Chapter 1 Investments: Background and Issues

Chapter Objectives

- Define an investment.
- Distinguish between real assets and financial assets.
- Explain the economic functions of financial markets and how various securities are related to the governance of the corporation.
- Describe the major steps in the construction of an investment portfolio.
- Identify major participants in financial markets.
- Identify types of financial markets and recent trends in those markets.
- Explain the causes and consequences of the financial crisis of 2008.

Investment

- Investment is the *current* commitment of money or other resources in the expectation of reaping *future* benefits.
  - For example, an individual might purchase shares of stock anticipating that the future proceeds from the shares will justify both the time that her money is tied up as well as the risk of investment.
  - The time you will spend studying this text (not to mention its cost) also is an investment.
  - You are forgoing either current leisure or the income you could be earning at a job in the expectation that your future career will be sufficiently enhanced to justify this commitment of time and effort.
  - While these two investments differ in many ways, they share one key attribute that is central to all investments:
    - ✓ You sacrifice something of value now, expecting to benefit from that sacrifice later.

1.1 REAL ASSETS VERSUS FINANCIAL ASSETS

- The material wealth of a society is ultimately determined by the productive capacity of its economy, that is, the goods and services its members can create.
  - This capacity is a function of the **real assets** of the economy: the land, buildings, and knowledge that can be used to produce goods and services.
- In contrast to such real assets are **financial assets** such as stocks and bonds.
  - Such securities are no more than sheets of paper, or more likely, computer entries and do not directly contribute to the productive capacity of the economy.
  - Instead, these assets are the means by which individuals in well-developed economies hold their claims on real assets.
  - Financial assets are claims to the income generated by real assets (or claims on income from the government).
  - If we can not own our own auto plant (a real asset), we can still buy shares in Honda or Toyota (financial assets) and, thereby, share in the income derived from the production of automobiles.

- While real assets generate net income to the economy, financial assets simply define the allocation of income or wealth among investors.
  - Individuals can choose between consuming their wealth today or investing for the future.
  - If they choose to invest, they may place their wealth in financial assets by purchasing various securities.
- When investors buy the securities from companies, the firms use the money so raised to pay for real assets, such as plant, equipment, technology, or inventory.
  - So investors' returns on securities ultimately come from the income produced by the real assets that were financed by the issuance of those securities.
- The distinction between real and financial assets is apparent when we compare the balance sheet of U.S. households, shown in Table 1.1, with the composition of national wealth in the United States, shown in Table 1.2.

TABLE 1.1 Balance sheet of U.S. households

Assets	$ Billion	% Total	Liabilities and Net Worth	$ Billion	% Total
Real assets					
Real estate	$22,820	23.9%	Mortgages	$ 9,551	10.0%
Consumer durables	5,041	5.3	Consumer credit	3,104	3.2
Other	468	0.5	Bank and other loans	493	0.5
Total real assets	$28,330	29.6%	Security credit	352	0.4
			Other	286	0.3
			Total liabilities	$13,785	14.4%
Financial assets					
Deposits	$ 9,783	10.2%			
Life insurance reserves	1,257	1.3			
Pension reserves	19,766	20.7			
Corporate equity	13,502	14.1			
Equity in noncorp. business	8,869	9.3			
Mutual fund shares	7,059	7.4			
Debt securities	5,263	5.5			
Other	1,720	1.8			
Total financial assets	$67,219	70.4%	*Net worth*	81,764	85.6
Total	$95,549	100.0%		$95,549	100.0%

Note: Column sums may differ from total because of rounding error.

Source: *Flow of Funds Accounts of the United States,* Board of Governors of the Federal Reserve System, June 2014.

TABLE 1.2 Domestic net worth

Assets	$ Billion
Commercial real estate	$20,092
Residential real estate	22,820
Equipment & intellectual property	7,404
Inventories	2,514
Consumer durables	5,041
Total	$57,873

Note: Column sums may differ from total because of rounding error.

Source: *Flow of Funds Accounts of the United States,* Board of Governors of the Federal Reserve System, June 2014.

- Household wealth includes financial assets such as bank accounts, corporate stock, or bonds.
  - ✓ However, debt securities, which are financial assets of the households that hold them, are *liabilities* of the issuers of the securities.
  - ✓ For example, a bond that you treat as an asset because it gives you a claim on interest income and repayment of principal from Toyota is a liability of Toyota, which is obligated to make these payments to you. Your asset is Toyota's liability.

- Therefore, when we aggregate over all balance sheets, these claims cancel out, leaving only real assets as the net wealth of the economy.
  - ✓ National wealth consists of structures, equipment, inventories of goods, and land.
- We will focus almost exclusively on financial assets. But you shouldn't lose sight of the fact that the successes or failures of the financial assets we choose to purchase ultimately depend on the performance of the underlying real assets.

1.2 FINANCIAL ASSETS

- It is common to distinguish among three broad types of financial assets: debt, equity, and derivatives.
- Fixed-income or debt securities promise either a fixed stream of income or a stream of income that is determined according to a specified formula.
  - For example, a bond may pay an interest rate that is fixed at two percentage points above the rate paid on U.S. Treasury bills.
  - Unless the borrower is declared bankrupt, the payments on these securities are either fixed or determined by formula.
  - For this reason, the investment performance of debt securities typically is least closely to the financial condition of the issuer.
- Nevertheless, debt securities come in a tremendous variety of maturities and payment provisions.
  - At one extreme, the *money market* refers to fixed-income securities that are short term, highly marketable, and generally of very low risk.

- Examples of money market securities are U.S. Treasury bills or bank certificates of deposit (CDs).

- In contrast, the fixed-income *capital market* includes long-term securities such as Treasury bonds, as well as bonds issued by federal agencies, state and local municipalities, and corporations.
  - These bonds range from very safe in terms of default risk (for example, Treasury securities) to relatively risky (for example, high yield or "junk" bonds).
  - They also are designed with extremely diverse provisions regarding payments provided to the investor and protection against the bankruptcy of the issuer.
- Unlike debt securities, common stock, or **equity,** in a firm represents an ownership share in the corporation.
  - Equity holders are not promised any particular payment.
  - They receive any dividends the firm may pay and have prorated ownership in the real assets of the firm.
    - ✓ If the firm is successful, the value of equity will increase; if not, it will decrease.

- The performance of equity investments, therefore, is tied directly to the success of the firm and its real assets.
  - For this reason, equity investments tend to be riskier than investments in debt securities.
- Finally, derivative securities such as options and futures contracts provide payoffs that are determined by the prices of *other* assets such as bond or stock prices.
  - For example, a call option on a share of Intel stock might turn out to be worthless if Intel's share price remains below a threshold or "exercise" price such as $35 a share, but it can be quite valuable if the stock price rises above that level.
  - A call option is the right to buy a share of stock at a given exercise price on or before the option's expiration date.
    - ✓ If the market price of Intel remains below $35 a share, the right to buy for $35 will turn out be valueless.
    - ✓ If the share price rises above $35 before the option expires, however, the option can be exercised to obtain the share for only $35.

- Derivative securities are so named because their values derive from the prices of other assets.
  - For example, the value of the call option will depend on the price of Intel stocks.
- Derivatives have become an integral part of the investment environment.
  - One use of derivatives, perhaps the primary use, is to hedge risks or transfer them to other parties.
    - ✓ This is done successfully every day, and the use of these securities for risk management is so commonplace that the multitrillion market in derivative assets is routinely taken for granted.
  - Derivatives also can be used to take highly speculative positions, however.
    - ✓ Every so often, one of these positions blows up, resulting in well-publicized losses of hundreds of millions of dollars.
- While these losses attract considerable attention, they do not negate the potential use of such securities as risk management tools.
  - Derivatives will continue to play an important role in portfolio construction and the financial system.

- Investors and corporations regularly encounter other financial markets as well.
  - Firms engaged in international trade regularly transfer money back and forth between dollars and other currencies.
    - ✓ Well more than a trillion dollars of currency is traded each day in the market for foreign exchange, primarily through a network of the largest international banks.
  - Investors also might invest directly in some real assets.
    - ✓ For example, dozens of commodities are traded on exchanges such as the New York Mercantile Exchange or the Chicago Board of Trade. You can buy or sell corn, wheat, natural gas, gold, silver, and so on.
- Commodity and derivative markets allow firms to adjust their exposure to various business risks.
  - For example, a construction firm may lock in the price of copper by buying copper futures contracts, thus eliminating the risk of a sudden jump in the price of its raw materials.
- Wherever there is uncertainty, investors may be interested in trading, either to speculate or to lay off their risks, and a market may arise to meet that demand.

1.3 FINANCIAL MARKETS AND THE ECONOMY

- We stated earlier that real assets determine the wealth of an economy, while financial assets merely represent claims on real assets.
  - Nevertheless, financial assets and the markets in which they trade play several crucial roles in developed economies. Financial assets allow us to make the most of the economy's real assets.

The Informational Role of Financial Markets

- Stock prices reflect investors' collective assessment of a firm's current performance and future prospects.
  - When the market is more optimistic about the firm, its share price will rise.
    - ✓ That higher price makes it easier for the firm to raise capital and therefore encourages investment.
  - In this manner, stock prices play a major role in the allocation of capital in market economies, directing capital to the firms and applications with the greatest perceived potential.

- Do capital markets actually channel resources to the most efficient use?
  - At times, they appear to fail miserably.
  - Companies or whole industries can be "hot" for a period of time (think about the dot-com bubble that peaked in 2000), attract a large flow of investor capital, and then fail after only a few years. The process seems highly wasteful.
- But we need to be careful about our standard of efficiency.
  - No one knows with certainty which ventures will succeed and which will fail.
  - It is therefore unreasonable to expect that markets will never make mistakes.
- The stock market encourages allocation of capital to those firms that appear *at the time* to have the best prospects.
  - Many smart, well-trained, and well-paid professionals analyze the prospects of firms whose shares trade on the stock market.
    - ✓ Stock prices reflect their collective judgment.

Consumption Timing

- Some individuals in an economy are earning more than they currently wish to spend. Others, for example, retirees, spend more than they currently earn.
- How can you shift your purchasing power from high-earnings periods to low-earnings periods of life?
  - One way is to "store" your wealth in financial assets.
    - ✓ In high-earnings periods, you can invest your savings in financial assets such as stocks and bonds.
    - ✓ In low-earnings periods, you can sell these assets to provide funds for your consumption needs.
- By so doing, you can "shift" your consumption over the course of your lifetime, thereby allocating your consumption to periods that provide the greatest satisfaction.
  - Thus, financial markets allow individuals to separate decisions concerning current consumption from constraints that otherwise would be imposed by current earnings.

Allocation of Risk

- Virtually all real assets involve some risk.
  - When Toyota builds its auto plants, for example, it cannot know for sure what cash flows those plants will generates.
- Financial markets and the diverse financial instruments traded in those markets allow investors with the greatest taste for risk to bear that risk, while other, less risk-tolerant individuals can, to a greater extent, stay on the sidelines.
  - For example, if Toyota raises the funds to build its auto plant by selling both stocks and bonds to the public, the more optimistic or risk-tolerant investors can buy shares of stock in Toyota, while the more conservative ones can buy Toyota bonds.
  - Because the bonds promise to provide a fixed payment, the stockholders bear most of the business risk but reap potentially higher rewards.
- Thus, capital markets allow the risk that is inherent to all investments to be borne by the investors most willing to bear that risk.

- This allocation of risk also benefits the firms that need to raise capital to finance their investments.
  - When investors are able to select security types with the risk-return characteristics that best suit their preferences, each security can be sold for the best possible price.
  - This facilitates the process of building the economy's stock of real assets.

Separation of Ownership and Management

- A large group of stockholders obviously cannot actively participate in the day-to-day management of the firm. Instead, they elect a board of directors that in turn hires and supervises the management of the firm.
  - This structure means that the owners and managers of the firm are different parties.
  - This gives the firm the stability that the owner-managed firm cannot achieve.
    - ✓ For example, if some stockholders decide they no longer wish to hold shares in the firm, they can sell their shares to other investors, with no impact on the management of the firm.
- Thus, financial assets and the ability to buy and sell those assets in the financial markets allow for easy separation of ownership and management.

- How can all of the disparate owners of the firm, ranging from large pension funds holding hundreds of thousands of shares to small investors who may hold only a single share, agree on the objectives of the firm?
  - Again, the financial markets provide some guidance.
    - ✓ All may agree that the firm's management should pursue strategies that enhance the value of their shares.
    - ✓ Such policies will make all shareholders wealthier and allow them all to better pursue their personal goals, whatever those goals might be.
- Do managers really attempt to maximize firm value?
  - It is easy to see how they might be tempted to engage in activities not in the best interest of shareholders.
    - ✓ For example, they might engage in empire building, avoid risky projects to protect their own jobs or overconsume luxuries such as corporate jets, reasoning that the cost of such perquisites is largely borne by the shareholders.
- These potential conflicts of interest are called **agency problems** because managers, who are hired as agents of the shareholders, may pursue their own interests instead.

- Several mechanisms have evolved to mitigate potential agency problems.
  - First, compensation plans tie the income of managers to the success of the firm.
    - ✓ A major part of the total compensation of top executives is typically in the form of shares or stock options, which means that the managers will not do well unless the stock price increases, benefiting shareholders.
    - ✓ Of course, we've learned that overuse of options can create its own agency problem.
      - ➢ Options can create an incentive for managers to manipulate information to prop up a stock price temporarily, giving them a chance to cash out before the price returns to a level reflective of the firm's true prospects.
  - Second, while boards of directors are sometimes portrayed as defenders of top management, they can, and in recent years increasingly do, force out management teams that are underperforming.

- Third, outsiders such as security analysts and large institutional investors such as pension funds monitor the firm closely and make the life of poor performers at the least ~~un~~comfortable.
  - ✓ Such large investors today hold about half of the stock in publicly listed firms in the United States.
- Finally, bad performers are subject to the threat of takeover.
  - ✓ If the board of directors is lax in monitoring management, unhappy shareholders in principle can elect a different board.
    - ➢ They can do this by launching a *proxy contest* in which they seek to obtain enough proxies (i.e., rights to vote the shares of other shareholders) to take control of the firm and vote in another board.
  - ✓ However, this threat is usually minimal.
    - ➢ Shareholders who attempt such a fight have to use their own funds, while management can defend itself using corporate coffers. Most proxy fights fail.

- ✓ The real takeover threat is from other firms.
  - ➢ If one firm observes another underperforming, it can acquire the underperforming business and replace management with its own team.
  - ➢ The stock price should rise to reflect the prospects of improved performance, which provides incentive for firms to engage in such takeover activity.

- Example 1.1: *Carl Icahn's Proxy Fight with Yahoo!*
  - Study yourself.

Corporation Governance and Corporate Ethics

- We've argued that securities markets can play an important role in facilitating the deployment of capital resources to their most productive uses.
- But market signals will help to allocate capital efficiently only if investors are acting on accurate information.
  - We say that markets need to be *transparent* for investors to make informed decisions.
  - If firms mislead the public about their prospects, then much can go wrong.

- Despite the many mechanisms to align incentives of shareholders and managers, the three years between 2000 and 2002 were filled with a seemingly unending series of scandals that collectively signaled a crisis in corporate governance and ethics.
  - For example, the telecom firm WorldCom overstated its profits by at least $3.8 billion by improperly classifying expenses as investments. When the true picture emerged, it resulted in the largest bankruptcy in U.S. history, at least until Lehman Brothers smashed that record in 2008.
  - The next-largest U.S. bankruptcy was Enron, which used its now notorious “special purpose entities” to move debt off its own books and similarly present a misleading picture of its financial status.

- Other scandals of that period included systematically misleading and overly optimistic research reports put out by stock market analysts (their favorable analysis was traded for the promise of future investment banking business, and analysts were commonly compensated not for their accuracy or insight but for their role in garnering investment banking business for their firms) and allocations of initial public offerings to corporate executives as a quid pro quo for personal favors or the promise to direct future business back to the manager of the IPO.
- What about the auditors who were supposed to be the watchdogs of the firms?
  - Here too, incentives were skewed.
    - ✓ Recent changes in business practice made the consulting businesses of these firms more lucrative than the auditing function.
    - ✓ For example, Enron's (now defunct) auditor Arthur Andersen earned more money consulting for Enron than auditing it; given its incentive to protect its consulting profits, it should not be surprising that it, and other auditors, were overly lenient in their auditing work.

- In 2002, in response to the spate of ethics scandals, Congress passed the Sarbanes-Oxley Act to tighten the rules of corporate governance.
  - The Act requires corporations to have more independent directors, that is, more directors who are not themselves managers (or affiliated with managers).
  - The act also requires each CFO (chief financial officer) to personally vouch for the corporation's accounting statements, creates a new oversight board to oversee the auditing of public companies, and prohibits auditors from providing various other services to clients.
- Ultimately, a firm's reputation for integrity is key to building long-term relationships with its customers and is therefore one of its most valuable assets.
  - Indeed, the motto of the London Stock Exchange is "My word is my bond."
  - Every so often firms forget this lesson, but in the end, investments in reputation are in fact good business practice.

1.4 THE INVESTMENT PROCESS

- An investor's *portfolio* is simply his collection of investment assets.
  - Once the portfolio is established, it is updated or "rebalanced" by selling existing securities and using the proceeds to buy new securities, by investing additional funds to increase the overall size of the portfolio, or by selling securities to decrease the size of the portfolio.
- Investment assets can be categorized into broad asset classes, such as stocks, bonds, real estate, commodities, and so on.
- Investors make two types of decisions in constructing their portfolios.
  - The **asset allocation** decision is the choice among these broad asset classes, while the **security selection** decision is the choice of which particular securities *within* each asset class.
- "Top-down" portfolio construction starts with asset allocation.
  - For example, an individual who currently holds all of his money in a bank account would first decide what proportion of the overall portfolio ought to be moved into stocks, bonds, and so on.

- In this way, the broad features of the portfolio are established.
  - ✓ For example, while the average annual return on the common stock of large firms since 1926 has been about 11.5% per year, the average return on U.S. Treasury bills has been less than 4%.
  - ✓ On the other hand, stocks are far riskier, with annual returns (as measured by the Standard & Poor's 500 Index) that have ranged as low as -46% and as high as 55%.
  - ✓ In contrast, T-bill returns are effectively risk-free: You know what interest rate you will earn when you buy the bills.
- Therefore, the decision to allocate your investments to the stock market or to the money market where Treasury bills are traded will have great ramifications for both the risk and the return of your portfolio.
- A top-down investor first makes this and other crucial asset allocation decisions before turning to the decision of the particular securities to be held in each asset class.

- **Security analysis** involves the valuation of particular securities that might be included in the portfolio.
  - For example, an investor might ask whether Merck or Pfizer is more attractively priced.
  - Both bonds and stocks must be evaluated for investment attractiveness, but valuation is far more difficult for stocks because a stock's performance usually is far more sensitive to the condition of the issuing firm.
- In contrast to top-down portfolio management is the "bottom-up" strategy.
  - In this process, the portfolio is constructed from the securities that seem attractively priced without as much concern for the resultant asset allocation.

- The “bottom-up” portfolio is constructed from the securities that seem attractively priced without as much concern for the resultant asset allocation.
  - Such a technique can result in unintended bets on one or another sector of the economy.
    - ✓ For example, it might turn out that the portfolio ends up with a very heavy representation of firms in one industry, from one part of the country, or with exposure to one source of uncertainty.
  - However, a bottom-up strategy does focus the portfolio on the assets that seem to offer the most attractive investment opportunities.

1.5 MARKETS ARE COMPETITIVE

- Financial markets are highly competitive.
- Thousands of well-backed analysts constantly scour securities markets searching for the best buys.
  - This competition means that we should expect to find few, if any, "free lunches," securities that are so underpriced that they represent obvious bargains.
- There are several implications of this no-free-lunch proposition. Let's examine two.

The Risk-Return Trade-Off

- Investors invest for anticipated future returns, but those returns rarely can be predicted precisely. There will almost always be risk associated with investments.
  - Actual or realized returns will almost deviate from the expected return anticipated at the start of the investment period.
  - For example, in 1931 (the worst calendar year for the market since 1926), the stock market lost 46% of its value. In 1933 (the best year), the stock market gained 55%. You can be sure that investors did not anticipate such extreme performance at the start of either of these years.

- Naturally, if all else could be held equal, investors would prefer investments with the highest expected return.
  - However, the no-free-lunch rule tells us that all else cannot be held equal.
  - If you want higher expected returns, you will have to pay a price in terms of accepting higher investment risk.
  - If higher expected return can be achieved without bearing extra risk, there will be a rush to buy the high-return assets, with the result that their prices will be driven up.
- Individuals considering investing in the asset at the now-higher price will find the investment less attractive.
- The asset will be considered attractive and its price will continue to rise until its expected return is no more than commensurate with risk.
  - At this point, investors can anticipate a “fair” return relative to the asset’s risk, but no more.

- Similarly, if returns were independent of risk, there would be a rush to sell high-risk assets.
  - Their prices would fall (improving their expected future rates of return) until they eventually were attractive enough to be included again in investor portfolios.
- We conclude that there should be a **risk-return trade-off** in the securities markets, with higher-risk assets priced to offer higher expected returns than lower-risk assets.
- Of course, this discussion leaves several important questions unanswered.
  - How should one measure the risk of an asset?
  - What should be the quantitative trade-off between risk (properly measured) and expected return?
- One would think that risk would have something to do with the volatility of an asset's returns, but this guess turns out to be only partly correct.
  - When we mix assets into diversified portfolios, we need to consider the interplay among assets and the effect of diversification on the risk of the entire portfolio.
  - *Diversification* means that many assets are held in the portfolio so that the exposure to any particular asset is limited.

Efficient Markets

- Another implication of the no-free-lunch proposition is that we should rarely expect to find bargains in the security markets.
- According to the efficient market hypothesis, as new information about a security become available, the price of the security quickly adjusts so that at any time, the security price equals the market consensus estimate of the value of the security.
  - If this were so, there would be neither underpriced nor overpriced securities.
- One interesting implication of this "efficient market hypothesis" concerns the choice between active and passive investment-management strategies.
  - **Passive management** calls for holding highly diversified portfolio without spending effort or other resources attempting to improve investment performance through security analysis.
  - **Active management** is the attempt to improve performance either by identifying mispriced securities or by timing the performance of broad asset classes—for example, increasing one's commitment to stocks when one is bullish on the stock market.

- If markets are efficient and prices reflect all relevant information, perhaps it is better to follow passive strategies instead of spending resources in a futile attempt to outguess your competitors in the financial markets.
- If the efficient market hypothesis were taken to the extreme, there would be no point in active security analysis; only fools would commit resources to actively analyze securities.
- Without ongoing security analysis, however, prices eventually would depart from "correct" values, creating new incentives for experts to move in.
- Even in environments as competitive as the financial markets, we may observe only *near*-efficiency, and profit opportunities may exist for especially diligent and creative investors.

1.6 THE PLAYERS

- From a bird's-eye view, there would appear to be three major players in the financial markets.
- Firms are net demanders of capital.
  - ◆ They raise capital now to pay for investments in plant and equipment.
    - ✓ The income generated by those real assets provides the returns to investors who purchase the securities issued by the firm.
- Households typically are suppliers of capital.
  - ◆ They purchase the securities issued by firms that need to raise funds.
- Governments can be borrowers or lenders, depending on the relationship between tax revenue and government expenditures.
  - ◆ Since World War II, the U.S. government typically has run budget deficits, meaning that its tax receipts have been less than its expenditures. The government, therefore, has had to borrow funds to cover its budget deficit.
    - ✓ Issuance of Treasury bills, notes, and bonds is the major way that the government borrows funds from the public.

- In contrast, in the latter part of the 1990s, the government enjoyed a budget surplus and was able to retire some outstanding debt.

- Corporations and governments do not sell all or even most of their securities directly to individuals.
  - For example, about half of all stock is held by large financial institutions such as pension funds, mutual funds, insurance companies, and banks.
  - These financial institutions stand between the security issuer (the firm) and the ultimate owner of the security (the individual investor).
    - ✓ For this reason, they are called *financial intermediaries*.
  - Similarly, corporations do not directly market their securities to the public. Instead, they hire agents, called investment bankers, to represent them to the investing public.

Financial Intermediaries

- Households want desirable investments for their savings, yet the small (financial) size of most households makes direct investment difficult.
  - A small investor seeking to lend money to businesses that need to finance investments doesn't advertise in the local newspaper to find a willing and desirable borrower.
  - Moreover, an individual lender would not be able to diversify across borrowers to reduce risk.
  - Finally, an individual lender is not equipped to assess and monitor the credit risk of borrowers.
- For these reasons, **financial intermediaries** have evolved to bring together the suppliers of capital (investors) with the demanders of capital (primarily corporations and the federal government).
  - These financial intermediaries include banks, investment companies, insurance companies, and credit unions.

- Financial intermediaries issue their own securities to raise funds to purchase the securities of other corporations.
  - ✓ For example, a bank raises funds by borrowing (taking deposits) and lending that money to other borrowers.
    - ➢ The spread between the interest rates paid to depositors and the rates charged to borrowers is the source of the bank's profit.
    - ➢ In this way, lenders and borrowers do not need to contact each other directly. Instead, each goes to the bank, which acts as an intermediary between the two.
    - ➢ The problem of matching lenders with borrowers is solved when each comes independently to the common intermediary.

■ Financial intermediaries are distinguished from other businesses in that both their assets and their liabilities are overwhelmingly financial.

- Table 1.3 presents the aggregated balance sheet of commercial banks, one of the largest sectors of financial intermediaries.
  - ✓ Notice that the balance sheet of commercial banks includes only very small amounts of real assets.

TABLE 1.3 Balance sheet of FDIC-insured commercial banks and savings institutions

Assets	$ Billion	% Total	Liabilities and Net Worth	$ Billion	% Total
Real assets			Liabilities		
Equipment and premises	$ 120.7	0.8%	Deposits	$11,490.3	75.8%
Other real estate	27.9	0.2	Debt and other borrowed funds	888.2	5.9
Total real assets	$ 148.6	1.0%	Federal funds and repurchase agreements	366.7	2.4
			Other	703.2	4.6
			Total liabilities	$13,448.4	88.7%
Financial assets					
Cash	$ 1,843.1	12.2%			
Investment securities	3,113.1	20.5			
Loans and leases	8,111.2	53.5			
Other financial assets	870.3	5.7			
Total financial assets	$13,937.7	91.9%			
Other assets					
Intangible assets	$ 365.6	2.4%			
Other	712.7	4.7			
Total other assets	$ 1,078.3	7.1%	*Net worth*	1,716.2	11.3
Total	$15,164.6	100.0%		$15,164.6	100.0%

Note: Column sums may differ from total because of rounding error.

Source: Federal Deposit Insurance Corporation, **www.fdic.gov**, September 2014.

◆ Table 1.4 presents the aggregated balance sheet of nonfinancial U.S. business.

TABLE 1.4 Balance sheet of U.S. nonfinancial corporations

Assets	$ Billion	% Total	Liabilities and Net Worth	$ Billion	% Total
Real assets			Liabilities		
Equipment & intellectual property	$ 6,200	17.7%	Bonds and mortgages	$ 7,905	22.6%
Real estate	10,166	29.0	Bank loans	654	1.9
Inventories	2,203	6.3	Other loans	1,072	3.1
Total real assets	$18,569	53.1%	Trade debt	1,996	5.7
			Other	4,275	12.2
Financial assets			*Total liabilities*	$15,902	45.4%
Deposits and cash	$ 1,040	3.0%			
Marketable securities	838	2.4			
Trade and consumer credit	2,581	7.4			
Other	11,969	34.2			
Total financial assets	$16,428	46.9%	*Net worth*	19,094	54.6
Total	$34,997	100.0%		$34,997	100.0%

Note: Column sums may differ from total because of rounding error.

Source: *Flow of Funds Accounts of the United States*, Board of Governors of the Federal Reserve System, June 2014.

- ✓ Compare Table 1.3 to the aggregated balance sheet of the nonfinancial corporate sector in Table 1.4, for which real assets are about half of all assets.
  - ➢ The contrast arises because intermediaries simply move funds from one sector to another.
  - ➢ In fact, the primary social function of such intermediaries is to channel household savings to the business sector.

■ Other examples of financial intermediaries are investment companies, insurance companies, and credit unions. All these firms offer similar advantages in their intermediary role.

- ◆ First, by pooling the resources of many small investors, they are able to lend considerable sums to large borrowers.
- ◆ Second, by lending to many borrowers, intermediaries achieve significant diversification, so they can accept loans that individually might be too risky.
- ◆ Third, intermediaries build expertise through the volume of business they do and can use economies of scale and scope to assess and monitor risk.

- **Investment companies,** which pool and manage the money of many investors, also arise out of economies of scale.
  - Here, the problem is that most household portfolios are not large enough to be spread among a wide variety of securities.
    - ✓ It is very expensive in terms of brokerage fees and research costs to purchase one or two shares of many different firms.
  - Mutual funds have the advantage of large-scale trading and portfolio management, while participating investors are assigned a prorated share of the total funds according to the size of their investment.
    - ✓ This system gives small investors advantages they are willing to pay for via a management fee to the mutual fund operator.
- Investment companies also can design portfolios specifically for large investors with particular goals.
- In contrast, mutual funds are sold in the retail market, and their investment philosophies are differentiated mainly by strategies that are likely to attract a large number of clients.

- Like mutual funds, *hedge funds* also pool and invest the money of many clients.
  - But they are open only to institutional investors such as pension funds, endowment funds, or wealthy individuals.
  - They are more likely to purchase complex and higher-risk strategies.
  - They typically keep a portion of trading profits as part of their fees, whereas mutual funds charge a fixed percentage of assets under management.
- Economies of scale also explain the proliferation of analytic services available to investors.
  - Newsletters, databases, and brokerage house research services all engage in research to be sold to a large client base. This setup arises naturally.
    - ✓ Investors clearly want information, but with small portfolios to manage, they do not find it economical to personally gather all of it.
    - ✓ Hence, a profit opportunity emerges: A firm can perform this service for many clients and charge for it.

Investment Bankers

- Just as economies of scale and specialization create profit opportunities for financial intermediaries, so ~~too~~ do these economies create niches for firms that perform specialized services for businesses.
- Firms raise much of their capital by selling securities such as stocks and bonds to the public.
  - Because these firms do not do so frequently, however, investment bankers that specialize in such activities can offer their services at a cost below that of maintaining an in-house security issuance division.
- **Investment bankers** advise the issuing corporation on the prices it can charge for the securities issued, appropriate interest rates, and so forth.
  - Ultimately, the investment banking firm handles the marketing of the security in the **primary market,** where new issues of securities are offered to the public.
    - ✓ In this role, the banks are called *underwriters.*
  - Later, investors can trade previously issued securities among themselves in the so-called **secondary market.**

- For most of the last century, investment banks and commercial banks in the U.S. were separated by law.
  - While those regulations were effectively eliminated in 1999, until 2008 the industry known as "Wall Street" still comprised large, independent investment banks such as Goldman Sachs, Merrill Lynch, or Lehman Brothers.
  - But that stand-alone model came to an abrupt end in September 2008, when all the remaining major U.S. investment banks were absorbed into commercial banks, declared bankruptcy, or reorganized as commercial banks.

Venture Capital and Private Equity

- While large firms can raise funds directly from the stock and bond markets with help from their investment bankers, smaller and younger firms that have not yet issued securities to the public do not have that option.
- Start-up companies rely instead on bank loans and investors who are willing to invest in them in return for an ownership stake in the firm.

- The equity investment in these young companies is called **venture capital (VC).**
  - Sources of venture capital are dedicated venture capital funds, wealthy individuals known as *angel investors*, and institutions such as pension funds.
- Most venture capital funds are set up as limited partnerships.
  - A management company starts with its own money and raises additional capital from limited partners such as pension funds.
  - That capital may then be invested in a variety of start-up companies.
- The management company usually sits on the start-up company's board of directors, helps recruit senior managers, and provides business advice.
  - It charges a fee to the VC fund for overseeing the investments.
  - After some period of time, for example, 10 years, the fund is liquidated and proceeds are distributed to the investors.

- Venture capital investors commonly take an active role in the management of a start-up firm.
  - Other active investors may engage in similar hands-on management but focus instead on firms that are in distress or firms that may be bought up, "improved," and sold for a profit.
- Collectively, these investments in firms that do not trade on public stock exchange are known as **private equity** investments.

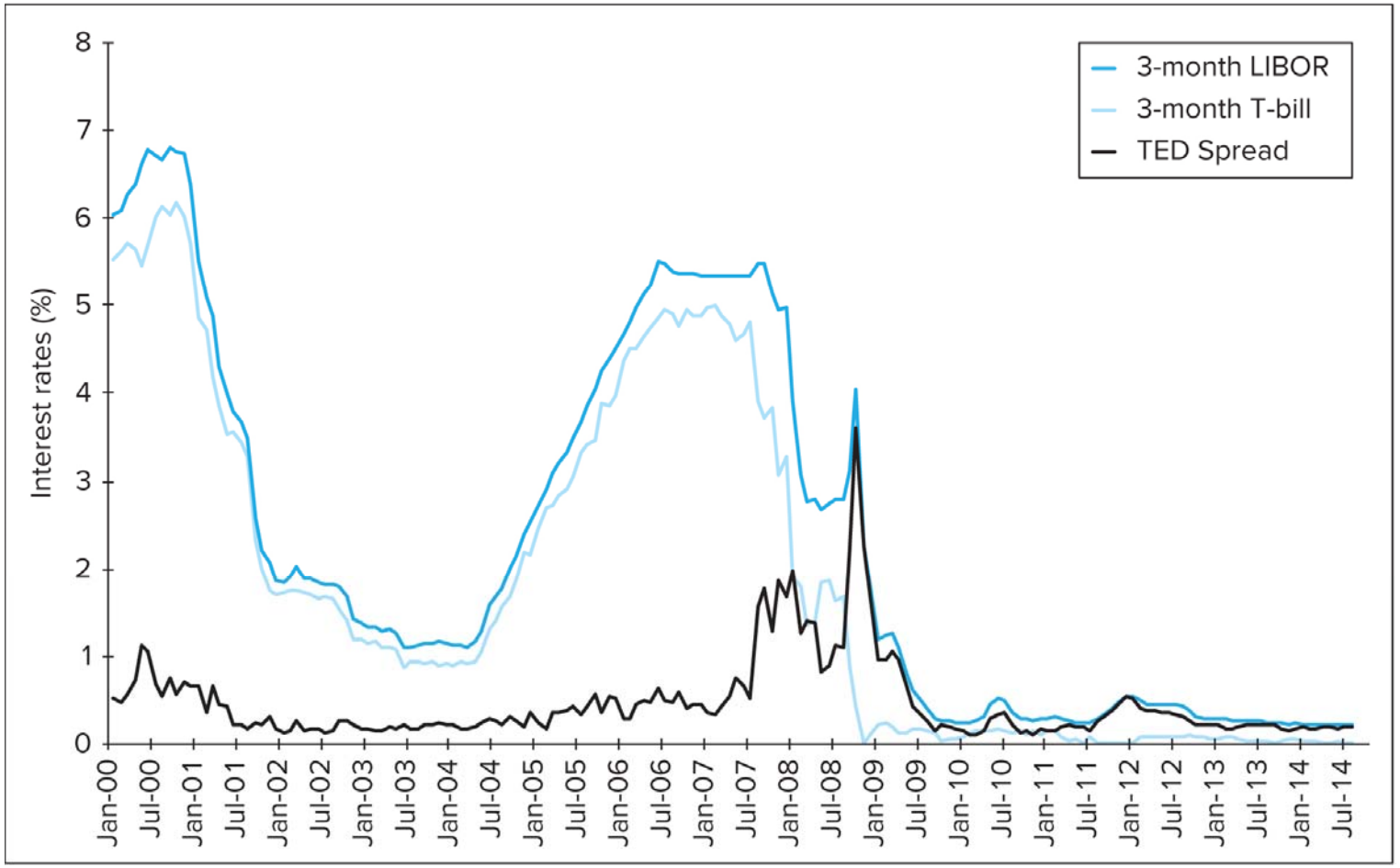
1.7 THE FINANCIAL CRISIS OF 2008

- This chapter has laid out the broad outlines of the financial system, as well as some of the links between the financial side of the economy and the "real" side, in which goods and services are produced. The financial crisis of 2008 illustrated in a painful way the intimate ties between these two sectors.
- We present in this section a capsule summary of the crisis, attempting to draw some lessons about the role of the financial system as well as the causes and consequences of what has become known as *systemic risk*.

Antecedents of the Crisis

- In early 2007, most observers thought it inconceivable that within two years the world financial system would be facing its worse crisis since the Great Depression.
  - At the time, the economy seemed to be marching from strength to strength.
- The last significant macroeconomic threat had been from the collapse of the high-tech bubble in 2000-2002.
  - But the Federal Reserve responded to an emerging recession by aggressively reducing interest rates.

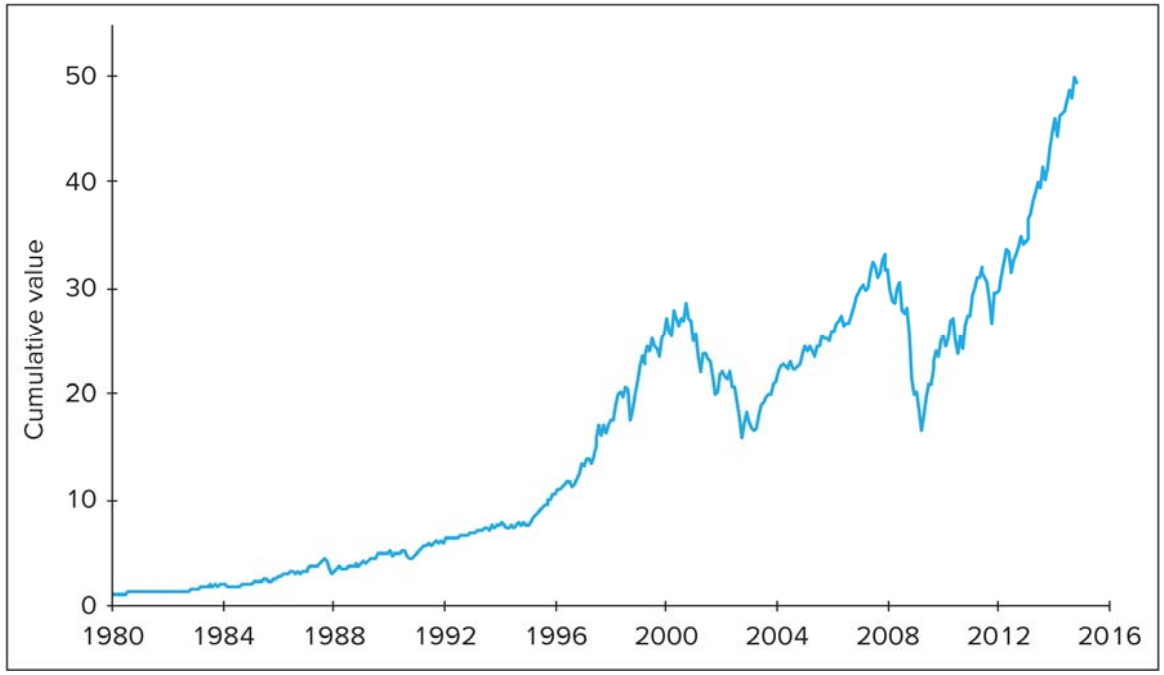
◆ Figure 1.1 shows that Treasury bill rates dropped drastically between 2001 and 2004, and the LIBOR rate (LIBOR is an acronym for the London Interbank Offer Rate), which is the interest rate at which major money-center banks lend to each other, fell in tandem.



- These actions appeared to have been successful, and the recession was short-lived and mild.

■ By mid-decade the economy was once again apparently healthy.

- While the stock market had declined substantially between 2001 and 2002, Figure 1.2 shows that it reversed direction just as dramatically beginning in 2003, fully recovering all of its post-tech-meltdown losses within a few years.

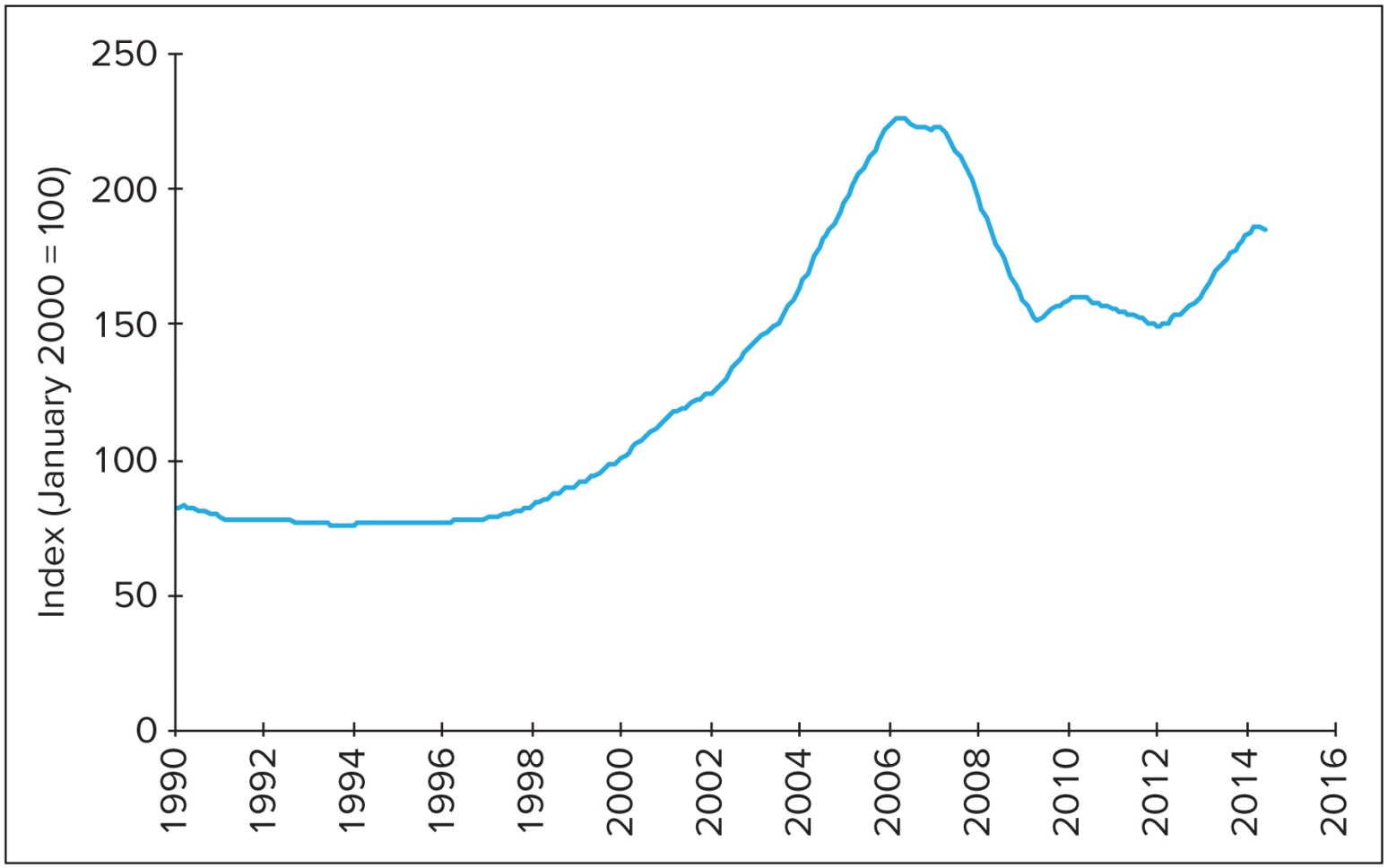


✓ Figure 1.2 shows cumulative value of a $1 investment in the S&P 500 Index.

- ◆ Of equal importance, the banking sector seemed healthy.
  - ✓ The spread between the LIBOR rate (at which banks borrow from each other) and the Treasury-bill rate (at which the U.S. government borrows), a common measure of credit risk in the banking sector (often referred to as the *TED spread*), was only around .25% in early 2007 (see the dark line in Figure 1.1), suggesting that fears of default or "counterparty" risk in the banking sector were extremely low.
    - ➢ *TED* stands for "Treasury-Eurodollar spread." The Eurodollar rate in this spread is, in fact, LIBOR.

■ The combination of dramatically reduced interest rates and an apparently stable economy fed a historic boom in the housing market.

- ◆ Figure 1.3 shows that U.S. housing prices (the Case-Shiller index of U.S. housing prices) began rising noticeably in the late 1990s and accelerated dramatically after 2001 as interest rates plummeted.



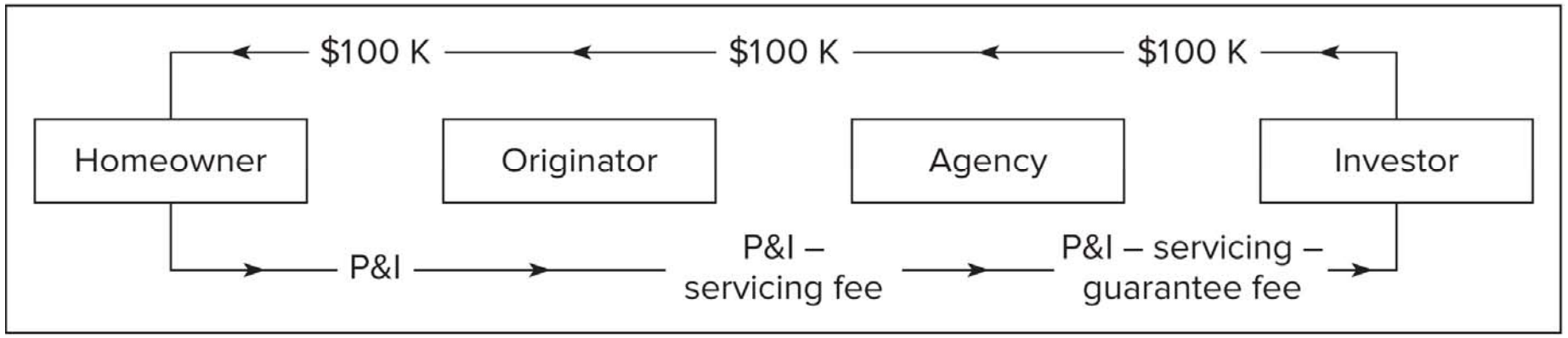
✓ In the 10 years beginning 1997, average prices in the U.S. approximately tripled.

- But confidence in the power of macroeconomic policy to reduce risk, the impressive recovery of the economy from the high-tech implosion, and particularly the housing price boom following the aggressive reduction in interest rates may have sown the seeds for the debacle that played out in 2008.
  - On the one hand, the Fed's policy of reducing interest rates had resulted in low yields on a wide variety of investments, and investors were hungry for higher-yielding alternatives.
  - On the other hand, low volatility and bright macroeconomic prospects encouraged greater tolerance for risk in the search for these higher-yielding investments.
  - Nowhere was this more evident than in the exploding market for securitized mortgages.
    - ✓ The U.S. housing and mortgage finance markets were at the center of a gathering storm.

Changes in Housing Finance

- Prior to 1970, most mortgage loans would come from a local lender such as a neighborhood savings bank or credit union.
  - A homeowner would borrow funds for a home purchase and repay it over a long period, commonly 30 years.
  - A typical thrift institution would have as its major asset a portfolio of these long-term home loans, while its major liability would be the accounts of its depositors.
- This landscape began to change in the 1970s when Fannie Mae (FNMA, or Federal National Mortgage Association) and Freddie Mac (FHLMC, or Federal Home Loan Mortgage Corporation) began buying large quantities of mortgage loans from originators and bundling them into pools that could be traded like any other financial asset.
  - These pools, which were essentially claims on the underlying mortgages, were soon dubbed "mortgage-backed securities," and the process was called **securitization.**
  - Fannie and Freddie quickly became the behemoths of the mortgage market, between them buying more than half of all mortgages originated by the private sector.

- Figure 1.4 illustrates how cash flows passed from the original borrower to the ultimate investor in a mortgage-backed security.



  - The loan originator, for example, the savings and loan, might make a $100,000 loan to a homeowner. The homeowner would repay principal and interest (P&I) on the loan over 30 years.
  - But then the originator would sell the mortgage to Freddie Mac or Fannie Mae and recover the cost of the loan. The originator could continue to service the loan (e.g., collect monthly payments from the homeowner) for a small servicing fee, but the loan payments net of that fee would be passed along to the agency.

- In turn, Freddie or Fannie would pool the loans into mortgage-backed securities and sell the securities to investors such as pension funds or mutual funds.
- The agency (Fannie or Freddie) typically would guarantee the credit or default risk of the loans included in each pool, for which it would retain a guarantee fee before passing along the rest of the cash flow to the ultimate investor.
- Because the mortgage cash flows were passed along from the homeowner to the lender, to Fannie or Freddie, and finally to the investor, the mortgage-backed securities were also called *pass-throughs*.

- Until the last decade, the vast majority of the mortgages that had been securitized into pass-throughs were held or guaranteed by Freddie Mac or Fannie Mae.
  - These were low-risk *conforming* mortgages, meaning that eligible loans for agency securitization couldn't be too big and homeowners had to meet underwriting criteria establishing their ability to repay the loan.
    - ✓ For example, the ratio of loan amount to house value could be no more than 80%.

- Conforming loans were pooled almost entirely through Freddie Mac and Fannie Mae, but once the securitization model took hold, it created an opening for a new product: securitization by private firms of *nonconforming* "subprime" loans with higher default risk.
  - One important difference between the government-agency pass-throughs and these so-called private-label pass-throughs was that the investor in the private-label pool would bear the risk that homeowners might default on their loans.
  - Thus, originating mortgage brokers had little incentive to perform due diligence on the loan *as long as the loans could be sold to an investor*.
    - ✓ These investors, of course, had no direct contact with the borrowers and could not perform detailed underwriting concerning loan quality.
    - ✓ Instead, they relied on borrowers' credit scores, which steadily came to replace conventional underwriting.
- A strong trend toward low-documentation and then no-documentation loans entailing little verification of a borrower's ability to carry a loan soon emerged. Other subprime underwriting standards also quickly deteriorated.

- For example, allowed leverage on home loans (as measured by the loan-to-value ratio) rose dramatically.
- By 2006, the majority of subprime borrowers purchased houses by borrowing the *entire* purchase price!
- When housing prices began falling, these highly leveraged loans were quickly "underwater," meaning that the house was worth less than the loan balance, and many homeowners decided to "walk away" or abandon their homes—and their loans.

■ Adjustable rate mortgages (ARMs) also grew in popularity, quickly becoming the standard in the subprime market.

- These loans offered borrowers low initial or "teaser" interest rates, but these rates eventually would reset to current market interest yields, for example, the Treasury bill rate plus 3%.
- While many of these borrowers had "maxed out" their borrowing capacity at the teaser rate, as soon as the loan rate was reset, their monthly payments would soar, especially if market interest rates had increased.

- Despite these obvious risks, the ongoing increase in housing prices over the last decade seemed to have lulled many investors into complacency, with a widespread belief that continually rising home prices would bail out poorly performing loans.
- But starting in 2004, the ability of refinancing to save a loan began to diminish.
  - First, higher interest rates put payment pressure on homeowners who had taken out adjustable rate mortgages.
  - Second, as Figure 1.3 shows, housing prices peaked by 2006, so homeowners' ability to refinance a loan using built-up equity in the house declined.
- Mortgage default rates began to surge in 2007, as did losses on mortgage-backed securities. The crisis was ready to shift into high gear.

Mortgage Derivatives

- One might ask: Who was willing to buy all of these risky subprime mortgages?
  - Securitization, restructuring, and credit enhancement provide a big part of the answer.
    - ✓ New risk-shifting tools enabled investment banks to carve out AAA-rated securities from original-issue "junk" loans.

- ✓ Collateralized debt obligations, or CDOs, were among the most important and eventually damaging of these innovations.

- CDOs were designed to concentrate the credit (i.e., default) risk of a bundle of loans on one class of investors, leaving the other investors in the pool relatively protected from that risk.
  - The idea was to prioritize claims on loan repayments by dividing the pool into senior versus junior slices called *tranches*.
    - ✓ The senior tranches had first claim on repayments from the entire pool.
    - ✓ Junior tranches would be paid only after the senior ones had received their cut.
      - For example, if a pool were divided into two tranches, with 70% of the pool allocated to the senior tranche and 30% allocated to the junior one, the senior investors would be repaid in full as long as 70% or more of the loans in the pool performed, i.e., as long as the default rate on the pool remained below 30%.

- Even with pools comprised of risky subprime loans, default rates above 30% seemed extremely unlikely, and thus senior tranches were commonly granted the highest (i.e., AAA) rating by the major credit rating agencies, Moody's, Standard & Poor's, and Fitch. Large amounts of AAA-rated securities were thus carved out of pools of low-rated mortgages.

- Of course, we know now that these ratings were wrong.
  - The senior-subordinated structure of CDOs provided far less protection to senior tranches than investors anticipated.
  - When housing prices across the entire country began to fall in unison, defaults in all regions increased and the hoped-for benefits from diversifying loans geographically never materialized.
- Why had the rating agencies so dramatically underestimated credit risk in these subprime securities?
  - First, default probabilities had been estimated using historical data from an unrepresentative period characterized by a housing boom and an uncommonly prosperous economy.

- Moreover, the ratings analysts had extrapolated historical default experience to a new sort of borrower pool—one without down payments, with exploding payment loans, and with low- or no-documentation loans (often called *liar loans*).
  - ✓ Past default experience was largely irrelevant given these profound changes in the market.
- Moreover, there was excessive optimism about the power of cross-regional diversification to minimize risk.

■ Finally, there were apparent agency problems.

- The ratings agencies were paid to provide ratings by the issuers of the securities—not the purchasers.
- They faced pressure from the issuers, who could shop around for the most favorable treatment, to provide generous ratings.

Credit Default Swaps

- In parallel to the CDO market, the market in *credit default swaps* also exploded in this period.
  - A credit default swap, or CDS, is in essence an insurance contract against the default of one or more borrowers.
  - The purchaser of the swap pays an annual premium (like an insurance premium) for the protection from credit risk.
  - Credit default swaps became an alternative method of credit enhancement, seemingly allowing investors to buy subprime loans and insure their safety.
  - But, in practice, some swap issuers ramped up their exposure to credit risk to unsupportable levels, without sufficient capital to back those obligations.
    - ✓ For example, the large insurance company AIG alone sold more than $400 billion of CDS contracts on subprime mortgages.

The Rise of Systemic Risk

- By 2007, the financial system displayed several troubling features.
  - Many large banks and related financial institutions had adopted an apparently profitable financing scheme: borrowing short term at low interest rates to finance holdings in higher-yielding, long-term, illiquid assets and treating the interest rate differential between their assets and liabilities as economic profit.
    - ✓ But this business model was precarious: By relying primarily on short-term loans for their funding, these firms needed to constantly refinance their positions (i.e., borrow additional funds as the loans matured), or else face the necessity of quickly selling off their less liquid asset portfolios, which would be difficult in times of financial stress.
    - ✓ Moreover, these institutions were highly leveraged and had little capital as a buffer against losses.

- Large investment banks on Wall Street in particular had sharply increased leverage, which added ~~to~~ an underappreciated vulnerability to refunding requirements—especially if the value of their asset portfolios came into question.
- Even small portfolio losses could drive their net worth negative, at which point no one would be willing to extend them loans.

- Another source of fragility was widespread investor reliance on credit protection through products like CDOs.
  - Many of the assets underlying these pools were illiquid, hard to value, and highly dependent on forecasts of future performance of other loans.
  - In a widespread downturn, with rating downgrades, these assets would prove difficult to sell.
- The steady displacement of formal exchange trading by informal "over-the-counter" markets created other problems.
  - In formal exchanges such as futures or options markets, participants must put up collateral called *margin* to guarantee their ability to make good on their obligations.

- ✓ Prices are computed each day, and gains or losses are continually added to or subtracted from each trader's margin account.
- ✓ If a margin account runs low after a series of losses, the investor can be required to either contribute more collateral or close out the position before actual insolvency ensues.
- ✓ Positions, and thus exposures to losses, are transparent to other traders.

◆ In contrast, the over-the-counter markets where CDS contracts trade are effectively private contracts between two parties with less public disclosure of positions and less opportunity to recognize either cumulative gains or losses over time or the resultant credit exposure of each trading partner.

■ This new financial model was brimming with **systemic risk,** a potential breakdown of the financial system when problems in one market spill over and disrupt others.

◆ When lenders such as banks have limited capital, and are afraid of further losses, they may rationally choose to hoard their capital instead of lending it out to customers such as small firms, thereby exacerbating funding problems for their customary borrowers.

The Shoe Drops

- By fall of 2007, housing prices were in decline (Figure 1.3), mortgage delinquencies increased, and the stock market entered its own free fall (Figure 1.2). Many investment banks, which had large investments in mortgages, also began to totter.
- The crisis peaked in September 2008.
  - On September 7, the giant federal mortgage agencies Fannie Mae and Freddie Mac, both of which had taken large positions in subprime mortgage–backed securities, were put into conservatorship. The failure of these two mainstays of the U.S. housing and mortgage finance industries threw financial markets into a panic.
  - By the second week of September, it was clear that both Lehman Brothers and Merrill Lynch were on the verge of bankruptcy.
    - ✓ On September 14, Merrill Lynch was sold to Bank of America.
    - ✓ The next day, Lehman Brothers, which was denied equivalent treatment, filed for bankruptcy protection.

- Two days later, on September 17, the government reluctantly lent $85 billion to AIG, reasoning that its failure would have been highly destabilizing to the banking industry, which was holding massive amounts of its credit guarantees (i.e., CDS contacts). The next day, the Treasury unveiled its first proposal to spend $700 billion to purchase "toxic" mortgage-backed securities.

- A particularly devastating fallout of the Lehman bankruptcy was on the "money market" for short-term lending.
  - Lehman had borrowed considerable funds by issuing very short-term unsecured debt called *commercial paper*.
    - ✓ Among the major customers in the commercial paper were money market mutual funds, which invest in short-term, high-quality debt of commercial borrowers.
  - When Lehman faltered, fear spread that these funds were exposed to losses on their large investments in commercial paper, and money market fund customers across the country rushed to withdraw their funds.
    - ✓ In turn, the funds rushed out of commercial paper into safer and more liquid Treasury bills, essentially shutting down short-term financing markets.

- The freezing up of credit markets was the end of any dwindling possibility that the financial crisis could be contained to Wall Street.
  - Larger companies that had relied on the commercial paper market were now unable to raise short-term funds. Banks similarly found it difficult to raise funds.
    - ✓ Look back to Figure 1.1, where you will see that the TED spread, a measure of bank insolvency fears, skyrocketed in 2008.
  - With banks unwilling or unable to extend credit to their customers, thousands of small businesses that relied on bank lines of credit also became unable to finance their normal business operations.
    - ✓ Capital-starved companies were forced to scale back their own operations precipitously.
    - ✓ The unemployment rate rose rapidly, and the economy was in its worst recession in decades.
  - The turmoil in the financial markets had spilled over into the real economy, and Main Street had joined Wall Street in a bout of protracted misery.

The Dodd-Frank Reform Act

- The crisis engendered many calls for reform of Wall Street.
  - These eventually led to the passage in 2010 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, which proposes several mechanisms to mitigate systemic risk.
- The act calls for stricter rules for bank capital, liquidity, and risk management practices, especially as banks become larger and their potential failure would be more threatening to other institutions.
  - With more capital supporting banks, the potential for one insolvency to trigger another could be contained.
  - In addition, when banks have more capital, they have less incentive to ramp up risk, as potential losses will come at their own expense and not the FDIC's.
- Dodd-Frank also mandates increased transparency, especially in derivative markets.
  - For example, one suggestion is to standardize CDS contracts so they can trade in centralized exchanges where prices can be determined in a deep market and gains or losses can be settled on a daily basis.

- Margin requirements, enforced daily, would prevent CDS participants from taking on greater positions than they can handle, and exchange trading would facilitate analysis of the exposure of firms to losses in these markets.

- The act also attempts to limit the risky activities in which banks can engage.
  - The so-called Volcker Rule, named after former chairman of the Federal Reserve Paul Volcker, limits a bank's ability to trade for its own account and to own or invest in a hedge fund or private equity fund.
- The law also addresses shortcomings of the regulatory system that became apparent in 2008.
  - The U.S. has several financial regulators with overlapping responsibility, and some institutions were accused of "regulator shopping," seeking to be supervised by the most lenient regulator.
  - Dodd-Frank seeks to unify and clarify lines of regulatory authority and responsibility in one or a smaller number of government agencies.

- The act addresses incentive issues.
  - Among these are proposals to force employee compensation to reflect longer-term performance.
  - The act requires public companies to set “claw-back provisions” to take back executive compensation if it was based on inaccurate financial statements.
  - The motivation is to discourage excessive risk taking by large financial institutions in which big bets can be wagered with the attitude that a successful outcome will result in a big bonus while a bad outcome will be borne by the company, or worse, the taxpayer.
- The incentives of the bond rating agencies are also a sore point.
  - Few are happy with a system that has the ratings agencies paid by the firms they rate.
  - The act creates an Office of Credit Ratings within the Securities and Exchange Commission to oversee the credit rating agencies.

- It is still too early to know which, if any, of these reforms will stick.
  - The implementation of Dodd-Frank is still subject to considerable interpretation by regulators, and the act is still under attack by some members of Congress.
  - But the crisis surely has made clear the essential role of the financial system in the functioning of the real economy.