Chapter 2  Financial Markets and Institutions

Studying the financial system quickly becomes quite complicated. Partly, the complications arise due to the numerous varieties of financial instruments, participants, and markets. In addition, though related to the forces of supply and demand, the pricing of financial instruments is difficult and not completely understood (if it were, there would be far fewer ‘crashes’). Moreover, if you have never taken a look at the financial pages of any newspaper, then take a look and you will quickly observe that even understanding how prices are stated can be a difficult a task.

Reasons for studying the financial system may vary. Some may do so in the hopes of obtaining personal wealth. This is not our purpose. Our reason will be to understand how the financial system functions within the broader schemes of the domestic and world economy. Consider, for example, the determinants of the standard of living within a nation (or, more broadly, the world economy). One commonly used measure of this is per capita Gross Domestic Product (GDP). Simply put, this measure divides the total amount of goods and services produced within a given time period (typically a year) by the number of citizens.¹ The determinants of this measure can be generically stated in terms of the nation’s resources and their utilization. The nation’s resources will include such things as machinery, equipment, labor force, land, and natural resources. To get a little more specific, we would want to know how productive these resources are in producing goods and services. This will depend upon the technology in place (or, how efficiently inputs can be transformed into outputs) along with the knowledge and skills of the labor force (or, human capital for short).² The current resources, along with their productivity, determine how much it will be possible to produce. Hence, they determine the maximum possible per capita GDP.³ How much is actually produced, or the actual level of per capita GDP, will depend upon the utilization of those resources. Thus, if 25% of the labor force is unemployed – as it was in 1932 in the United States – then the actual per capita GDP will be much lower than the potential level.

The financial system will affect the potential and actual level of per capita GDP – hence, the standard of living. The resources along with the technology and human capital which exists today - determining the level of potential per capita GDP -required that funds be raised in the past. The financial system should efficiently transfer funds from those with a surplus to those who will invest in new resources and technology. The utilization of resources is influenced by the financial system as well. Recall, in the latest recession – which by definition implied underutilized resources - experienced in the United States, the Federal Reserve (the central bank in the U.S.) quickly began injecting money into the economy and bringing down interest rates in the hope to increase the

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¹ Notice that this measure says nothing about the distribution of the goods and services.
² You may recall from your introductory economics courses that all of this simply defines the production possibilities frontier for a nation.
³ Note that this is strictly true for a nation which does not trade with other nations or for the world economy as a whole. If you take an international trade course, then you will learn that trade between nations allow each to consume beyond their given possibilities.
utilization of resources. In addition to impacting the potential and actual level of per capita GDP, the financial system will impact the distribution of GDP as well. For example, high interest rates may redistribute income – to be used in claiming the current output of goods and services – from young people (typically borrowers in the form of school loans, car loans, or home loans) to older people (typically lenders of their accumulated savings).

A useful distinction to keep in mind while studying the financial system is between real assets and financial assets. Real assets constitute the resources of the nation. The utilization of these real assets will generate income (at least in the aggregate, thus some particular real assets may result in losses) in producing the current goods and services in the economy. As a result of the property system, and the fundamental identity in accounting, someone (e.g., an individual, institution, agency, etc.) must have a claim on the real assets. Financial assets are merely pieces of paper which represent the claims on real assets. These financial assets not only represent claims on the existing real assets but also on the income they generate.

As an example, suppose you started a lawn mowing business during the summer. You may need to raise funds to purchase a lawn mower. Now, suppose you raised half the funds from a bank loan and the other half by taking in a parent as a ‘silent’ partner. The lawn mower would be a real asset which when utilized will hopefully generate income for your business. Who has a claim to this real asset? The bank will have a claim to the real asset until you pay back the loan plus interest. In this case, a debt financing case, the loan is a liability to you, but it is a financial asset for the bank. If you go bankrupt due to rainy days, the bank will exercise its claim to half the lawn mower. Your parent will also have a claim on the lawn mower. In this case, your parent is part owner in your lawn mowing business. This is an example of issuing equity financing – you have sold part of the business – and similar to the issue of stock. Furthermore, both the bank and your parent have claims to the future income from utilizing the lawn mower. The bank’s claim to income takes the form of interest payments. Your parent’s claim is in the form of a claim to your profits. Although quite simplified, this example illustrates the accounting identity (value of lawn mower = bank loan + parent’s investment), how real assets generate income at least partly claimed by financial assets holders, and the distinction between debt (e.g., bank loan or issue of bonds) and equity (e.g., ownership rights) financing.

The current chapter presents a broad overview of the financial system. The focus will be on defining the two main links between the investor and saver, the types of markets, and some of the instruments. Hopefully, this will allow you to organize your studying of the financial system. The chapter will avoid the complications raised in the pricing of these instruments. Finally, the most pervasive of all instruments will be discussed – money.

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4 The fundamental identity in accounting states that assets must equal the sum of liabilities and owners’ equity (or, net worth). As discussed above, this simply means that someone must have a claim on assets.

5 The term ‘instruments’ will be used as a generic term for financial assets.
2.1 Indirect Financing

Funds can flow from lenders-savers to borrowers-spenders directly or indirectly. In the indirect route a financial intermediary occupies a place between the lenders-savers and borrowers-spenders. The financial intermediary can be a depository institution (e.g., a commercial bank, credit union, or savings & loan), some form of contractual savings institution (e.g., insurance company or pension fund), or an investment intermediary (e.g., finance company or mutual fund). The financial intermediary must attract funds from lenders-savers by issuing some form of liability. For example, a commercial bank attracts funds by providing services and/or offering to pay interest on deposits. The deposit is an asset for the lenders-savers but a liability for the bank. With the funds in hand, the financial intermediary will attempt to create an asset. In the case of the commercial bank, the asset might be a loan to a business or household (i.e., borrower-spender). Here, the loan is an asset for the commercial bank but a liability for the borrower-spender. The financial intermediary will hope to make a profit from the difference between what it must pay to attract funds and what it earns from using those funds.

The immediate question that arises in the case of indirect financing is why the savers-lenders and borrowers-spenders do not come together directly. In other words, if the financial intermediary makes a profit from the difference between what it offers savers-lenders for the sources of their funds and what it charges the borrowers-spenders for the use of their funds, then both could conceivably do better for themselves by meeting directly. For example, you may deposit funds in a bank account that pays 2% interest while the bank loans those funds out to your neighbor in the form of a car loan at 4% interest. You and your neighbor would benefit by meeting directly and agreeing to make a loan at 3% interest. Although this type of transaction may occur (e.g., among family members or close friends), it does not happen with great frequency. If you have ever been engaged in such a transaction you will immediately appreciate the role of the financial intermediary. The following reasons given to explain the infrequency of such transaction was a preliminary attempt to understand the role of financial intermediaries.

- **Transactions Costs.** These are either out-of-pocket costs or opportunity costs associated with a transaction. In the example of a loan between you and your neighbor, the ‘rules’ of the transactions should be spelled out in a legally binding document. The ‘rules’ may include the timing of any payments (interest and principal payments), the interest rate, and what will happen in the case that one party in the transaction does not live up to the agreement (e.g., you take possession of your neighbor’s car). Creating the legal document will entail out-of-pocket costs for someone. Thus, a $2,000 loan may entail a $200 legal fee to draw up the legal document making it prohibitive to complete the transaction. A financial intermediary will be able to take advantage of economies of scale to reduce this type of transaction cost. Thus, the bank may spend $1,000 to create a water-tight loan contract, but then use this contract in many loans, thereby decreasing the transaction cost per loan. Another type of transaction cost occurs due to the searching involved to find the right type of transaction. For example,
you may not be aware that your neighbor has a use for your funds. You may, therefore, spend a great deal of time searching for someone that is willing to pay for the use of your funds. The time you spend searching for that ‘special someone’ could be used in doing something else (e.g., working an extra hour, spending time with family, etc.). What you must give up during your searching to make a transaction is a very real cost even though it may not appear as directly as a legal fee. Economists term this type of cost as an opportunity costs.  

• **Asymmetric Information.** In any transaction a problem associated with asymmetric information may arise. These problems arise because one party in a transaction has more information than another party. The classic example - known as the lemons problem - is the used car market. The seller of a used car has traditionally had much more information about vital characteristics of the car than the potential buyer. Asymmetric information normally takes one of two forms: adverse selection or moral hazard. *Adverse selection* appears prior to the transaction and has led to difficulties in pricing products along with the absence of markets developing. In the used car market example, you might imagine that the market might be flooded with poor quality used cars which if buyers believe this will drive down the price of even the high quality used cars on the market. In the example of a personal loan (e.g., between you and your neighbor), the reason that your neighbor comes to you is that s/he has been turned down for loans from other places. Believing that most people that need loans do so because of their inability to manage their money, then you will either not make the loan or do so only at a high interest rate. Thus, even those high quality borrowers will either not receive a loan or have to pay a high interest rate. *Moral hazard* is an example of an information problem that arises after the transaction. After making a car loan to your neighbor, you may not have as much information as the neighbor. For example, your neighbor may decide not to take out car insurance understanding that getting into an accident will simply mean that they will not pay the loan back. A financial intermediary has specialized skill in ascertaining information about a potential borrower prior to making a loan. In addition, a financial intermediary will monitor what the borrower does after receiving the loan. These specialized skills will be developed with the large number of transactions taking place, thus creating some economies of scale as well.  

• **Risk Sharing.** If the loan that you make to your neighbor amounts to your total nest egg, then you are essentially taking on all the risks that s/he faces. If your neighbor suffers a job loss, then you may suffer from not being repaid the loan. If you were wealthy enough, you might choose to spread out your lending to many borrowers. This process would lower the risk associated with your overall lending. You might even choose to lend to two people that work in jobs that

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6 As a non-financial example, consider the purchase of a house. Most transactions in the housing market take place with the aid of a real estate agent. The agent can minimize the search costs involved. In addition, the agent may also alleviate some of the information problems to be discussed next.

7 This has traditionally been the case. However, with the advent of better record keeping and internet websites devoted to making these records available, this particular information problem has been lessend.
typically do well and poorly at opposite times. By pooling the excess funds from many people – even if relatively small amounts per person – a financial intermediary is able to make loans - or, other types of uses - to a wide variety of borrowers, thereby creating a diversified collection of assets (portfolio) and reducing risks.

These are just a few of the reasons financial intermediaries are used to transfer funds from lenders-savers to borrowers-spenders.

As we have seen, there are good reasons for participants to use financial intermediaries (thus, indirect financing). However, the hope of lenders-savers to earn higher returns and borrowers-spenders to obtain lower financing costs prompts the use of direct financing. The reasons given for using financial intermediaries should be kept in mind in studying the direct financing route as well. We will want to see how participants in the direct financing route cope with the difficulties arising from transactions costs, asymmetric information, and risk sharing. In the next section we will focus on the markets and instruments that constitute the direct financing route.

2.2 Direct Financing

The broadest distinction to draw in terms of the financial system is between direct and indirect financing. In terms of the direct financing route, three important distinctions need to be made.

- Debt vs. Equity Financing
- Primary vs. Secondary Markets
- Money vs. Capital Markets

The first makes a distinction between what type of security is being exchanged. In debt financing, the security is typically a bond. A bond is a loan exchanged by way of the direct financing route. Importantly, the loan (i.e., bond) itself can be exchanged between individuals. Equity financing consists of exchanging a title to a share in the ownership of an enterprise. For the seller (or, more technically, the issuer), important differences arise between debt and equity financing in terms of the impact on their balance sheet, requirements, and tax treatment. Debt financing will increasing the amount of liabilities on their balance sheet (matched by an increase in their assets in terms of the cash received). Equity finance, or more commonly termed stocks, will increase the owners’ equity (or, net worth) on their balance sheet (again, matched by an increase in their assets in terms of the cash received). One drawback of equity finance is that ownership will be spread among more people. Recall the example of taking on a parent as part ownership of your lawn mowing business. Debt financing will require specific payments at specific

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8 This is really the key to a well-diversified portfolio. Holding financial assets that tend to do well and poorly at the same time does not really reduce risk. On the other hand, investing in suntan lotion and umbrellas would reduce the risk of your overall investment – in good weather the suntan investment does well while the umbrellas suffer and in bad weather the reverse. Thus, you would have reduced the risk associated with predicting the weather.
dates. If these payments are not met, then the borrower will face default and bankruptcy. Equity financing does not usually require the issuer to make payments—called dividends—at any particular time. However, missing what has come to be regarded as a ‘regular’ dividend payment may signal trouble and cause owners to sell their stock—resulting in a drop of the price. Debt financing is treated advantageously for tax purposes compared to equity financing. The interest payments made on debtexpenses for the issuer - are deducted from revenues, thereby lowering taxable income. On the other hand, dividend payments to stockholders (equity financing) are made after taxable income is calculated. Thus, the issuer will have to pay taxes on the income that ends up going to owners in the form of dividend payments, and the owners will then have to pay taxes on the dividend income as well. This can amount to a significant advantage in favor of debt financing.

The distinction between primary and secondary markets exists for both debt and equity financing. Primary markets are where new securities are sold. It is here where lenders-savers provide funds to borrower-spenders by purchasing a bond (debt) or equity (stock). Secondary markets are where existing securities are exchanged. These are the markets which the general public hears about and deals in the most. As a rough non-financial example, if you purchased a new textbook from the bookstore, then you participated in a primary market. On the other hand, you may have purchased a used textbook online. In this case, you were operating in a secondary market. Non-financial examples of these types of markets abound (e.g., take a look at the things for sale in your local paper—representing secondary markets—and you’ll also find advertisements from stores selling new goods—representing primary markets).

There are a variety of ways a corporation may issue new securities. In order to give a simplified picture of this topic, we will use a new issue of common stock by a corporation as a working example to highlight the general mechanics. The two types of issues of stock coming to the primary market are initial public offerings (IPO’s) and seasoned new issues (or, secondary offerings). The first occurs when a formerly private company ‘goes public’ whereas the latter occurs when an existing corporation issues additional stock. The mechanics are similar for both types—though predicting the price it will eventually sell at on the primary market will be less certain for IPO’s.

A company that wishes to offer a new issue normally hires an investment bank. Among other things, the investment bank will advise the company during the process. The company must file a preliminary registration statement with the Securities and Exchange Commission (SEC). The statement describes the new issue and the prospects of the company. Once the statement has been approved by the SEC, the final form is called the prospectus. This prospectus provides detailed financial information on the company, the products and/or services it offers, information on managers, and an assessment of the risks it faces. Normally, the investment bank will underwrite the stock offering. Simply put, the investment bank purchases the stock at an established price. In this way, the investment bank takes over the risk that either the entire issue will not be

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9 Below you will see that the bookstore can be equated to an investment bank in this example.
10 New technologies—specifically the internet—are making themselves felt in this regard as well and may allow for more small lenders-savers to participate.
sold or will not receive a minimum price. In most cases, the lead investment bank will form a syndicate composed of other investment banks in order to spread the risks involved. Moreover, the investment bank will advertise – these advertisements are termed ‘tombstones’ - the new issue in financial newspapers and take it out in ‘road shows’ to generate interest. The road shows provide valuable information to the investment banks in determining what price to expect the shares to receive on the market. Normally, large institutional investors attend these road shows and are allotted – i.e., sold - a substantial portion of the new issue. The new shares finally arrive on the market to be openly traded where the price per share may rise or fall. Although media reports of huge immediate increases in the price of new stock make big headlines, the evidence indicates that IPO’s underperform existing issues measured over the course of a number of years.

The distinction between money and capital markets arises due to differences in the life of financial assets. Since equity (i.e., stock) are titles to ownership and have no stated time for redemption, the distinction is normally reserved for debt instruments. The money market refers to the market for short-term (e.g., less than a year) debt instruments. These short-lived instruments are typically highly liquid and carry relatively low risk. The capital market refers to longer-term – and, typically riskier - instruments.

Instruments on the money market are sometimes referred to as cash equivalents because of their high liquidity (i.e., ability to be turned into cash at short notice with relatively little risk of price changes). The securities on the money market come in a number of different forms associated with the issuer. One of the most significant is the U.S. Treasury Bill (or, T-bills). These are short-term debt instruments issued by the U.S. government – specifically, the Treasury department. New T-bills are typically auctioned off weekly in denominations of $10,000. Existing T-bills can then be purchased on the secondary markets. Other examples of money market instruments include the following – note that this is not an exhaustive list:

- Certificates of Deposit (CD). These are time deposits at banks. Normally, CDs have a stated time of deposit (e.g., 3 months) and interest rate. The issuing bank will pay the holder of a CD the interest and principal at the end of the stated time period – but, unlike other types of deposits, the amount cannot be withdrawn until that time. Since these are bank deposits, they are insured up to $100,000 by the Federal Deposit Insurance Corporation (FDIC). Large denomination CDs (e.g., greater than $100,000) can be sold fairly easily to another saver-lender making them more like a bond.

- Commercial Paper. An established corporation in need of short-term cash may choose to borrow by issuing commercial paper. The commercial paper is a short-term loan – normally, one or two months – with a stated repayment date. Commercial paper is normally issued in multiple denominations of $100,000.

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11 It is possible that the company and investment bank will enter into a best-efforts agreement. In this case, the investment bank does not actually purchase the new issue, rather simply acts as an intermediary between the company and the public.

12 Alternatively, equities can be included in the capital markets.
Like large denomination CDs, commercial paper is traded on secondary markets making it very liquid.

- Repurchase Agreements (Repos). A repurchase agreement occurs when one party sells a security to another party with an agreement to repurchase the security at a slightly higher price at a specified time. For example, a dealer in government securities may sell them to someone else with an agreement to repurchase the same securities the next day at a slightly higher price. The difference between the sale and repurchase price constitutes the interest on the loan. Loans of this nature for a longer period (e.g., 30 days or more) are called term repos. These loans are considered to be fairly safe because the government security underlying the loan acts as collateral for the loan.

- Federal Funds. Commercial banks maintain deposits at the Federal Reserve (i.e., the U.S. central bank). If the deposits of a bank exceed the minimum amount required by the Federal Reserve, then the bank can loan these funds to another bank who finds itself short on the required amount of deposits (i.e., reserves) to be held at the Federal Reserve. The interest rate banks charge to one another for these short term loans – normally, overnight – is called the Federal Funds rate. This rate is an important tool for conducting monetary policy by the Federal Reserve and tends to be watched closely by market participants. Similarly, the London Interbank Offer Rate (LIBOR) is the interest rate which banks in London charge one another for short-term loans. Like the Federal Funds rate in the U.S., the LIBOR is quoted and watched closely in the European money market.

The capital market – or, sometimes simply referred to as bond market – encompasses a wide variety of long-term debt instruments. Bonds come in several varieties which will be studied more closely in the following chapter. For now it is enough to describe the basic features of a bond. A bond is a loan. The borrower is the issuer. The lender is the buyer. The initial financing raised by the issue of a bond takes place on the primary market while trading of existing bonds takes place on the secondary market. The ability to trade bonds on the secondary market – unlike most bank loans – increases the liquidity of bonds. Bonds are normally issued with a maturity date denoting the end of the loan and face value establishing the amount to be repaid at maturity. Many bonds make semi-annual payments – termed coupon payments – during the life of the bond. The size of the coupon payments will be stated – normally as a percentage of the face value, thus the term ‘coupon rate’ – at the time the bond is issued. Other bonds, normally short-term bonds such as T-bills, make only one payment in the amount of the face value upon maturity (i.e., expiration). These bonds will almost always sell at a discount – or, sell at a price below the face value – thereby incorporating the interest in the difference between the sale price and face value.

There are many types of bonds on the capital market. Like the money market, the debt issued by the U.S. government plays an important role in this market. Historically, the U.S. government issued long-term bonds – termed Treasury notes and bonds – with maturities ranging up to 30 years. That is, a 30 year Treasury bond issued in 1975 would
make semi-annual payments for 30 years with a final payment at the end of the period. In 2001, the Treasury announced that it would not issue Treasury bonds which lasted longer than 10 years \({\text{note that just recently the Treasury seems to have reintroduced the 30 year bond --- check on this, was it the run-up of deficits in recent years?}}\). Because of the high volume of trading in Treasury notes and bonds, along with their backing of the U.S. government, their interest rate has acted as a benchmark for other interest rates. Other bonds traded on the capital market include the following – again, the list is not exhaustive \({\text{again, what else should be added and what format? Also, include data from Fed’s Flow of Funds on how U.S. households hold and the size of the securities?}}\).

- Federal Agency Debt. These bonds are issued by a Federal agency rather than directly from the Treasury department. The funds raised by the issue of these bonds help to finance the activities of the agencies. For example, the Federal National Mortgage Association (FNMA, or more commonly referred to as Fannie Mae), Government National Mortgage Association (GNMA, or Ginnie Mae), and Federal Home Loan Mortgage Corporation (FHLMC, or Freddie Mac) are federal government agencies created to promote home ownership. In order to fulfill their activities the agencies issue their own bonds.

- Municipal Bonds (munis). These are bonds issue by state and local governments. Although not quite as risk-free as Treasury bonds, they are still considered a relatively safe debt to hold. The interest income earned by holders of these bonds is exempt from federal income tax and state and local income taxes in the issuing state.

- Corporate Bonds. Corporations raise funds from the issue of corporate bonds. These bonds are structured much like government bonds. A major difference, however, is the risk of default incurred on corporate bonds. A corporation failing to make the specified interest and/or principal payments will be subject to bankruptcy. Some corporate bonds – termed secured bonds – are backed by a specific set of assets for collateral in case of bankruptcy. Unsecured corporate bond holders must wait for the sale of a bankrupt firm’s assets.

- Mortgage-Backed Securities. There has been tremendous growth in the market for mortgage-backed securities. A mortgage lender will typically originate the loan for a home buyer, then pool many of these loans together and sell the pool of mortgages on the secondary market as one security. The buyer of the mortgage-backed security will have a claim on the mortgage payments – interest and principal – derived from the mortgages. The act of pooling many mortgages together helps to reduce the exposure of risk for the holder that a particular homeowner will default.

The study of bonds will occupy the following two chapters. We will then turn towards the study of the equity (stock) markets. In finishing our introduction to the financial system, we turn to the role and definition of money.
2.3 Organization of Markets

{{insert from Wordperfect file --- points to address:
- different types of market arrangements
- different trading mechanisms
- efficient operations and transactions
- empirical picture}}

2.4 Money

Money is a financial asset much like bonds or stocks. However, it stands out as a special financial asset because of what it does which others simply cannot do. Money functions as the medium of exchange in the economy. It is this function which normally defines what money is. Thus, if sea-shells were used to facilitate transactions, then they would be defined as money. Closely associated with serving as a medium of exchange, money serves as a unit of account. Hence, there would be little purpose in having sea-shells used as a medium of exchange, when prices were quoted in terms of beads. As unlikely as this scenario may seem at first, there have been cases in which prices were quoted in terms of the domestic currency (e.g., pesos) and yet many transactions took place in terms of a foreign currency (e.g., dollars). Finally, money serves as a store of value. This function should remind us that money is one of many financial assets.

The various functions of money make it difficult to define the money supply precisely. For example, we may agree that coins and currency are money, but what about checking and savings accounts? Economists utilize at least three definitions of the money supply. The M1 money supply is the narrowest including currency, traveler’s checks, and demand deposits (i.e., checking accounts). The M2 money supply adds to M1 small time deposits, savings deposits, and money market accounts. The M3 money supply adds to M2 large-denomination time deposits, institutional money market mutual funds, repurchase agreements, and Eurodollars (i.e., U.S. dollars deposited in foreign banks). Which definition is best often depends upon the particular purpose. We will see that the broader definitions of the money supply are more difficult to control by the central bank.

This will need to be extended. 1. include the L definition of the money supply? Probably, especially if in Part 3 we want to take up the suggestion that the definition of money may include T-bills. 2. some empirical stuff? 3. If banking section/chapter is not used, then this could be a place to deal with the role of banks and central bank in the money supply process – either here or in the first chapter of Part 3. A possible starting point would be the following:

A. 1 Introduction to Banking from my Money & Banking Online

The necessity of a healthy banking system tends to be taken for granted by the general public. Though a healthy banking system may not be a sufficient condition for a healthy and growing economy (a productive labor force, real assets, natural resources, etc. are also
essential), but it is a necessary condition. This was driven home in the U.S. during the banking panics of the Great Depression era. Nowadays, the necessity of a healthy banking system is manifested in developing economies during times of crisis. The latest crisis in Argentina took a terrible turn when banks had to close their doors to the crowds attempting to withdraw their money. The collapse of the banking system meant that individuals did not have access to funds for paying bills and buying food. In addition, firms did not have access to loans in order to meet payments. As a result, poverty and unemployment exploded in the country.

Banks play unexpected roles at times. For example, Joseph Stiglitz – a Nobel prize winner in economics and chairman of the Council of Economic Advisors under President Clinton – recounts in his latest book *The Roaring Nineties* why balancing the government’s budget in the early 1990s led to growth rather than decline. Short-run macroeconomic theory would have predicted that cutting government spending and raising taxes – intended to balance the government’s budget – would cause a decline in aggregate demand and GDP. However, this policy actually had the opposite effect at the time. Stiglitz believes that a major reason for this outcome lied with the banks. Through a bit of an accident, U.S. banks had a large amount of Treasury notes on their balance sheets. The new policy led to a decrease in the supply of bonds and from Chapter 4 we know that this would mean lower interest rates on these bonds. The drop in interest rates meant that the banks could not obtain the same income from these holdings as before the policy change. Thus, banks began extending more loans, which stimulated economic activity. Here, we see how the banking sector – often ignored in discussions of macro policy – can have an enormous impact on the economy. The experience further demonstrates that the balance sheets of banks matter.

The commentary begins with a general treatment of financial. Financial intermediaries play an important role in financing productive activities in the U.S. and even more so in other countries. The commentary moves on to a brief summary of asymmetric information and how financial intermediaries may help alleviate some of the resulting problems. Finally, the commentary turns specifically to a discussion of the operations of a bank. The focus of this section will be on helping to understand the balance sheet.

A.2 Financial Intermediaries

The financial system channels funds from savers-lenders to investors-borrowers. The financial system promotes economic efficiency by allocating funds from those without profitable investment opportunities in real assets (savers-lenders) to those with profitable investment opportunities in real assets (investors-borrowers). By far the largest source of this reallocation of funds occurs indirectly via financial intermediaries with banks as the single most important source. The explanation of why this has historically been the case rests on the existence of transactions costs and asymmetric information.

*Transaction costs* represent the out-of-pocket or opportunity costs involved in any transaction. Transactions in financial instruments tend to have high, often prohibitively so, costs for individuals. In our discussion of stocks and bonds, the transaction (or, brokerage) costs had

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13 An excellent and very accessible account of this devastating crisis in Argentina has been written by Paul Blustein – a reporter for the *Washington Post* – in *And the Money Kept Rolling In (and Out).*
been ignored. Historically, these costs were such that for the ordinary saver – purchasing a few stocks or bonds – the direct financing route was simply not possible. New technologies (e.g., e-trading) and the advent of discount brokers have increasingly opened this route to the ordinary saver. On the other hand, the opportunity costs involved in these transactions still remain. That is, the cost of spending time researching, evaluating, and making decisions on whether or not to undertake a particular transaction are very real opportunity costs. As a simple case, we might imagine a saver coming across an individual with a profitable investment opportunity. The saver may be very excited about the chance of loaning his or her money to the investor or even arranging some form of part ownership. However, the cautious saver will have to employ a lawyer to arrange a legally binding document for this specific transaction. The costs of completing this transaction may eat into any extra profits that the saver could gain in bypassing a financial intermediary (placing the money in a bank account, then letting the bank make the loan to the investor). High transaction costs can thereby impede the channeling of funds from savers-lenders to investors-borrowers, creating inefficiencies in the economic system.

The financial intermediary is at a distinct advantage over the direct financing method when it comes to transaction costs. First, a financial intermediary can take advantage of economies of scale. Economies of scale exist when there is a reduction in transaction costs per dollar of investment as the number of transactions increase. In contrast to our previous saver, the financial intermediary will use the legal document for many transactions (i.e., loans). The cost of the legal document being spread over many transactions will lower the cost per unit of each transaction. Second, the financial intermediary gains expertise in specific areas of finance and industry that will lower transaction costs. Financial intermediaries gain expertise in the latest technology available, access to information, writing of financial contracts, evaluating investors-borrowers, analyzing industry characteristics, and monitoring. This expertise lowers the out-of-pocket and opportunity costs associated with transactions.

A.3 Asymmetric Information

In our simple example, the saver-lender – attempting to bypass the financial intermediary - is at a distinct informational disadvantage compared to the potential investor-borrower. The potential investor-borrower knows their credit history and controls the decision of what to do with the borrowed funds. The lack of information may prevent the channeling of funds from the saver-lender to the investor-borrower. This may occur due to the saver-lender being unwilling to make the transaction or doing so only at a price, which the investor-borrower refuses. Asymmetric information exists in many types of day-to-day transactions (e.g., buying a car, purchasing fruit, etc.), but tends to be accentuated in financial transactions. Much of this can be attributed to the fact that financial transactions tend to take place in things that span time. Hence, without a crystal ball to know what the future will bring, there is uncertainty involved with these transactions which obtaining information (both before and after the transaction) can help to alleviate, but not entirely eliminate.

Adverse selection refers to the asymmetric information prior to a transaction. In order to see the implications of this type of informational problem, suppose our saver-lender faces two possible investors-borrowers – Lisa and Bart - requesting the use of his or her funds. Further, assume Lisa actually does have a “good” investment as defined in terms of expected rate of return at an acceptable level of risk and credit rating, whereas Bart does not. Due to
a lack of information, our saver-lender does not know which is the good investor-borrower. What might happen if Lisa and Bart have to bid by offering higher interest rates for the use of the funds? Bart having little recourse to other means of financing may well out bid Lisa for the funds. The funds may end up with Bart rather than Lisa – a poor outcome for the society and the saver-lender. When adverse selection is present, then only the investor-borrowers with poor opportunities can be left in the market for loans. Taking this one step further, if our saver-lender knows that only investor-borrowers with poor opportunities and credit risk will remain in the market, then the funds may be withdrawn completely. In either case, we are left with an inefficient channeling of funds.

A financial intermediary may alleviate the adverse selection problem illustrated above by utilizing expertise in evaluating investors-borrowers. The financial intermediary will have access to more information and be able to evaluate that information better than the individual saver-lender. Thus, the financial intermediary will deny a loan to Bart while extending one to Lisa. In order to do so, however, the financial intermediary will need to borrow from the individual saver-lender. The lower interest rate paid by the financial intermediary to the saver-lender will be compensated by the reduced risk. The financial intermediary will then be able to profit on its expertise and information by paying the saver-lender a lower interest rate for the use of their funds than what it charges to Lisa for the loan.

If the saver-lender had solved the adverse selection problem and made a direct loan to Lisa, then an informational problem arises after the loan. The saver-lender must obtain information on how the funds are being used. This second type of information problem is called moral hazard. The moral hazard problem becomes significant when studying incentives. Having obtained the loan, Lisa with her excellent investment opportunity may be enticed to take greater risks in hopes of even bigger returns. After all, if she gets into trouble, the money is not hers. More to the point, Lisa may believe that another loan will be possible if trouble arises.

The financial intermediary can serve a role in alleviating this informational problem as well. The financial intermediary can use standard legal contracts in order to force the investor-borrow to act according to prearranged agreements. The financial intermediary also has on staff many individuals trained in analyzing an investor’s performance. Written into the loan contract may be a clause requiring the investor-borrow to supply periodic financial reports, which the financial intermediary will analyze in order to ensure compliance with the loan agreement. It is this monitoring activity, requiring time and expertise, which the financial intermediary can perform in order to ensure an efficient channeling of funds.

The moral hazard problem arises in many different contexts and plays a prominent role for policymakers. The link between moral hazard and the changed incentives after the transaction causes many problems. This problem will arise again in discussing monetary policy. For now, consider the example of Long-Term Capital Management (LTCM). This was a hedge fund – to be discussed later, for now, think of it as a private investment company – begun by several big name players (a couple of Nobel prize winners as well). LTCM had grown rapidly by searching for small mispricing in financial markets, then using mostly borrowed funds to make their bets. It had investments throughout the world. Due to some unlikely events (one of which was Russia’s default on its bonds), LTCM began
losing big. Things became so bad that LTCM would not be able to meet their repayment obligations forcing them to call upon the Federal Reserve. Now, the Federal Reserve faced a difficult decision. Should they let the failure of LTCM drag down its lenders and possibly financial markets throughout the world or attempt some form of bailout? The problem with the bailout was precisely the problem raised by moral hazard. Would a bailout change incentives for other hedge funds and lenders? Once everyone knew the Federal Reserve would come to the rescue as long as a hedge fund was large enough, then other hedge funds would have an incentive to take on huge risks in order to grow rapidly. This is just one example of the problems raised by moral hazard.  

A.4 Bank Operations

The basic operations of a bank are illustrated by the changes that take place on their balance sheets. The balance sheets can then be used to study the three most prominent types of risks – liquidity, credit, and interest rate risks - faced by banks. Due to the importance of the information provided in a bank’s balance sheet, this section provides further details on balance sheets in the hopes of helping those students unfamiliar with accounting.

Two of the most important financial statements are the balance sheet and income statement. The income statement provides information on revenues, expenses, and earnings (or, profits) of a firm during a period of time. The balance sheet provides information on a firm’s assets, liabilities, and net worth (sometimes referred to as owners’ equity or, in the case of banks, bank capital) at a point in time. The balance sheet is an aggregate representation of the fundamental accounting identity:

\[
\text{ASSETS} = \text{LIABILITIES} + \text{NET WORTH}
\]

This identity must be true for every transaction and for all transactions in the aggregate.

A little example of these financial statements might be useful. Suppose Charlie is applying to a bank for a loan to purchase his first home. The bank will require Charlie to provide information contained in a balance sheet and income statement – though, they probably will not actually use these terms. The bank will ask Charlie to list significant items that he owns – these will be his assets. Further, the bank will ask Charlie to list his debts – these will be his liabilities. The bank will then find the difference between the two lists to determine Charlie’s net worth. The information can be summarized in the form of the following balance sheet.

---

14 The Federal Reserve did come to the rescue of the lenders and financial markets. An excellent NOVA documentary (The Billion Dollar Bet) provides details on this episode.
<table>
<thead>
<tr>
<th>ASSETS</th>
<th>Liabilities and Net Worth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and Checking Account $1,000</td>
<td>Credit Card $2,000</td>
</tr>
<tr>
<td>Savings Account        $1,000</td>
<td>Car Loan $15,000</td>
</tr>
<tr>
<td>Bonds                  $2,000</td>
<td>School Loan $8,000</td>
</tr>
<tr>
<td>Stocks                 $8,000</td>
<td>Total Liabilities $25,000</td>
</tr>
<tr>
<td>Car                    $18,000</td>
<td>Net Worth $5,000</td>
</tr>
<tr>
<td>Total Assets           $30,000</td>
<td>Total Liabilities and Net Worth $30,000</td>
</tr>
</tbody>
</table>

The fundamental accounting identity holds true for the balance sheet. This identity arises from the fact that someone must have a claim on every asset. In Charlie’s case, we see that the credit card company and issuers of the car and school loan combined have a relatively large claim on his assets (i.e., $25,000 of the $30,000 in assets). Who has a claim on the remaining $5,000 of assets? Charlie does, precisely the amount of his net worth. The balance sheet provides very useful information on Charlie. For example, if interest rates rise and Charlie’s stocks suddenly fall in value – to say, $2,000 – then his net worth will become negative. On the other hand, his liabilities will probably not be impacted by the higher interest rate unless some are variable rates. Also, Charlie’s assets are not very liquid in the sense that if he had to meet a payment obligation in a hurry, then he has only $2,000 worth of assets that can be used quickly, after that he would have to sell either some of his financial assets or the car.

On the day of construction, the balance sheet provides a *snapshot* of Charlie’s financial position. The bank would also like to know how Charlie has done over the past year. The income statement provides a *video* of Charlie’s financial position during this time period. Hence, it will summarize the revenues and expenses Charlie incurred during this period. The bank can then take the difference between revenues and expenses to determine Charlie’s (net) earnings.
<table>
<thead>
<tr>
<th>Charlie's Income Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1/1/04-12/31/04</strong></td>
</tr>
<tr>
<td><strong>Revenue:</strong></td>
</tr>
<tr>
<td>Salary $57,000</td>
</tr>
<tr>
<td>Dividend and Interest Income $3,000</td>
</tr>
<tr>
<td><strong>Total Revenue</strong> $60,000</td>
</tr>
<tr>
<td><strong>Expenses:</strong></td>
</tr>
<tr>
<td>Rent $36,000</td>
</tr>
<tr>
<td>Car (Insurance, repairs, Gas) $5,000</td>
</tr>
<tr>
<td>Clothing $8,000</td>
</tr>
<tr>
<td>Food and Entertainment $3,000</td>
</tr>
<tr>
<td>Interest Payments $4,000</td>
</tr>
<tr>
<td><strong>Total Expenses</strong> $56,000</td>
</tr>
<tr>
<td><strong>EARNINGS</strong> $4,000</td>
</tr>
</tbody>
</table>

The income statement allows the bank to determine how much Charlie had coming in and going out during the past year. Thus, the bank can determine what is leftover (earnings) as well. The bank can at this point use the financial statements to calculate accounting ratios, which will be useful in deciding whether or not to grant Charlie a loan. Finally, the income statement represents the link between two consecutive balance sheets. For example, if we had Charlie’s balance sheet for January 1, 2004, we would see that his net worth at that time must have been $1,000. The difference between his net worth on January 1, 2005 and January 1, 2004 must be equal to his earnings as stated on the income statement during the year. This will only be approximately true for a corporation and bank since dividends are paid after earnings are calculated. Thus, the difference between a corporation and banks net worth (or, bank capital) on two consecutive balance sheets will be equal to its earnings minus dividend payments (any new issues of stock will also need to be accounted for as well).

The balance sheet of a bank provides the same information as it did for Charlie. The bank’s balance sheet indicates the assets, liabilities, and net worth (or, bank capital) at a particular
point in time. For example, a particular bank may have the following balance sheet on January 1, 2005.

<table>
<thead>
<tr>
<th>ASSETS</th>
<th>Liabilities and Bank Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserves and Cash Items</td>
<td>Checkable Deposits $10</td>
</tr>
<tr>
<td>Securities</td>
<td>Nontransaction Deposits $55</td>
</tr>
<tr>
<td>Loans</td>
<td>Borrowings $25</td>
</tr>
<tr>
<td>Other Assets</td>
<td>Total Liabilities $90</td>
</tr>
<tr>
<td></td>
<td>Bank Capital $10</td>
</tr>
<tr>
<td>Total Assets</td>
<td>Total Liabilities and Bank Capital $100</td>
</tr>
</tbody>
</table>

The difficulty in interpreting a balance sheet for a bank lies in everything appearing opposite from what we are used to seeing. For example, the checking and saving accounts were assets for Charlie. Yet, for a bank these are liabilities (e.g., it owes Charlie the amounts in his checking and savings accounts). Also, we normally think of loans as our liabilities. Yet again, for banks a loan is its asset (e.g., Charlie owes the bank for his car loan). Once we get used to thinking in terms of the other side of a transaction – whether depositing a paycheck in your bank account or taking out a new loan – then everything appears correct.

The income statement of a bank operates much like Charlie’s. A bank’s income statement will provide information on its revenues (e.g., interest income from loans, fees, etc.), expenses (e.g., interest paid on deposits, wages and salaries paid, utilities paid, etc.), and earnings (the difference between revenue and expenses). After deducting any dividend payments made to its stockholders, then the earnings will be added to last year’s bank capital to obtain the new amount for the current balance sheet.

The balance sheet provides the managers of a bank with some of the information necessary to evaluate the risks faced by the bank – although our text focuses solely on the balance sheet, we should not pretend that it is the only financial statement in need of careful study, e.g., the income statement also provides essential information. The bank faces the same risk as Charlie in terms of needing access to liquidity. Thus, the amount of short-term assets (e.g., reserves and cash items as well as short-term government securities) listed in the balance sheet is paramount. Various techniques have been developed to use this information in an efficient manner. In addition, a bank also faces credit risks and interest rate risks. The credit risk arising from the possibility that some of its loans (assets) may go bad, decreasing its
assets relative to liabilities leading to a decline in net worth (Bank Capital). This would be similar to what would happen to Charlie if his stocks suddenly fell in value.

The interest rate risk faced by a bank is of a unique variety. A bank, historically, has been in the business of borrowing short and lending long. Borrowing short refers to the deposit collection function of banks. Most of the deposits, at least historically, of a bank can be withdrawn at very short notice. Thus, these deposits (liabilities for the bank) will be very sensitive to interest rate changes in the economy. If, for instance, interest rates rise in general, then banks will be forced to pay higher interest rates in order to attract deposits. In very general terms, lending long has meant that banks make long-term loans at fixed interest rates (of course, now there are loans with flexible interest rates such as 4% above the prime lending rate or above the interest rate on Treasury notes). Thus, the interest rate risk arises when interest rates go up, forcing the bank to pay higher interest rates on deposits and yet receiving low interest rates on previously granted loans.

END OF Bank material --- from here goto the money supply process?}}}}