borrowing; the customary limits vary across industries, and even then, some companies seem to be able to comfortably support a lot more debt than their competitors do. This means that it's even more difficult in the case of business lending to assess a company's true capacity to borrow.

- Another important part of financial capacity is how many other loans, and what kinds, a potential borrower has already taken out. In other words, lenders are very careful to measure how much of your borrowing capacity you've already used up.

- In addition to financial capacity, there's a second dimension of capacity—the legal capacity to borrow. This is primarily an issue for business borrowers, and it comes from the fact that restrictions on future borrowing may be written into loan contracts. A business may have ample financial capacity to borrow, but previous loan agreements may place specific limits on the borrower's total debts.

The Five Cs of Credit Analysis: Conditions

- One of the five Cs that is closely related to capacity is conditions—as in, the economic conditions during the time that this loan will be

paid back. For example, if the economy is going into a recession, this increases the chances that people will get laid off, which of course lowers the incomes they expect to earn on average.

- Economic conditions are especially important in business loans because these loans are often used to fund the development of brand-new products or other new ventures. Some new products may not sell very well unless the economy is growing robustly—luxury items like designer handbags, for example.

- At the other extreme, a recession may be the perfect time to expand a chain of discount retail stores, so a lender may be more willing to make a loan for this project during a recession than during an economic boom—everything else equal, of course.

- Understanding the impact of economic conditions on a particular borrower's ability to repay a loan is a complex task that requires a lot of information and analysis. In the case of business loans, the lender will have to put some effort into understanding the business the company is in and how this particular business is usually affected by the economy.

The Five Cs of Credit Analysis: Collateral

- The next C of credit analysis is collateral, which is important for mitigating the information problems that get in the way of borrowing and lending. Also, when a loan is secured by collateral, the collateral helps ensure that the lender can recover most if not all of the money the borrower owes, in the event that the borrower defaults on the loan. In that case, the lender would seize, or repossess, the collateral and then try to sell it or otherwise use it to earn money.

- The collateral part of credit analysis is all about determining the most accurate value possible for the collateral that the borrower is offering. For a few types of loans—for example, loans for new or used cars—figuring out the value of collateral is not very difficult. But in general, it takes a lot of effort to find the right price for collateral.

- For businesses, who are investing in all kinds of specialized physical capital—like assembly lines, custom software, specially built factories, and office buildings—the valuation of collateral is even harder. Many lenders don't want to accept this specialized collateral and will only make loans backed by things that are easier to value. And if a business doesn't have many of these things, then they can't borrow very much.

- Sometimes, lenders are legally prevented from accepting certain business assets as collateral. For example, some countries only permit real property—land and buildings—to be pledged as business collateral. This policy ends up hurting small businesses, which are sometimes locked out of the loan market in these countries.

- When it comes down to it, most lenders don't want to have to repossess the collateral. They'll usually try to work with a borrower who is having difficulties and find a way for the borrower to keep paying the loan, rather than having to go through all the hassle and expense of repossessing and selling these items.

The Five Cs of Credit Analysis: Capital

- The fourth C of credit analysis is related to collateral—it's capital, which is the value of the other things that a borrower owns that they could sell or otherwise use to generate cash in order to repay the loan.

- As in the case of collateral, this is not really the preferred way that the borrower would repay the loan, but if a borrower defaults on a loan and the lender takes the borrower to court to collect on the loan, the court will expect the borrower to use all of his or her resources—including the other things they own—to repay the loan.

- Capital is technically the difference between the value of all the things you own and the total value of all the debts you owe to others. Capital is really the net worth of the person or the business. In accounting, equity also refers to the capital or net worth of a business or a person.

- Capital provides an extra cushion of safety for the lender, in case the borrower can't repay the loan and if the true value of the collateral turns out to be lower than the lender thought it was. If the borrower has some capital, this means that there are at least a few things that the borrower owns free and clear that can be sold—hopefully—for cash to help repay the loan.

- Capital works very much like collateral. In fact, capital also has the same incentive effects that collateral does. Capital works by making sure that the borrower has something to lose if he or she defaults. The more capital a borrower has, the more he or she stands to lose if he or she defaults on a loan. This incentive effect of capital is so important that one of the ways that we regulate banks and other financial companies is by requiring them to have enough capital.

The Five Cs of Credit Analysis: Character

- The last of the five Cs is character, which is about your integrity as a borrower. When you take on a responsibility, how seriously do you take it, and how hard do you try to live up to your responsibilities? This is what character is trying to measure.

- There's no way to measure character directly, but there are many indirect ways to measure it. For example, a lender can simply look at your track record of meeting all your other financial obligations—such as paying your monthly electric bill or the rent on your apartment. Whether, and how, you paid back previous loans is a very good indication of character.

- These examples show what kind of information about your character that people can infer from your financial history, but other things also give clues about your character. How long you've worked in your current job, for example, can give information about your character.

- Although it's easy to understand character on an individual level, with businesses, we usually use the term "reputation" instead of "character"—but it's really referring to the same commitment

If people have to spend more than a third of their income paying back loans, then they're in a precarious position—and an unexpected medical bill can leave them short of money to pay back one or more of their loans.

to meeting financial obligations. And we measure a business's reputation for repayment the same way we measure the character of individual borrowers.

- Does the business pay its bills on time, along with its other loan payments? If the answer is yes, then a business builds up a reputation for paying its debts, and this factors positively into the analysis of its credit.

Suggested Reading

Fair Isaac Corporation, "Learn about Scores."

Saunders and Cornett, "Credit Risk: Individual Loan Risk," Chapter 11 in *Financial Institutions Management.*

Questions to Consider

1. You are entitled to receive one free credit report per year from each of the major consumer credit bureaus. Have you looked at your credit report recently? Details about how to obtain the free credit reports are included in an excellent question-and-answer document about credit scores available at http://www.federalreserve.gov/creditreports/.

2. Do you know how to dispute or fix incorrect information in your credit report? The U.S. Federal Trade Commission (FTC) publishes a how-to guide at http://www.ftc.gov/bcp/edu/pubs/consumer/credit/cre13.shtm.

What are the simple things you should always do to keep your credit score as high as possible? The FTC has an extensive set of recommendations at http://www.ftc.gov/bcp/edu/pubs/consumer/credit/cre03.shtm.

The Fine Print

Lecture 5

Every financial instrument is based on some kind of contract, so if you're going to be using any kind of financial instrument—as a borrower, lender, or trader—you need to understand the contract associated with that instrument. Understanding what is actually in a contract can make you more comfortable with using financial instruments and better able to judge whether a particular contract really does contain provisions that you don't want to agree to. In this lecture, you're going to take a closer look at financial contracts.

Financial Contracts

- Technically, we can put just about whatever we want into a financial contract; after all, it's simply an agreement between all of the different parties. But at the heart of just about every financial contract is a simple exchange, or a sale. Generally, one party to the contract gives cash to the other party now, while the other gives something of equal value in exchange. The item of value can be just about anything, but there are a few common categories.

- The first category is an ownership claim on something, such as a business, a building, or even a portfolio of securities. One of the main jobs of the financial markets is to help people pool money and divide up the ownership of large and expensive assets that people can't afford themselves. Whenever we pool resources like this, we need to have some kind of contract that lays out who owns what and what each owner's rights and responsibilities are.

- The second type of valuable item is a promise to make cash payments—or possibly noncash payments, too—sometime in the future. The key part is the promise to deliver something of value later, rather than now. This, of course, is the basic arrangement behind lending. The lender gives the borrower cash now, and the borrower gives the lender a promise to make a set of cash payments

Most people have signed off on loan contracts that they don't fully understand.

in the future. The set may include only one large cash payment, but it usually includes many smaller payments, like loan payments.

- Whenever a financial contract calls for an exchange, both sides are agreeing that the two things they're exchanging are equivalent in value. Many financial contracts involve putting a money price on a financial asset that may actually be fairly difficult to price, for both the lender and the borrower. A lot of negotiation may have to be done before the two sides are able to agree on the exact terms of the contract.

The Promissory Note

- One of the most common financial contracts is the promissory note. As its name suggests, it's a contract in which one party is promising to transfer something of value to another party at some future date—presumably in exchange for something of value today, though it could also be in exchange for something in the future as well. The promissory note is the basic document behind every

loan, and many other financial contracts are variations on the basic promissory note.

- One of the main parts of the promissory note is a section of information that describes what is being promised; these are the detailed terms of the loan. This part of the agreement states how much the borrower is receiving from the lender and how the borrower is supposed to repay the loan.

- These details include how much each payment will be, how often the payments will be made, and for how long. In addition, the interest rate on the loan is stated explicitly. We have a specific description of what each party is receiving in this exchange.

- The next part of many promissory notes is actually many times longer than the description of the promised payments. This part is a set of covenants, which are additional conditions that one party requires the other to fulfill as part of the overall contract. They're additional promises that one party makes to the other—usually it's the borrower making promises to the lender.

- Covenants are necessary because of the problems caused by asymmetric information, especially adverse selection and moral hazard problems. Because the lender won't be able to observe the borrower's type or actions perfectly, the lender requires the borrower to make a set of promises that helps to protect the lender from being taken advantage of.

- Covenants come in two basic forms: positive and negative. The positive covenants in a promissory note require the borrower to take actions that benefit the lender by increasing the probability that the borrower will repay the loan. For example, many positive covenants require the borrower to provide information to the lender, which helps the lender monitor the borrower's activities.

- Negative covenants require the borrower to avoid doing certain things. For example, many loans place limits on the amount of

additional borrowing that the borrower can do until this particular promissory note is fully repaid. Negative covenants are usually aimed at the moral hazard problem by ruling out specific actions that borrowers could take.

- Most promissory notes have at least a small set of covenants, and many loans have a big set of covenants. For many business loans and bonds, the covenants run to dozens of pages of dos and don'ts, and it takes a lot of effort for borrowers to comply with all of these covenants—so much that they consider covenants a significant added cost of the loan.

- The final part of the promissory note has to do with enforcement. The enforcement-related parts of the promissory note specify the penalties for late payments, and they define the circumstances when the borrower will be considered in default on the loan.

- If the borrower has posted collateral, then this part of the promissory note will specify when the lender may take possession of the collateral. In many cases, lenders will also specify that if they have to hire a collection agency or legal help in order to collect missed payments from the borrower, they'll pass those costs on to the borrower.

- The enforcement provisions also include procedures and penalties dealing with violations of the covenants in the promissory note. One of the most common penalties is known as an acceleration clause. If the lender finds that the borrower has violated a covenant, the lender has the right to require the borrower to repay the loan in full, immediately. That is, the lender can accelerate the repayment of the loan.

Types of Loans

- There are two main types of loans that most people take out. The first type is called an amortizing loan, in which the loan principal is gradually paid back over the life of the loan so that each payment pays some interest to the lender, and it also pays back some of the

loan principal. In most amortizing consumer loans, such as car loans and mortgages, the payments are all the same amount, and they're made monthly.

- Keep in mind that financial contracts are agreements to exchange two things of equal value. This helps you think about how to calculate the monthly payment on an amortizing loan. In the case of a four-year car loan of 40,000 dollars, the lender and the borrower agree that the value of the 48 equal monthly payments is exactly equal to 40,000 dollars. The payments are not just principal, but they also have to contain the right amount of interest.

- The annuity formula is known in finance as one of the basic formulas for calculating the time value of money; it makes concrete the idea that money promised to you in the future isn't worth as much as cash in hand today. One of the most common applications of this formula is to find the payment amount for an amortizing loan.

- The following is the general formula. $\text{Principal} = \frac{Payment}{i} - \frac{Payment}{i*(1+i)^n}$

  where *Payment* is the amount of the payment, *i* is the interest rate, and *n* is the number of payments.

- This formula captures the basic exchange of value in the loan contract: On the left-hand side of the formula is the loan principal, which is the amount of cash the lender is handing over to the borrower, and on the right-hand side of the formula is an expression that gives the value of the payments that the borrower is promising to make. You can fill in the numbers from your loan agreement and then simply solve for the payment amount.

- For the annuity formula to work, the interest rate has to match the time period covered by each payment. Because each payment covers one month, the interest rate has to be the interest rate for one month.

- The Truth in Lending Act requires the lender to tell the borrower what the annual percentage rate (APR) is on the loan. This requirement came about because there are actually many different ways to quote interest rates, and the law requires every lender to use the same way so that borrowers can easily compare interest rates across lenders.

- Revolving loans are the second major type of loan that people take out. With a revolving loan, the borrower is free to pay back the full loan amount at any time, but doesn't have to. If the loan isn't paid off at the end of a month, then the lender adds a finance charge to the amount of the loan that hasn't been paid off, and that becomes the new total amount of the loan.

- In the case of credit cards, this is complicated by the so-called grace period on new purchases. Most credit card lenders won't charge interest on new purchases for some amount of time, usually between 21 and 28 days, provided that the person had a zero balance on the card to start with. This gives people a chance to avoid paying interest at all, if they always pay off the full balance on their credit cards each month. But if you don't pay off the full balance each month, then the credit card lender will charge interest.

- Credit card lenders charge interest based on your average daily balance. To do this, they need to use a one-day interest rate. Just as in the example of the car loan, this daily rate can be found by taking the APR and dividing. In the case of daily rates, assume that each year has 365 days, so the daily rate is the APR divided by 365.

- If the credit card's APR is 18 percent, or 0.18, the one-day interest rate used to find the interest on the average daily balance will be 0.18/365, or 0.0004932. This daily interest rate is multiplied by the average daily balance, which gives the interest charge for one day. This number is then multiplied by the number of days in the billing cycle to get the total finance charge for the month.

Suggested Reading

Federal Reserve Bank of Philadelphia, "Do You Know Your Credit Rights?"

Qian and Philip, "How Laws and Institutions Shape Financial Contracts."

Questions to Consider

1. You can download a simple loan payment calculator for Excel at http://office.microsoft.com/en-us/templates/loan-calculator-TC006206287.aspx.

Using this calculator, find the monthly payment if you refinanced your current mortgage at an interest rate that is one percent lower than it currently is.

2. In many loans made between banks and other financial institutions, the collateral used includes bonds, such as government bonds. But when a borrower offers a bond as collateral, the lender will give the collateral a "haircut." The haircut is a discount, usually between 1 and 10 percent, from the current market value of the bond. Thus, if a bond used as collateral is currently worth 10,000 dollars and the lender gives a haircut of 5 percent, then the lender will only be willing to lend the borrower 9,500 dollars because 500 dollars is 5 percent of 10,000 dollars. Why do lenders give certain types of collateral a haircut? Why don't banks do that for mortgages? (If you'd like some hints, please try the Investopedia article on haircuts at http://www.investopedia.com/terms/h/haircut.asp#axzz2DmUTP3Ao.)

What Is Special about Banks?

Lecture 6

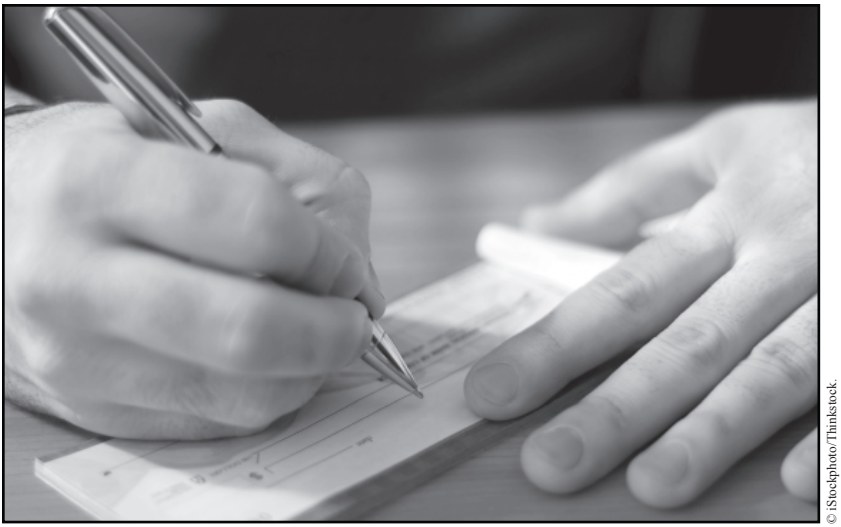
Banks do so much for us that it's almost impossible to imagine life without them. Banks are what we call financial intermediaries because they stand between borrowers and lenders and help money go back and forth between the two. This might give you the impression that banks aren't really necessary, but they aren't simply passing the money from lenders to borrowers and back. They need to put in some serious effort to get money to flow from lenders to borrowers—and then flow safely back to the lenders again. In this lecture, you will learn how banks successfully do this.

Taking Deposits and Making Payments

- The business of banking starts with taking deposits. In most countries, the definition of a bank centers on this activity. A bank deposit is, as its name suggests, a way for a person to store value by placing, or depositing, it in a bank. In the simplest deposit contract, the bank promises to keep the money safe and to return the money to the depositor whenever the depositor wishes.

- The business of making payments—transferring money and other valuable items back and forth between people—is incredibly important to every economy. In fact, this job is important enough to be added to the list of financial functions that you've been learning about in this course. The formal name of this fifth function is clearing and settling payments.

- There are two parts to making payments. The first part, clearing, is about making sure the payment instruction gets to the right person or business. For example, if you pay your credit card bill by sending a check to the company's payment processing center in Delaware, then the credit card company has to find some way to present that check to your bank, which is located several states away.



People use checks because it is both secure and convenient to have the bank hold your money and make payments for you.

- Once the check comes to your bank, the bank verifies that this is an authentic payment instruction. If the bank agrees that the check really did come from you, and you have enough funds in your checking account to cover the amount of the check, then the bank will proceed to the next phase of the payment process—settlement.

- In settlement, the money is actually moved from your bank to the credit card company. Once the money reaches the credit card company, the settlement is declared final—meaning that neither you nor your bank can change your minds about actually making the payment. Up to the time that the settlement is final, you could technically stop the payment by giving an instruction to your bank to do that.

- Needless to say, in the old days, clearing and settlement was a huge hassle. Companies and banks had to physically deliver payment instructions, such as checks, to the banks they were drawn against.

Then, they had to take the money back to their own banks, which was costly and dangerous.

- These expenses made people reluctant to accept payments from banks that were far away. In addition, people tried to cheat each other by presenting fake checks drawn on banks that didn't even exist. This made people even more reluctant to accept payments from banks that were in another city.

- To overcome these problems, banks in large towns started to meet regularly to pass payment instructions from each others' depositors—and money—back and forth. In the big cities, the banks had to meet daily to make these exchanges. The banks would all chip in to rent or buy a building where they could meet and make these exchanges daily, and these places became known as clearing houses.

- Clearing houses are important because they're the basic model for how our entire payment system works today. When global banks like HSBC and Citibank make billions of dollars of payments to each other, they use an arrangement that's based on the basic clearing-house model—with some updates, of course.

- These days, whenever you make a payment using some kind of payment instruction rather than cash, your payment is cleared through some kind of clearing house. There are private clearing houses, and one of the largest ones is operated by the Federal Reserve.

- Over the years, information technology has made the process of clearing and settling payments faster, safer, and more convenient. Today, in addition to using paper checks, many businesses and organizations accept electronic funds transfers (EFTs), which can be as simple as using a debit card at the grocery store.

- A payment system failure often leads to long and painful recessions. The Great Depression, for example, was so bad in part because of the failure of a large part of the payment system. And the reason why the financial crisis in 2008 led to a recession was that it caused

big problems in the payment system that hadn't been seen since the Great Depression.

- Clearing and settling payments takes effort and resources. It costs money to move money from one person to another. When a bank makes and collects payments for you, it has to put a lot of resources into this activity. And this helps explain why banks often charge significant fees on their checking accounts.

- If you think that fees on your checking account are high, consider the alternative—living without a bank checking account. Not only would you have to figure out some way to store your cash safely, but you also face the expense of making and collecting payments in cash. If you can't make your payment in cash, then you have to buy something to make the payment with.

- Collecting payments from other people is also expensive. Although some stores will cash checks issued by well-known companies or banks if you make a significant purchase there, generally you will have to use a specialized business called a check-cashing outlet. These businesses charge fees based on the amount of the check cashed and the riskiness of the person or company who wrote the check.

Making Loans

- In the fractional reserve banking system, the money the bank has on hand to pay back depositors—that is, the reserves—are only a fraction of the deposits. Most of the deposits are loaned out at any given time. The lender is trying to lend successfully so that he or she can keep the interest on the loan as profit. But some of the deposits are always on hand, so that when people come back to take some or all of their deposits out, the bank has enough cash to meet this demand for withdrawals.

- Providing payment services is important, but it's not really a big source of profits for banks. The real profits are in borrowing money from the depositors and lending the money out to

households and businesses. That's why we say that banks are financial intermediaries; they stand between the ultimate borrowers and lenders.

- Banks borrow from their depositors in two main types of accounts: demand deposits and time deposits. A demand deposit is a deposit that may be withdrawn at any time—that is, on demand. One type of demand deposit is a checking account, which is often also called a current account. These demand deposits may not only be withdrawn at any time, but they also can be used to make payments, through checks or EFTs. There are other simple demand deposits without the ability to make payments: savings accounts.

- A time deposit is a deposit contract in which the depositor explicitly agrees to leave the deposit in the bank for a minimum amount of time. Needless to say, these accounts can't be used to make payments. It is possible, however, for someone to withdraw their time deposit before the time is up. But if you do, the bank will reduce the amount of interest you get dramatically, and in some cases, it will actually give you back less money than you deposited. This is the so-called penalty for early withdrawal.

- The bank pays interest on all of these different deposits. Generally, the longer the bank can count on you to leave your deposit in the bank, the higher the interest the account pays. In the case of current accounts, the interest is often paid in kind, instead of in cash. That is, if you have a so-called free checking account, then the bank is paying you interest in the form of payment services. But because payment services are fairly expensive, banks usually require depositors to hold a minimum amount in their checking accounts at all times in order to earn free checking.

- On the other side, the bank earns interest on the loans that it makes. We often distinguish between loans according to whom the bank is lending to. Banks lend to businesses, including to other banks, which is often called commercial and industrial lending, or

wholesale lending. Banks also lend to individuals, which is called retail lending.

- In addition to regular loans, banks also provide lines of credit to both businesses and individuals. A line of credit is preapproval to take out a loan, up to a certain amount, that the borrower can use whenever they like. Borrowers like the flexibility, and the bank earns a monthly or annual fee just for holding the credit line open for the borrower. And when the borrower actually taps the line of credit by borrowing, the bank earns interest on the resulting loan.

- When we add all the interest that the bank earns on the various loans that it makes, and add all the interest on all the deposits that the bank takes, we can compare these numbers and get a very important measure of a bank's profitability called its net interest margin, which is the difference between two ratios.

- The first ratio is formed by taking the total amount of interest earned and dividing it by the total amount of all the interest-earning assets the bank holds, which gives us the average interest rate the bank is earning on its loans. The second ratio is formed by taking the total amount of interest paid out by the bank and dividing it by the total amount of borrowing the bank does. This gives us a measure of the average interest rate a bank pays on its deposits. The difference between the two is called the net interest margin.

The Advantage of Banks

- There is an explanation for why banks have played such a dominant role in the financial markets throughout history—and continue to do so in most economies today. Banks are simply better at the business of lending than other institutions.

- First, banks can make better-quality loans than other potential lenders because they have better information about the potential borrowers. Second, even when a loan does go bad and the borrower can't pay, the bank has a better ability to recover at least some

money from the borrower. Both of these advantages come from the fact that banks take deposits.

Suggested Reading

Cecchetti and Schoenholz, "Depository Institutions: Banks and Bank Management," Chapter 12 in *Money, Banking, and Financial Markets.*

Rajan and Zingales, "Which Capitalism?"

Questions to Consider

1. Do you carry a credit card that pays you cash back, frequent-flyer miles, or other bonuses based on your transactions? How do the credit card companies manage to pay you these bonuses? Have you calculated what these bonuses are really worth?

2. One of the other advantages that banks have as lenders that we didn't have the chance to cover in this lecture is that banks can diversify risk by lending to many different borrowers. Consider this: In the 1930s, the United States experienced thousands of bank failures. The United States had thousands of small banks, and generally each bank served a single town. Meanwhile, in Canada, there were almost no bank failures during this time. There were only about 10 banks in Canada, but they were allowed to have branches all over the country. What role did diversification play in this story?

Billion-Dollar IOUs—Using Bonds to Borrow

Lecture 7

Even though banks are very good at lending, this doesn't mean that there isn't any room for alternative ways to borrow and lend. In fact, one of the most significant developments in the financial markets over the past century has been the rise of these alternatives. In this lecture, you will learn what these alternatives are and why they have only recently challenged the dominance of bank lending.

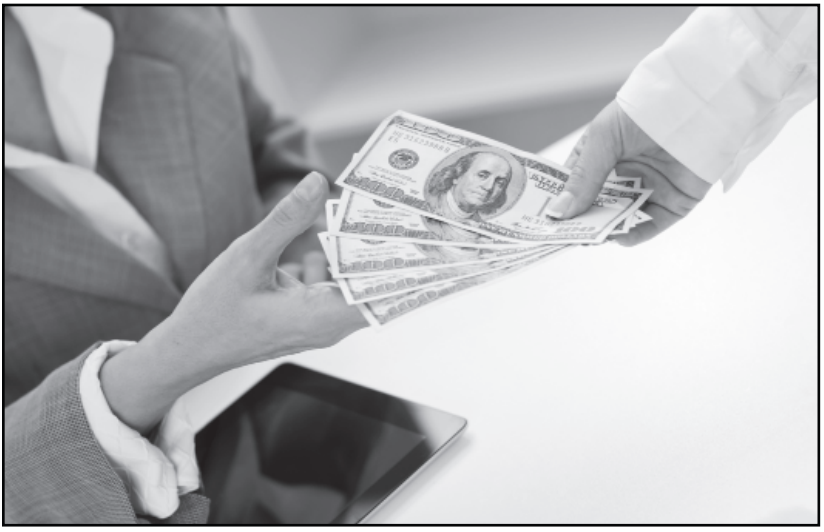
Bonds versus Bank Loans

- Bonds, like all other financial instruments, are contracts. The technical name for the bond contract is a bond indenture. The modern bond indenture looks a great deal like a standard bank loan contract. The indenture describes the terms of the loan and includes restrictive covenants. However, bonds differ from bank loans in several important ways.

- First, bonds tend to have a different arrangement for repayment than most bank loans, which call for monthly payments, and each payment includes both interest and a partial repayment of the total amount borrowed. The standard bond, on the other hand, calls for semiannual payments—that is, the borrower makes a payment only twice a year, once every six months. No principal is paid back until the end of the bond contract, which is called the maturity of the bond.

- Every six months, the borrower simply pays the accumulated interest on the amount they borrowed. Because the borrower doesn't pay off the principal until the end of the bond, the interest payment stays the same throughout the life of the bond. At maturity, the borrower pays the final interest payment and repays the original amount borrowed as well.

- The interest payments on a bond are called coupons. The amount of the coupon is determined by an interest rate called the coupon



In terms of lending, bonds pick up where banks leave off, making it possible for companies and governments to borrow astounding amounts of money, for very long periods of time.

rate, or coupon yield. The coupon rate is set at the start of the bond contract, and it's usually chosen to match the market interest rate at the time the bond is issued.

- When a company borrows using a bond, we say that the company issues a bond. When a company issues a bond, it sells the bond to any investor who wants to buy it. The buyer of the bond is lending money to the bond issuer, and the purchase price of the bond when it's issued is the amount of the loan.

- Another important distinction between bonds and bank loans is that when companies borrow by issuing bonds, they don't usually borrow the entire amount from one lender. That is, companies don't usually issue one giant bond at a time. Instead, they issue hundreds or thousands of identical small bonds at once. Each individual bond's price is a fraction of the total amount the company wants to borrow.

- Companies often find it easier to borrow a lot of money using bonds rather than bank loans because it's going to be easier to find a large group of investors who are each willing to invest a little money rather than finding one investor who's willing to invest a huge amount of money. The financial markets have developed a pretty good process for making this work.

- The final way that bonds differ from bank loans is that bonds tend to have more restrictive covenants than bank loans do—a lot more covenants. There's a good reason for that, and it has to do with information.

- Banks have a huge information advantage over other lenders, based on the fact that the bank maintains the borrower's checking accounts. The bank can observe, minute by minute, what the borrower is up to, financially speaking.

- In a bond transaction, on the other hand, think about the interactions that the borrower and all the bond buyers have: The bond investors buy the bond, and hopefully every six months they get their coupon payments from the borrower, followed by the final payment of interest and principal at maturity—but that's it. There's not much information flowing from the borrower to the lenders in the bond market, or indeed in any direct-financing arrangement.

- Direct financing is often called arm's-length financing, because the borrower and lender don't really have much to do with each other apart from this particular lending arrangement. Bank lending, on the other hand, is often called relationship-based financing, because the borrower and lender have an ongoing financial relationship in addition to the lending arrangement.

- In an arm's-length, direct-financing arrangement, there's much less information being passed from the borrower to the lender. So the lender has to compensate for that lack of information flow in some way—otherwise, they wouldn't lend the money in the first place. The way to do that is to use restrictive covenants.

- Bond indentures contain many restrictive covenants aimed at requiring the borrower to disclose specific information about his or her financial condition and activities to the lenders. That way, the bond lenders can have sufficient information about the borrower to mitigate all of those moral hazard problems that take place after the loan is made.

- This in turn raises an important question: How do the lenders get enough information about the borrower before the loan is made? Remember the key adverse selection problem that all lenders face—every borrower will try to look like a great borrower, even though many of them are not so great.

- How do thousands of small investors get enough information about a borrower's quality to be able to judge whether to buy a bond from a particular borrower? This is one of the toughest information problems in finance, because there's not just one information problem, but two.

- First, we have the adverse selection problem. Lenders like banks overcome the adverse selection problem by investing their time and money into gathering information on potential borrowers and doing credit analysis on them. Why don't bond investors do the same thing?

- This is where the second problem comes in. For a moment, assume that individual lenders have the expertise and resources to gather information and do credit analysis on individual bond borrowers. That's already a huge assumption, but assume that you go through the time and expense to gather information on a company, do the credit analysis, and conclude that the company is a great borrower and that you want to buy its bonds.

- If you announce to the world that you think the company is a great borrower, then other people buy the bonds and get the benefit of all your hard work. This happens because information is what

economists call a public good, which is a special kind of good that multiple people can consume without using it up.

- Information is one of the most important public goods. Once information is made public, it becomes a public good. Everyone can use this information to make themselves better off, without using up the value of the information.

- Economists call this situation the free-rider problem, and it's the second information problem that makes direct financing especially challenging. The solution to the adverse selection problem in lending is to invest resources into producing information, but private investors don't have the incentive to invest in producing information about a borrower's creditworthiness because disclosing this information will produce a public good and make everyone else better off at the investor's expense.

- What if you do all of that work but don't disclose it to the rest of the world and buy the bonds if you find that the borrower is good enough? The information will still get out to the market because the very act of buying a bond sends a signal to other people in the market that you think that the borrower is creditworthy. So other people can still coast off of your hard work.

- Banks get around this problem because they can keep the information private. Not only do they keep all of the information they learn about borrowers secret, but they also don't have to disclose to the rest of the world if they make a particular loan to a customer. So the information about a borrower's creditworthiness stays inside the bank, and the bank is the only one that benefits from this private information.

Credit Rating Agencies

- How do we have a bond market at all, if nobody wants to do the work to find out if a potential borrower is creditworthy? The financial markets have come up with a workaround that takes the form of a specialized business called a credit rating agency,

which collects and analyzes financial information on all kinds of borrowers who would like to issue bonds.

- The rating agencies make judgments about the financial strength of a potential borrower and, in particular, about a borrower's ability to meet its financial obligations in the future. These judgments take the form of easy-to-understand labels, or ratings, that are then released to the public. Then, anyone who is interested can use the rating to help make up his or her mind about whether to buy a particular borrower's bonds.

- There are many rating agencies out there, but three seem to tower above all the other ones in terms of their prominence. Most bond issuers are rated by at least two of these three companies: Fitch, Moody's, and Standard & Poor's (S&P).

- The ratings systems use letters, where A is the top grade and D (which stands for "default") is the failing grade. Each rating has between one and three letters, as well as pluses and minuses. This enables the rating system to make relatively fine distinctions between the creditworthiness of different borrowers.

- When a rating is assigned to a borrower, it's not written in stone. The rating agency continues to monitor the borrower's financial condition, and it will change the rating if it receives sufficient evidence that the borrower's financial strength has changed. Both upgrades to higher ratings and downgrades to lower ratings are possible. However, upgrades and downgrades are not intended to anticipate changes in the borrower's financial strength; instead, they're signals that the borrower's strength has already changed.

- The business of bond ratings works like this. When a borrower is interested in issuing bonds, he or she hires at least one credit rating agency to rate them. The rating is on the borrower, not the bonds—so if a borrower is rated, the rating applies to all of their bonds. The borrower pays the credit rating agency to evaluate its financial information and to assign a rating, which then is announced to the public.

- The fact that the borrower pays for the rating is critical. Notice how this arrangement gets around the incentive problem that was referenced previously. The lenders don't have enough incentive to put sufficient effort into analyzing the borrower's credit, but the borrower does; after all, if the borrower doesn't get a rating, he or she can't issue the bonds. So the borrowers capture enough of the benefit from the credit analysis to make it worth their while to foot the bill for a rating.

- This arrangement represents a conflict of interest, and this is a serious issue. Investors and bond issuers alike voice legitimate complaints about the bond rating process, but given its flaws, it's impressive that the rating system has worked as well as it has.

Suggested Reading

Brealey, Myers, and Allen, "The Many Different Kinds of Debt," Chapter 24 in *Principles of Corporate Finance.*

Thau, "Buying and Selling Bonds," Chapter 2 in *The Bond Book.*

———, "The Life of a Bond," Chapter 1 in *The Bond Book.*

Questions to Consider

1. What is the number of AAA-rated companies in the United States, or in other countries? You can find out through a quick Internet search on "AAA-rated companies." Similarly, how many AAA-rated governments are there? Given the current economic conditions, would you expect these numbers to be high or low right now?

2. One controversy regarding rating agencies is what responsibility they have for their ratings. The rating agencies claim that their ratings are merely opinions so that they can't be held liable for any losses that people suffer when they use the ratings to make investing decisions. Do you agree with this? If not, then how much financial responsibility should rating agencies bear?

The Double Identity of Stocks

Lecture 8

In this lecture, you will learn about one of the strangest-sounding borrowing arrangements: What if somebody asked to borrow money from you today and made it clear that he or she never intended to give you your principal back? Not only is this one of the most popular types of borrowing arrangements, but it's also safe to say that the modern economy was built on these loans—called stocks. As you might suspect, there's a lot more going on in the stock market than just a simple loan arrangement.

The Double Life of Stocks

- Stocks perform two of the six functions of financial markets at once. The job that is usually associated with stocks is to pool resources and share ownership of assets, but stocks also transfer resources across time and space—that is, they facilitate borrowing and lending. In fact, in the case of stocks, the two jobs are really inseparable.

- The whole point of buying shares is to transfer resources across time and space, which is what loans do as well. In fact, from the stock buyer's point of view, buying a share of stock and making a loan work much the same way: Pay out money today, wait, and hopefully get back more money in the future. That's why we can say that stocks are just a different kind of loan.

- The lending arrangement for stocks is very different from the ones you've already learned about. To begin with, the lender doesn't pass the money to the borrower by buying an IOU from the company, as in the case of loans. Instead, the lender buys an actual ownership stake in the company. And there's no explicit maturity to this loan, unlike the cases of bank loans and bonds.

- Because there's no explicit maturity, we say that in the case of stocks, the maturity of the loan is technically infinite—that is, the

borrower doesn't promise to pay back the loan principal, ever. That doesn't mean that the borrower can't, or won't, ever pay it back. That can take place if the borrower buys the shares back from the shareholder. This does happen, but it's not the way that most shareholders get paid back.

- Part of the return on a stock can come from dividends, which are a portion of the company's profits that are paid out to the shareholders. We could view dividends as equivalent to interest payments on a loan, but there's a key difference between the two: Paying dividends isn't required on stocks.

- Many companies want to pay dividends, because this is one way to keep their shareholders happy—and keeping shareholders satisfied is important to a company—but there are a few reasons why companies may not pay them out. For example, a company may want to pay dividends, but may not earn any profits, so it simply can't afford to pay dividends. And there are companies that simply don't want to pay dividends.

The main job of stocks is to pool resources and share ownership of assets, but they also facilitate borrowing and lending.

- One thing a corporation can do to make some of its stock more attractive is to make an explicit promise about the dividend it will pay on certain shares. For example, a company can sell special shares for a dollar each and promise to pay a five percent dividend on them. And it can also promise that it won't pay dividends on any other shares until it pays out this dividend on the special shares.

- Finally, the corporation may promise to buy back the special shares at a guaranteed price, such as the dollar that you originally paid for them. In other words, a corporation can give some shares preferential treatment. When a corporation does this, these shares are called preferred shares. Shares without this special treatment are called ordinary or common shares.

- Preferred shares are issued by companies, but generally in limited amounts, and they tend to play a niche role in company financing. The main reason why common stocks are a popular way to lend money to companies despite the fact that they don't necessarily pay any dividends is that there's a huge additional source of returns on these loans—capital gains. A capital gain is a change in the price of an asset, and it's part of the return on any investment.

- The total return on any asset is the sum of two parts. The first part is the income paid on the asset, which is the interest on a loan or a bond, or the dividend paid on a stock. The second part is the capital gain, which is the amount of price appreciation—the difference between the price you sell the asset for and the price you bought it for. So even if a stock pays very little or even no dividends, it can still be an attractive investment if it has the possibility of large capital gains.

- If a company could pay dividends but doesn't, it takes the money and reinvests it into new projects that could earn even more profits in the future. This is called internal financing. Investors are happy to let companies keep the profits and reinvest them, rather than paying out dividends—as long as the company's projects really do pay off.

Proprietorships and Partnerships

- There are many ways to set up the ownership of a business. Most small businesses are proprietorships, which means that a single person owns it. In a proprietorship, the owner or proprietor keeps all the profits but is also personally responsible for all the debts of the business.

- There are also partnerships, in which a business is owned by two or more partners. As in a proprietorship, the partners share all the profits, but each partner can be held responsible for all the debts of the business if the other partners can't pay them.

- Proprietorships and partnerships are still popular ways to organize a business, but they have one main drawback: The owners' liability for the debts of the firm is unlimited. That is, if the business goes bankrupt, the owners will have to dig into their personal savings to pay off all the debts of the business. This risk discourages people from starting businesses, especially when the business requires a big investment to get up and running.

- One way to get around this problem is to spread the risk among many more partners. So a more formalized partnership called the joint-stock company came into existence in the 16th century. The strategy of spreading ownership among thousands of stockholders was successful, but only to a point.

- The real revolution in ownership came with the introduction of limited liability, which occurred in the 19th century. Limited liability refers to limits placed on the financial responsibility of the business owners. Under limited liability, the owners can lose whatever money they have invested in the business, but no more—that is, they are no longer personally responsible for the debts of the business.

- That means that the risk of the business is shared more evenly between the owners and the people who loaned money to the business. Under limited liability, a lender stands to lose more if a

business it loaned money to goes bankrupt. This discourages banks and other lenders from lending to a company, especially when it is just starting up. But it gives a much stronger incentive for people to start new businesses and participate in the ownership of a business, and this more than makes up for the lower amount of lending.

- There are several broad ways to organize a company so that it has limited liability. First, there are limited partnerships. In a limited partnership, some partners have limited liability, but there is at least one partner called a general partner who still has unlimited liability.

- Then, there are corporations. In a corporation, the ownership of the company is divided into many small portions called shares, and an owner of a share, called a shareholder, is a part owner of the corporation. Each shareholder's liability for the corporation's debts is limited to the amount of money they paid for their shares.

- Finally, there is also a type of company known as a limited liability company, called an LLC in the United States. They're present in most economies, and they're often confused with corporations. A limited liability company is organized a lot like a corporation, but there aren't shares. The owners are called members.

- In addition, a corporation has legal status as a person, and it has to pay taxes on its profits. Limited liability companies pass their profits on to their members, and the members count these profits as part of their individual incomes for the purposes of taxation.

Control Rights

- There's a continuum of control rights that are embedded in financial instruments. Some loans give the lender only a little bit of control over the borrower, other loans give the lender a significant amount of control over the borrower, and stocks give the lender full control over the borrower—at least while the company stays out of bankruptcy. The amount of control the lender exercises over the borrower is an important issue that a lender and borrower have to negotiate when they make a financial contract.

- It can be argued that there is a tradeoff in financial instruments between control and seniority, called the seniority-control compromise. In this compromise, borrowers and lenders agree to trade off seniority and control against each other. Seniority refers to your place in line when the company pays back its lenders; the higher seniority you have, the closer to the front of the line you are and the more likely it is that the company will pay you back in full and on time.

- The seniority-control compromise describes the fact that when you compare different financial instruments, you find that there's an inverse relationship, or a tradeoff, between seniority and control. The more seniority a loan has, the fewer control rights the lender receives, in general. At the same time, low-seniority instruments receive more control rights. Stocks, because they have the lowest seniority, have the strongest control rights over the borrower.

- This compromise works because seniority and control are two different strategies that lenders can use to protect the value of their investments. Seniority protects a lender by enabling the lender to get paid sooner, when there's a better chance of getting repaid.

- Control protects a lender by giving him or her the ability to force the borrower to do things that help ensure that the borrower can repay the lender. Stockholders use their explicit control rights to operate the company in ways that increase the value of their shares.

Suggested Reading

Brealey, Myers, and Allen, "An Overview of Corporate Financing," Chapter 15 in *Principles of Corporate Finance.*

Cecchetti and Schoenholz, "Stocks, Stock Markets, and Market Efficiency," Chapter 8 in *Money, Banking, and Financial Markets.*

Questions to Consider

1. In this lecture, you learned about companies that don't pay dividends so that they can reinvest all of their profits back into the company, presumably into high-returning investments in new products. When should companies that follow this practice of not paying dividends start to pay them? Do you think that this is an easy decision for the managers? Why or why not?

2. In the United States, there is an ongoing debate about whether to make it easier for groups of investors to participate in selecting the board of directors. For example, one proposal considered by the SEC would allow any investor who has held three percent or more of a company's shares for at least two years to be able to nominate candidates for election to the board of directors. Currently, only the members of the board of directors have the ability to nominate candidates. Do you think that this proposal should be accepted? Why or why not?

The Sell Job

Lecture 9

In this lecture, you're going to learn about finance by learning about marketing. Companies don't necessarily have to go through banks if they want to borrow money; they can issue securities, specifically bonds or stocks, as a way to finance their new investments. If a company wants to issue stocks or bonds, it raises a very important practical issue: How does the company actually get potential investors to buy these stocks or bonds it wants to issue? The short answer is marketing.

Publicly Traded Securities

- A publicly traded security is a financial instrument that anyone may buy. There are securities whose sales are restricted. In most countries, the government regulates the sale of securities in order to protect the general public. In the United States, the main regulations are the Securities Act of 1933 and the Securities Exchange Act of 1934, which put in place a set of definitions and requirements that stipulates which securities may be publicly traded.

- In addition, they put in place an approval process that securities issuers have to go through if they want their securities to be publicly traded. Furthermore, they created the government agency that conducts the approval process and enforces this law and all other federal securities laws as well—the U.S. Securities and Exchange Commission (SEC).

- The approval process is actually very simple. If a company wants to issue publicly traded securities, it must register the securities with the SEC. The registration process consists of filing one form, which the SEC calls Form S-1, but which is known as a prospectus.

- A prospectus is a document that gives information about the company or other entity that will be issuing the securities and information about the securities themselves. It's intended to be the

main source of information that potential buyers of these securities can refer to in order to help them make their decision about whether to buy the securities.

- Although the registration process sounds simple, it can actually take a long time, because the SEC wants to make sure that the prospectus is accurate and complete. And there's a lot of information that the SEC wants companies to put in their prospectuses, including the company's address, who runs the company, and who the main owners of the company are. One big source of information that the prospectus must include is financial statements about the company.

- The SEC has to verify the information the company states in its prospectus, and it often requires companies to amend their discussion of their financial results and the risks they face. Once the prospectus is finally approved, the security is registered and may be freely sold to the general public.

- In the old days, companies would simply sell their securities to people who stopped by their stores or offices and asked for the securities. This was known as selling securities over the counter. To this day, we refer to the over-the-counter (OTC) market in securities, which simply means that the issuer of the security sells it directly to the buyer on an individual basis.

- Selling securities over the counter isn't a terribly aggressive or effective means of issuing a large amount of securities in a short time. If a company wants to issue 100 million dollars' worth of bonds, for example, and needs to have all the money from the sale of bonds next week, the company will need some help.

- There's plenty of help for hire in the form of an institution known as an investment bank. Investment banks are financial intermediaries that borrow from one set of people and lend to another set. But investment banks don't take deposits, so they aren't true banks.

- Investment banks play a key role in the marketing of bonds, stocks, and other publicly traded securities. They form a bridge between the companies that want to issue securities and the investors that want to invest in securities.

- In an initial public offering (IPO), a company issues publicly traded shares for the first time. This is the first opportunity for the general public to own a piece of this company. We say that at the IPO, a company goes public. IPOs are one of the most exciting examples of this securities marketing process, because they often give investors the chance to make very good profits, both in the short run and in the long run.

- Even before the company makes up its mind that it wants to issue publicly traded securities, it probably has occasional contact from investment banks. They give companies advice about whether the conditions in the securities markets are favorable for issuing securities, and they inform companies about different types of securities that the company could issue.

Privately Traded Securities

- Securities don't necessarily have to be publicly traded. Some types of publicly traded securities are exempt from registration with the SEC. In certain situations, securities that would otherwise by subject to SEC registration do not have to be registered. We say that these securities are privately held. The market for privately held securities is increasingly important.

- Privately held securities are not meant to be publicly traded. There are two reasons why a security isn't publicly traded: either it's not intended to be sold to a member of the general public—but can be traded—or it's available to members of the general public but isn't intended to be traded—at least, not immediately.

- Until recently, the main reason a security was classified as privately held was because the only investors who will be buying the securities are so-called sophisticated investors. The United States

and other countries have rules that define so-called sophisticated investors, who are presumed to be very skilled and experienced in the financial markets and therefore don't need much supervision—and, more importantly, protection.

- One of the SEC's main jobs is to protect individual investors who aren't very skilled or experienced—in other words, the unsophisticated investors. Sophisticated investors are allowed to invest in almost anything they want, because they're supposed to be able to look out for their own interests and be smart enough to know when they should stay away from an investment.

- It's actually pretty difficult to tell which investors really are sophisticated. Because it's too difficult to find some kind of objective measure of sophistication, the SEC uses a substitute measure of sophistication: money. In particular, the SEC sets minimum income and asset standards that qualify the investors who exceed them as sophisticated investors. The SEC refers to a person or business that meets these standards as an accredited investor.

- To be considered an accredited investor as an individual, you have to be able to show to the SEC either that you have a personal net worth of at least 1 million dollars, excluding your home, or that you've had an income of at least 200,000 dollars for the past two years. An accredited financial institution must have at least 25 million dollars in investable assets.

- When a bond or stock is intended to be sold only to, and held only by, sophisticated investors, this is typically called a private placement. Both stocks and bonds may be privately placed. And when it comes to private placements, investment banks are just as important in marketing the securities as they are to publicly traded securities.

- If you're a sophisticated investor who buys one of these privately held securities, you're only allowed to sell the security to another

sophisticated investor if you find that you don't want to hold this private security anymore. That still means that they can be traded, and the market for trading privately placed securities among sophisticated investors has been developing quite rapidly over the past decade.

- The restrictions that the SEC places on privately held securities make this a relatively small market. In total terms, though, tens of billions of dollars' worth of securities are issued every year through private placements.

- Some types of companies depend on private placements for their financing. For example, startup companies that are growing but are still not ready for an IPO will often borrow by issuing privately placed debt.

- The other special situation for privately held securities has to do with size—small size. If the number of buyers of the security is small enough, then this security issue can stay under the SEC radar and remain exempt from registration. This is a situation that is extremely common with small companies.

- According to the U.S. securities law, as long as there are fewer than 2,000 shareholders in a corporation, the equity of the company does not have to be registered, and the company doesn't have to comply with all of the financial disclosures and other regulations that go along with having publicly traded equity. Thus, many corporations are privately held.

- Being a privately held corporation is attractive to small businesses because the owners get the advantages of limited liability but don't have the disadvantages of all the regulation. If they do grow to the point that they are ready to go public, they're already a corporation, so they don't have to set one up from scratch.

- In a typical privately held corporation, the shareholders tend to be the founders of the company and the other employees of the company. That's because many small corporations can't afford to pay high salaries, so they also compensate their employees with stock. The idea is that the stock may become very valuable some day.

- The shareholders of these small companies are regular people—not sophisticated investors. And the law was designed to allow these unsophisticated investors to receive and hold private equity stakes in their companies until the companies went public, which would allow the shares to be traded in the normal way.

- Needless to say, when there's the possibility that some of the shares of stock of a fast-growing but privately held company will be worth millions some day, there will be many people asking to buy the shares of privately held companies. And of course, companies that need money—and their employees—are willing from time to time to sell shares to outside investors.

- What tends to happen as a privately held startup company becomes successful is that it accumulates more and more shareholders. Eventually, the number of shareholders will go above that 2,000-shareholder limit, and the company will have to start reporting its financial information to the SEC. This has generally been taken as the signal for a young company that it's time to go public, whether they want to or not.

Suggested Reading

Brealey, Myers, and Allen, "How Corporations Issue Securities," Chapter 15 in *Principles of Corporate Finance.*

Kidwell, Blackwell, Whidbee, and Sias, "Investment Banking," Chapter 18 in *Financial Institutions, Markets, and Money.*

Questions to Consider

1. One of the (literally) colorful Wall Street words associated with IPOs is the term "greenshoe" or "greenshoe option." Search for either of these terms on Investopedia or another financial website for its definition. When do we see greenshoes, and why do investment banks like them?

2. In an IPO, the company that is selling its shares to the public for the first time receives the IPO price for its shares. Therefore, if there is a big first-day pop, the company does not benefit from it. For example, if the IPO price of a new company's shares is set at 20 dollars per share, but the first-day pop is 5 dollars per share, then the company receives only the IPO price of 20 dollars per share. The 5-dollar gain goes to a trader who bought the shares from the company at the IPO price and then sells at the closing price of 25 dollars later that day. So underpricing of IPOs causes companies to lose money, in a very real sense, because the market is saying that the company sold something for 20 dollars that was actually worth 25 dollars. But when the founders of a company are asked, they routinely say that they don't mind that their companies don't benefit from the first-day pop. Why do you think that this is the case?

The Mysterious Money Market

Lecture 10

The money market is almost invisible to most people and yet forms the financial lifeblood of governments, large banks, and corporations. Instruments like T-bills, commercial paper, and repo keep a tremendous amount of money moving through the economy—and the movement of money through the financial markets keeps the entire economy healthy and growing. As you will learn in this lecture, although the money market seems like a secret society at first glance, what actually happens in the money market is just borrowing and lending.

The Money Market

- The term "money market" is used to denote the markets for all financial instruments with up to one year of maturity. So a money-market mutual fund is an investment fund that only invests in financial instruments that have one year or less until they mature. Instruments with longer than one year of maturity are said to belong to the capital market.

- The borrowing tools that you've learned about—stocks and bonds—are generally thought to be part of the capital markets, except for those bonds with a maturity of one year or less. So when people talk about the money market or the capital market, they're simply distinguishing between instruments with short and long maturity.

- The vast majority of money market instruments have maturities that are much shorter than one year,

The money market may seem daunting at first, but it's really just borrowing and lending.

and in fact, a huge part of the money market has overnight maturity, or just a few days. There's an amazing amount of borrowing and lending going on in the financial markets overnight—every night. When the maturity of the loan is one day, or up to a few weeks, it completely changes the lending game as you've been learning about it so far.

- If you're going to be borrowing overnight virtually every day, then speed is of the essence when it comes to being able to issue securities. You need to be able to issue securities the same day you decide to borrow. Remember, though, that most securities need to be registered, and registration can take a long time—it always takes more than a day.

- Money market instruments are designed to take advantage of exceptions to the SEC rules that require securities to be registered. There are special exemptions from registration for several different kinds of publicly traded money market instruments.

- For other types of money market instruments, there's a special type of registration that's called shelf registration, which allows an issuer to register a large amount of securities at one time and have up to several years to actually issue them.

- The other part of issuance that needs to be speedy is the actual sale of the securities. If a company needs to borrow overnight, it needs to be able to sell the securities it issues right away. If the company issues many small bonds to many investors, then it may take a long time to line up all of these small investors and get them to purchase the security. So issuers of money market securities—with one notable exception—only issue securities in big chunks so that they need to find far fewer willing lenders.

- For most money market securities, the minimum denomination is one million dollars. That's the main reason why most individuals are shut out of the money market. Most people don't have a million dollars to invest, let alone in a single bond, and though most of

us would probably like to be able to borrow a million at a time, it's unlikely that most of us could find a lender willing to lend us that much—at least without some serious collateral. In fact, an interesting feature of many money market instruments is that they are unsecured; the borrower doesn't post any collateral.

- One of the main reasons why there are so many money market lenders is because many big companies have extra cash that they won't need for a few days or a few weeks. Money market instruments are a great place to store extra cash for short periods of time, where it can earn some interest.

- Another big source of demand for money market securities is from money-market mutual funds, also known as money-market funds, which are special investment companies that take customers' deposits and then invest these deposits in money market securities. This is one of the two main ways that individuals participate in the money market.

- Money-market mutual funds have been around since the 1970s, and for many investors, they provide a higher-return alternative to bank deposit accounts. That's because for the investors, money-market mutual funds look like, and work like, bank deposit accounts.

Money Market Instruments

- In the United States, short-term government bonds are known as treasury bills, or t-bills for short. The word "bill" in the name denotes a bond with up to one year of maturity. So if a security has the word "bill" in its name, we automatically know that it's a money market instrument.

- Short-term government bonds are generally issued for maturities of three months, sometimes six months, and one year. Governments like to stick to standard maturities for two reasons. First, they generally don't want to have to go back to the market to borrow as frequently as businesses do. Even so, large governments do issue

their short-term bonds quite frequently. New t-bills, for example, are issued once a week, every week.

- The second reason why governments stick to standard maturities is to create an orderly and liquid market for their securities. Governments want to make it easy and attractive to buy, hold, and sell their securities. That keeps their borrowing costs as low as possible, and it helps ensure that when the government borrows in the credit markets, it affects private borrowing and lending as little as possible.

- Most governments around the world have standardized the maturities of the securities they offer, and they've committed themselves to a schedule of selling bills and other bonds that is dependable. The amounts that the governments intend to borrow are also announced in advance, to give the markets enough time to get ready to absorb the latest issue of government bonds.

- Most governments issue quite a large amount of short-term government bonds like t-bills. This is a very flexible way to finance the government. And governments that need long-term financing can roll over their short-term government bonds just like business borrowers do, thus creating long-term financing out of short-term instruments.

- Because government bonds are considered risk-free, they offer a very safe place to invest money. That makes t-bills very popular with all kinds of investors, including individuals. The government issues t-bills (and all other government bonds) in denominations as small as 1,000 dollars. This is one of the few places where individuals can participate directly in the money market—by joining all of the other investors in short-term government bonds.

- Investors are willing to buy a money market security from the government because of the short maturity. There's less chance that something will go wrong that would prevent the government

from paying back the security, and the rollover threat can be just as effective on governments as it is on private borrowers.

- Another reason short-term government bills are such important financial instruments is because they provide a reference point or a benchmark for most of the borrowing rates in the economy. Because government bonds are usually considered risk-free, the interest rate on government bonds will be lower than the interest rates that private borrowers—who are at least a little more risky than governments—will have to pay on their loans.

- Longer-maturity bonds will tend to have higher interest rates than shorter-maturity bonds, in general. So the interest rate on a three-month t-bill is one of the key benchmark interest rates in the economy. This rate is effectively a lower limit on most of the market interest rates that are relevant to our lives.

- The second of three key money market securities is commercial paper (CP). The "commercial" in "commercial paper" denotes that it's used by businesses. The term "paper" is an old-fashioned term for a bond. Commercial paper simply denotes a bond issued by a business. Specifically, commercial paper is unsecured (no collateral) company debt with a maturity of 1 to 270 days.

- The maturity is 270 days, or about 9 months, because the SEC allows corporate debt of 1 to 270 days of maturity to be exempt from registration, if the debt is used to fund the day-to-day operations of the company. The vast majority of commercial paper is designed to take advantage of this exemption.

- In the 1970s, because of the creation of money-market mutual funds, the commercial paper market took off. Suddenly, the number of willing lenders matched or exceeded the number of willing borrowers. In fact, the demand for money-market mutual funds was so great that some companies were able to dramatically expand their commercial paper borrowings.

- One special type of company that took advantage of the growth in the commercial paper market was a financial intermediary called a finance company, which makes loans, just like a bank does. But instead of funding itself by issuing deposits, a finance company has to borrow in the credit markets, by issuing securities.

- Finance companies weren't the only ones that benefited from the expansion of the commercial paper market. Many large nonfinancial corporations started to issue commercial paper as a normal part of their funding mix and, over time, became dependent on this market to supply the cash they needed to support their operations.

- There is a third money market security that is very different from the usual money market instruments and has also become extremely important to business borrowers. This instrument is called repurchase agreement, or repo for short.

- Repos are different from other money market instruments because repos are collateralized whereas most other money market instruments aren't. Only the most creditworthy companies can actually issue unsecured money market instruments like commercial paper. The repo market, on the other hand, is available to any business that has treasury securities in its possession.

- And that helps explain why the repo market is as huge and important as the commercial paper market—just about any business can lend or borrow using repo. At any given time, there's about a trillion dollars that have been loaned out in the United States using repurchase agreements. Another aspect of repo that explains its popularity is its safety; it's almost as safe as the treasury bonds that form the collateral.

- Finally, the repo market isn't just for overnight loans. If a business is sitting on a big pile of treasuries that it isn't going to need anytime soon, it can enter repo agreements for weeks at a time, or even open-ended repo agreements that have a flexible ending date.

Suggested Reading

Hahn, "Commercial Paper," Chapter 9 in *Instruments of the Money Market.*

Kidwell, Blackwell, Whidbee, and Sias, "Money Markets," Chapter 7 in *Financial Institutions, Markets, and Money.*

Lumpkin, "Repurchase Agreements and Reverse Repurchase Agreements," Chapter 6 in *Instruments of the Money Market.*

Questions to Consider

1. In the bond market, there are more than a dozen ratings categories that run from AAA all the way down to D. In the commercial paper market, however, there are basically only two ratings: A1/P1 and A2/P2. Why is that? (Hint: What bond ratings do you think they correspond to?)

2. Many of the instruments in the money market pay interest in a different way than bonds. Money market instruments do not make coupon payments, as bonds do. Instead, these instruments are "discount" instruments whose prices are always less than their par value (except at maturity, when the price is equal to the par value). Between the time the money market instrument is issued and the time it reaches maturity, the price rises toward par. Investors in money market instruments receive interest in the form of the change in price of the instrument—the price received for a t-bill when it's sold or redeemed, minus the price paid by the investor, is the interest paid on the t-bill. Why do you think that money market instruments pay interest in this way?

Think Globally, Lend … Globally

Lecture 11

International borrowing and lending is a big story in the financial markets—and has been ever since banks and securities have existed. In this lecture, you will learn why companies, governments, and even individuals borrow from and lend to foreigners. You will learn about some of the main ways that borrowing and lending takes place across borders today and also about one of the complicating factors that makes international borrowing and lending even more tricky than lending locally: foreign currencies and exchange rates.

The Spread of the Financial Market

- Financial instruments are contracts, so they're highly portable; you can easily take them with you overseas. Gold and silver coins are also fairly easy to transport—as well as to conceal on your person as you cross a border. The portability issues alone were almost enough to ensure that financial resources—money and contracts—would be able to travel quickly and easily to find the best returns.

- Another reason the financial markets were able to spread across borders long ago is that the financial world was small and cozy. We like to think that the modern world has become smaller, with respect to the financial market, but it's actually getting much larger, because millions more people are participating in this market every day.

- If we go back in time, income and wealth—and therefore financial activities—were highly concentrated in the hands of a small international elite. And the members of this small elite not only knew each other, but they were also often related to each other. These connections helped to overcome the adverse selection and moral hazard problems that would otherwise make international lending virtually impossible.

- A final aspect of the financial market that facilitated its development early on was the use of so-called full-bodied money—that is, gold and silver coins. Even though different countries had different currencies, each currency was defined as a certain weight of a certain purity of gold or silver.

- Exchange rates really become a problem for international borrowing and lending in 1971. Before the Second World War, most countries used some kind of money based on gold or silver. And after the Second World War, most of the world was on an indirect gold standard known as the Bretton Woods system, after the resort in New Hampshire where the system was devised. The system was an indirect gold standard because only one country in the world was formally on the gold standard—the United States. The rest of the world was on a U.S. dollar standard.

- Under Bretton Woods, foreign holders of U.S. dollars could redeem them for gold at the rate of 35 dollars per ounce. Every other country that joined the system agreed to fix their currency's exchange rate with the U.S. dollar, which effectively tied every other currency to gold as well, but indirectly, through the dollar. More importantly, it created a system of fixed exchange rates.

- The system came under increasing stress during the 1960s and finally broke apart in 1971, when U.S. President Richard Nixon formally severed the tie between the U.S. dollar and gold by halting the international redemptions of U.S. dollars for gold. After that time, most of the world's major currencies have had floating exchange rates that move up and down in response to economic and market forces.

- We'll never really be able to know for certain whether this change from fixed exchange rates and an effective gold standard to a world of floating exchange rates was beneficial or harmful to the world economy. What we can say is that it had two big practical impacts on borrowing and lending internationally.

- First, in order to borrow or lend internationally, one of the parties will have to buy foreign currency. The party that has to exchange currencies runs into the second practical impact of floating exchange rates: A change in the exchange rate can really help or hurt you, depending on how the exchange rate changes and whether you're the borrower or lender.

- Given the hassles and dangers of dealing with foreign exchange, in addition to the usual dangers of borrowing and lending, why would anyone want to borrow or lend internationally? There's only one reason: Borrowing or lending internationally must be a better deal than borrowing or lending locally in your own currency. That's certainly possible, because market interest rates on borrowing and lending can vary a lot from country to country.

- If you're an investor looking to lend money, but you're in a country with really low interest rates, then sending your money abroad looks attractive. Even though your return may be a bit lower because of exchange rate changes, it's still likely to be higher than the return you could have earned at home, lending in your home currency. Similarly, if you're a borrower stuck in a country with high interest rates, then borrowing from a country with low interest rates can be really attractive.

- Usually, when someone issues a bond in a foreign currency, they're large and sophisticated enough of a borrower to take the necessary steps to insulate themselves from changes in the exchange rate. They do this by purchasing a hedging tool, which is a financial instrument that can offset some or all of the losses resulting from a change in exchange rates. Or in some cases, the company that issues bonds in foreign currency does business in many countries and may have use for the currency.

- Even though a lot of international lending takes place by issuing bonds in foreign countries, it's still a hassle. There's a lot of extra expense and extra time involved in issuing bonds outside of your home country.

- One of the most important international borrowing and lending markets is the Eurodollar market, which is an international borrowing and lending market in which all transactions are done in U.S. dollars—but they take place outside the United States. The Eurodollar is very different from the Euro, which is the currency adopted by many of the member countries of the European Union in 2002. Eurodollars are made up of U.S. dollars.

- Interestingly, the Eurodollar existed before the Euro. Despite a huge amount of confusion—many people think that the Euro and the Eurodollar are the same thing—the two coexist in the global financial markets. And international borrowing in U.S. dollars via the Eurodollar market is stronger than ever.

International Trade

- Currencies leave home and go abroad because of trade. Broadly speaking, there are two types of things that are heavily traded internationally. On one hand, we trade products—that is, goods and services. Both of these things are products that we make and sell to both domestic and foreign customers. But we also trade assets—bonds, stocks, and real property. The trade in assets is as large as the trade in products. And much of the trade in assets is simple borrowing and lending.

- An imbalance in trade, in which the United States buys much more of something from a trading partner than that country buys from the United States, will lead to an accumulation of U.S. dollars outside the United States. For most of the past 50 years, the imbalance has been in the product market. The United States buys more goods and services from other countries than other countries buy from the United States, so U.S. dollars necessarily end up outside the United States, in the hands of foreign citizens and governments.

- And because it's silly to have stacks of dollars just sitting around, the foreign holders of U.S. dollars put the dollars to work in the financial markets. A lot of it goes back into the U.S. financial

International borrowing and lending is a big story in the financial markets—and has been ever since banks and securities have existed.

market, but some of it goes into the Eurodollar market and stays outside the United States, potentially forever.

- International trade in goods and services, international trade in assets—that is, borrowing and lending—and international trade in currencies are all linked together. It's not just the quantities of products, assets, or currencies that are linked; it's also the prices that are linked together.

- Trade in goods and services depends on the differences in prices of goods and services between countries. The trade in assets depends on the differences in interest rates between countries. The exchange rate is also a price. The right way to think about an exchange rate is that it is the price, in terms of your home currency, of one unit of foreign currency.

- No matter how you quote these prices, they're all tied together. Interest rates across countries, exchange rates, and the prices of goods and services across countries all affect each other. They

all have to adjust so that there's always equilibrium in all three markets simultaneously.

- Whenever a country has a so-called currency crisis, the problem is generally rooted in the financial markets. During the past half century, there have been quite a few major and minor currency crises, in which a country has had to allow the value of its currency to fall dramatically. This harms the country's citizens by raising the prices of imported goods and services and making it difficult for borrowers to pay back their debts to foreigners. Just about all of these currency crises are actually driven by excessive borrowing from foreign investors on the parts of governments or even the private sector.

- Interest rate differences, and the international borrowing and lending that they cause, are a powerful influence on exchange rates. Economists used to believe that exchange rates responded mostly to changes in the trade of products, but the movement of assets across borders is far larger and has proven to be a far more potent driver of exchange rates.

- For example, during the past 20 years, an international investment strategy called the carry trade has become immensely popular. Rather than simply borrowing internationally where it's cheaper, or lending internationally where it's more attractive, people who try the carry trade do both. That is, they borrow money in a country with very low interest rates, exchange that currency for the currency of a country with very high interest rates, and buy bonds or stocks or other assets in that country.

- This is called the carry trade because the investors who pursue this strategy don't protect themselves against changes in the exchange rate—they choose to bear, or carry, this risk. When it works, the investors who pursue the carry trade can make huge returns.

- But the carry trade is also a dangerous strategy, because if the exchange rate suddenly changes in the wrong direction, it wipes

out the investor. So people who pursue the carry trade will sell out their investments at the first hint of trouble, which makes the flow of money across borders even faster and more unpredictable.

- Because of both the complexity of the international trade system and the powerful effects of international borrowing and lending, exchange rates are some of the most variable and unpredictable prices in the world.

Suggested Reading

Goodfriend, "Eurodollars," Chapter 5 in *Instruments of the Money Market.*

Kidwell, Blackwell, Whidbee, and Sias, "International Banking," Chapter 14 in *Financial Institutions, Markets, and Money.*

———, "International Markets," Chapter 12 in *Financial Institutions, Markets, and Money.*

Questions to Consider

1. One thing you learned in this lecture is that many foreign central banks hold trillions of U.S. dollars as reserves, in the form of U.S. government bonds. How does this help the U.S. economy? What would happen in the United States if foreign governments decide that they don't want or need to hold nearly as many U.S.-dollar reserves as they do currently?

2. In many cases, governments in developing economies will issue bonds in U.S. dollars or Japanese yen before they issue any bonds in their own domestic currencies. Why do developing countries do this? What are some of the risks involved?

Trading Securities

Lecture 12

If you can't imagine yourself trading securities, it might be because your definition of trading isn't broad enough. Most people think that securities trading has to take place quickly, so that you sell a security within minutes or even seconds of buying it. While it's true that many traders do trade as fast as lightning, there are plenty of other traders who buy today and don't intend to sell for years. But even if years pass between buying and selling a security, that's still trading. In this lecture, you will learn the basics of securities trading.

Securities Trading

- In our usual economic lives, we have a preference for buying new things, not used things. For products like clothes and groceries, that's completely understandable. For many people, this preference for buying new extends to goods like cars and homes as well. This differs from securities trading because, for the most part, the securities trading market is a market for used securities.

- In this case, the word "pre-owned" is more accurate. Economists draw a distinction between the markets for new products and used products, calling the market for new products the primary market and the market for used products the secondary market. In finance, the primary market is where securities are issued.

- In the primary market, a borrower issues—really, sells—a brand-new security to some lender. In the secondary market, on the other hand, everything for sale has had at least one previous owner. It's possible for securities to be sold and resold hundreds or even thousands of times in the secondary market.

- Securities don't wear out, so there really isn't the same stigma attached to used securities that there can be with other used goods or used assets. Pre-owned securities are nearly perfect substitutes

for brand-new securities—as long as all of the other characteristics of the securities are the same, of course.

- There are also a lot more used securities out there at any given time than there are new ones being issued, so the selection of securities on the secondary market is much better. Finally, it's usually easier and cheaper to buy securities on the secondary market because they're larger and better organized than primary markets for most securities.

- The second difference between trading securities and buying other goods and services has to do with what you get for your money. Whenever you buy a good or service, you receive something concrete, such as a shirt or a car wash. But when you trade securities, you don't get anything physical for your money.

- The closest thing you'll receive is a piece of paper stating that you own some securities or that you've been paid for selling some securities. These days, you don't even get the paper; physical certificates have been replaced with electronic records, which are stored and maintained by specialized institutions called depositories.

- When you buy a security these days, the depository transfers ownership electronically as soon as the cash payment for the security has been cleared. Depending on the time of day that you buy the security, this process could be concluded on the same day—but it will almost certainly be complete by the end of the next business day.

- Economists call this "t plus one" clearing and settlement—that is, the money and the securities are formally exchanged within one business day after the buyer and seller agree to the terms of the trade.

Organizing Secondary Markets

- A successful secondary market for securities has to do for stocks and bonds what the system of supermarkets does for groceries: It has to benefit the users of the market enough to make them want

to keep using it. And there has to be a way for the operators of the market to earn enough profits to make them want to stay in business.

- There are two reasons to trade any security: You either want to trade it, or you have to. Wanting to trade usually has to do with profits and losses that you've made and your expectations about future profits and losses. The reason to buy any security is because its price seems low, so if you buy it at this price, you can expect to earn a good return on it.

- When it comes to selling, there are several possible reasons. You may want to sell a security because you've made a big profit that you want to capture or because you've made a big loss that you want to prevent from getting larger. You may also want to sell simply because the price of the security hasn't done anything, and you think you can do better by investing in a different security.

- There are also several reasons why you may have to sell a security. For some securities, such as stocks, the only way to convert them to cash is to sell them. You may also want to sell if something happens in your life that requires you to raise a significant amount of cash in a hurry. The ability to buy and sell securities quickly, as soon as you want or need to, is key to making a securities market attractive. This is an elusive characteristic of secondary markets called liquidity—in particular, it's a type of liquidity called market liquidity.

- "Liquidity" is generally defined as being like cash, or being easily convertible to cash. Market liquidity refers to being easily convertible to cash and, specifically, the ease with which securities and cash can be exchanged back and forth. In a liquid secondary market, it's easy for sellers to find buyers who are willing to pay the current market price for an asset, and it's easy for buyers to find sellers.

- In an illiquid market, on the other hand, it's difficult for buyers and sellers to find people to trade with. So an attempt to sell a security may drive down the market price significantly, or an attempt to buy a security may drive up the market price. In highly illiquid markets,

buyers and sellers may not find people who are willing to trade with them at any reasonable price.

- This means that the number one job of people who organize secondary markets in securities is to ensure sufficient liquidity in the market. In fact, one of the general names that economists give to people who organize or make markets in securities is liquidity provider. Of course, traders provide liquidity too, simply by being present in a market and willing to buy or sell. So "liquidity provider" is a name that includes traders as well as the specialized market organizers.

- One way to ensure or provide liquidity to a market is through networking. A liquidity provider called a broker makes a market by matching potential buyers and sellers, based on the network that the broker sets up and maintains. The broker earns a living by collecting a fee, or commission, for this service—but generally only if a sale occurs. The broker facilitates trading, but doesn't do any actual trading.

- Some asset markets are mainly organized by brokers, so they're called broker markets. In addition to matching potential buyers and sellers, brokers often facilitate the actual trade as well. For example, brokers maintain accounts with the depositories, so they deal with the depositories and make sure that the securities are transferred correctly.

- Although brokers are present in the secondary markets for most securities, they aren't generally the most important organizers of securities markets. That's because it simply may not be possible to find a willing seller for every buyer, and vice versa. But this presents a problem for secondary markets: How can you create a liquid market if you can't guarantee that there will be enough buyers and sellers?

- The answer is that you have to provide the liquidity yourself, by working as a dealer—a liquidity provider who is always ready and

willing to buy from people who want to sell securities, as well as sell securities to people who want to buy them. A dealer is a special kind of trader, and in fact, they're often called market makers.

- In a securities market that is organized around dealers, each dealer announces two prices for each security that they make a market in. One price is the bid price, which is the price the dealer is willing to pay you for the security, and the other price is the ask price, which is the price the dealer will charge to sell the security to you. If you sell to the dealer, you get the bid price, and if you buy from the dealer, the dealer gets the ask price.

- The ask price is higher than the bid price. We often call the difference between the ask price and the bid price the bid-ask spread. This represents the dealer's revenue that he or she receives each time he or she buys a security and sells it. The bid-ask spread is the value of the liquidity that the dealer is providing.

- Dealers aren't looking to buy a security at a low price and then sell it later at a much higher price, the way most other traders are. A dealer simply wants to buy and sell as many times as possible during a day so that they earn that bid-ask spread over and over. In order to reach that objective, so that the dealer can stay in business and maybe earn some profit, he or she needs to do two things that affect how they set their bid and ask prices.

- First, each dealer needs to roughly balance their buying and selling activity. Second, the dealer needs to make the ask and bid prices as attractive as they can to the buyers and sellers of securities so that they'll trade as frequently as possible. Dealers follow these guidelines by changing their bid and ask prices in response to changes in market conditions. What prevents dealers from setting any prices they want is the same thing that works in every other market—competition.

- Broker markets and dealer markets are not mutually exclusive models. In any given securities market, there are both brokers and

dealers, and moreover, it's perfectly acceptable for the same person to play both roles. A liquidity provider can be a broker-dealer.

- There's one more important way to organize a secondary market for securities. It's different from broker markets and dealer markets, but it relies on brokers and dealers to work. This final way is to create an exchange. A securities exchange is simply a formal marketplace that's built for trading. In the old days, they were physical marketplaces, but over the years, technology has completely remade most of the securities exchanges around the world.

Suggested Reading

Bodie, Kane, and Marcus, "How Securities Are Traded," Chapter 3 in *Investments.*

Technical Committee of the International Organization of Securities Commissions (IOSCO), *Regulatory Issues Raised by the Impact of Technological Changes on Market Integrity and Efficency*.

Questions to Consider

1. In many exchanges, the dealer's job of setting the bid and ask prices has been taken over by computer programs, which adjust bid and ask prices according to a set of complex rules that tell them how to react to the quantities of orders coming in. What are the main advantages to doing this? Are there any potential disadvantages?

2. One of the big trends in securities trading is that exchanges are merging together. For example, if you go to the website of the New York Stock Exchange (NYSE), what is the name (and the location) of the exchange that is now joined to the NYSE? What are the motivations for exchanges to merge?

Returns and Prices in the Secondary Market

Lecture 13

In the goods market, we tend to keep score in terms of who has the nicest stuff—new cars, cool gadgets, lavish homes. In the labor market, salaries are the yardsticks. In the financial markets, we tend to keep score in another way—with returns. Now that you've learned about most of the ways that the financial markets add value, it's a good time to find out how to measure the rewards for providing these essential services.

Quoting and Calculating Rates of Return

- There are several ways to quote and calculate rates of return. The way that most investors think about and calculate returns is slightly different from the returns you've already learned about. The return that most investors and other traders think about is called a holding period return, or simply a periodic rate of return, which measures the total return you earn on an asset by holding it for some arbitrary length of time—the time from when you buy the asset to the time you sell it.

- To calculate the holding period return, realize that there are two ways to earn a return on an asset of any kind. First, the price of the asset can change. The change in price of an asset is usually called the capital gain if the price rises or the capital loss if the price falls. That's from the perspective of the person who buys and holds the asset.

- The second way that an asset can provide a return is by paying income to the holder of the asset. The income can be interest on a loan or bond, or dividends on a stock. Not every asset pays out any income.

- To calculate the holding period return on an asset, add the capital gain, or loss, to the income paid by the asset during the period you held it. Then, divide by the price of the asset at the beginning of the period. The sum of the capital gain and the income is the return.

The financial markets keep score with returns, which are the rewards earned on investments.

Dividing by the price you paid converts the money return to a percent return.

- Notice that we don't adjust for time in this calculation. All we're interested in is a measure of what your total return was during the time you owned the asset, however long or short that was.

- Holding period returns are great because they're easy to calculate, and they help us see how much we earned on an investment. But because they don't take time into account, they aren't as useful when we need to compare returns across assets.

- There is an easy way to calculate holding period returns so that we can compare returns across assets, and it's often used by professionals. Simply calculate the holding period return earned by an asset during a calendar year.

- We pretend to buy the asset at the start of the day on January 1, or whatever day is the first trading day of the year, and then pretend to sell the asset at the end of the day on December 31, or whatever

day is the last trading day of that year. So the change in price from January 1 to December 31 is the capital gain or loss.

- We add to that any income paid out by the asset during the calendar year and use that as our annual money return. Divide by the January 1st price, and you have the annual holding period return. This return is useful because it helps us compare apples to apples when we compare returns across different assets, as long as we measure all of the returns during the same year.

Stock Prices

- In the markets for most goods and services, we're used to prices being quoted in terms of currency—dollars and cents in the United States, for example. In the financial markets, though, different pricing conventions are used for different instruments. These different conventions evolved for convenience.

- Many investors want to invest in stocks, but they don't want to buy shares of individual companies. In fact, most financial advisors suggest that individual investors would be better off investing in entire stock markets rather than individual companies' shares.

- To buy a piece of an entire stock market, you buy the market index. Every major stock exchange has at least one index associated with it that serves as a measure of the price of the entire market. In the United States, for example, the two most famous market indexes are the Dow Jones Industrial Average (Dow) and Standard & Poor's 500 (S&P 500).

- An index is a weighted average. Stock indexes are weighted averages of some or all of the stocks listed on a market. There are many ways to choose the weights for the index, and these decisions can have a big impact on how accurately the index represents the market.

- The S&P 500 index is called a market-value-weighted index. To make this index, the total market value of each company in the index is added up. The total market value of the company—also

called the market capitalization—is the price of the share times the number of shares in the company that are available for public trading. The number of shares available for trading is called the float of a company, or sometimes the free float.

- The S&P 500 calculates the market value of the companies based on the free float rather than the total number of shares in the companies. For most companies in the index, though, the free float is equal to the total number of shares in the company.

- The downside to using a market-value-weighted index, if any, is that the returns on the index will be influenced the most by the largest companies—that is, the companies with the largest market capitalizations.

- There's an additional technical issue connected with stock indexes that helps explain the index numbers that are reported in the news. Once the market values or weighted average prices are calculated, there's another adjustment made. The adjustment consists of dividing the raw index by a number called a divisor. Doing this corrects for changes in the prices of the stocks that are related to special events, such as when one firm leaves the index and is replaced by another.

- Most investments that promise to deliver the same returns as the S&P 500 will hold most of the stocks that make up the S&P 500, because that would be a good way to mimic its returns. But they may not necessarily hold all of the companies in the index, and they may hold some other investments as well that aren't in the S&P 500. Still, they manage to deliver returns that are very close, if not virtually identical, to the actual S&P 500 return.

Bond Prices

- Bond prices are more complicated than stock prices. First, bond prices aren't quoted in terms of money. If you buy a bond, you'll be asked to pay real money for it, but to figure out how much money you owe, you'll need to translate the quoted bond price into money

terms. Bond prices aren't quoted in terms of money because bonds come in all different sizes. We need a simple way to quote the price of a bond that applies to any sized bond.

- The system that bond traders use is to quote all bond prices as a percent of par. Par, or par value, is the amount of money that the bond issuer promises to pay to the holder of the bond at maturity. The par value of the bond is the principle payment that the lender receives at maturity.

- If you buy a bond, then the money price you pay will be calculated in two steps. In the first step, the quoted price of the bond will be divided by 100 to convert the bond price to a decimal, and then that decimal will be multiplied by the par value of the bond, which is the principle amount the borrower promises to pay at maturity. In the second step, part of the coupon that is earned by the seller of the bond is added to the price paid by the buyer.

- The second reason why bond prices are more complicated than stock prices is because most of the information we get about the bond market is focused on returns, not prices. When we see or hear a bond return quoted in the news, it's almost always a market return known as the yield to maturity, which tells you the average annual rate of return you'll earn on the bond if you buy it at the current market price and then hold the bond all the way to maturity.

- The yield to maturity on a bond is a return, and like all returns, it consists of two parts: income and capital gain. The income part of a bond return comes from the coupons paid by the bond. Take the sum of the coupons paid during a year and divide this by the current market price of the bond. This calculation gives a rate of return called the current yield on the bond.

- The current yield on an individual bond can and does change from minute to minute and day to day. That's because it's part of the market return on the bond, which is constantly changing because of changes in supply and demand.

- As the current yield changes, the market price of the bond has to change in a particular way: The annual coupon payments are fixed and don't change, so if the current yield changes, then it is the market price of the bond that has to change—there's no other way to make the current yield change.

- The current yield on the bond and its market price move in opposite directions. That is, if the current yield on a bond falls, the market price has to rise, and vice versa. If the current yield on a bond rises, it means that the fraction given by the annual coupons divided by the market price gets larger in value. So the price of the bond falls when the current yield goes up, and the price rises when the current yield falls.

- The capital gain on a bond is the difference between the price you sell the bond for and the price you paid for it. So we need to find these prices in order to calculate the capital gains part of yield to maturity.

- The price of the bond changes now in order to change the capital gain that you earn on the bond between now and maturity. If the capital gains part of yield to maturity needs to rise, the only way to make that happen is for the current price of the bond to fall. If the capital gains part of yield to maturity falls, the current market price of the bond rises.

- Both the income part and the capital gains part of the yield to maturity are inversely, or negatively, related to the current market price of the bond. And this implies that there's a negative relationship overall between the market return on a bond, expressed as its yield to maturity, and the current market price of a bond.

Suggested Reading

Bodie, Kane, and Marcus, "Bond Prices and Yields," Chapter 14 in *Investments*.

Cecchetti and Schoenholz, "Stocks, Stock Markets, and Market Efficiency," Chapter 8 in *Money, Banking, and Financial Markets.*

S&P Dow Jones Indices LLC, "Dow Jones Industrial Average Overview."

Questions to Consider

1. There is a very interesting interactive learning center focusing on the Dow Jones Industrial Average (DJIA) at the website http://www.djaverages.com/. One of the exercises you can do there is to see what companies were added to the DJIA and dropped from it over time. Compare the companies that were added and dropped in the most recent decade to those that were added and dropped 20 years ago or more. What do these lists tell us about changes in the overall economy?

2. Even though bond interest rates dropped to the lowest levels in history around 2012, many investors still rushed to buy bonds in the hopes that interest rates would continue to fall. But given that bond interest rates had already fallen to very low levels, they wouldn't be able to fall much lower. Why would investors still be interested in buying bonds when interest rates were very low and further declines in interest rates were also expected to be small? Hint: It helps to look at the price-yield diagram to think about this question.

The Truth about Pricing

Lecture 14

The market sets the prices and returns of the assets being traded in the market, but the market is made up of people—investors, traders, and other market makers—and each of them must have an opinion about what the right price is for whatever asset they're trading. In this lecture, you will learn about the theories behind these opinions and about something economists call asset pricing models. If you understand these theories, you will be more comfortable forming your own opinions about what different financial assets are worth, and that will help you feel more at home in the financial market.

The Fundamentals Approach

- There are at least two practical methods that people use to find prices for all assets. Standing behind these two practical methods are two distinct theoretical approaches to pricing assets. In this lecture, we are going to work with an extremely simple asset: a zero-coupon bond (a bond that only makes one payment at maturity) that pays 1,000 dollars one year from today.

- The fundamentals approach to pricing assets starts with the idea that an asset's price should be tied to the cash that the asset pays you for holding it. This view of the value of financial assets is connected to our understanding of the prices of so-called real assets, such as cement trucks or computer servers.

- We think that the value of a real asset should be equal to the total value of the services that the real asset produces. Because financial assets produce cash flows instead of services, then the value of the asset should be equal to the cash that the asset will pay out over its lifetime. In this case, the zero-coupon bond is worth 1,000 dollars—right?

In terms of assets, there is an opportunity cost to having to wait for any future cash payment.

- There are two problems with this basic view of asset prices. First, you have to wait for most assets to pay you the cash; sometimes, you have to wait a long time, and time is money. To be more precise, there's an opportunity cost to having to wait for any future cash payment.

- In the case of the bond, if you had the 1,000 dollars now, you could invest it and earn some kind of return on that cash. That return you could have earned on the cash right now is the opportunity cost. This rate of return is called the opportunity cost rate of return.

- We need to adjust the value of the cash you will receive in the future by the opportunity cost of waiting for it. The way that we adjust a future cash payment to take the opportunity cost of waiting into account is called finding the present discounted value—or, simply, the present value—of the cash payment.

- Suppose that we knew that the opportunity cost rate of return, the cost of waiting, on the zero-coupon bond was five percent. The present value of the 1,000-dollar payment one year from now is the amount of money you would have to put in a bank account for one year, earning five percent, that would be worth 1,000 dollars one year from now.

- Let the phrase "present value" stand for the present value of the 1,000 dollars. You put present value in the bank today, and it earns interest at five percent per year. One year from now, you have present value plus the interest, which is 0.05 times present value. So the bank account is worth 1.05 times present value, and if you have the right present value, this should be exactly equal to 1,000 dollars.

- The equation is as follows, with *PV* standing for present value: 1.05 x *PV* = 1,000. Dividing by 1.05, *PV* = 952.38. Therefore, if you are offered 1,000 dollars one year from now or 952.38 dollars now, you'd be indifferent between the two payments—because you know that if you invested the cash payment today at the correct opportunity cost rate of return, five percent, you would have 1,000 dollars one year from now. In essence, present value is the amount of cash that would make you indifferent between taking that cash now and waiting around for a cash payment that comes later.

- Dividing a future cash payment by one plus the opportunity cost rate of return is the mathematical operation called discounting. As its name suggests, it shrinks—or discounts—the value of a future cash payment. The further into the future a cash payment is, the more you have to discount.

- If that 1,000 dollars was payable two years in the future instead of one, then you'd have to divide the 1,000 dollars by 1.05, the discount factor, squared. So to find the present value of 1,000 dollars two years from now, divide 1,000 by 1.1025, because 1.1025 is equal to 1.05 squared.

- Then, the present value of 1,000 dollars two years into the future, when the opportunity cost rate of return is five percent per year, is 907.03 dollars, which is less than the present value of 1,000 dollars paid one year from now, which was 952.38 dollars.

- Therefore, if you were offered 1,000 dollars two years from now or 907.03 dollars, you'd be indifferent because if you invested that cash payment at the same opportunity cost rate of return, five percent, you would have that 1,000 dollars two years from now.

- There's one problem with this method—uncertainty. Many assets have payments that are uncertain, or even unknown. We deal with payments that are uncertain the same way we do for all other uncertain quantities in economics and finance: We make our best guess, which is the expected cash payment.

- If a future payment is uncertain, we try to estimate the amount we expect the payment to be and use that number as if it were the actual payment. The number that we would use is the expected value of the uncertain payment.

- When we put these two adjustments together, we can summarize the basic message of the fundamentals approach to asset pricing very simply: To find the value of any asset, add up the present values of all of its expected future cash payments. In terms of stocks, the fundamentals-based view says that the price of a stock today should be the sum of the present values of all expected future dividends. In terms of bonds, the price is given by the sum of the present values of all of the expected future coupon payments, plus the present value of the final par payment.

- How do we know which number to use for the opportunity cost rate of return? This is the critical issue in the fundamentals-based approach to valuing assets because the prices that we calculate are very sensitive to the size of the opportunity cost rate of return. A small increase in the opportunity cost rate of return can make a

price much smaller, and a small decrease in the opportunity cost rate of return can make a price much larger.

- Every economic theory of asset pricing says that the opportunity cost rate of return is composed of the risk-free rate, which is the market rate of return for waiting, plus a risk premium, which is the extra return on an asset that people demand in order to induce them to bear the risk that the asset's returns won't be as good as expected.

- Economists cannot agree on what the true underlying sources of risk in the financial markets are, so everyone chooses a different source, or multiple sources, of risk, depending on what they believe about the markets and what particular asset they're trying to value.

- The main risk that people worry about in the bond market is that the borrower will default on the bond, but there's no overarching theory in the bond market about what causes defaults. Participants simply use bond ratings as a measure of default risk without worrying about exactly what's causing this risk. Each bond rating has an associated risk premium, so the opportunity cost rate of return is the risk-free rate plus the risk premium corresponding to the borrower's credit rating.

- In the stock market, there are multiple theories about the main source of risk and what the risk premium should be. All of these theories seem to work well some of the time, but none of them seem to work well all of the time. No theory has done a particularly good job of explaining the behavior of asset prices in all financial markets.

The Method of Comparables

- The second way to value assets is called the method of comparables, which infers the prices of assets from the market prices of comparable, or similar, assets. In other words: like prices like. The method of comparables is based on finance theory and, in particular, on the concept of arbitrage.

- When most people think of arbitrage, they think of buying the identical item in one market where it's cheap and selling it in another market where it's more expensive. This is a type of arbitrage, but in finance, there is also another type of arbitrage based on the ability to put together portfolios of securities that mimic other securities.

- The finance-based theory of asset pricing is based on two steps: replication and arbitrage. In the replication step, you find a portfolio of securities that mimics the security that you want to price. This is called the replicating portfolio because it replicates, or mimics, the payments of the security you want to price in every possible situation.

- The key is that you only construct replicating portfolios out of securities that already have market prices. Once you find a replicating portfolio, you calculate the cost of the portfolio by adding up the total cost of all of the securities in it.

- Then, you go to the second step—arbitrage. You invoke the principle of arbitrage to argue that the price of the replicating portfolio is the correct price of the security. The reason is simple: If the prices of the two are different, then you can earn fast profits by selling whichever of the two is more expensive on the open market and buying whichever one is cheaper. As you engage in all of this buying and selling, not only will you make big profits, but your buying and selling activity will actually push the prices together.

- This method of finding the correct prices for assets is different from the economics-based approach because arbitrage should work regardless of what people's preferences are. This is a huge difference between the two theoretical approaches.

- In practice, replication and arbitrage are used to price some assets. Almost all derivatives and other very complex financial products are priced using this method. But for another very large set of assets, replication and arbitrage isn't practical—it's just too demanding. But at the heart of this approach lies a simple principle: like prices like. Instead of trying to find assets that replicate each other exactly,

which can be too demanding, in many markets, we simply try to find assets that are similar, or comparable, so we get the method of comparables.

- The method of comparables isn't simply the principle of arbitrage applied to assets that aren't identical. This method takes into account that the assets we are using as our pricing benchmark really are different from the asset we're trying to price. So instead of inferring the price of an asset directly from the price of another, we infer the price indirectly, through the use of a value driver, which is simply a characteristic of an asset that we think is related to its value.

- The method of comparables says that the ratio of an asset's price to its value driver is the same across comparable assets. The way that we use this information is to find the average price-to-value-driver ratio for an industry and call this average the valuation multiple. We then multiply the valuation multiple by the value of a particular firm's value driver to infer what its stock price should be.

- The great thing about the method of comparables is that it's quick and relatively easy to use. However, we have to be careful, because there's some circular causation at work. If many professionals believe that using the method of comparables is the correct way to find the price of an asset, then they'll buy and sell assets based on that belief, and the asset prices will ultimately tend toward the prices implied by this method. That will reinforce the belief of the traders that this is the correct model, and the cycle continues.

- It looks like relative pricing models tend to get the prices wrong, with alarming frequency. Nobody has found the truth about asset pricing yet, but we should wonder whether there really was a truth out there to begin with.

Suggested Reading

Bodie, Kane, and Marcus, "Equity Valuation Models," Chapter 18 in *Investments.*

Brealey, Myers, and Allen, "Introduction to Risk and Return," Chapter 7 in *Principles of Corporate Finance.*

———, "Portfolio Theory and the Capital Asset Pricing Model," Chapter 8 in *Principles of Corporate Finance.*

Questions to Consider

1. If you had to design your own economics-based theory of asset pricing, what would you select as the two or three main universal risks that should affect all asset prices? In other words, what are the two or three main risks that affect our economy and our investment returns the most? What are the sources of these risks?

2. You learned that one of the problems with using the method of comparables is that the entire market can be wrong about the value of stocks or other assets. How do we know when the market is getting all of the prices wrong, as in a bubble? What information or theories do we use to make the case that the market prices are incorrect?

A Tale of Two Funds

Lecture 15

There are many individual traders in the markets, and there are also specialized securities trading companies, but companies that manage other people's investments are some of the most important traders in the financial markets. In this lecture, you will learn about two of the most important types of money management companies—mutual funds and hedge funds—and the trading strategies that they pursue. You will examine the differences between these funds and consider whether they have the power to trigger a financial crisis.

Mutual Funds

- Mutual funds have been around for more than two centuries, but it's only been in the past 50 years that they've become a prominent part of the financial markets. That's because more and more people are using mutual funds as a way to save for retirement, especially through employer-sponsored retirement savings plans such as 401(k) plans in the United States.

- The 401(k) savings plan allows employees of participating companies the chance to invest for retirement on a tax-deferred basis. The money you invest now isn't taxed, but you'll pay taxes on the money later when you withdraw it to pay for your retirement. The investments offered in the typical 401(k) plan generally consist of a variety of mutual funds.

- A mutual fund is a very specific example of a type of company called an investment company. As the name suggests, investment companies are formed for the purpose of investing their owners' money. People buy shares in the investment company, and the managers of the company invest the money they receive from selling the shares.

Mutual funds have become a very popular way to save for retirement.

- When a person buys shares in a mutual fund, they're buying shares in a company that exists to invest money on behalf of the owners in a particular way. So mutual funds are a bit different from other types of companies that sell shares. Most regular companies don't sell shares very often, but most investment companies are always selling shares to investors because that's how they grow their business.

- If you want to sell some or all of your shares in an investment company like a mutual fund, the company itself buys the shares back from you at their current market value. In fact, you really can't sell your shares to other people, as you have to if you hold shares in a regular company.

- The managers of a mutual fund earn a management fee that's a share of the total value of the investments they manage. The fee varies, but it generally ranges from around one percent to a few

percent. That means that the more the managers of a mutual fund earn, the bigger the fund gets.

- By earning high returns on the investments that they're already managing, fund managers attract millions or even billions of dollars' worth of savings to their investment company. There's a big incentive for investment company managers to earn good returns because those big returns will attract more and more investors to the company and increase the size of the company—that is, the mutual fund.

- Mutual funds are intended to be open to the general public, so their investments are regulated by the SEC in the United States and by similar bodies in other countries. The regulations allow mutual funds to invest in a wide variety of standard securities like stocks and bonds, but they generally can't invest in other types of assets, like commodities or real estate. The use of leverage, or borrowing, by mutual fund managers, is also very tightly restricted. That doesn't mean that mutual funds can't make risky investments; some mutual funds are very aggressive about trading.

- Mutual funds have to give both prospective investors and current shareholders a document called a summary prospectus that spells out many of the details of how the managers of the fund plan to invest the shareholders' money and how the fund has performed over the past several years. Anything that the managers tell the shareholders about how they plan to invest the money is legally binding, so they can't tell the shareholders one thing and do another.

- In terms of investing strategy, there are a variety of approaches. Some managers follow price trends closely and trade securities frequently, hoping to time the market's ups and downs. Others buy assets that they believe are undervalued and then simply wait for the rest of the market to wake up and adjust the price—sometimes they wait for years.

- There are three types of mutual funds that everyone needs to know about. The first of these funds is the so-called index fund, which is an inexpensive way to make an investment in the entire market represented by a particular index, such as the S&P 500.

- Index funds deliver a diversified investment in a broad market index for a reasonable price, and the investors keep a larger share of the returns than they do with other types of normal mutual funds, which are also called actively managed funds.

- The second type of mutual fund is a relatively recent innovation called the target-date mutual fund, which is aimed at people who aren't especially interested in or comfortable with the idea of picking mutual funds on their own. With a target-date fund, all an investor has to do is choose the year when he or she thinks he or she will need to start withdrawing money from the fund, such as the investor's year of retirement. Then, he or she invests in a target-date fund that's been established for that particular year.

- A third fund is the pension fund, which is set up by corporations and governments to help them achieve a specific financial purpose: investing money in order to pay employees the pensions they've been promised. Pension funds are funds that start paying a person on a certain date, and to that extent, they appear to be very similar to target-date mutual funds. But there's a big difference between mutual funds and pension funds, which boils down to the difference between pensions and other savings plans like 401(k) plans.

- Pension funds don't sell shares to the public, like mutual funds do. Instead, an employer establishes a pension fund and then contributes money to it. The employees may also be required to contribute to their pension fund, but the majority of the money invested usually comes from the employer. That's different from savings plans, in which the employee contributes most of the money and the employers may contribute some, often by matching a portion of the employee's contribution.

Hedge Funds

- Hedge funds are infamous for their risk—not only the risk that their investors face, but also the risk that we all supposedly face as a result of their activities. Hedge funds are private investment pools that are not open to the general public; you need to be a sophisticated investor (a wealthy individual or a company) to be able to invest in a hedge fund.

- Because they're only open to investors who are supposedly able to look out for themselves, hedge funds are free to engage in just about any investing strategy and get involved with just about any assets they want to. Hedge funds can borrow money, short sell, and trade commodities, real estate, and derivatives—they can even buy entire companies.

- Hedge funds have tended to cluster into several fairly simple trading strategies, although there are always managers who are following exotic ideas. The three most popular strategies are the long-short strategy, the arbitrage strategy, and the macro strategy.

- The classic long-short strategy involves simultaneously buying and short selling different assets. This is also known as a market-neutral strategy because it is supposed to earn high returns regardless of which direction the market is heading.

- A second strategy is an arbitrage strategy. Some hedge funds use replication and arbitrage to find assets that supposedly have the wrong prices. The arbitrage could be as simple as finding a stock that trades for two different prices on two different stock exchanges, but it's usually quite sophisticated, using computers to design replicating portfolios.

- The third strategy is what many people call the macro strategy. So-called macro hedge funds follow big developments in the global economy and move money around to take advantage of them.

- It's the macro hedge funds that have acquired the reputation for being dangerous to the global economy. Governments of developing economies, for example, blame hedge funds for investing so-called hot money that pours into a small country when the economy is booming, leading to a bubble. When the bubble bursts, as the story goes, the hedge funds pull out their hot money, which worsens the downturn.

- Hedge funds even make the governments of large countries nervous. These countries point out that hedge funds can borrow huge amounts of money very quickly, allowing them to put a lot of pressure on any asset price they want to. But if the hedge funds' investments backfire, this will cause stress and possibly panic in the market.

- In addition, the hedge funds might default on the loans they took out from banks. So it's conceivable, according to this story, that hedge funds could simultaneously throw a security market into panic and cause a banking crisis. If those stories are correct, then maybe hedge funds do deserve their bad reputation—and maybe they should be put on some sort of leash by the government.

- In the case of developing economies, it's not clear that hot money really exists, and it's also not clear that hedge funds contributed to the economic problems in any given country. Analysis of data by economists at the International Monetary Fund indicates that while investment money can flow rapidly into fast growing economies, it tends not to leave in a rush.

- As for the concerns of developed economies, the abilities of hedge funds to borrow are certainly worth worrying about. There was one case in which a hedge fund came close to causing an international financial crisis as a result of its borrowing. This was the case of a hedge fund named Long-Term Capital Management (LTCM) in 1998.

- A surprise partial default by the Russian government caused the interest rates on government bonds to diverge wildly, creating huge losses for LTCM that they had no way to pay back. This threatened to cause a crisis in the government bond market, which was only narrowly averted because the Federal Reserve persuaded the very banks that had loaned the money to LTCM to bail out the hedge fund.

- This incident has been held up as a model of how government can avoid bailing out banks by organizing private bailouts instead. It also helped reinforce the government's policy of not regulating hedge funds. Instead, tighter supervision was placed on banks—because banks were the source of the borrowed money to begin with, and they're already regulated fairly heavily.

- The strategy of not regulating hedge funds has seemed to work fairly well since this incident. Hedge funds weren't directly involved in the financial crisis of 2008, for example, which is almost certainly the worst financial crisis since the Great Contraction of 1929 to 1933, which was a massive banking crisis that was one of the main causes of the Great Depression.

- Some hedge funds made very large profits from the crash of securities prices tied to subprime mortgage loans, but it is doubtful that anybody has seriously suggested that hedge funds either triggered the crisis or made it worse. In fact, you could argue that hedge funds were some of the first victims of the crisis.

- Even though hedge funds haven't been stirring up trouble lately, this doesn't mean that we should assume they never will. On the other hand, though, hedge funds are some of the few large investors out there who are free to take a stand that's opposed to the conventional wisdom in the markets. And unless someone keeps the financial market on its toes, it won't do nearly as good a job at performing all the key functions we need it to, such as price discovery.

- The trick is to find a way to allow hedge funds to police the markets, while we remain able to police the hedge funds. That's a lot to ask, and so far, nobody has figured out how to accomplish it.

Suggested Reading

Bodie, Kane, and Marcus, "Mutual Funds and Other Investment Companies," Chapter 4 in *Investments.*

Scaramucci, *The Little Book of Hedge Funds*.

Questions to Consider

1. On the Internet, look up the characteristics of a target-date mutual fund such as the Fidelity Freedom Funds. Choose a target date that is close to your own expected retirement date. What is this fund currently holding in terms of its investments, and how do the managers promise to change these investments as your retirement date approaches? Is this an attractive strategy to you, or would you rather take a more hands-on approach to your retirement investing?

2. Hedge funds are usually set up with a lot of restrictions on investor withdrawals. Most investors must agree to leave their money in the fund for a minimum length of time, often five years or longer, and they also agree to limit their withdrawals. Why do hedge fund managers impose these conditions? Why do investors agree to them?

The Market for Corporate Control

Lecture 16

In this final lecture within the unit on trading and price discovery, you will continue to learn about trading, but the topic of this lecture moves to a market where not just securities but entire companies are bought and sold. Fortunes are made and lost in this market, but in many cases, no money changes hands at all. People use many names for this market, but economists like to refer to it as the market for corporate control. In this lecture, you will learn about what it means to buy and sell corporate control and how to price it.

Mergers and Acquisitions

- The word "merger" usually implies that two companies join together and share everything, including the management. That is, in many mergers, the companies try to assemble one management team using executives from both companies, who are then supposed to share the management responsibilities equally.

- In some cases, the combined company even has two CEOs. Generally speaking, that's a disaster because nobody knows who's in charge when a merger takes place. So the first thing that takes place after the merger is finalized is a power struggle among the remaining executives, which ends up wasting time, money, and, of course, profits.

- In an acquisition, there's no doubt about who's in charge. The acquiring company's managers call the shots, and the combined company implements their vision for the future. This vision may still be terrible, but the market likes a bad vision better than an uncertain or unknown vision. And an acquisition has a better chance of succeeding than a merger, all other things held equal, because of the reduced likelihood of infighting between the managers after the acquisition is completed.

In a merger, the acquired company's shareholders get a much higher price for their shares, and the winning company's CEO usually gets a raise and a big bonus, too.

- This idea that there needs to be a vision or plan for the combined company is one of the keys to understanding the market for corporate control. There are many reasons for one company to buy another, but every reason has to do with a plan to take the assets of both companies and rearrange them. The goal of this rearranging is to find a new way to use the assets of the combined company in a way that produces more profits than the two companies could if they remained separate.

- The increase in profits due to implementing this plan goes by a few names. One name that it's often given is "synergies," which is a standard term, but it carries the connotation of getting something for nothing. The term that economists use is "merger gain," which is the increase in the expected profits of the combined company—that is, the increase in profits due specifically to the acquisition.

- There are many ways that two companies might be able to rearrange their assets to create extra profits. Sometimes one company buys

another in order to acquire an asset or an attribute that it lacks. One example of an asset might be a product distribution network in another country.

- Another broad motivation behind acquisitions is to increase the efficiency of the combined company. Sometimes a small company will buy another small company in the hope that the combined company will enjoy economies of scale. In many cases, the combined firm becomes more efficient through simple cost cutting.

- The merger gain is basically a pool of extra value created by the acquisition. It's an extra stream of profits that serves as a reward for combining the two companies. In order to create this extra stream of profits, both companies have to agree to the acquisition, so in acquisitions, the shareholders of both companies have to get some kind of reward. They have to figure out some way to share the merger gain.

- The acquired company's shareholders have to agree to allow their company to be purchased by another company. The way to get them to agree to the acquisition is to pay them a higher price for their shares than they can get in the stock market. It's necessary to pay the shareholders more than the market says that their shares are currently worth; otherwise, they won't agree to the acquisition, and the deal is off.

- To make the deal proceed, the acquiring company has to pay a merger premium to the shareholders of the target company. A merger premium is the difference between the price the acquirer pays for the target company and the actual market value of the target company, judging by the price of its shares in the stock market.

- In an acquisition, the acquiring company always pays more for the shares than the market says they're currently worth. As long as the merger premium is less than the merger gain, the acquiring company can afford to pay a merger premium without reducing its own value.

- In practice, anything left over from the merger gain once the merger premium is paid goes right to the shareholders of the acquiring company. So the managers of the acquiring company have a big incentive to pay the smallest merger premium they can get away with. On the other side, the managers of the target company have an incentive to extract the largest merger premium possible from the acquiring company. The rest is up to negotiation. In many acquisitions, the managers from both companies get together and haggle over the right price to pay for the target company.

- Once they strike a bargain, the managers present the acquisition proposal to their respective boards of directors, and if the boards of both companies sign off on the deal, the acquisition is approved and finalized shortly afterward. This is the process that takes place in a so-called friendly acquisition.

- In some cases, the target company doesn't wish to be acquired, but the acquiring company doesn't want to back down, so the acquiring company goes hostile—that is, it attempts a hostile takeover, in which the acquiring company simply tries to purchase a majority of the shares of the target company on the open market.

- One way that this takes place is through a tender offer. The acquiring company makes a formal offer to all of the shareholders of the target company to pay them a certain price for any shares they tender, or offer to sell, to the acquiring company by a certain date.

- In a hostile takeover, the merger premium paid to the target company usually ends up being significantly larger than in a friendly takeover. The acquiring company usually wants to overcome any resistance from shareholders by paying them a very attractive price for their shares. It's also larger because there's an incentive for some of the shareholders of the target company to hold out for a better deal.

- If 49 percent of the shareholders in the target company have sold their shares, then the acquiring company may have to significantly increase the amount they'll offer for the remaining one percent of

shares that they need in order to take over the target company. But at the end of the day, hostile takeovers are limited by the size of the merger gain that the managers of the acquiring company hope to create.

- Even though hostile takeovers are infrequent these days, the prospect of a hostile takeover leads many companies to adopt what are called anti-takeover defenses, which are mechanisms that are used to stop or discourage a hostile takeover by making a company a less attractive target for a hostile takeover.

- One of the most popular of these defenses is called the poison pill, but its formal name is a shareholder rights issue, which is an alternative way for a company to issue new shares of stock. It's used frequently in Europe but isn't popular in the United States.

- In a rights issue, a company sends out a notice to its existing shareholders, offering to sell them additional shares in the company, generally at a price below the current market price of the outstanding shares and usually in proportion to the number of shares they currently hold. This makes it attractive for the existing shareholders to buy additional shares in the company.

- The poison pill is a variation on the standard shareholder rights issue in which the number of shares offered to the existing shareholders of the company is huge and the price is even lower than usual. The idea is that creating a large number of extra shares in the company during a short time period will make it harder and more expensive for a potential acquirer to buy up enough shares in the target company to take it over. In addition, the large number of new shares dilutes, or waters down, the value of the shares, making the company a much less attractive investment.

Paying for an Acquisition

- In addition to the decision to try a friendly or a hostile takeover, a company that wants to acquire another company also has to decide

how it wants to pay for the deal. There are two different currencies that a company can use to pay for an acquisition: cash and stock.

- One company can use stock to buy another in a transaction known as a stock swap, in which the acquirer offers a set number of its own shares in exchange for all of the shares in the target company. If the offer is accepted, then the acquiring company issues new shares that are exchanged for the shares in the target company.

- Of course, not every acquisition goes as planned. There can be several months between the time that the two companies agree to a deal and the day that the actual stock swap takes place. In the meantime, the market has a chance to think about the true value of the deal, and what it thinks about the deal will be reflected in the stock price of the acquirer. Specifically, the stock price of the acquiring company will go up or down depending on whether the market believes that the merger will be successful.

- When the market drives down the share price of the acquiring company, this gives the managers of both firms a reason to call the deal off. Generally, the market is pretty optimistic that an acquisition will be successful—but every once in a while, it dislikes a deal so much that it punishes the value of the companies, leading them to call everything off.

- You might think that all of the complications associated with using stock to pay for an acquisition would lead most companies to use cash, but using stock has one huge advantage over using cash: It's cheaper.

- It takes a huge amount of cash to buy another company—hundreds of millions if not billions of dollars. Most companies spend their time economizing on cash, not hoarding cash. So if a company wants to use cash to make an acquisition, it has to save the cash from its own profits, which takes a long time, or it has to borrow from a bank or other lender, which is expensive. On the other hand,

when issuing new shares, the company doesn't have to scrimp and save or pay interest if it uses its own shares.

- It's so cheap and easy for companies to use their own shares to pay for acquisitions that the market thinks it's too cheap and easy. The market seems a little skeptical of stock-swap acquisitions, because they may not be as well thought out and executed as the ones that are paid for with hard-to-get cash. Academic studies show that when companies pay cash for their acquisitions, the market reacts more favorably to the transactions, pushing the price of the acquiring company up significantly. On the other hand, when a company announces a stock-swap acquisition, the market usually pushes the stock price of the acquiring company down.

- The market for corporate control is an exciting market for stock traders. There's a lot of money to be made by predicting which companies will be bought, who the buyers will be, and whether the deals will be successful in creating value. In fact, many hedge funds pursue a trading strategy called merger arbitrage.

- In this strategy, traders buy the shares of a company they believe will be acquired and short sell the shares of the company they believe is going to be its acquirer, if the traders believe that the deal will be paid for in stock. If the traders are correct, then the target company's shares go up in value and the acquiring company's share price falls, so the trade makes money two ways—if the traders guess correctly.

Suggested Reading

Brealey, Myers, and Allen, "Mergers," Chapter 31 in *Principles of Corporate Finance.*

DePamphilis, "Introduction to Mergers and Acquisitions," Chapter 1 in *Mergers and Acquisitions Basics*.

———, "Key Players in Mergers and Acquisitions," Chapter 5 in *Mergers and Acquisitions Basics*.

Questions to Consider

1. In some economies, companies become very large through conglomerate mergers, in which many seemingly unrelated businesses are combined. And in some economies, such as Japan and Korea, conglomerate companies like Samsung are quite large and successful. What large companies in the United States can be said to be conglomerates? Can there be sound reasons for conglomerate mergers?

2. Search on the Internet for an example of a company that has used a "poison pill" anti-takeover defense. If you can, read up on the details of the case, paying attention to the reasons given by the managers for using the defenses. Whose interests do you think are best served by using anti-takeover defenses?

What Companies Tell the Markets

Lecture 17

The quest for information about companies bears a striking resemblance to a gold rush. Companies release rivers of information about their performance every three months—that is, every quarter. Hidden among all of the information that drifts downstream to the financial markets are some nuggets that are every bit as valuable as gold, if you can be the first trader to discover them. In this lecture, you will learn about the information that companies tell the markets about themselves. You will learn which pieces of information are the golden nuggets that everyone is looking for, and you will see how far people have gone in their quest to strike it rich.

Disclosure Requirements for Publicly Traded Companies

- Publicly traded companies are corporations whose stock is listed on a public stock exchange, such as the NASDAQ or the New York Stock Exchange. Publicly traded companies have an obligation to disclose information about their performance, and this obligation is embodied in a set of laws and regulations administered by the Securities and Exchange Commission (SEC). In addition, the stock exchange on which the company lists its shares may also have additional disclosure requirements.

- The disclosure requirements that the SEC places on publicly traded companies are there to enable the investors in a company—specifically the individual investors—to monitor the managers by monitoring the performance of the overall company.

- In order for an arm's-length financing arrangement like stocks or bonds to work, investors have to have enough information about the company to convince them that they won't be taken advantage of by the managers, who have much better information about the company than the stockholders do and are tempted to do things that make them better off at the stockholders' expense.

- The investors will never be able to observe the managers' actions directly, but if they get reliable information about how the company is doing, then they can conclude from this information whether the managers are doing a good job or not. And that will help the investors decide whether to buy, sell, or hold the stock.

- With privately held companies, there's no need for disclosure rules. Either the owners are insiders who already help manage the company and have access to all of the information or they're sophisticated investors who strike private deals with companies about information sharing. The general public isn't invited to invest in privately held companies, and they're not allowed to, either, by the SEC's sophisticated investor rules.

- The SEC requires publicly held companies to disclose many different kinds of information to the markets. Fortunately, the SEC requires most of the information to be disclosed on one of three main forms: form 10-K (annual report), form 10-Q (quarterly report), and form 8-K (current report).

- As their names suggest, these forms are relatively standardized reports that companies are required to file either periodically, as in the case of the annual and quarterly reports, or when something financially significant or noteworthy happens to the company, as in the case of the current report.

- Several decades ago, the SEC created a system called the Electronic Data Gathering, Analysis, and Retrieval System (EDGAR). Since the advent of the Internet, EDGAR has become much more user-friendly, thanks to web applications that communicate with EDGAR for you. In fact, many companies post links to EDGAR on their websites that take you directly to their annual reports and other SEC filings.

- The SEC requires companies to include several broad categories of information in their annual reports as well as their quarterly reports.

Because the quarterly reports contain most of the same categories as the annual report, the following focuses on the annual report.

- The annual report is divided into three broad sections. In the first section, the company gives an overview of the main developments in its business during the past year, discusses the major changes to its property, and outlines any legal proceedings it became involved in or resolved during the year.

- The second section of the annual report is the financial section, and for many people, this is the heart of the annual report. In this section, the company presents financial information about itself, and the management has its chance to give its interpretation and analysis of the financial results. The company has to include a complete set of its financial statements—that is, its accounting books—and reveal if it has any issues with the auditor who prepared them.

- The final section of the annual report is devoted to people—the managers and the so-called beneficial owners of the company, who hold very large stakes in the company of at least 10 percent of the outstanding shares. All of these people are named in the annual report so that the public can know who they are, and their ownership stakes in the company are also disclosed.

- In addition, this section contains one of the most interesting and provocative sections of the annual report: executive compensation numbers. The SEC requires that every company discloses the compensation packages for five employees: the CEO, the principal financial officer (such as the chief financial officer, or CFO), and the other three most highly compensated employees earning more than 100,000 dollars per year in total compensation.

- The annual report really does try to give an overall picture of what a company has done during the previous year. Of course, getting news at the end of a year or the end of a quarter may come too late to really help a stockholder or a potential investor in a company. The SEC realizes this, so it also requires companies to file a current

report, or form 8-K, whenever there's a significant event in the life of the company.

- The SEC lists over 20 different categories of events that should be disclosed using the current report. The general idea is that if something happens to the company that would affect investors' decisions to buy, sell, or hold the company's shares if they knew it, then it should be disclosed using a current report.

The Financial Statements

- The financial statements are a set of four documents that presents the company's financial condition, mostly in terms of numbers. The documents include the income statement, balance sheet, statement of cash flows, and statement of shareholders' equity.

- In addition, there are also notes to the financial statements, which are as important as the other four documents. Each document tries to show the public a different aspect of the company's financial

As long as companies have material information about their performance to release to the public, there will be lots of jockeying to be the first to know it and profit from it.

performance. Of the four documents in the financial statements, two of them grab most of the market's attention: the balance sheet and the income statement.

- The balance sheet shows what a company owns and what it owes to other people. It usually starts out with the list of assets that the company owns. Companies mostly own real assets, such as facilities and equipment, which they use to produce the products and services they sell. But they also own financial assets, such as securities, because they need to store excess cash temporarily, or they want to have some money saved for a rainy day.

- The balance sheet divides the assets into current, or short-term, assets and long-term assets. A current asset is supposed to convert to cash within the coming year, so it's a potential source of cash that the company can use to pay its bills over the coming year. Long-term assets, on the other hand, may take years to produce substantial amounts of cash for the company.

- Below the assets of the company on the balance sheet is the section devoted to liabilities, which includes any amount that the company has borrowed from someone else. Just as the assets section is divided between short-term and long-term assets, the liabilities section is divided between current and long-term liabilities.

- Companies borrow from banks and the securities markets for long periods of time in order to buy many of the long-term assets listed on the balance sheet, but companies also do a lot of short–term borrowing. These short-term borrowings are the accounts payable of the company, also simply called the payables.

- Investors and financial analysts are interested in the balance sheet for three main reasons. First, they want to know whether a company looks like it has enough short-term assets to pay off its short-term liabilities. This is important because a company will run into big financial trouble if it can't pay its short-term bills.

- In fact, this is more of a concern than the issue of whether the company has borrowed too much in general, which is the second reason why people are interested in the balance sheet. If a company has borrowed too much, that's a problem, but if the loans aren't due for a few years, then there's time to do something to fix that problem. On the other hand, if many bills are due tomorrow and the company doesn't have the cash to pay them, then that can push the firm out of business overnight.

- The final reason why people look over the balance sheet is to see how much larger the assets are than the liabilities. When a company is healthy and doing well, its assets will be significantly larger than its liabilities, and there'll be a big, positive difference between the two—which is called capital, net worth, or equity. This number represents, in an accounting sense, what the shareholders' ownership stake in the company is worth.

- The other main financial statement is the income statement. If the balance sheet is about what a company has, then the income statement is about what a company does. Companies make products and sell them, hopefully for a nice profit. The income statement details how much money a company takes in by selling its products, what it costs the company to make and sell those products, and how much profit is left over after it pays all of its costs and the government.

- The income statement starts off with information about the money that the company earned during the most recent year or quarter. Most companies call this sales, or revenues. Then, all of the various costs of making the products are subtracted from revenues, such as costs for labor, materials, and advertising. The only costs that aren't subtracted right away are the interest the company pays on its debts and the taxes the company pays to the various local, state, and federal governments.

- The number that results from the subtraction of costs from revenues is a measure of profit called earnings before interest and taxes

(EBIT), which is also often called operating income. Many people like to look at EBIT because they believe that it gives a better way to compare profitability across different companies. That's because two companies can be similar in almost every way but have different profits if one has borrowed a lot and pays a lot of interest while the other company doesn't.

- Likewise, two similar companies can have very different tax bills, depending in part on where they're located and mostly on how good they are at finding and exploiting corporate tax breaks. EBIT bypasses all of those differences by looking at profits before the effects of borrowing and taxes are taken into consideration. That facilitates better comparisons.

- But if we want to judge a company on its own merits, we'll subtract the interest expense and the taxes from EBIT, which gives us net income, also known as the earnings of the company. "Earnings" is the financial word for "net profits."

- Then, because earnings represent the profits of the company that are available to be paid out to the shareholders, it makes sense to divide the total amount of earnings by the number of shares of stock in the company in order to see how much money each share of stock is technically entitled to receive. The result is earnings per share (EPS), which—more than any other financial number—is the nugget of gold that stock analysts and investors are rushing to discover.

- Not only is earnings per share a clear signal of the company's current performance, but it's also the key number when it comes to putting a value on the company's stock. The price-to-earnings ratio—the ratio of the price of one share of the stock to its EPS—is by far the most commonly used method to estimate the correct value for a stock.

- Everyone in the market wants to be the first to know a company's earnings per share for the quarter because if you are the first one to

know, then you can guess how the rest of the market will react to the EPS number when it's revealed and make a stock trade that's very likely to earn a big profit for you.

Suggested Reading

Bodie, Kane, and Marcus, "Financial Statement Analysis," Chapter 19 in *Investments*.

Shon and Zhou, "Earnings Announcements: Why Are They So Important?" Chapter 2 in *Trading on Corporate Earnings News*.

Questions to Consider

1. Most corporations now link directly to their SEC filings through their company websites. For example, McDonald's Corporation provides this link through http://www.aboutmcdonalds.com/mcd/investors/sec_filings.html.

Go to the SEC filings for McDonald's or another corporation and look at one of their 8-K releases. What kind of material information was released in this filing? How would that have affected an investor's decision to buy, sell, or hold the company's shares?

2. Look up a company's 10-K filing and find the main items discussed in this lecture. In particular, find the financial statements and executive compensation information. Do the top employees receive most of their compensation in the form of salary, bonus, or variable compensation such as stock-based compensation?

What Moves the Markets

Lecture 18

There are hundreds of economic indicators that are released to the public on a regular basis—usually once a month or once every three months—but there are less than 100 major indicators that the market seems to pay attention to. Still, that's a large number of statistics. In order to help narrow down this huge field into a few groups of really useful and important numbers, this lecture will teach you about some of the main numbers that move the financial markets.

Economic Indicators

- There are three broad categories of numbers that people in the financial markets find most interesting. The first kind of number gives people more information about the future growth rate of the economy, or the likely stage of the business cycle that the economy will be in. Most indicators fall into this category, because there are a lot of economic relationships that help forecast economic activity.

- Financial markets want to know about the future state of the economy for two main reasons. First, the state of the economy strongly influences business earnings. Generally, the faster the economy grows, the higher business earnings are. Earnings are the single most important piece of information that companies release to investors, so investors are interested in any additional information that helps them forecast what's likely to happen to company earnings.

- Information on the future state of the economy isn't just for stock investors. Bond investors also want to know about the future state of the economy. On one hand, investors in corporate bonds are concerned about the risk that a company will default on its bonds. The higher the economic growth rate is, the stronger companies are likely to be and the lower the probability they'll default.

- At the same time, though, other bond investors are concerned with the future level of interest rates. If interest rates fall, then bond prices will rise. And interest rates tend to fall during economic slowdowns, especially because central banks often cut interest rates then, in order to stimulate the economy.

- This last point illustrates an important fact common to all of the economic indicators that you'll learn about in this lecture. Just because everyone pays attention to the same indicator, it doesn't mean that they're all hoping it'll move in the same direction. Where you hope the indicator goes depends on your role in the market and your investment strategy. This also means that an economic indicator can send the same signal to the market two different times, but the market will react differently each time.

- Labor market statistics get a lot of attention in the financial markets. They tend to be lagging indicators; in other words, they tend to follow the stage of the business cycle, not lead it. That's because employers often try to avoid firing workers when the economy turns down, and they're cautious about hiring when the economy turns up. So there isn't much predictive power about the stage of the business cycle from these numbers.

- Nonetheless, they're important to the financial markets for a few reasons. First, because they're lagging indicators, they help confirm or disprove people's guesses about how the economy is doing. That's important information because the official committee at the National Bureau of Economic Research that declares when the United States is in a recession or expansion only does so well after the recession or expansion starts.

- The more important reason why the financial markets pay attention to the labor market is because the condition of the labor market strongly influences how people feel about the rest of the economy. If people think that jobs are plentiful and unemployment is low, then they feel confident about the future and are eager to borrow and buy lots of expensive stuff—including houses, cars, and appliances.

- But if people think that jobs are hard to come by, then they're fearful and conservative with their cash. This is bad for the credit markets, as well as for the construction industry and the manufacturers of consumer durable goods like cars and appliances, because many of these companies are still producing their products in the United States.

- Another pair of indicators that try to measure this directly is the Survey of Consumer Confidence Sentiment, which is produced by the University of Michigan in conjunction with Reuters, along with the Consumer Confidence Index, which is produced by The Conference Board, an independent business research organization. Both of these indexes try to measure individuals' opinions about how the economy is doing and, more importantly, whether they believe that economic conditions will get better or worse in the future.

- There are all kinds of statistics released to the public that tell us what people are actually buying, and these play an important role in confirming the information from indicators like the employment numbers and the consumer sentiment indexes. For example, statistics are released regularly on new car sales, on new home sales, and on retail sales. There are also statistics on existing home sales and new housing starts.

- Another business cycle indicator that always grabs the attention of the financial markets is the Institute for Supply Management (ISM) Manufacturing Survey, which is a survey of purchasing managers—the ones that buy all of the raw materials and parts that manufacturing companies turn into finished products. They also buy all of the boxes and the packing materials that the companies use to ship these products to stores.

- When the economy picks up and manufacturing companies start to make more goods, the purchasing managers are leading the charge, because the increase in production starts with increased orders for raw materials and parts. Similarly, purchasing managers are the

first to stop ordering when the economy turns down and sales of manufactured goods start to fall. This is a very informative indicator of upturns and downturns in manufacturing.

- The ISM Manufacturing Index has a counterpart, which is called the ISM Non-Manufacturing Index. The manufacturing index moves up and down strongly in reaction to changes in the overall economy, but the services index doesn't seem to move as strongly.

Inflation Indicators

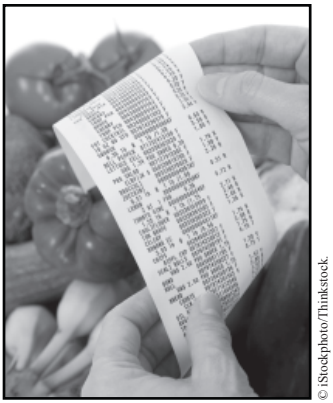
- A different group of numbers that also commands a lot of attention from the financial markets is the price statistics, such as the consumer price index. Prices are used to measure inflation, which is the rate of change in the overall level of prices, usually measured in percent. Inflation is one of every investor's worst enemies; it reduces your purchasing power—what your money can actually buy. If inflation is high, it erodes the value of your savings and defeats the whole purpose of investing.

- The financial markets are well aware of the damage that inflation does, so they are always watching various price indexes and individual prices for signs of inflation. If they see it, they tend to react negatively, pushing down the prices of securities of all kinds.

- The most comprehensive measure of prices in an economy is the so-called GDP deflator, which is the ratio of nominal GDP to real GDP for a given year. The markets don't pay much attention to the GDP deflator, mainly because it only comes out once every three months.

- Instead, the market pays attention to two main price indexes: the consumer price index (CPI) and the producer price index (PPI). The CPI, which is produced by the U.S. Bureau of Labor Statistics, is the most popular measure of inflation because it is easy to understand, is the most relevant to individuals, and comes out monthly. The CPI is an index that measures the price of a set of

goods and services that the typical American household consumes on a weekly or monthly basis.



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The consumer price index measures the price of a set of goods and services that the typical American household consumes on a weekly or monthly basis.

- The other price index that the market watches closely is the PPI, which tells the story of inflation at the company level—in terms of the prices that manufacturers charge to wholesalers, retailers, or other customers who buy their products. The idea is that if manufacturers raise their prices, these price increases are likely to be passed on to consumers, so the PPI may be the first sign of future inflation. Although the PPI does tend to move together with the CPI, they don't move in lockstep by any means. That's because the market situation faced by manufacturers and retailers can be quite different.

- In addition to the price index numbers, there are several commodity prices that the financial markets pay attention to as inflation indicators. At times, commodity prices like gold and oil will give good insights into future inflation and really move the financial markets, but they aren't consistent indicators of future inflation. The prices of these commodities are subject to the laws of supply and demand, so the movements in the price of any given commodity may simply reflect conditions that are unique to that particular commodity's market.

Financial Market Indicators

- Another number that moves the market is a relatively new indicator that belongs to a small group of indicators that tells us about the financial markets themselves. While business cycle indicators and prices tell us about conditions in the goods market that affect the

financial markets, there are also indicators measuring the financial markets that tell us what might happen in the financial markets.

- The example of such a number is something that people call VIX, which is the ticker symbol for the Chicago Board Options Exchange Volatility Index, which is supposed to measure something called the implied volatility of the S&P 500 stock index. The volatility of the S&P 500 is the amount of variation in the index over time—how far, and how frequently, the value of the S&P 500 index wanders away from its average value. The higher the variability, the further and more often it wanders.

- In finance, we use variability to measure risk, so by measuring variability, VIX becomes a measure of how much risk the market associates with the S&P 500 right now. The VIX is commonly called the fear index—the more fear there is in the market about the future, the higher VIX rises. And when the markets calm down, VIX falls.

- VIX has taken on a wider interpretation in the past few years; now it doesn't just stand for the fear in the stock market, but the fear in all of the financial markets. VIX shows a tendency to overreact—just like financial prices do. But the VIX rises and falls well before the other prices in the financial market, which makes it a favorite indicator for traders.

- When fear in the market increases and VIX rises to a high level, then the markets push securities prices down too far. People who buy when VIX is high typically make some nice profits. However, the behavior is not symmetric, so when VIX is low, it's not necessarily time to sell.

Suggested Reading

Baumohl, "Consumer Confidence Index," pp. 92–96 of *The Secrets of Economic Indicators*.

———, "Institute for Supply Management (ISM) Manufacturing Survey," pp. 156–162 of *The Secrets of Economic Indicators*.

Constable and Wright, "CBOE Volatility Index (VIX)," Chapter 49 in The Wall Street Journal *Guide to the 50 Economic Indicators That Really Matter*.

———, "Consumer Sentiment," Chapter 3 in The Wall Street Journal *Guide to the 50 Economic Indicators That Really Matter*.

Questions to Consider

1. Go to the website of the Billion Prices Project at http://bpp.mit.edu/ and look at the graphs comparing the online index estimate of inflation with the CPI inflation rate. How confident are you in the accuracy of the online index, given the graphs presented? What are some of the differences between the behaviors of these two sets of data? If you were an active securities trader, would the online index add any value to your trading?

2. In addition to VIX, another indicator of market sentiment is the Arms Index, also known as TRIN (which stands for Trader's Index). On Investopedia or another financial website, look up the definition of TRIN and read about how this indicator is supposed to work. Do you think you would base investment and other financial decisions on the values of or movements in these indexes? Why or why not?

When Central Banks Talk, Markets Listen

Lecture 19

Since the 1950s, central banks have become one of the most powerful forces in the financial markets and, indeed, in the global economy. In this lecture, you will learn the reasons why the financial markets hang on every word that central bankers release to the public. Not only do the actions of central banks directly affect market prices and interest rates, but investors' expectations of their actions can affect markets just as dramatically.

Central Banks

- Central banks were created by governments to do two things. First, they regulate the supply of money in the economy. In the U.S. Constitution, the Congress is given the power to coin money and regulate its value. It delegated this power to the Federal Reserve System in 1913, when the Fed was created. In most economies, mints and government printers create the coins and notes, but it's the central bank that issues all the currency.

- Issuing currency is one of the easiest parts of a central bank's job. Regulating the value of a country's money is tough, because that part has to do with controlling inflation. For many central banks around the world, fighting inflation is its primary job.

- Many central banks around the world have officially adopted a monetary policy called inflation targeting, in which they set a numerical target for the inflation rate and then design their actions to make sure that inflation stays under its target rate. Because inflation is one of the main enemies of investors, the financial markets are very interested in knowing how well a central bank is doing at fighting inflation.

- The second main job entrusted to the central bank has to do with the "bank" part of the name. Central banks are often considered to

The Federal Reserve issues U.S. currency. In fact, the phrase "Federal Reserve Note" is printed right on the front of dollar bills.

be the custodians of the payment system—that is, it's the central bank's job to ensure that the payment system works efficiently and that it doesn't fall apart during financial crises.

- The payment system is the system that links banks together and enables money to move from buyers to sellers so that everyone can make and receive the payments they need. Because the payment system consists of banks, it makes sense that the institution that protects and supervises the payment system should also have some of the characteristics of a bank.

- The central bank takes deposits from banks, which are called reserve deposits, and makes loans to banks. These aren't the only tools that the central bank can use to protect the payment system, so it's limiting to think of central banks simply as large banks. They're also important bank regulatory agencies, protecting the payment system by making and enforcing rules for the banks in the

economy. They make other financial regulations as well that affect all of the borrowers and lenders in an economy.

- There are several ways that central banks influence the financial markets. First, monetary policy affects several variables that are important to financial markets—inflation, interest rates, and even economic growth and unemployment. Second, central banks are an important player in the financial markets in their own right. Finally, central banks regulate and supervise banks, and in many countries, they regulate other financial institutions as well.

How Central Banks Actively Influence the Financial Markets

- Many people think that central banks, such as the Fed, control interest rates, but that's not true. Central banks do have the ability to control certain interest rates, and in many cases, they control these rates closely, but the vast majority of interest rates are not controlled by central banks—though they are influenced by central bank actions. That's part of how monetary policy affects the economy.

- The first interest rate is called the discount rate in the United States. This is the rate that the Fed charges on loans that it makes to banks that need short-term cash to meet unexpectedly high withdrawals from depositors. Every central bank has a similar rate, and generally this interest rate is low. The rate is determined by the central bank; it's like the loan rate that a bank decides to charge its loan customers.

- The discount rate doesn't directly affect other interest rates. That's because most central banks around the world don't do that much direct lending to banks anymore. But the discount rate does play a key signaling role to the financial market. A central bank will lower this rate to signal that it is going to be increasing the money supply at a faster rate than before. It raises this discount rate to signal that it will be slowing down the growth rate of the money supply. This signaling value gives the discount rate its significance.

- The main interest rate that the Fed and other central banks control is an interest rate in the interbank lending market, which is the market in which banks lend money back and forth to each other. What banks lend to each other isn't just any old money, but a subset of our money called bank reserves. They lend each other the reserve deposits they hold at the central bank.

- The lenders in the interbank market are banks that are holding excess reserves, which are extra reserves over and above the reserves the bank is required to hold. A bank's excess reserves are kept in its deposit account at the central bank. In the United States, this interbank market for bank reserves is called the fed funds market because the banks are borrowing each others' reserve deposits at the Fed. The deposits technically never leave the Fed; they're just transferred back and forth between different banks' reserve deposit accounts inside the Fed.

- The rate of interest on a loan in the fed funds market is called the fed funds rate. The loans on the fed funds market are typically overnight, or one-day, loans—so this is a very short-term interest rate. It's used as a benchmark for other interest rates, and it's effectively a lower bound on bank lending rates as well, because the bank has to charge at least the fed funds rate on its loans in order to pay back any borrowing it does on this market.

- The central bank can control the fed funds rate, or the interbank lending rate, very closely. It doesn't set the rate by decree, but it has total control over the supply of bank reserves, so it can expand and contract the supply of bank reserves in order to fine-tune the fed funds rate if it wishes. Most of the time, this is exactly what the Fed and other central banks do—they set, or peg, the fed funds or similar interbank lending rate where they want it to be.

- This interest rate is one of the anchors or key benchmarks for all of the interest rates in the economy. That is, many other market interest rates follow the movements of the fed funds rate so that if

the fed funds rate rises, these market interest rates rise, and if the fed funds rate falls, so do these other rates.

- A central bank expands or contracts the supply of reserves by using the most important tool of monetary policy: open-market operations. The "market" in open-market operations is the bond market. Central banks hold huge portfolios of bonds—predominantly government bonds—and they're free to buy and sell government bonds on the secondary market as much as they like. They like to do both of these, because it's a powerful way to affect the money supply and interest rates. When a central bank makes an open-market purchase, it pays out money into the economy, and it takes in government bonds, so the money supply expands.

- The Fed pushes the fed funds rate down by making open-market purchases of government bonds. The Fed can push the fed funds rate up by making open-market sales. When a central bank like the Fed is engaging in open-market operations, chances are that it's doing so in order to push the interbank lending rate to some level or to hold it there.

- During normal economic times, the Fed doesn't buy or sell enough bonds to move the entire bond market—but it does buy or sell enough to move the supply of bank reserves in the much, much smaller fed funds market.

- Quantitative easing is simply another name for open-market purchases. But instead of aiming to peg some interest rate, quantitative easing simply sets a number on the amount of bonds that the central bank aims to purchase. The purchases need to be done on a much larger scale in order to push up significantly on bond prices and, hence, push down on bond rates.

The Fisher Effect

- Expected inflation does direct damage to the value of most investments, through a phenomenon known as the Fisher effect, which is named after Irving Fisher, a famous economist who was

active in the 1920s. Fisher theorized that investors and lenders set interest rates in two steps.

- First, investors and lenders choose the real interest rate, which is the rate of return they would demand if they knew prices were going to stay the same over the life of the investment. It's called a real interest rate because if prices stay the same, lending money is the same as lending real goods.

- The real interest rate depends only on the riskiness of the investment and the time period covered; in other words, the real interest rate is the compensation people demand because they're risk averse, and they're impatient.

- Once they've chosen the appropriate real interest rate for a particular investment, investors add the expected inflation rate to the real interest rate to get the total interest rate, or nominal interest rate, they charge. That is, Fisher theorized that investors and other lenders demand to be compensated one for one for any inflation that they expect to occur over the life of the investment or the loan they make.

- The Fisher effect says that nominal interest rates—that is, the interest rates that are actually quoted in the markets—are equal to the real interest rate for that investment plus the expected annual inflation rate.

- What the Fisher effect means in a practical sense is that interest rates on loans and expected returns on investments should go up one for one with the expected inflation rate. That spells trouble for the prices of bonds, stocks, and other investments. The prices of all these financial instruments depend negatively on the rate of return they have to pay.

- Inflation is usually a concern when the economy is growing rapidly or when there are price increases in basic commodities like oil, food, or raw materials. When economies go into a recession,

central banks can still have a big impact on markets by affecting expectations. In this case, the effect that central banks have doesn't work through the Fisher effect and expected inflation. Instead, the effect works through expected interest rate cuts.

Suggested Reading

Cecchetti and Schoenholz, "Central Banks in the World Today," Chapter 15 in *Money, Banking, and Financial Markets*.

———, "The Structure of Central Banks: The Federal Reserve and the European Central Bank," Chapter 16 in *Money, Banking, and Financial Markets*.

Kidwell, Blackwell, Whidbee, and Sias, "The Fed and Interest Rates," Chapter 3 in *Financial Institutions, Markets, and Money*.

Questions to Consider

1. In this lecture, you learned about central bank open-market operations. In practice, central banks usually conduct much of their open-market operations through repurchase agreements that last from one day to several months. Why would central banks prefer to use repurchase agreements to conduct open-market operations rather than simple sales and purchases of government bonds?

2. In a previous lecture, you learned that often the stock market might react to earnings announcements in unexpected ways. Similarly, sometimes stock and bond prices will rise after the release of higher unemployment or lower GDP numbers than expected. Explain these unexpected increases in stock and bond prices by taking into account what these announcements would mean for monetary policy.

Interest Rates as Indicators

Lecture 20

There are dozens if not hundreds of interest rates quoted in the market on a daily basis, but you only need to watch a handful of individual interest rates and combinations of interest rates to get some insights into what's happening in the financial market. In this lecture, you will learn about some of the most important interest rates in the financial markets and how these rates can be used to tease out more information about the state of the financial markets and the economy.

Benchmark Interest Rates

- The interest rate on a particular bond or other lending arrangement is usually set by first choosing a benchmark interest rate and then adding a credit spread to the current value of this benchmark interest rate. The credit spread is an extra amount of interest that reflects the extra riskiness of the borrower, relative to the level of risk embodied in the benchmark rate.

- The use of benchmark interest rates simplifies the job of watching interest rates because it means that the benchmark rates will be one of the main drivers of all interest rates. In other words, because so many bonds and loans use this arrangement, interest rates across the board will tend to rise as the benchmark rate rises and fall as the benchmark rate falls. This isn't foolproof, because credit spreads can and do vary over time. Still, the changes in the benchmark rates are good indicators of how all interest rates will behave.

- There are two sets of benchmark interest rates that are commonly used. One set of benchmarks is the set of government bond rates. Government bonds are popular because they are considered to be practically risk-free. This makes it relatively easy to determine credit spreads because we don't have to make tricky distinctions between the riskiness of the benchmark rate and the riskiness of a particular borrower. When we use a government bond rate as the

benchmark, then the credit spread captures all of the riskiness of the borrower. It's much easier to measure the total riskiness of a borrower rather than try to measure the difference in risk between two risky borrowers.

- Government bond rates are also popular benchmark rates because government bonds are usually issued in many different maturities. We like to choose a benchmark that has about the same maturity as the loan itself. Matching the maturity of the benchmark rate with the maturity of the loan is a way to make sure that the interest rate the borrower pays matches their true risk.

- The government bond rate makes a good benchmark for loan contracts that have fixed rates—that is, contracts in which the interest rate stays the same over the life of the loan. But many lending contracts have variable rates, also known as floating rates.

- The financial markets also want a good benchmark rate for floating-rate loans. Many variable-rate lending contracts use government bond rates as their benchmark, but the main concern is that a government bond rate may not accurately reflect credit conditions for businesses on a day-to-day basis.

- The financial markets settled on a different benchmark for floating-rate loans to large businesses: the London Interbank Offered Rate (LIBOR), which is an interest rate on U.S. dollar loans. The Eurodollar market was an early leader in floating-rate lending, so LIBOR became the standard benchmark in that market and has spread to the rest of the U.S. dollar lending market.

- The Interbank Offered Rate is an interest rate that banks charge to lend to each other at, so it's an interbank rate. The London Interbank Offered Rate was originally the interest rate that London banks would quote when they offered to place U.S. dollar deposits in each other.

- Because LIBOR is a lending rate between private banks, these banks do have some default risk, and LIBOR reflects this default risk. This rate differs from government bond rates because of the increased risk of the banks relative to the government. The fact that LIBOR includes risk creates an opportunity to use LIBOR to deduce some important information about the market.

- Differences between interest rates are called spreads, and spreads between different interest rates can convey a lot of information. The spread between the U.S. dollar LIBOR and U.S. treasury bond rates is heavily watched by traders as an indicator of market sentiment as well as an early indicator of actual increases in default risk.

- This spread is called the Treasury-Eurodollar spread (TED spread), and it serves a similar purpose to VIX. The higher the TED spread is, the more fearful the markets are that defaults are going to rise. The TED spread is more specific to the loan markets whereas the VIX is a fear indicator that is more specific to the stock markets.

The Yield Curve

- Relationships between interest rates can pass along lots of information about what's going on in the market. One of the most important and informative relationships between interest rates is called the yield curve, or the term structure of interest rates. The yield curve is a graph that shows the interest rates paid on bonds of differing maturities.

- Imagine a graph that has the maturity of a bond on the horizontal axis and the market interest rate paid on that bond on the vertical axis. The yield curve shows how the yield, or the interest rate paid on a bond, changes as its maturity rises. All of the other characteristics of the bond that could affect its yield, such as its default risk and tax treatment, are held constant—so the yield curve isolates the effect of maturity on the interest rate that a bond pays.

- To draw the yield curve, we have to find a set of bonds that has the same characteristics except for maturity. The best, and the only, set

of bonds that fits this description is the set of government bonds. Most governments issue bonds with a wide range of maturities.

- The shape of the yield curve varies over time, and it's the shape of the yield curve that contains information that the market wants to know. The yield curve has taken on all kinds of different shapes and slopes, but there are a few generalizations worth keeping in mind. We call these generalizations stylized facts, because they're generally true but not always true. However, they are dependable enough to be worth keeping in mind.

- The first stylized fact is that the yield curve usually slopes up. That is, as maturity increases, the interest rate on the bond increases. The second stylized fact has to with downward-sloping yield curves, which are also called inverted yield curves. The yield curve usually slopes down when interest rates are relatively high.

- The theoretical relationships between short-term and long-term interest rates can help us understand how to interpret the slope of the yield curve. Several economic theories are commonly used to explain the slope of the yield curve, and each one has something important to say. In fact, at different times, a different theory does the best job of explaining the slope of the yield curve, and therefore, the slope will have a different message about the financial markets.

- One simple theory of the yield curve is called the segmented market theory. That is, the markets for short-term bonds and long-term bonds are segmented, or separated. According to this theory, short-term borrowers and lenders don't have much interest in borrowing and lending for long periods of time, and long-term borrowers and lenders don't have much interest in borrowing and lending for short periods of time.

- The strength of this theory is that sometimes there are big changes in the supply of bonds or the demand for bonds that affect the yield curve. The downside of this theory is that it doesn't naturally explain why the yield curve slopes up, unless you make some

additional assumptions about supply and demand in the markets for short-term loans and long-term loans.

- A second theory of the yield curve helps to fill in these missing assumptions. This second theory, which has to do with risk, complements the segmented markets view of the yield curve. The second theory of the yield curve says that long-term bonds are riskier than short-term bonds, so people demand a risk premium to induce them to make long-term loans.

- In the context of the yield curve, this risk premium is called the term premium because it's associated with the longer term, or maturity, of the bonds, so this theory of the yield curve is often called the term premium theory.

- In addition to helping explain the upward slope of the yield curve, this theory also gives further support to the idea that the markets for long-term bonds and short-term bonds are segmented because lenders may naturally prefer to lend in the less-risky short-term bond market. It also suggests that lenders can be induced to lend in the long-term bond market instead, if the risk premium is high enough.

- When we add this term premium theory to the supply and demand theory of the yield curve, it helps explain why the yield curve usually slopes up. As maturity goes up, the riskiness of the bonds increases, so the interest rate that lenders demand rises, or they won't lend in the long-term bond market. This means that long-term interest rates will usually be higher than short-term interest rates.

- The term premium theory is a good economics-based story, and it helps explain that first stylized fact about the slope of the yield curve. It can also help explain why the yield curve might get steeper or flatter: The yield curve will get steeper if the perceived riskiness of long-term bonds increases relative to the riskiness of short-term bonds; the yield curve will get flatter if the perceived riskiness of long-term bonds falls.

- But the risk-premium theory doesn't do a very good job at all on the second stylized fact, because it really can't explain why the yield curve would ever slope down. Fortunately, there's a third theory of the yield curve that can help explain why the yield curve would slope down. It's called the expectations theory, and it's different from the supply and demand theory or the term premium theory because it's a finance-based theory of the yield curve, so it's based on arbitrage.

- Contrary to the segmented markets theory, the expectations theory says that short-term bonds and long-term bonds are good substitutes for each other, and this leads to the potential for arbitrage. The expectations theory of the yield curve says that the returns to holding long-term bonds have to be equal to the expected returns from holding a series of short-term bonds that have the same total maturity as the long-term bond. If they aren't equal, there'll be arbitrage between these bonds until it is true. What this implies is that long-term bond rates are the averages of current and expected future short-term bond rates.

- This theory explains an upward-sloping yield curve by saying that people are expecting short-term interest rates to rise in the future. Similarly, if the yield curve slopes down, the expectations theory says that people are expecting future interest rates to fall. Finally, if people aren't expecting interest rates to rise or fall, then the yield curve should be perfectly flat.

Suggested Reading

Baumohl, "Yield Curve," pp. 318–324 of *The Secrets of Economic Indicators*.

Constable and Wright, "Credit Spreads," Chapter 45 in The Wall Street Journal *Guide to the 50 Economic Indicators That Really Matter*.

———, "LIBOR," Chapter 30 in The Wall Street Journal *Guide to the 50 Economic Indicators That Really Matter*.

———, "TED Spread," Chapter 46 in The Wall Street Journal *Guide to the 50 Economic Indicators That Really Matter*.

———, "Yield Curve," Chapter 39 in The Wall Street Journal *Guide to the 50 Economic Indicators That Really Matter*.

Kidwell, Blackwell, Whidbee, and Sias, "The Structure of Interest Rates," Chapter 6 in *Financial Institutions, Markets, and Money*.

Questions to Consider

1. You can watch a 25-year history of the U.S. Treasury yield curve at this link: http://www.smartmoney.com/investing/bonds/the-living-yield-curve-7923/. As you watch the yield curve moving, how well does it live up to the ideas that the yield curve generally slopes up, and when it's inverted, interest rates are unusually high? Are there any times when the yield curve was inverted but interest rates didn't seem unusually high?

2. In this lecture, you learned about several different theories of the yield curve. The lecture makes the point that at any given time, more than one of these theories can help explain the current shape of the yield curve. Find a current picture of the yield curve and reflect on the conditions in the economy as well as in the financial markets. Which theory or theories seem to give the best explanation of the current shape of the yield curve?

Risk Management and Insurance

Lecture 21

One of the six functions of the financial markets—the only one you haven't learned about yet—is risk management. In this lecture, you will learn all about the different types of risks in the financial markets and the main ways that individuals and companies deal with them. You will also learn how financial markets help us deal with all kinds of other risk in our lives by using financial products like insurance.

Types of Financial Risk

- The best way to learn about risk is to do it within the framework of risk management, which is a three-step process that starts with identifying the risks that we face. This first step will give us a great grounding in understanding the risks in the financial markets. Then, we move on to measuring the risks and, finally, to taking actions to deal with the various risks.

- By following the steps of risk management, we'll learn everything we really want to know about risk—what the risks are and how to deal with them. There are six types of financial risk that investors and companies deal with on a daily basis, and you will learn about five of them in this lecture.

- First, credit risk is the risk that somebody who owes you money can't, or won't, pay you back. Credit risk is one of the most pervasive and important risks in the financial markets. We've gotten pretty good at dealing with it, but some of the biggest problems in the financial markets are related to credit risk.

- The next type of risk is market risk, which is the likelihood that you'll suffer losses because of changes in the market price of some asset. This is a risk that anyone who trades financial assets faces—and because all investors are technically traders, this is a risk that everyone faces when they invest their savings in some kind of

financial instrument. Usually, we think of market risk as the risk that the price of our investments falls significantly.

- There are a few types of financial prices that are so important that they have their own types of market risk named after them. One of these is foreign exchange risk, or forex risk, which is a risk that investors face when they buy foreign assets because they're priced in terms of their home currency. Forex risk is also a big risk that multinational companies face.

- Another specific type of market risk is interest rate risk, which is the likelihood that the interest rate you earn as a lender falls or that the interest rate you pay as a borrower rises. Interest rate risk is a problem for all investors, but it's a special problem for banks and other financial intermediaries who make their living borrowing from one set of people and lending to another.

- The next type of financial risk is liquidity risk, which is the risk of running out of cash or other liquid assets that you can use to pay bills or pay back someone who loaned you money. Liquidity risk is a danger for any lender who makes long-term investments that tie up money for long periods of time because something unexpected can happen that causes you to need cash, and you won't have easy access to it.

- The really threatening aspect of liquidity risk is how fast it strikes. For example, if you're a depositor at a bank and you hear a rumor that the bank is running short on cash, then you have a huge incentive to hurry over to the bank and withdraw your deposits before the money runs out—even if you think that the rumor isn't true. Of course, everyone else who hears the rumor does the same thing, and the bank is doomed.

- In modern times, most countries have deposit insurance to protect individuals against this liquidity risk, so we hardly ever hear about this situation, but it still happens—only it takes place among the

large business depositors in the bank, who generally aren't covered by deposit insurance.

- Liquidity risk has become even more threatening in recent years because banks have increased the amount of short-term borrowing they do from large business customers, especially other financial institutions. And these customers are very quick to demand their money back when business conditions change or when they start to suspect that the bank's financial condition is weakening, even slightly.

- When you look deeply into the reasons why some of the world's largest and best-known financial institutions failed or came close to failing in 2008, liquidity risk is one of the main reasons. Liquidity risk is also tricky because it sounds like credit risk, but liquidity risk is different from credit risk because liquidity risk is simply about having enough cash when you need it. Liquidity risk is often caused by credit risk. This link between credit risk and liquidity risk is a huge danger because it can spread panic from bank to bank.

- The final financial risk that you'll learn about in this lecture is operational risk, which is a fascinating type of risk that affects all businesses, but there are special ways that it affects the financial markets. Operational risk is the possibility of sustaining losses because of problems with people, processes, and systems in your company.

- The people side of operational risk includes both honest mistakes that people make all the time as well as intentional actions that people take, including illegal ones. The internal procedures that companies use can also go wrong, leading to big losses instead of big profits. Systems, such as IT systems, can also malfunction or fail, causing banks and other financial institutions to lose money.

Managing Financial Risks

- There are five main strategies that you can use to deal with the financial risks you face, and the first one is risk avoidance—as in,

staying away from a risk. This is easier said than done. A better way to express this is to choose the types and sizes of the risks you face, if you can. Avoidance is a great strategy, but, of course, not every risk can be avoided.

- If you can't avoid a risk, you can use the next strategy for managing risks: diversification, which is possible any time you have the ability to choose which sources of a particular risk you'll be exposed to. Banks face credit risk from of all their borrowers, but they can reduce their overall credit risk by lending to a variety of borrowers from different industries and geographic areas.

- Another strategy for managing risk when you can't avoid it is called hedging. Many people use the word "hedging" to refer to any strategy that protects you from a risk, but it actually refers to a very specific technique for risk protection. True hedging results in locking in a future price of something so that you can know for sure now what price you'll have to pay in the future.

Risks are inherent in the financial markets.

- The final protection strategy is insuring a risk. When you buy insurance, you get a third party to agree to compensate you for a potential future loss. You pay that person now, in the form of an insurance premium, to get them to agree to do that. Insurance is a bit like hedging, but you pay for insurance now, in cash. When you hedge a risk, on the other hand, you pay in the future, and you pay by giving up a potential gain rather than paying money outright. The defining feature of insurance is that it allows you to keep any of the potential benefit from being exposed to a risk.

- If you can't avoid the risk, or use one of the three tools you just learned about to minimize the damage, you either have to just bear the risk or do what's called self-insuring the risk. This means holding capital—or savings—to serve as a financial cushion that will absorb the losses when some risk strikes.

- There are some risks in finance and in life that we just can't totally protect ourselves against, so you may have no choice but to self-insure. And in business, you have to take on some risk if you want to make profits. Even though you can pay to insure many risks, insurance can be extremely expensive. This means that even though you can insure a risk, you may still prefer to self-insure the risk by setting aside your own savings for that purpose.

- The decision over which risks to pay to insure and which risks to self-insure can be a tough one. There's a useful guideline that comes from the world of financial risk management, in which businesses separate losses into two categories that help them make this decision. One category is expected losses, which are losses that occur as a normal part of doing certain types of business and are to be expected. They're not terribly large.

- On the other hand, some losses are unexpected—that is, they are unusual or extremely large. These are the losses that, if they occur, are large enough or occur at such a bad time that they're devastating. These are the losses that companies and individuals would like to insure against, if they can, even if the insurance is pretty expensive.

- We always want to try to insure against the unexpected and financially devastating losses, but we may want to self-insure against the expected losses that we know we'll encounter in our lives. One relatively new insurance product that is causing a lot of interest, as well as confusion, is long-term care insurance, which will provide a cash benefit to help you pay for nursing home or assisted-living care for someone. You can insure yourself, and many families insure elderly parents.

- According to this breakdown of expected versus unexpected losses, we should plan to set aside enough money to cover the average length of assisted care and purchase long-term care insurance that would pay a benefit if you end up spending longer than expected needing this care.

- The calculation is a bit tricky, because social insurance programs such as Medicare and Medicaid in the United States will also provide long-term care benefits for people whose income and wealth fall below certain standards.

- If you've been thinking about taking out long-term care insurance for yourself or a loved one, get the help of a professional who knows all of the rules and has the most up-to-date information about the cost of care and the features of long-term care policies.

Suggested Reading

Saunders and Cornett, "Financial Services: Insurance," Chapter 3 in *Financial Institutions Management*.

———, "Risks of Financial Institutions," Chapter 7 in *Financial Institutions Management*.

Questions to Consider

1. What is the largest financial risk that you face—credit risk, market risk, liquidity risk, or some other risk? Now compare the financial risks you face to other sources of risk in your life, such as your job security or your health. How do the financial risks you face stack up in terms of importance? Is it easy or difficult to compare them?

2. Take a few minutes to think about operational risk—losses due to people, processes, and systems—in your personal finances. What kind of concrete operational risks have you faced in your financial life? What steps can you take to reduce these risks? Has this course helped you deal with some of the operational risks that you face in your finances?

Mortgages and Securitization

Lecture 22

In this lecture, you will learn what securitization is by learning why and how mortgages are securitized. This lecture will answer a common question that you may have asked yourself: What happened to my mortgage after I bought my home? As this lecture solves this mystery, you will see just how useful the securitization process is—both for mortgage borrowers as well as for mortgage lenders. That, in turn, will help you see why these days, trillions of dollars' worth of other instruments in the United States and around the world are also securitized.

The History of the Mortgage Market

- During the past century, the mortgage market went from a completely private and largely unregulated market to one subject to a high degree of government involvement. The United States government—and governments in many other countries as well—have become active participants in the mortgage markets, playing multiple roles in many of them.

- In fact, several of the basic characteristics of mortgage loans that we take for granted today are the result of government-led innovation in the mortgage markets. Mortgage loans in the old days only called for interest payments; at the end of the loan, the borrower either had to come up with the entire loan principal or take out a new mortgage.

- Mortgages had fairly short maturities in the old days, such as only 5 or 10 years. The introduction of amortizing mortgages, in which the loan payments gradually pay off the loan principal but also include interest, and the increase in the length of the loan to 30 years, both came as the result of government involvement in the mortgage markets.

For just about everyone, housing is at the top of the list of biggest financial obligations.

- During the Great Depression of the 1930s, most of the world's banking system went into distress, and financial markets, including the mortgage market, stopped working. In the United States, the government took many actions to try to resuscitate the mortgage market.

- First, the government created a special banking institution devoted to mortgage lending, called the federal savings and loan association (S&L). S&Ls were specialized banks that took deposits—only savings deposits at first, no checking accounts—and used the deposits only for making mortgage loans. To ensure that the S&Ls would be successful, the government even set up a Federal Reserve–like system to support the S&Ls, called the Federal Home Loan Banks.

- The second big thing that the government did was to go into the mortgage insurance business. Mortgage insurance is often required

as part of a mortgage loan these days, especially if you make a down payment that is less than 20 percent of the value of the home you're buying.

- Mortgage insurance is a type of credit insurance that borrowers buy. Credit insurance is a type of insurance that pays some, or all, of a borrower's obligation in the event that they can't make their payments, usually because they've lost their income due to unemployment, illness, or death.

- Before the 1930s, mortgage insurance was widely available, but this industry was another one of the financial casualties of the Great Depression, and no private mortgage insurance companies made it past March of 1933. But the government knew that mortgage insurance could be a powerful tool to help revive the mortgage market, so in 1934, one of several things created by the National Housing Act was the Federal Housing Administration (FHA).

- The FHA instituted a government mortgage insurance program that provided complete insurance in case the borrower defaulted. The FHA would take over the mortgage payments if the borrower stopped making them. On top of that, the premium charged for the insurance was reasonable—only one half of one percent of the value of the loan, paid at the time the loan was made.

- These two government interventions—the creation of S&Ls and FHA mortgage insurance—remade the entire U.S. mortgage market. In a very real sense, they split the market between them. The S&L-FHA partnership ushered in an era of amazing growth in home ownership that took place during the 20 years following the end of the Second World War.

- For the first 40 years or so, the mortgage market was a big success story, but by the end of the 1960s, the economy was changing dramatically, and this spelled big trouble for the mainstay of the mortgage market—the S&Ls. From the late 1960s through 1980,

inflation rose more or less continually in what is now known as an inflationary spiral.

- Inflation is bad for mortgages for two reasons. First, when inflation increases, interest rates also increase. So as inflation rose, interest rates on all new lending and borrowing rose with it. The second part of the answer is that while interest rates on new lending and borrowing rose, the interest rates that were being earned on old loans stayed the same.

- The new mortgages that the S&Ls made earned higher market interest rates, but the millions of mortgages made in 1950, 1960, and even 1965 still earned the same low rates that they did when they were first issued. So the S&Ls started to lose money, simply because they were earning, for example, five percent interest on their mortgages and paying five and a half percent on their deposits. By about 1980 the entire S&L industry was technically bankrupt, and during the late 1980s, the S&Ls were in a crisis.

- The reason that the S&L crisis didn't cause a mortgage crisis in the United States—in other words, mortgage funding did not plummet when the S&Ls started to fail in droves—is because someone else stepped up and filled the huge gap in financing that was created by the S&L crisis. Not other banks, or even the government, but millions of investors, funneling money to mortgages through the bond market, filled the gap by using a relatively new process called securitization.

Securitization

- Securitization means turning something into a security—and in most cases, the security is a bond. The things that are turned into bonds are sets of cash payments that occur on a regular basis. The process of securitization simply collects cash payments from some source or sources, bundles the cash payments together, and then pays them out again to a set of investors.

- The payments that come out of the securitization process have very different characteristics from the payments that go into the process. For example, the payments that go into the securitization process can be mortgage payments, which are paid by individual people, once per month. The person or company operating the securitization process will collect these monthly mortgage payments from thousands of individuals and pool the cash together. Then, the operator will take the cash in this pool and use it to make bond payments—which come once every six months, not once a month.

- These particular bond payments are coming from a pool that receives the payments from thousands of mortgage borrowers. Each bond payment contains a part of the payments made by thousands of people. The securitization process completely changes the character of the payments that investors receive—in terms of timing and in terms of the risk.

- It's critical to understand how the pooling of assets changes the riskiness of the payments we collect from the assets because this is one of the main advantages of securitization. Suppose that you're an investor and your investment is to make one mortgage loan of 200,000 dollars. Each individual mortgage is pretty risky, because there's a nontrivial chance that the borrower will default on their mortgage. If you're the lender on a single mortgage and that happens, that's a disaster for you.

- But suppose that you're an investor who's holding a claim to collect a payment that is the same size as the payment from a single mortgage of 200,000 dollars, but instead of being the payment from a single mortgage, the payment you're entitled to receive is actually a small share of the total payments on a few thousand mortgages, plus a few hundred extra mortgages that are being held as insurance against defaults.

- In this case, the organizers of the pool of payments have a good idea of how many mortgages on average will default. Because they're holding so many different mortgages, the actual default rate

will probably be very close to the rate they expect. They're standing ready with a set of backup mortgages to cover these expected defaults, if and when they occur. Your payment has a much higher chance of being made to you in full and on time because of the benefits of pooling.

- The securitization process converts an inconvenient and risky investment—the monthly mortgage payments that one person makes—into a convenient and much safer investment. The first step is that a special purpose company is formed, where the special purpose of the company is to operate this securitization process. The company will buy mortgages from banks and other mortgage lenders, hold these mortgages in a pool, and collect the cash that comes in each month from the mortgage borrowers.

- To get the money to do all of that, the company issues bonds to the bond market. The bonds promise to make periodic payments to the bondholders, just like any normal bond does, but in this case, the bond payments are coming from the mortgage payments that flow into the special purpose company each month.

- The bond investors are so happy with the convenience and relative safety of these bond payments that they agree to accept an interest rate that is actually a little lower than the average interest rate being paid on the mortgages in the pool. This difference in interest rates provides income for the operation of the special purpose company and, potentially, some profits for its owners.

- Because the payments on the bond are coming from the mortgage payments flowing into the special purpose company, the bonds are called mortgage-backed securities (MBS). People also distinguish between residential mortgage-backed securities (RMBS), which means that the mortgages backing the bonds are on residences like single-family homes, and commercial mortgage-backed securities (CMBS), which means that the mortgages backing the bonds are on commercial property like office buildings.

- Mortgage-backed securities are a relatively recent invention. The first one appeared in 1970, and it was issued by a government-owned corporation named the Government National Mortgage Association, better known as Ginnie Mae, which was given a mandate by the government to make a market for FHA-insured mortgages and did so by setting up this mortgage-backed security arrangement. In order to make this brand-new financial product attractive to investors, Ginnie Mae guaranteed the payments on these mortgage-backed securities.

- Within a few years, virtually all FHA-insured mortgages were securitized into mortgage-backed securities carrying a guarantee from Ginnie Mae, and this practice continues today. Securitization took a while to spread to the rest of the mortgage market, but it gathered momentum in the 1980s.

- The main organizers of mortgage-backed securities are two companies that have close ties to the federal government: Fannie Mae, whose full name used to be the Federal National Mortgage Association, and Freddie Mac, whose full name used to be the Federal Home Loan Mortgage Corporation. Even though they were private companies, both came to be known as government-sponsored entities (GSEs).

Suggested Reading

McDonald and Thornton, "A Primer on the Mortgage Market and Mortgage Finance."

Rosen, "The Role of Securitization in Mortgage Lending."

Questions to Consider

1. If you have a mortgage on your home, do you know who currently owns and services it? Are they the same companies that originally owned and serviced it? Do you know (roughly) how many times your mortgage has been sold?

2. Currently, the vast majority of mortgage-backed securities available to investors carry a government guarantee. That is, the government will continue to make all of the promised payments on these securities if the mortgage payments fall short. But economists disagree whether it's necessary to have these guarantees in place. For example, think about investing a highly rated corporate bond such as an AA-rated bond (you may recall that there aren't that many AAA-rated companies). Then think about investing in a residential mortgage-backed security instead. The mortgage-backed bond has the same rating, maturity, and interest rate as the corporate bond, but it does not have a government guarantee. Are there reasons to choose the mortgage-backed security over the corporate bond, even though the mortgage-backed security does not have a government guarantee?

The Whys and Hows of Financial Regulation

Lecture 23

By this point in the course, you should really start to appreciate the amazing game that is played in the financial markets as well as understand how you can play along, too. But every game needs a set of rules—and a referee to enforce them. In this lecture, you're going to learn about financial regulation. The goal of this lecture is to help you decipher some of the arguments that are used by both the defenders and the opponents of regulation so that you can make up your own mind about whether any particular proposal is worthwhile.

Financial Regulation

- Financial markets always have been and always will be plagued by fundamental market imperfections. One of the most significant is asymmetric information. Whenever there's asymmetric information in the market, we get problems like moral hazard and adverse selection. These problems distort people's decisions and may lead to market outcomes that harm people rather than making them better off.

- In extreme cases, unscrupulous operators use asymmetric information as a way to steal, by committing fraud. In the scam of Internet phishing, someone tries to steal from you by pretending to be your bank. Other crooks make claims that they know some investing secret that's guaranteed to earn huge returns and let people come to them.

- Asymmetric information is just one of the main imperfections in the financial markets that justifies having financial regulation. Another one is the existence of market power, which means that someone in the market is able to dictate prices and quantities to other market players—as in the case of a monopoly or a cartel. People with market power will restrict the availability of valuable goods and

services so that they can overcharge for them and extract excessive profits in the market.

- We need regulation to promote and protect healthy competition in the financial markets, just as we need it in every other market. We also need regulations to promote and coordinate the adoption of common rules and standards. The rationale behind this is that common rules and standards are public goods, or goods whose benefits flow to many people, beyond the person who creates the good.

- But because the producer doesn't keep all of the benefits of producing the good, he or she won't make enough of it. Infrastructure like roads, bridges, and airports are public goods that need government coordination if they're going to be produced. Financial markets also need lots of infrastructure. Some of it's physical, such as the clearing and settlement system, but much of it is in the form of common practices and standards, such as accounting standards.

- Unfortunately, it's time consuming and expensive to adopt any new standard or to convert to a new one. So, left on their own, most companies will wait for everyone else to adopt a new standard before they get around to it. That means that nobody adopts it voluntarily. It takes government coordination to prompt everyone to adopt it at the same time.

- There is one more factor that we use to justify financial regulation that is specific to the financial markets. It's called systemic risk, which is the risk that the entire financial system will stop working properly or even stop working altogether. It's a risk that threatens not only the financial markets, but the entire economy as well.

- Systemic risk is the risk that when one financial institution fails, it takes others down with it. That can happen because banks and other financial institutions lend each other money—lots of money. When one bank makes a bunch of bad loans, it's not just endangering its

own depositors' savings, but it's also running the risk that it can't pay back the other banks that it has borrowed money from.

- If it can't, then these institutions also suffer and may in turn default on their obligations—and so on. It's a financial domino effect that is often called financial contagion because it can spread like a virus through the financial system. And systemic risk is made worse by asymmetric information problems.

- Systemic risk is a powerful theoretical justification for regulating the financial market. In practice, it's been the most powerful driving force behind financial regulation. A large proportion of the financial regulation we have in place all around the world either is there to limit systemic risk or was created in direct response to systemic risks that materialized into systemic financial crises.

- In most countries, the job of regulation is spread out across many different players. They're not only in the government. The financial markets have a long tradition of self-regulation, which means that private groups also play a big role in making and enforcing rules in the financial markets.

- Stock exchanges and other financial markets are self-regulating organizations because they make up rules that people have to abide by if they want to use these private trading systems. Big organizations like the National Association of Securities Dealers (NASD), which is now called the Financial Industry Regulatory Authority (FINRA), also make rules for securities professionals and enforce them.

- Most countries practice what's called a hierarchical model of financial regulation. Each type of financial activity has a self-regulating organization, like a trade association, that's responsible for making rules and disciplining its members. The trade association is answerable to a government agency, who can make up rules, discipline individuals in the trade association, and tell the trade association what to do.

- In most financial regulation, the government agency proposes new rules or asks the trade association to propose new rules. Then, the government agency asks for public comments on the new rules, considers the comments, and then publishes a final rule in the *Federal Register*, which is the main public document that describes all of the activities of the regulatory agencies on a day-to-day basis.

- There can be dozens of government agencies that are actually responsible for financial regulation. One of the big reasons for this is that in the past, governments have typically created individual regulators for each different type of financial institution or product. In many countries, this structure is complicated even further by the fact that there can be separate financial regulators at the state and the federal level.

- Many countries are moving in the direction of consolidating all of their financial market regulatory agencies into a handful of regulators or even just one. The model for this was the UK, which created the Financial Services Authority (FSA) in 1997. The FSA combined all of the different regulatory agencies, except for one, into a single body.

- Many countries consolidate much of their financial regulation in their central bank, but even if a country doesn't make the central bank the sole financial regulator, the central bank still has to be one of the main players.

Regulation Tools: Monitoring and Enforcement

- Despite the many different ways that the authority over the financial markets is divided up, regulators all rely on the same basic set of tools to get the job done. There are many tools, but we will only highlight a few of the most important ones.

- After they make up rules, regulators watch the markets. Economists call this monitoring, which is the simple act of gathering information about what all of the players in the markets are doing. This may sound passive, but in fact it's quite active. Financial

regulators spend a lot of time doing what's called on-site and off-site supervision.

- In on-site supervision, specially trained examiners periodically visit a financial institution like a bank to observe how things are done and to verify that the information that the bank is sending to the regulator is accurate. In off-site supervision, financial institutions are required to report all kinds of information about their activities and performance to the appropriate regulator—on a weekly, daily, and sometimes minute-by-minute basis. People at the regulatory agency sift through this information looking for irregularities and other signs of problems.

Financial markets need to be regulated.

- Supervision is one of the main reasons why the financial industry is said to be one of the most heavily regulated industries. The reason for this goes back to systemic risk. To try to reduce systemic risks, regulators focus on ensuring that individual financial institutions are operated in a safe and sound manner. The idea is that if each individual bank is doing this, then the entire system will be safer. The regulators tend to focus their attention on the institutions that are the largest and most complex.

- The point of gathering all of this information is to be able to enforce all of the rules that the regulators make. Enforcement is another basic tool in the toolbox. There are both formal and informal ways to enforce the rules, and every country has its own style. The style of the United States is to go to court, so every regulatory agency employs plenty of lawyers, and in general, they work pretty hard.

- Of course, we still can't catch all of the financial scam artists or accounting frauds or other mischief. It's just impossible to do that because the system is so big and complex. And we develop regulatory blind spots, based on our philosophy of regulation and our philosophy about the markets. Regulation evolves over time, both because our ideas about regulation change and because the financial markets react to regulations in powerful and often unanticipated ways.

- One of the hottest topics in regulation from the late 1990s through the late 2000s was how to rely more on market discipline and less on traditional regulation and supervision. Starting in 2007, the United States and Europe experienced the largest financial crisis since the 1930s. Certainly, financial regulation played a significant role in this crisis, especially the idea that we could rely more on market discipline than on the other tools of regulation that you've learned about in this lecture. In 2013, the pendulum is already swinging back the other way, and the trend is toward increasing regulation of financial markets.

Suggested Reading

Chami, Fullenkamp, and Sharma, "A Framework for Financial Market Development."

Kidwell, Blackwell, Whidbee, and Sias, "Regulation of Financial Institutions," Chapter 15 in *Financial Institutions, Markets, and Money*.

Questions to Consider

1. In a previous lecture, you learned that one of the key steps in risk management is to measure the risk. How easy do you think it is to measure systemic risk? How does this affect the regulators' ability to convince the financial markets that new regulations are necessary? Does this help explain why most regulations are made after a financial scandal or market panic?

2. One of the consequences of deregulation in the financial markets—as well as the changes in technology, globalization, and other trends you've learned about in this course—is the increase in the average size of banks and other financial institutions. Financial institutions have become so large that many of them are considered "too big to fail." Look up the definition of this problem on the Internet. If a bank or other financial institution were considered to be too big to fail, what would this do to the bank managers' incentives? Which of the information problems you've learned about in this course does the "too big to fail" problem seem to be an example of?

The Future of Finance

Lecture 24

Predicting the future is always difficult, and it's especially tough in the financial markets, because the pace of change is even faster than in other markets. Nonetheless, if you follow the financial news and ask why things happen, you'll realize that there are some really big trends currently at work in the financial markets. In this lecture, you'll learn about two of these trends, and you'll use what you've learned during this course to think about how these trends are likely to change the way that the financial system performs the six jobs that we ask it to do.

Trends in the Financial Markets: Communications Technology

- Information and communications technology are some of the most powerful driving forces in finance. Over the past two decades, we've seen two profound changes in these technologies—in the form of the Internet and also in wireless communications. And, of course, it wasn't long before the two technologies were combined into the smartphone.

- It's really hard to overestimate the impact that the Internet is having on financial markets, thanks to the ability it gives to collect data. Every time you visit a website, or click on an ad, or make a purchase online, you're being tracked.

- The Internet is doing for all kinds of companies what your checking account does for a bank—that is, it gives these companies information about what you do with your money. It also gives them information about your other habits and behaviors.

- The Internet has made banking-type data available to any company willing to collect it or buy it. And that means that offering banking-type services, especially loans, is possible for more companies than ever.

- It's not much of a stretch to think that in the future, millions of people will turn to companies like Walmart or Google for basic financial services, such as payment services and loans. These companies may even start their own banks that offer the full complement of deposit and lending services.

- The Internet has also created an even more surprising new set of financial institutions—people. Thanks to the so-called social media features of the Internet, which allow people to share information and collaborate in real time, we all have the potential not only to become banks, but even venture capitalists as well. Two separate but related phenomena on the Internet are responsible for that.

- The first one of these is called peer-to-peer lending, which involve websites devoted to matching up individuals who want to borrow money with other individuals who may be willing to make loans. There are already dozens of these services on the web today, and examples of them are companies like Prosper and Lending Club.

- In peer-to-peer (P2P) lending, potential borrowers post electronic loan applications that include information about themselves, how much money they want to borrow, what interest rate they're willing to pay, and what they intend to do with the money. It's very similar, in other words, to a normal loan application process. The only difference in this case is that the borrower has more direct input over the interest rate they'll end up paying, if the loan is made.

- On the other side of the P2P lending sites are the lenders, who are individuals willing to make a loan of a few hundred or a few thousand dollars to the right borrower. The lenders may be motivated by altruism as well as by profits, but either way, the lenders have to do their own credit analysis on the borrowers and decide whether they're willing to lend to a particular borrower and, if so, what interest rate they'll charge.

- Peer-to-peer lending is growing rapidly because it offers significant benefits for both lenders and borrowers. Borrowers are able to obtain

credit at rates lower than what they'd have to pay on credit cards, for example. On the lender side, there's the attraction of earning a higher interest rate than on a bank deposit or a bond. Additionally, many lenders like the idea that they're helping a borrower get a business started or get back on his or her feet financially.

- Of course, P2P lending is pretty risky, but people on both sides are climbing up the learning curve very quickly. Borrowers are learning what information they really need to give, and likewise, lenders are learning how to evaluate borrowers better. The websites now give lots of good tips to both sides about how to make a successful loan.

- In many cases, a single borrower on a peer-to-peer lending site will want to borrow much more than a single lender is willing to lend, so the borrower will end up splitting up the loan among several different lenders. In other words, many P2P loans are actually made by groups, and that idea leads us to the other Internet innovation, which is called crowdfunding.

- Crowdfunding is different from peer-to-peer lending in that there's no lending involved. In crowdfunding, someone with an investment project that needs funding will post information about this project on a crowdfunding website, such as Kickstarter.

- In the early days of crowdfunding, the funding was done via donations, and these websites would accept donations as small as a dollar. But in order to attract enough funding in a short period of time, many of the entrepreneurs started to offer premiums and prizes to people who made large donations to their projects.

- It's not a big stretch to go from giving coffee mugs or other thank-you gifts for a donation to selling stock in a startup company through one of these crowdfunding websites. So the next phase in the development of crowdfunding is likely to be the sale of private equity through crowdfunding.

- The final way that technology is changing finance via the Internet is through the combination of Internet and wireless communication—in other words, the smartphone or mobile web. The mobile web doesn't just offer the possibility to engage in P2P lending or crowdfunding from your mobile device, but it actually holds the potential to completely upset the world of finance, by making true electronic money a reality.

- Internet-based and mobile web–based payment systems exist, but they are still tied to existing financial institutions, especially credit card companies and banks. In the past few years, though, mostly in developing countries, mobile phones have increasingly been used to make payments using an alternative currency not tied to any financial institutions. This currency is phone credits, which are measured in minutes of airtime or perhaps in terms of the local currency.

- The ability to send and receive credits over the cell phone network to anyone else on that network opens the door to most of the basic functions of the financial markets, especially lending and making payments. These systems that enable people to transmit credits through the phone network are capable of doing the same thing that the peer-to-peer and crowdfunding networks are doing in the United States and other countries.

- The interesting feature of these mobile phone–based systems is that the issuer of the phone credits is similar to an issuer of currency. That is, the operator of the communication network has the power to expand and contract the supply of credits at will and change their value as well. As long as these credits are accepted by people on the network—meaning that people are willing to exchange goods, services, and other money for these credits—then they'll have value and serve as an alternative currency. The thing that's different with the mobile phone credits is that they have intrinsic value—that is, they're worth something in themselves.

Trends in the Financial Markets: Health and Retirement Benefits

- In the future, nearly all of us are going to have to shoulder a much larger share of the responsibility for our financial well-being, meaning having enough money to fund the big expenses of our lives, such as health care and retirement. We'll have to transfer more of our own resources from the present into the future by saving more, and we'll have to make more of the decisions about how our resources are invested.

- The reason for this is that it's increasingly clear that neither governments nor private companies can continue to make most of these transfers for us. They simply won't be able to afford the increased costs of providing health care and retirement benefits for their citizens and employees.

- Many governments, including the U.S. government, are facing shortfalls that run into the tens of trillions of dollars unless they reconsider the ways they fund and operate the social insurance programs that provide these health-care and retirement benefits.

- In the private sector, we've already seen company after company sharply cut back on the pensions and health-care benefits that they provide their retirees—and for good reason. These costs were driving them into bankruptcy.

- No matter who is responsible, health and retirement benefits have become a potential source of financial distress for both the U.S. government and private companies. To see why this is the case, we need to understand how these benefit programs operate.

- Unfortunately, many people believe that Social Security is a government savings program. They believe that our Social Security taxes are invested somehow, and then after retirement, we all get back the money we paid into the system, along with the interest it earned during all of those years we worked. However, Social Security is what economists call a pay-as-you-go retirement program, which means that the Social Security taxes you pay today

One of the most difficult things to do is save for retirement because it is often so far in the distant future—and more pressing expenses exist.

are immediately paid out to someone who's already retired. Nothing is really saved in this system.

- All of us who are paying Social Security taxes today—and Medicare taxes, because that system also works the same way—are hoping that when we retire, the system will still be in place and that there will be enough taxes paid into the system to be able to pay us what we've been promised.

- At some point in the not-too-distant future, the government may have to reduce the amount of money it pays out in Social Security and Medicare benefits, just as many private companies have cut their pensions and other retirement benefits for their employees. And these reductions will be pretty severe—because they'll have to be.

- So instead of counting on the government to pay for our living expenses after we retire, we'll have to rely even more on ourselves.

People already need to rely mostly on their own savings, even with today's relatively generous Social Security and Medicare systems in place. Unfortunately, most people are pretty shocked when they retire and find out just how much Social Security actually pays per month.

- All of us need to take more responsibility for our own financial security, especially when it comes to our retirement. And the only way to do that is to transfer resources across time, using the financial markets. In other words, you've got to save and invest for your future. The responsibility is on each one of us to make sure that we can have a healthy and comfortable retirement, regardless of what happens to Social Security and Medicare.

Suggested Reading

Hakkio and Wiseman, "Social Security and Medicare."

Koech, "Bringing Banking to the Masses."

Questions to Consider

1. Go to a peer-to-peer lending site such as Prosper and browse the information about the types of loans that are made, the interest rates, and the potential borrowers. What kinds of loans would you be interested in making, and to what kinds of borrowers? How high of a return would you demand for an investment of, for example, 5,000 dollars?

2. One simple way to start taking charge of your financial life is simply to think about how much technology you want to use to manage your finances. How do you decide whether to use new technologies to help manage your personal finances? Do you insist on having a certain level of security and privacy, or is convenience the most important factor? Do you keep any electronic records of your finances? Do you pay any bills, or do any of your banking, online? Do you, or would you, use a smartphone to make payments instead of cash? If you're old enough to remember the world before ATMs and debit cards, it may be fun to think

about how quickly you adopted those innovations and compare what you thought of those innovations then with how you feel about the new generation of financial technology.

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as the amount of each instrument issued per year. Other countries' central banks produce similar data.

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Chami, Ralph, Connel Fullenkamp, and Sunil Sharma. "A Framework for Financial Market Development." *Journal of Economic Policy Reform* 13, no. 2 (2010), pp. 107–135. This article goes into depth about how the financial system uses contracts to perform the six functions of the financial markets and shows how markets overcome the obstacles to making and trading contracts. It also has a section on why regulation is important in the financial markets and how financial regulation ought to work.

Constable, Simon, and Robert E. Wright. The Wall Street Journal *Guide to the 50 Economic Indicators That Really Matter*. New York: HarperCollins Publishers, 2011. This book has very concise descriptions of many of the standard economic indicators that are followed by the markets as well as many less-well-known indicators that many people in the financial markets also pay attention to.

Cook, Timothy Q., and Robert K. Laroche, eds. *Instruments of the Money Market*. Richmond: Federal Reserve Bank of Richmond, 1993. http://www.richmondfed.org/publications/research/special_reports/instruments_of_the_

money_market/. This is a comprehensive special report on money market instruments that has separate chapters describing all of the major money market instruments discussed in this course. The information on the history of the instruments, and how they work, remains accurate and relevant.

Damadoran, Aswath. *The Little Book of Valuation: How to Value a Company, Pick a Stock, and Profit*. Hoboken, NJ: John Wiley and Sons, 2011. Damadoran is acknowledged as one of the top scholars in valuation. This book is a gentle introduction to valuation, and you may be interested in his other texts on valuation as well.

DePamphilis, Donald. *Mergers and Acquisitions Basics: All You Need to Know*. New York: Academic Press, 2011. DePamphilis is a leading author on mergers and acquisitions, and this book is an accessible summary of his graduate-level textbook. It lives up to its title.

Fair Isaac Corporation. "Learn About Scores." http://www.myfico.com/CreditEducation/Articles/. This website is a link to Fair Isaac's online resources about consumer credit scores and credit reports. It gives information about how credit scores are calculated and instructions on how to investigate and address mistakes in your credit report.

Federal Reserve Bank of Philadelphia. "Do You Know Your Credit Rights?" 2011. http://www.philadelphiafed.org/consumer-resources/publications/do-you-know-your-credit-rights.pdf. This brochure summarizes all of the main consumer protection laws that apply to credit and loans—a very convenient resource.

Friedman, Benjamin M. "Is Our Financial System Serving Us Well?" *Dedalus* 104, no. 4 (Fall 2010), pp. 9–21. This article, written in the context of the financial crisis of 2008, answers the question in the title by comparing the sizes of the financial markets and the rest of the economy. It also uses the idea of double counting of financial assets to discuss which assets' price declines that took place during this crisis were truly damaging to society.

Gerdes, Geoffrey R. "Recent Payment Trends in the United States." *Federal Reserve Bulletin* 94 (2008), pp. A75–A106. http://www.federalreserve.gov/

pubs/bulletin/2008/pdf/payments08.pdf. This article discusses how people in the United States use the payment system and discusses some new ways to make electronic payments.

Gerdes, Geoffrey R., Jack K. Walton II, May X. Liu, and Darrel W. Parke. "Trends in Use of Payment Instruments in the United States." *Federal Reserve Bulletin* 91 (2005), pp. 180–201. http://www.federalreserve.gov/pubs/bulletin/2005/spring05_payment.pdf. This article discusses how people in the United States typically make payments, and it makes some comparisons with how people in other countries make payments.

Gross, Matthew, Jeanne M. Hogarth, and Maximilian D. Schmeiser. "Use of Financial Services by the Unbanked and Underbanked and the Potential for Mobile Financial Services Adoption." *Federal Reserve Bulletin* 98 (2012), pp. 1–20. http://www.federalreserve.gov/pubs/bulletin/2012/pdf/mobile_financial_services_201209.pdf. This article gives some insights into who lives without banking services and why. In addition, the article examines why people use mobile payment and banking services using their smartphones.

Hakkio, Craig S., and Elisha Wiseman. "Social Security and Medicare: The Impending Fiscal Challenge." Federal Reserve Bank of Kansas City *Economic Review*, First Quarter 2006, pp. 7–41. http://www.kansascityfed.org/Publicat/ECONREV/PDF/1q06hakk.pdf. This article describes how Social Security and Medicare operate and goes over the reasoning behind forecasts that show that these programs will run short of money by the year 2020.

Ittelson, Thomas R. *Financial Statements*. Revised and expanded edition. Franklin Lakes, NJ: Career Press, 2009. This is an extremely user-friendly introduction to financial statements and their analysis. This is a good complement to the chapters on financial statement analysis in most investments and corporate finance textbooks.

Kidwell, David S., David W. Blackwell, David A. Whidbee, and Richard W. Sias. *Financial Institutions, Markets, and Money*. 11th edition. New York: John Wiley and Sons, 2011. This text covers the major types of financial institutions and financial markets.

Koech, Janet. "Bringing Banking to the Masses, One Phone at a Time." *Dallas Fed Economic Letter* 7, no. 11, October 2012. http://www.dallasfed.org/assets/documents/research/eclett/2012/el1211.pdf. This article discusses how the mobile web is revolutionizing banking and electronic money, especially in the developing world.

Kushmeider, Rose M. "Restructuring U.S. Federal Financial Regulation." *Contemporary Economic Policy* 25, no. 3 (July 2007), pp. 325–340. This article gives a concise overview of all the federal financial market regulatory agencies in the United States—which are many. The article also summarizes some of the main debates over how to improve this system.

McDonald, Daniel J., and Daniel L. Thornton. "A Primer on the Mortgage Market and Mortgage Finance." Federal Reserve Bank of St. Louis *Review* 90, January/February 2008, pp. 31–45. http://research.stlouisfed.org/publications/review/08/01/McDonald.pdf. This article gives a comprehensive introduction to mortgages and to the mortgage market. It also shows some of the calculations that go into finding the monthly payments and interest on a mortgage.

Merton, Robert C., and Zvi Bodie. "A Conceptual Framework for Analyzing the Financial Environment." Chapter 1 in *The Global Financial System: A Functional Perspective*, edited by Dwight B. Crane. Boston: Harvard Business School Press, 1995. This book chapter is the source of the six functions of financial markets that are discussed throughout this course.

Qian, Jun, and Philip E. Strahan. "How Laws and Institutions Shape Financial Contracts: The Case of Bank Loans." *Journal of Finance* 62, no. 6 (Dec. 2007), pp. 2803–2834. This article compares different rights that lenders have across countries and shows how differences in these rights affect the terms of the lending contracts in these countries. It's an academic article, but it contains a lot of description and is easy to follow even if you skip the technical parts.

Rajan, Raghuram G., and Luigi Zingales. "Which Capitalism? Lessons from the East Asian Crisis." *Journal of Applied Corporate Finance* 11, no. 3 (Fall 1998), pp. 40–48. This article characterizes banking as "relationship-based"

finance and distinguishes it from "arm's-length" financing, which takes place through bonds and stocks.

Rosen, Richard J. "The Role of Securitization in Mortgage Lending." *Chicago Fed Letter* No. 244, November 2007. http://www.chicagofed.org/digital_assets/publications/chicago_fed_letter/2007/cflnovember2007_244.pdf. This article gives a concise overview of how the mortgage securitization process works.

S&P Dow Jones Indices LLC. "Dow Jones Industrial Average Overview." http://www.djaverages.com/?go=industrial-overview. This website provides further links to information about the Dow Jones Industrial Average, including its calculation. Also try the Learning Center link, which will take to you a time line that shows exactly when each company entered and left the index.

———. "S&P 500 Index Fact Sheet." http://www.spindices.com/indices/equity/sp-500. This website has links to more information about how the S&P 500 index is calculated.

Saunders, Anthony, and Marcia Million Cornett. *Financial Institutions Management: A Risk Management Approach*. 7th edition. New York: McGraw Hill, 2011. This textbook focuses on how banks and other financial institutions operate, and it integrates risk management into this discussion, which is a nice approach. It's a good source for further reading if you'd like to know more about how financial institutions manage risk.

Scaramucci, Anthony. *The Little Book of Hedge Funds*. Hoboken, NJ: John Wiley and Sons, 2012. This is a fun and informative look at hedge funds written by a hedge fund manager. Many of the other books in "*The Little Book of ...*" series are also worth reading.

Shon, John, and Ping Zhou. *Trading on Corporate Earnings News: Profiting from Targeted, Short-Term Options Positions*. Upper Saddle River, NJ: FT Press, 2011. If you get past the somewhat intimidating name of this book and read the first six chapters, you'll find an excellent overview of the basics of

corporate earnings announcements, including how they are constructed, why they are important, and how the market reacts to them.

Spong, Kenneth, and Eric Robbins. "Industrial Loan Companies: A Growing Industry Sparks a Public Policy Debate." Federal Reserve Bank of Kansas City *Economic Review*, Fourth Quarter 2007, pp. 41–71. http://www.kansascityfed.org/PUBLICAT/ECONREV/PDF/4q07Spong.pdf. This article discusses Walmart's attempt to become a specialized bank called an industrial loan company and shows that other companies have followed this path to establishing banks.

Technical Committee of the International Organization of Securities Commissions (IOSCO). *Regulatory Issues Raised by the Impact of Technological Changes on Market Integrity and Efficency*. Consultation Report 02/11, July 2011. http://www.iosco.org/library/pubdocs/pdf/IOSCOPD354.pdf. This report gives a good introduction to high-frequency trading and discusses some of the potential problems caused by the practice.

Teplin, Albert M. "The U.S. Flow of Funds Accounts and Their Uses." *Federal Reserve Bulletin* 87 (July 2001), pp. 431–441. http://www.federalreserve.gov/pubs/bulletin/2001/0701lead.pdf. This article explains how to interpret the Flow of Funds tables, and it discusses both households' and businesses' financial profiles.

Thau, Annette. *The Bond Book*. 3rd edition. New York: McGraw-Hill, 2011. This book gives a great overview of all bonds, but chapters 1–3 give a good introduction to bonds.

U.S. Consumer Financial Protection Bureau. "Know Before You Owe: Credit Cards." http://www.consumerfinance.gov/credit-cards/knowbeforeyouowe/. This website shows a simplified credit card agreement and has links to explanations of the terms in the agreement as well as other links to credit card agreements that are currently in use.

U.S. Federal Trade Commission. "Consumer Information: Credit and Loans." http://www.consumer.ftc.gov/topics/credit-and-loans. This website connects to a large number of resources that provide information and advice about

getting and using credit. Many of the resources also warn about deceptive or fraudulent practices that have been reported in the credit market.

U.S. Securities and Exchange Commission. "Regulators Launch Fake Scam Websites to Warn Investors about Fraud." Press Release 2002-17, January 2002. http://www.sec.gov/news/headlines/scamsites.htm. This gives the details about the fake investing websites that the SEC used as part of an investor education program.

Varian, Hal. "Asymmetric Information." Chapter 37 in *Intermediate Microeconomics: A Modern Approach*. 8th edition. New York: W. W. Norton & Company, 2009. This chapter contains a good explanation of asymmetric information, the adverse selection problem, and moral hazard, but mostly in a nonfinancial context.

Zask, Ezra. *All about Hedge Funds*. 2nd edition. New York: McGraw-Hill, 2013. This book gives a more formal look at hedge funds. Look at Part One, which is an introduction to hedge funds and how they work; Part Three, which gives a history and overview of hedge funds; and Part Five, which goes over the major trading strategies that hedge funds follow.

Internet Resources

Consumer Financial Protection Bureau. www.consumerfinance.gov. This site has some educational tools as well as pages devoted to outlining some of its proposals (which you can then enter your opinions on).

Federal Reserve Bank of Philadelphia Program in Consumer Credit and Payments. http://www.philadelphiafed.org/consumer-credit-and-payments/. This site links to consumer information as well as general information about how credit and payments are being used in the economy.

Federal Reserve System Publications Catalog. https://www.newyorkfed.org/publications/frame1.cfm?cmdBrowseType=Publications. The U.S. Federal Reserve System has a wealth of online publications about a large range of financial topics—from how the Fed and the financial markets work to consumer financial education. There is even a series of educational comic

books. This is a well-organized and searchable site that will connect you to all of the publications, regardless of which branch of the Federal Reserve System actually created them.

Investopedia. www.investopedia.com. This site features definitions of most financial terms and short articles about many topics in finance. Although it's focused on investment, it's a great all-around financial information website.