Solutions for Money Banking and the Financial System 4th Edition by Hubbard

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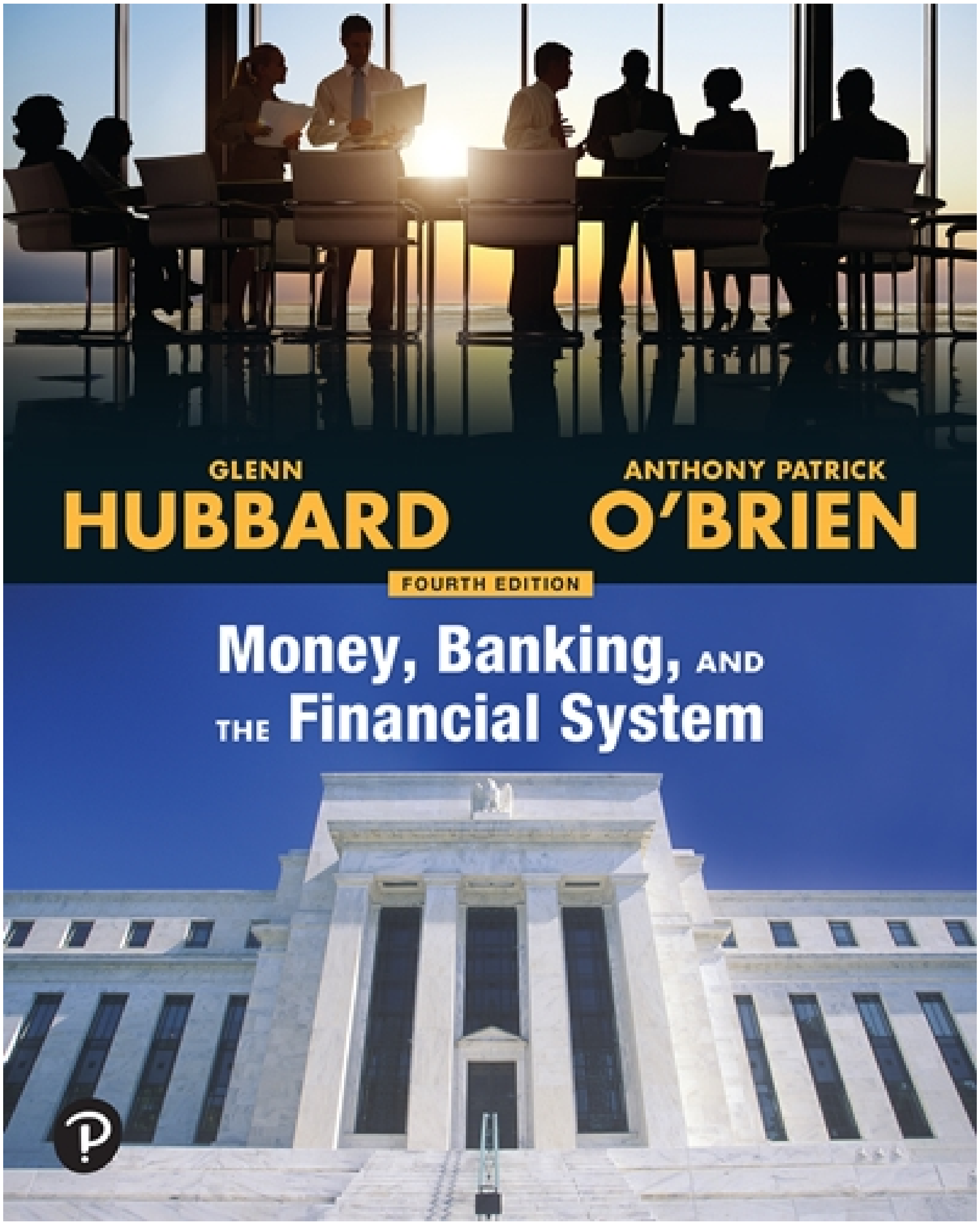


Solutions

Chapter 1
Introducing Money and the Financial System

■ Brief Chapter Summary and Learning Objectives

1.1 Key Components of the Financial System (pages 2–15)
Identify the key components of the financial system.

- Financial assets, financial institutions, the Federal Reserve, and financial regulators are the key components of the financial system.
- There are many different types of financial assets with distinctive characteristics.
- Financial institutions are distinguished by how they transfer funds from savers or lenders to borrowers.
- There are various regulators that provide oversight to different sectors of the financial system.

1.2 The Crises of 2007–2009 and 2020 (pages 15–19)
Provide an overview of the financial crises of 2007–2009 and 2020.

- The financial crisis of 2007-2009 provides an opportunity to explore the role and significance of the financial system in the economy.
- The crisis of 2020 again shows the uses of Fed tools in supporting the economy.

1.3 Key Issues and Questions About Money, Banking, and the Financial System (pages 19–21)
Explain the key issues and questions concerning the financial system.

- Beginning with Chapter 2, the start of each chapter highlights one key issue and a related question. Answers to the questions appear at the end of the chapters, using analysis from the chapters.

■ Key Terms

Asset, p. 2. Anything of value owned by a person or a firm.

Bond, p. 3. A financial security issued by a corporation or a government that represents a promise to repay a fixed amount of money.

Bubble, p. 16. An unsustainable increase in the price of a class of assets.

Commercial bank, p. 6. A financial firm that serves as a financial intermediary by taking in deposits and using them to make loans.

Diversification, p. 13. Splitting wealth among many different assets to reduce risk.

Interest rate, p. 3. The cost of borrowing funds (or the payment for lending funds), usually expressed as a percentage of the amount borrowed.

Liquidity, p. 13. The ease with which an asset can be exchanged for money.

Monetary policy, p. 11. The actions the Federal Reserve takes to manage the money supply and interest rates to pursue macroeconomic policy objectives.

Money, p. 3. Anything that is generally accepted in payment for goods and services or to pay off debts.

Dividend, p. 3. A payment that a corporation makes to its shareholders.

Federal funds rate, p. 12. The interest rate that banks charge each other on short-term loans.

Federal Reserve, p. 11. The central bank of the United States; usually referred to as "the Fed."

Financial asset, p. 2. An asset that represents a claim on someone else for a payment.

Financial crisis, p. 16. A significant disruption in the flow of funds from lender to borrowers.

Financial intermediary, p. 4. A financial firm, such as a bank, that borrows funds from savers and lends them to borrowers.

Financial liability, p. 4. A financial claim owed by a person or a firm.

Financial market, p. 2. A place or channel for buying or selling stocks, bonds, and other securities.

Foreign exchange, p. 4. Units of foreign currency.

Information, p. 14. Facts about borrowers and expectations of returns on financial assets.

Money supply, p. 3. The total quantity of money in the economy.

Portfolio, p. 8. A collection of assets, such as stocks and bonds.

Primary market, p. 9. A financial market in which stocks, bonds, and other securities are sold for the first time.

Risk sharing, p. 13. A service the financial system provides that allows savers to spread and transfer risk.

Secondary market, p. 9. A financial market in which investors buy and sell existing securities.

Securitization, p. 4. The process of converting loans and other financial assets that are not tradable into securities.

Security, p. 2. A financial asset that can be bought and sold in a financial market.

Stock, p. 3. A financial security that represents partial ownership of a firm; also called an equity.

■ Chapter Outline

The Coronavirus, Financial Markets, and the Flow of Funds

March 16, 2020 was "one of the worst days the financial markets have seen," according to an article in the *Wall Street Journal*, due to the effects of the Covid-19 pandemic. As it became clear that the pandemic would cause a significant recession, many investors stopped buying financial assets. Corporations, cities, and school districts all found it difficult to use financial markets to borrow money and so had difficulty paying their bills, including the salaries and wages of their employees. The Federal Reserve took steps to stabilize the *financial system* and restore the flow of credit to borrowers. A well-functioning financial system is a crucial determinant of economic prosperity. Without an efficient financial system, there will be little borrowing or lending, and so people will be stuck earning low incomes and the country will make very little economic progress.

To see the importance of borrowing and lending to an economy, suppose that you come up with an idea for a company: You design a smartphone application ("app") that will deliver a textbook chapter to a student's phone for a limited time for a low price. You have a lot of work to do to get your company off the ground—perfecting the software, designing the page in the app store where you will sell it, negotiating with textbook publishers to gain access to their books, and marketing your idea to students. You will have to spend a lot of money before you receive any revenue from sales. Where will you get this money?

We can demonstrate the importance of borrowing and lending to an economy by considering the process a company uses to develop a new product. The company will have to spend a lot of money before it receives any revenue from sales of the new product. Nearly every entrepreneur faces the same challenge. The role of the financial system is to channel funds from savers to businesses. During the economic crisis that began in 2007, the financial system was disrupted and large sections of the U.S. economy were cut off from the flow of funds they needed to thrive. The result was the worst recession the world had experienced since the Great Depression. Officials of the U.S. Treasury Department and the Federal Reserve took strong actions to restore financial markets. Although some of these actions were controversial, most economists believe that some government intervention was necessary to pull the economy out of a deep recession.

Teaching Tips

This chapter contains two innovations worth noting: (1) An overview of the Federal Reserve System and (2) an overview of the financial crises of 2007-2009 and 2020. Federal Reserve policy plays an important role in most money and banking courses. Because of the variety of new policies the Fed implemented during the financial crisis, many instructors have begun discussing the Fed earlier in their courses. In their own teaching, the authors found that they couldn't always rely on students recalling the basics of how the Fed operates from their principles courses. So the authors included an overview in this first chapter.

Many students have become more interested in the financial system due to the financial crises of 2007–2009 and 2020. The Covid-19 pandemic will be fresh in the minds of undergraduates and many of their families still bear financial scars from the deep recession of 2007–2009. Some students have formed their opinions of what happened during these episodes based on incomplete or erroneous information. Discussion of the two financial crises at the beginning of the semester can help to motivate the study of money, banking, and financial markets while also highlighting why students need to grasp the fundamental concepts underlying the financial system, including how financial assets are traded in financial markets, how financial institutions operate, and the role of regulatory agencies (including the Fed).

Instructors who prefer to leave discussion of the Federal Reserve and the financial crises for later in the course should feel free to do so by omitting these sections of the chapter. None of the discussion in later chapters directly requires knowledge of these topics.

1.1 Key Components of the Financial System (pages 2–15)

Learning Objective: Identify the key components of the financial system.

There are three major components of the financial system: Financial assets, financial institutions, and the Federal Reserve and other financial regulators.

A. Financial Assets

Financial assets can be divided among five categories: money, stocks, bonds, foreign exchange, and securitized loans. Money is anything that people are willing to accept in payment for goods and services or to pay off debts. Stocks, also called *equities*, are financial securities that represent partial ownership of a firm. When you buy a bond issued by a corporation or a government, you are lending the corporation or the government a fixed amount of money. Foreign exchange refers to units of foreign currency. Loans that banks could sell on financial markets become securities, so the process of converting loans into securities is known as securitization.

B. Financial Institutions

The financial system is made up of two types of financial institutions: (1) banks and other financial intermediaries and (2) financial markets. Funds flow from lenders to borrowers indirectly through financial intermediaries, such as banks, or directly through financial markets. Commercial banks are the most important financial intermediaries. Some financial intermediaries, such as savings-and-loans, savings banks, and credit unions, are legally distinct from banks, although these "nonbanks" operate in a very similar way by taking in deposits and making loans. Other financial intermediaries include investment banks, insurance companies, pension funds, mutual funds and exchange-traded funds (ETFs), and hedge funds. Financial markets are places or channels for buying and selling stocks, bonds, and other securities.

C. The Federal Reserve and Other Financial Regulators

The federal government of the United States has several agencies that are devoted to regulating the financial system, including:

- The Securities and Exchange Commission, which regulates financial markets
- The Federal Deposit Insurance Corporation, which insures deposits in banks
- The Office of the Comptroller of the Currency, which regulates federally chartered banks
- The Federal Reserve System, which is the central bank of the United States
- The Consumer Finance Protection Bureau, which was created by Congress to protect consumers from fraud and deceptive practices in financial markets.

Two of the major roles of the Fed are serving as the lender of last resort and conducting monetary policy. Monetary policy is the actions the Federal Reserve takes to manage the money supply and interest rates to pursue macroeconomic policy objectives such as high levels of employment, low rates of inflation, high rates of growth, and stability of the financial system. Figure 1.2 shows the location of the 12 districts of the Federal Reserve System.

D. What Does the Financial System Do?

The financial system provides three key financial services: risk sharing, liquidity, and information. Risk sharing gives savers and borrowers ways to reduce the uncertainty to which they are exposed. Liquidity is a measure of how easily an asset can be converted to cash. The financial system gathers and communicates information about borrowers' circumstances.

Teaching Tips

Solved Problem 1.1, "The Services That Securitized Loans Provide," shows students how to solve an economic problem by breaking it down step by step. Encourage students to read the *Solved Problems* in each chapter because this feature can help them solve homework problems on their own and develop the skills they'll need to perform well on exams.

1.2 The Crises of 2007–2009 and 2020 (pages 15–19)

Learning Objective: Provide an overview of the financial crises of 2007–2009 and 2020.
The only episode comparable to the financial crises and recessions of 2007–2009 and 2020 during the past 100 years was the Great Depression of the 1930s.

A. Origins of the 2007-2009 Financial Crisis

The origins of the financial crisis lie in large part in the housing bubble of 2000–2005. Many economists believe that changes in the market for mortgages played a key role in the housing bubble. By the 2000s, significant changes had taken place in the mortgage market. First, investment banks became significant participants in the secondary market for mortgages. Second, by the height of the housing bubble in 2005 and early 2006, lenders had greatly loosened the standards for obtaining a mortgage loan. The decline in housing prices that began in 2006 led to rising defaults among subprime and Alt-A borrowers, borrowers with adjustable-rate mortgages, and borrowers who had made only small down payments. By mid-2007, the decline in the value of mortgage-backed securities and the large losses suffered by commercial and investment banks began to cause turmoil in the financial system. Many investors refused to buy mortgage-backed securities, and some investors would only buy bonds issued by the U.S. Treasury. Banks began to restrict credit to all but the safest borrowers. The flow of funds from savers to borrowers, on which the economy depends, began to be greatly reduced.

B. The Deepening Crisis and the Response of the Fed and Treasury

Some economists and policymakers criticized the Fed and the Treasury for arranging the sale of the investment bank Bear Stearns to JP Morgan Chase in March 2008. The main concern was with moral hazard, which is the possibility that managers of other financial firms would make risky investments if they believed that the government would also save them from bankruptcy. In September 2008, the Fed and Treasury allowed another investment bank, Lehman Brothers, to go bankrupt. The fallout from the Lehman Brothers bankruptcy had widespread repercussions, including a sharp decline in most types of lending. In October 2008, Congress passed the *Troubled Asset Relief Program (TARP)*, under which the Treasury provided funds to commercial banks in exchange for stock in those banks. These actions by the Fed and the Treasury were meant to restore the flow of funds from savers to borrowers.

C. The Financial Crisis Caused by the COVID-19 Pandemic

The financial system suffered an immediate shock from the effects of the Covid-19. By mid-March 2020, many non-essential businesses were closed, reducing revenues and leading firms to lay off workers. Savers and investors became reluctant to lend because they worried that both household and business borrowers might have difficulty repaying loans. The Fed revived some of the lending programs used during the 2007–2009 financial crisis and set up new facilities with the goal of maintaining the flow of funds. The federal government also passed several aid packages. The main aid package was the Coronavirus Aid, Relief, and Economic Security (CARES) Act, a more than $2 trillion spending bill—the largest fiscal policy action in U.S. history. Many economists and policymakers believed the severity of the financial crisis resulting from the Covid-19 pandemic justified the Fed's use of innovative policies, but some worried that the Fed's actions in working closely with the U.S. Treasury during the crisis might reduce the Fed's independence.

1.3 Key Issues and Questions About Money, Banking, and the Financial System (pages 19-21)

Learning Objective: Explain the key issues and questions the concerning the financial system. This section lists the issues and questions that are addressed in the main text, beginning with Chapter 2.

Teaching Tip

The "Issues and Questions" in Section 1.3 serve as a roadmap for the topics the book will explore in the remaining chapters.

■ Solutions to the End-of-Chapter Questions, Problems, and Data Exercises

1.1 Key Components of the Financial System

Learning Objective: Identify the key components of the financial system.

Review Questions

1.1 a. Money: Anything that people are willing to accept in payment for goods and services or to pay off debts.

b. Stocks: Financial securities that represent partial ownership of a firm.

c. Bonds: Financial securities issued by a corporation or government to borrow money, in exchange for the rights to interest and principal payments.

d. Foreign Exchange: Units of foreign currency.

e. Securitized Loans: Loans that are tradable–that can be bought and sold in financial markets.

Not *every* financial asset is a financial security. Only a financial asset that can be bought and sold in a financial market is a financial security.

It is possible that a saver's asset could be a borrower's liability. For example, a bond issued by a corporation is a liability to the corporation because it represents a loan that corporation is legally obliged to pay back. From the point of view of the saver who buys the bond, however, the bond is an asset because it represents a financial claim on the corporation that issued the bond.

1.2 With direct finance, one party lends directly to the other party. Buying the stock of a firm's initial public offering (IPO) is direct financing. Direct financing requires financial markets. Indirect finance involves three parties: the borrower, the lender, and a financial intermediary who accepts the savings of the first party and independently lends those savings to the other party. A bank is an example of indirect finance because banks accept deposits from savers and lend the funds to borrowers. Indirect finance involves financial intermediaries.

1.3 The financial system is highly regulated because when left largely alone the financial system has experienced periods of instability that have led to economic recessions.

1.4 The Federal Reserve is the central bank of the United States. The president appoints the members of the Board of Governors with the consent of the Senate. The Federal Reserve's initial responsibility was to act as a lender of last resort. As the financial system and banking system have evolved, the Fed's role has expanded from being a lender of last resort to include the conduct of monetary policy to manage inflation, unemployment, and the stability of the financial system.

1.5 The financial system provides these services to savers:

i. Risk sharing, which allows savers to spread and transfer risk.

ii. Liquidity, which is the ease with which an asset can be exchanged for money.

iii. Collection and communication of information about borrowers and expectations of returns on financial assets.

Problems and Applications

1.6 Disagree. Insurance companies specialize in contracts to protect their policyholders from the risk of financial loss. These companies invest the insurance premiums they collect in stocks, bonds, and mortgages. Insurance companies channel funds from savers to borrowers, which makes them financial intermediaries.

1.7 a. A systemic problem is one that is inherent in the system, a problem of the system itself rather than specific firms or institutions.

b. While many industries are very important to the economy, banks are critical because of their important role as financial intermediaries in the economy, providing credit to households and businesses. Without bank loans to pay for inventories, help meet payrolls, and fund long-term capital projects, many businesses would have to cut back on operations or shut down.

1.8 a. Affirm is a financial intermediary in the sense that it channels funds from savers (from bank loans, so originally from savers) to borrowers. Borrowers on a peer-to-peer lending site can get a loan that they could not qualify for from a bank and at an interest rate lower than the interest rate charged on credit cards. Savers on a peer-to-peer lending site can get a higher interest rate than they would receive on bank savings accounts, many bonds, and other financial assets.

b. Affirm's borrowers may not meet bank lending standards, or the size of the loans offered by Affirm may be too small to be considered worthwhile by banks.

1.9 An IRA is an individual retirement account, and a 401(k) is a retirement savings plan sponsored by an employer. IRAs and 401(k) accounts allow households to invest in stocks and bonds which have a higher rate of return in the long run than bank deposits, and the income deposited in IRAs and 401(k) accounts is not taxed until the funds are withdrawn during retirement.

1.10 Directly lending your funds to an individual or a business decreases your liquidity (your money would be tied up in the loans); increases your risk (the loans may default); and increases your cost of determining whether the loans would be paid off because you would need to investigate the financial situation of the individual or business you are making a loan to. Depositing your funds in a bank allows you to withdraw your money when needed, transfers the risk of default to the bank, and eliminates your need to evaluate the loan.

1.11 Direct finance would make the process of an individual buying a car or a house much more difficult. The car or house buyer would either have to accumulate the savings to pay for the car or house or find someone willing to lend them the funds. Direct finance, as opposed to indirect finance through financial intermediaries, incurs more risk, less liquidity, and greater information costs. These drawbacks would increase the interest rate that the lender charges and reduce the quantity of loans.

1.12 Lenders win because borrowers would be more likely to make their mortgage payments. Borrowers win because they would be better able to afford their mortgage payments. Securitization slices the mortgages into numerous pieces because the mortgages are bundled together with similar mortgages in mortgaged-backed securities. Securitization makes renegotiating the loan more difficult because the bank does not own the loan; investors who purchased mortgage-backed securities generally own the loan. Moreover, the cost of negotiation with every investor holding the security may be very high. These difficulties substantially reduce the liquidity of mortgaged-backed securities and the amount of risk-sharing they provided during the 2007–2009 financial crisis was much less than expected. Also, the originators of some of the mortgage loans did a poor job of gathering information about the borrowers, particularly borrowers with poor credit histories.

1.2 The Crises of 2007–2009 and 2020

Learning objective: Provide an overview of the financial crises of 2007–2009 and 2020.

Review Questions

2.1 A bubble is an unsustainable increase in the price of a class of assets. Many economists believe that there was a housing bubble in the United States between 2000 and 2005 because, among other things, housing prices rose rapidly from 2000 to the beginning of 2006 and then fell more than 30% from 2006 to 2009.

2.2 Investment banks became significant participants in the secondary market for mortgages. Investment banks began buying mortgages, bundling large numbers of them together as mortgage-backed securities, and reselling them to investors. Also, lenders greatly loosened their standards for granting a mortgage loan. A subprime borrower is a borrower with a flawed credit history. Alt-A borrowers are borrowers who simply state their incomes but do not document their incomes.

2.3 The decline in housing prices led to rising defaults among subprime and Alt-A borrowers, borrowers with adjustable rate mortgages, and borrowers who had made only small down payments. As a result, mortgage-backed securities declined in value, causing losses for the investment institutions that owned them.

2.4 The Federal Reserve made loans to commercial banks and to investment banks. Congress passed the Troubled Asset Relief Program (TARP) under which the U.S. Treasury provided funds to commercial banks in exchange for stock in those banks. The Fed and U.S. Treasury also worked together to find a buyout partner for the investment bank Bear Stearns, and the Fed provided an $85 billion loan to American International Group (AIG). Likewise, the Fed and the Treasury worked together in 2020 to create lending facilities and make loans to businesses and governments affected by the Covid-19 pandemic. The interaction between the Treasury and the Fed has caused some concern about the independence of the Fed.

Problems and Applications

2.5 There can be no bubble in automobiles and refrigerators because those products do not gain value over time. If an increase in demand causes the prices of automobiles or refrigerators to rise, manufacturers can easily increase production, which should cause prices to quickly fall to their previous levels. Increasing the supply of houses is more time consuming and can be difficult to achieve in some urban areas or in places where zoning restrictions make new construction difficult.

2.6 The primary issue involved in measuring housing prices is that houses are not homogeneous goods. Because no two houses are exactly the same, the price of an "average" house can be difficult to determine. In addition, in constructing an index of housing prices, economists need to decide whether to use the sale price as the value of the house, or the appraised value. Even if the housing index is based solely on selling prices, it may not account for quality improvements (renovations to the home) or declines (the quality of neighborhood schools has deteriorated). There are many other features of a home or a neighborhood that are not easily identifiable from an index number.

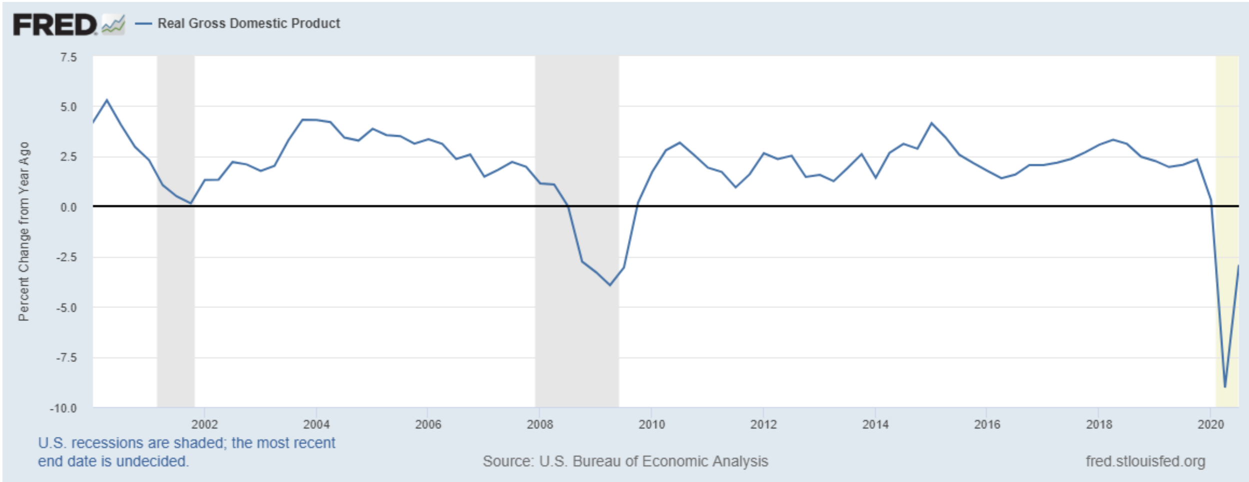
2.7 The secondary mortgage market allows banks to transfer the risk of holding mortgage loans to investors who buy mortgage-backed securities. Access to the funds from these investors allows banks to offer a lower interest rate than if the banks held the loans themselves. The Federal government has intervened in the housing market to promote ownership by creating Fannie Mae and Freddie Mac. The federal government believes that there are positive externalities to home ownership. Neighborhoods become more stable with less litter, vandalism, and crime when more of the people who live there own their homes rather than rent them. Because individual homebuyers don't take this externality into account when deciding whether to purchase a home, an inefficiently small number of homes may be purchased. Government intervention may result in a more efficient quantity of homes being purchased. Economists and policymakers debate how large the positive externality associated with homeownership may be and whether establishing Fannie Mae and Freddie Mac was the best way to deal with the externality.

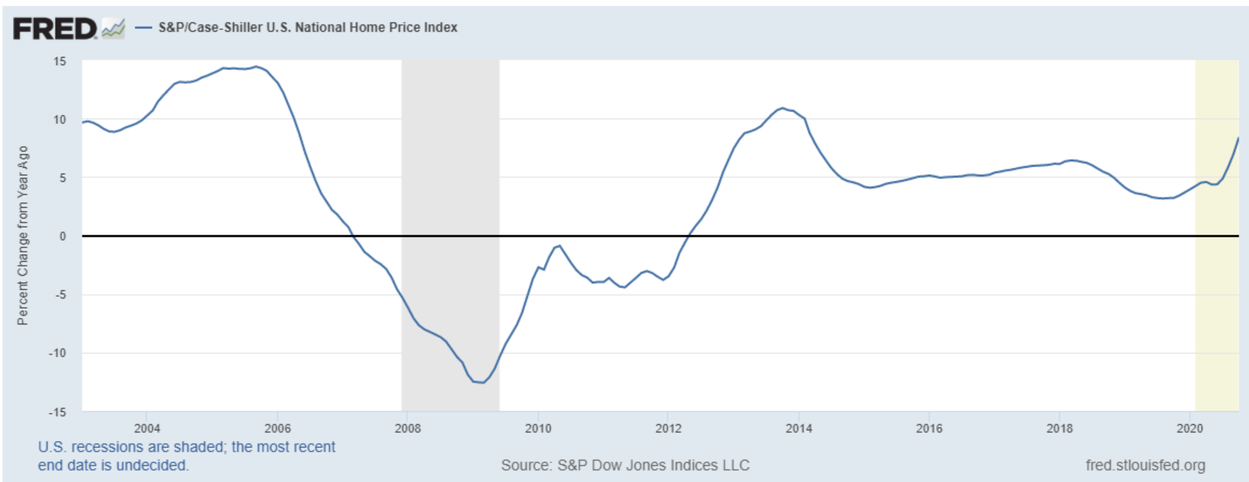
2.8 During the financial crisis of 2007–2009, the federal government's role was largely in helping the Fed to purchase troubled assets and in restoring the flow of funds from savers to borrowers. The disruption in the flow of funds during this period was the worst since the Great Depression of the 1930s. During the Covid-19 crisis, the federal government was faced with the unusual situation of many businesses being closed or operating at reduced capacity because of orders from mayors and governors or because consumers were reluctant to dine in restaurants, go to movies or plays, or attend sporting events for fear of contracting the virus. As a result, the federal government took a far more active role than it had during the 2007–2009 financial crisis, particularly in supplementing unemployment benefits and sending checks to most families, as well as acting with the Fed to facilitate lending to a number of sectors of the economy.

Data Exercises

D1.1 The first graph that follows shows the annual percentage change in real GDP (in chained 2009 dollars) for 2000–2020. The second graph that follows and the data from Figure 1.3(b) is updated and changed to a quarterly frequency and percentages change from a year ago.

Movements in real GDP correspond well, but not perfectly, to movements in the Case-Shiller price index of houses from 2000 through 2012. From 2000 through 2005, the Case-Shiller price index of houses increased, as did real GDP. The decline in housing prices, which started in 2006, preceded the decline in real GDP, which began in 2008. Both housing prices and real GDP declined in 2008 and 2009. Real GDP rose through the 2010 to 2019 period, but housing prices did not begin to rise until 2012. In early 2020, the growth rate of real GDP plummeted, but housing prices did not fall, fueled by low mortgage rates and a persistent shortage of housing in some areas.


FRED
Real Gross Domestic Product
Percent Change from Year Ago
7.5
5.0
2.5
0.0
-2.5
-5.0
-7.5
-10.0
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
U.S. recessions are shaded; the most recent end date is undecided.
Source: U.S. Bureau of Economic Analysis
fred.stlouisfed.org


FRED
S&P/Case-Shiller U.S. National Home Price Index
Percent Change from Year Ago
15
10
5
0
-5
-10
-15
2004
2006
2008
2010
2012
2014
2016
2018
2020
U.S. recessions are shaded; the most recent end date is undecided.
Source: S&P Dow Jones Indices LLC
fred.stlouisfed.org