

## Financial Crises

*There was a time when the credit markets had essentially frozen and when blue chip industrial companies were having trouble raising money. I knew then we were on the brink...We easily could have had unemployment of 25 percent."*

—Henry M. Paulson (former Treasury Secretary),  
commenting on the state of the U.S. economy in 2008

Throughout this book, we have seen that many kinds of shocks can decrease an economy's output in the short run. Examples include increases in taxes, decreases in consumer confidence, and increases in oil prices. However, one kind of shock is especially devastating to an economy: a **financial crisis**. Such a major disruption of the financial system typically involves sharp falls in asset prices and failures of financial institutions. In the United States, a financial crisis in the early 1930s triggered the Great Depression. A U.S. crisis that started in 2007 produced a recession that by many measures was the worst since the Depression. Financial crises have also damaged economies around the world, such as those of Argentina in 2001 and Greece in 2009–2010.

Regardless of where or when they occur, financial crises are complex events; the feedbacks among different parts of the financial system and the economy make them dangerous and difficult to stop. To understand crises, we must understand the workings of financial markets and the banking system (the topics of Chapters 15–18), the short-run behavior of the aggregate economy (Chapters 9–12), and the effects of macroeconomic policies (Chapters 13–14).

In this chapter, we first look at the events in a typical financial crisis and the various ways in which governments and central banks respond to them. We then use this background to examine what happened to the United States starting in 2007 and discuss some of the reforms that have been proposed in the wake of this crisis to make future financial crises less likely or less severe. Finally, we explore financial crises in emerging economies and what makes them different from those in advanced economies, including the role of the International Monetary Fund in combating crises.



## 19-1 The Mechanics of Financial Crises

No two financial crises are exactly alike, but most share a few basic features. We first discuss what happens to the financial system in a crisis and then look at how a crisis affects the rest of the economy.

### Events in the Financial System

At the center of most crises are declines in asset prices, failures of financial institutions caused by insolvency or liquidity crises, or some combination of these events.

**Asset-Price Declines** A crisis may be triggered by large decreases in the prices of stocks, real estate, or other assets. Many economists interpret these decreases as the ends of asset-price bubbles. Recall from Chapter 16 that a bubble occurs when asset prices rise far above the present value of the expected income from the assets. Then, at some point, sentiment shifts: people begin to worry that asset prices are too high and start selling the assets, pushing prices down. Falling prices shake confidence further, leading to more selling, and so on. Asset prices may fall over periods of months or years, or a crash may occur in the course of a single day.

**Insolvencies** In a typical crisis, decreases in asset prices are accompanied by failures of financial institutions. An institution may fail because it becomes insolvent; that is, its assets fall below its liabilities and its net worth (capital) becomes negative. A commercial bank can become insolvent because of loan defaults, increases in interest rates, and other events. When a bank becomes insolvent, regulators are likely to force its closure.

Other kinds of financial institutions can also become insolvent. Hedge funds, for example, borrow money from banks to purchase risky assets. If the prices of these assets decline, a fund's net worth can become negative. When this happens, the fund is likely to default on its debts and go out of business.

Insolvencies can spread from one institution to many others because financial institutions have debts to one another. Banks have deposits at other banks, lend to one another in the federal funds market, and lend to hedge funds and investment banks. If one institution fails, its depositors and lenders suffer losses, and they, in turn, may become insolvent.

**Liquidity Crises** Even if a financial institution is initially solvent, it can fail because it doesn't have enough liquid assets to make payments it has promised. The classic example of a liquidity crisis is a bank run. Depositors lose confidence in a bank, try to withdraw large amounts from their accounts, and exhaust the bank's reserves and liquid securities. To make the payments it has promised its depositors, the bank must sell its illiquid assets at fire-sale prices (less than the assets' true value), and losses on these transactions can push it into insolvency.

Liquidity crises can also occur at nondepository institutions, such as hedge funds and investment banks. These institutions often raise funds by making short-term loans and issuing *commercial paper* (short-term bonds). To stay in business,



they must raise new funds continuously to pay off maturing debts. If creditors lose confidence and cut off funding, an institution can be forced into a fire sale of its illiquid assets, leading to insolvency.

Liquidity crises can spread from one financial institution to another largely for psychological reasons. If a bank experiences a run, for example, depositors at other banks start worrying about the safety of their own funds. They may start making withdrawals, thus triggering an economy-wide bank panic and widespread failures.

## Financial Crises and the Economy

Financial crises have both direct and indirect costs. The direct costs include losses to asset holders when asset prices fall. They also include losses from financial institution failures. Owners of a failed institution lose their equity, and the institution's creditors lose funds they have lent. When a failed institution is a bank, losses also fall on uninsured depositors and the Federal Deposit Insurance Corporation (FDIC).

Although these direct costs can be large, the greatest costs from financial crises come from their indirect effects. A crisis can set off a chain of events that plunges the whole economy into a recession. Figure 19-1 summarizes the key parts of this process.

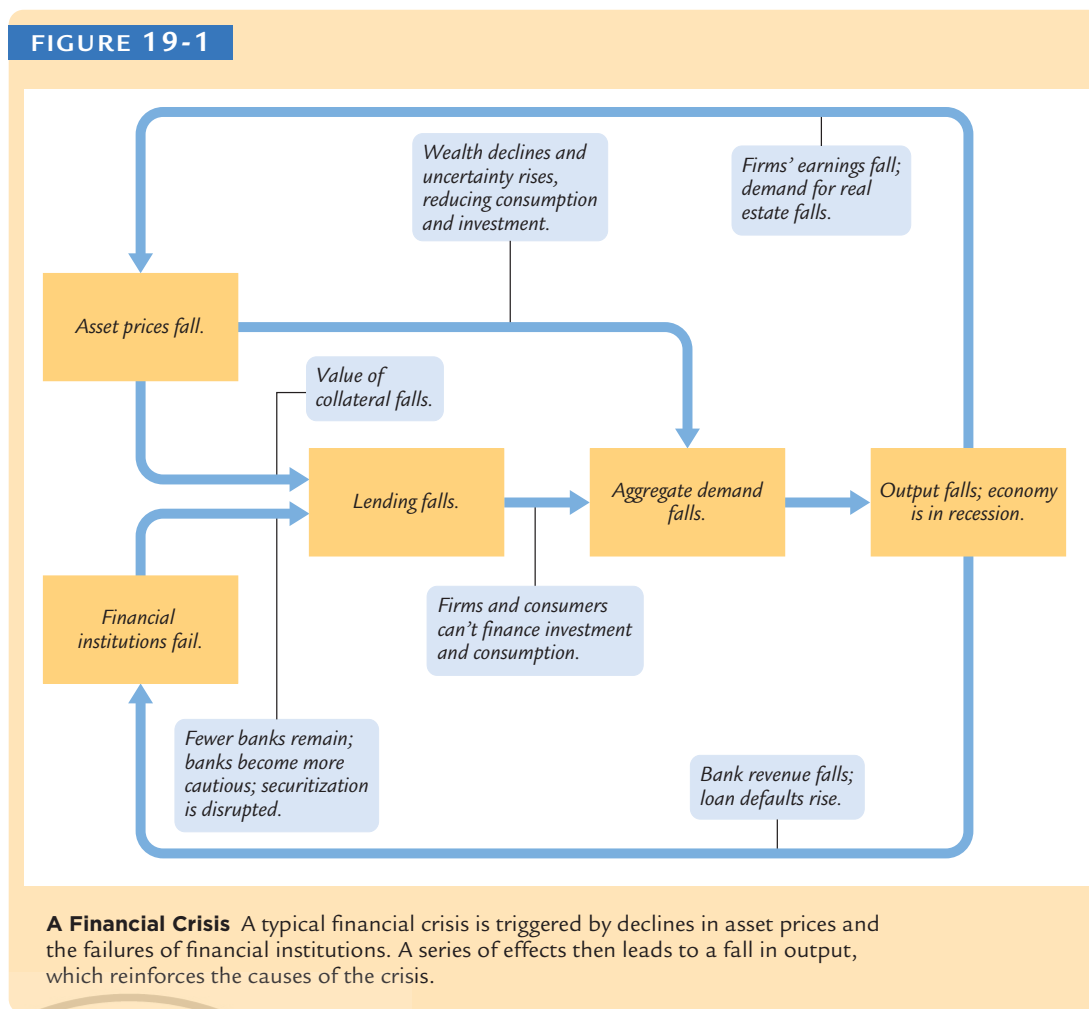
**Lending and Spending** A fall in asset prices can cause a sharp fall in aggregate demand. One reason is that asset holders suffer a loss of wealth, which leads them to reduce their consumption. Falling asset prices also shake the confidence of firms and consumers, who may interpret them as signs that the overall economy is in trouble. Uncertain of the future, they put off major decisions about spending until things settle down, and investment and consumption fall.

A fall in asset prices also makes it harder for individuals and firms to borrow. Lower prices decrease the value of borrowers' collateral, which is required to overcome adverse selection and moral hazard in loan markets. The result is a **credit crunch**, a sharp decrease in bank lending. Some borrowers are cut off from loans or face higher interest rates.

Failures of financial institutions also cause a credit crunch. When commercial banks fail, they stop lending. Surviving banks may fear failure and become more conservative in approving loans. They may also reduce loans in order to increase their liquid assets and guard against runs. When investment banks fail, securitization falls, which reduces the funds available for bank loans.

A credit crunch means less spending by firms and individuals who rely on credit. This decrease in investment and consumption reduces aggregate demand, adding to the direct effect of asset-price declines. In the short run, a fall in aggregate demand reduces output. In this way, a crisis can cause a deep recession.

**A Vicious Circle** Unfortunately, that's not the end of the story. If a financial crisis causes a recession, the recession can then exacerbate the crisis. Asset prices are likely to fall further. For example, stock prices fall because the recession reduces firms' expected profits, and real estate prices fall because of lower demand for real estate.



A recession also worsens the problems of financial institutions. Banks lose revenue because a recession reduces the demand for loans. Firms go bankrupt, increasing loan defaults. Worries about these problems make bank panics more likely. For all these reasons, bank failures rise during a recession.

Because of these feedbacks, a financial crisis can trigger a vicious circle of falling output and worsening financial problems. Once a crisis starts, it can sustain itself for a long time.

So far we've discussed the most common elements of crises. Crises often have additional wrinkles—other ways they hurt the economy and build on themselves. To see how much can go wrong, let's examine the Great Depression of the 1930s. Chapter 11 analyzed that disaster using the *IS-LM* model; here, we see that our model of financial crises can shed further light on this historic event.

**CASE STUDY****Disaster in the 1930s**

The Depression began in the early 1930s with a financial crisis that had the classic ingredients of falling asset prices and failures of financial institutions. The fall in asset prices started with a stock market crash: on October 28, 1929, the Dow Jones Index fell 13 percent. After the crash, stock prices kept falling: the Dow Index fell from 365 before the crash to 41 in 1932, a decrease of 89 percent.

The stock market crash created great uncertainty about the economy because a crash of this size was an unprecedented event. Uncertainty led firms and consumers to postpone major purchases, such as automobiles, so aggregate demand fell.

A wave of bank failures then rolled across the country from 1930 to 1933. Midwestern banks failed when farmers defaulted on loans, and these failures made people nervous about other banks. Eventually a series of panics swept the country as depositors lost confidence and, with no deposit insurance to protect them, rushed to withdraw funds. President Franklin Roosevelt eventually ended the panics with the bank holiday of March 1933, but more than a third of all U.S. banks failed.

Falling stock prices and massive bank failures reduced bank lending dramatically, resulting in a credit crunch. Because firms and individuals couldn't borrow, investment and consumption fell, causing a decrease in aggregate demand.

As usual in crises, falling aggregate demand and hence falling output magnified the problems of the financial system, especially the stock market. With the economy depressed, firms' earnings prospects were bleak. Stock prices stayed low: it took until 1954 for the Dow Index to climb back to its 1929 level.

As we discussed in Chapter 11, a special twist in this episode was a sharp fall in the money supply, a result of the Federal Reserve's passive response to the bank panics. This development led to deflation: the aggregate price level fell by 22 percent from 1929 to 1933. Deflation in turn increased the real burden of debts, causing many borrowers, especially farmers, to default on bank loans. These defaults further weakened banks and prolonged the severe credit crunch. The Depression was made "Great" because so many problems occurred at the same time. ■

**19-2 Financial Rescues**

A financial crisis is a vicious circle in which problems in the financial system and falling aggregate demand reinforce one another. Governments and central banks seek to break this cycle. They do so partly with expansionary fiscal and monetary policies, which boost demand. In crises, however, policy actions are typically not limited to these standard macroeconomic tools. Policymakers also take a range of actions aimed directly at reducing the problems of the financial system, especially the failures of financial institutions.



Generally these policies involve the use of government or central-bank funds to prevent institutions from failing or to compensate individuals or firms that are hurt by failures. In popular discussion, such policies are often called *bailouts*. This umbrella term is imprecise, however, because it is used for policies that vary widely. Bailouts range from giveaways of government money to loans or asset purchases that are costless or even profitable for taxpayers. This section explores some policy actions aimed at ending a financial crisis and looks at the debate about their benefits and costs.

### Liquidity Crises and the Lender of Last Resort

Liquidity crises at financial institutions, such as bank panics, are one cause of broader financial crises. A liquidity crisis can push a solvent institution into insolvency, causing it to fail for no good reason. Most economists think policymakers should try to prevent such occurrences.

Fortunately, a central bank has a simple solution for liquidity crises. It can make emergency loans to institutions that are running out of liquid assets, allowing them to avoid fire sales of their illiquid assets. A borrowing institution remains solvent and repays the central bank when its liquidity crisis subsides. To ensure repayment, the central bank requires the borrower to pledge some of its assets as collateral for the loan.

A financial institution facing a liquidity crisis needs help from the central bank because it has trouble borrowing from other private institutions. Potential lenders are wary of an institution that could be driven into insolvency and default on its debts. When the central bank steps in, it acts as **lender of last resort** to an institution with no other source of funds.

When Congress established the Federal Reserve in 1913, the main purpose was to create a lender of last resort for U.S. banks. Unfortunately, during the bank panics of the early 1930s, the Fed underestimated the danger to the banking system and the economy and therefore did not lend to many banks. The Fed learned from this mistake and has acted quickly in more recent liquidity crises.

Deposit insurance helps prevent bank runs, thus reducing the need for a lender of last resort, but it does not eliminate the need entirely. Some banks raise most of their funds through borrowing and deposits that exceed the limit on insurance. These uninsured funds disappear quickly if depositors and lenders lose confidence in a bank. A lender of last resort is needed for such an emergency.

In the United States, a loan from the Federal Reserve to a bank is called a **discount loan**. A bank facing a liquidity crisis can apply for such a loan, which the Fed approves if it judges that the bank is solvent and can post sufficient collateral. The Fed sets the interest rate on discount loans, the *discount rate*, at a level higher than the federal funds rate, the rate on overnight loans between banks. This policy encourages banks to borrow from one another in normal times and to approach the Fed only in emergencies when they can't borrow elsewhere.

Discount loans are available only to commercial banks and savings institutions, financial institutions that fit the definition of "bank": they accept deposits and make loans. At times, however, the Fed has stretched its role as lender of last resort





by providing liquidity to other financial institutions. After the terrorist attacks of September 11, 2001, for example, the Fed encouraged banks to lend to securities firms facing liquidity crises; in turn, the Fed promised to lend any necessary funds to the banks. As we discuss later in this chapter, the Fed lent money directly to securities firms during the financial crisis of 2007–2009.

### Giveaways of Government Funds

When a central bank acts as lender of last resort, it helps a solvent institution facing a liquidity crisis. The loan prevents the institution from failing, and it is repaid with interest. Ultimately, there is no cost to the central bank, the government, or taxpayers.

Not all failures of financial institutions are caused by liquidity crises. Sometimes an institution simply loses money, so its assets fall below its liabilities and it becomes insolvent. Normally, this causes the institution to fail and default on its debts. In some cases, however, policymakers intervene to prevent this outcome. Instead of lending to an institution, the government or central bank gives money away. It may give funds to the failing institution to restore its solvency and keep it in business. Alternatively, it may let the institution fail but compensate other individuals and institutions that are hurt by the failure.

Deposit insurance commits the government to paying part of the costs of bank failures. The FDIC compensates depositors for their losses up to some limit. Today, few economists question the desirability of deposit insurance, at least in countries with effective bank regulation. The controversial issue is whether compensation should extend beyond promised insurance payments. When a bank fails, should the government protect uninsured depositors and creditors? Should it aid institutions with no insurance guarantees, such as investment banks and hedge funds? Let's discuss the debate over these questions.

**The Pros and Cons of Giveaways** When the government gives away funds beyond required insurance payments, its purpose is to prevent the problems of an insolvent financial institution from spreading. As we've discussed, banks and other institutions deposit money and lend to one another. If one institution fails, it defaults on debts to other institutions, and their losses can cause them to fail. A rash of failures can produce a financial crisis and push the economy into a recession. The government can prevent this outcome by preventing the first institution from failing or by compensating other institutions for losses from the initial failure.

Such government intervention has two kinds of costs. The first is the direct costs of payments from the government. These costs are ultimately borne by taxpayers. The second cost is a worsening of moral hazard, the problem that financial institutions may misuse the funds they raise.

In particular, the prospect of government aid makes it more likely that institutions will take excessive risks, lose money, and become insolvent. Normally, an institution's creditors and uninsured depositors monitor what happens to their money and cut off funds if the institution misuses them. But if the government intervenes when institutions face failure, everyone comes to expect protection



from losses. Nobody has incentives to monitor, so institutions can easily raise funds to finance gambles. These institutions earn a lot if the gambles succeed, and if they lose, the losses fall largely on taxpayers.

When any given institution is in danger of failing, it's hard to know how badly the failure would damage the financial system. It's also hard to gauge how much a government rescue will increase moral hazard in the future. Because of these uncertainties, economists differ sharply on the desirability of government intervention.

**Too Big to Fail** Historically, decisions about whether to rescue an insolvent financial institution have been influenced strongly by the institution's size. A large institution has more links to other institutions than a small one does. It is likely to borrow heavily, and if it is a bank, it is likely to hold deposits from other banks. Consequently, regulators fear that the failure of a large institution threatens the financial system, whereas the failure of a small institution is relatively harmless. In other words, some financial institutions are deemed **too big to fail (TBTF)**.

This term was coined by a congressman after the rescue of Continental Illinois Bank in 1984, an episode discussed in the following case study.

#### CASE STUDY

### The Continental Illinois Rescue

Before 1984, the U.S. government had never extended significant aid to an insolvent financial institution beyond promised payments on deposit insurance. That changed when Continental Illinois, then the nation's seventh-largest commercial bank, ran into trouble. Continental had lent heavily to energy companies and to the governments of developing countries, and both groups defaulted during a worldwide recession in the early 1980s. In May 1984, Continental was on the brink of failure.

Regulators feared that the failure of Continental Illinois would have widespread effects. Over 2,000 smaller banks had accounts at Continental. For 66 of these banks, deposits at Continental exceeded their total capital; for another 113, the deposits were more than half of their capital. Regulators feared that many of these banks would fail if they lost their deposits, shaking confidence in the financial system. The comptroller of the currency, the head regulator of national banks, said after the crisis that Continental's failure would have caused "a national, if not international, financial crisis the dimensions of which were difficult to imagine."<sup>1</sup>

Policymakers acted aggressively to save Continental. Despite the bank's insolvency, the Fed lent it \$3.6 billion to keep it in operation. The FDIC promised to protect all of Continental's creditors and depositors, waiving the usual limit on insurance. Eventually, the FDIC bought Continental from its shareholders, added capital, and sold it to Bank of America. In the process, the FDIC lost about \$1 billion.

These actions were controversial at the time, and they remain so. Critics stress the moral hazard problem and argue that policymakers overstated the risks from

<sup>1</sup> Todd Conover, testimony before House Banking Committee, September 19, 1984.





a failure of Continental. The debate over treating some institutions as too big to fail continued in the years after the Continental rescue and intensified during the financial crisis of 2007–2009. ■

## Risky Rescues

The potential failure of a large financial institution creates a dilemma for policymakers. Letting the institution fail and default on its debts can damage the financial system, but preventing this outcome is costly for taxpayers and creates moral hazard. Policymakers wrestled with this dilemma repeatedly during the financial crisis of 2007–2009. Looking for a compromise between inaction and giveaways of government funds, they developed two new ways to aid troubled financial institutions: risky loans and equity injections. Unlike loans to solvent institutions facing liquidity crises, these policies expose taxpayers to a risk of losing money. On the other hand, unlike traditional giveaways of government funds, risky loans and equity injections *may not* cost the government anything and might even earn money. Let's discuss these policies and the rationale for using them.

**Risky Loans** In this type of rescue, the central bank moves beyond its traditional role as lender of last resort, in which it makes *riskless* loans to solvent institutions. When the central bank makes risky loans to prevent failures of financial institutions, it is not certain the loans will be paid back.

Chapter 17 touched on examples of risky loans by the Federal Reserve. In some cases, the Fed has taken on risk by lending to institutions that might fail. In September 2008, for example, it lent \$85 billion to the insurance conglomerate AIG, which was near bankruptcy because of losses on credit default swaps. This loan prevented AIG from defaulting immediately on debts to other institutions, but it meant the Fed was on the hook for \$85 billion if, as many feared, AIG declared bankruptcy later.

In other cases, the Fed has taken on risk by lending against collateral of uncertain value. In March 2008, it lent \$29 billion to JP Morgan Chase to finance the takeover of the investment bank Bear Stearns. The collateral was some of Bear's holdings of subprime mortgage backed securities—the securities whose decline in value had pushed Bear to the brink of bankruptcy. Crucially, the loan to JP Morgan was made *without recourse*: if the value of the collateral declined further, the Fed would be entitled only to the collateral, not the \$29 billion it had lent. The Fed stood to lose if the subprime crisis worsened.

During the crisis of 2007–2009, many economists and politicians criticized the Fed for risking money on troubled financial institutions. Fed officials argued, however, that the risks were modest. Part of their rationale was that the Fed's actions would ease the financial crisis, which in turn would reduce the risk that its debtors would default or that the value of their collateral would fall. That is, by agreeing to accept some of the potential losses from the financial crisis, the Fed hoped to prevent these losses from occurring. This strategy was similar to the logic of deposit insurance: by agreeing to bear the costs of a harmful event (bank runs), the government makes the event less likely.



**Equity Injections** A financial institution becomes insolvent when its capital or equity falls below zero. It can restore solvency and stay in business if it raises new capital by issuing stock. If an institution is troubled, however, individuals and private firms may not be willing to buy its stock. This problem is the rationale for **equity injections**, or purchases of stock, by the government. The U.S. Treasury Department pioneered this rescue policy in 2008 and 2009.

In buying the stock of a financial institution, the government provides the institution with capital to ensure its solvency. Like any purchaser of stock, the government receives an ownership share in the institution and it takes on risk. If the institution ultimately fails, or if it requires further assistance to survive, the government can lose money. On the other hand, the government can earn a profit on behalf of taxpayers if the institution recovers and its stock price rises. Equity injections are controversial because opinions vary on the government's likely gains or losses.

Government purchases of stock are also controversial because they deviate from a financial system based on free markets. Critics argue that the behavior of government-owned institutions may be influenced by politics. In 2008, for example, the Treasury imposed restrictions on executive pay as a condition for purchasing stock. Many voters supported such restrictions, believing that executives who had played a role in the financial crisis should not receive huge salaries and bonuses. Critics argued that high pay was needed to retain the most talented executives and that the government should not interfere with the market forces determining salaries.

### 19-3 The U.S. Financial Crisis of 2007–2009

The Great Depression of the 1930s showed how a financial crisis can have devastating macroeconomic repercussions. For many years after World War II, however, no such crisis caused an economic upheaval in the United States. Bank failures during the savings-and-loan crisis of the 1980s cost the government \$124 billion and embarrassed regulators, but the episode had modest effects on the overall economy. In the 1990s and into the 2000s, failures of financial institutions were rare. Many economists credited the bank regulation described in Chapter 18 for keeping the financial system safe.

More generally, the 1990s and early 2000s were a period of stability in the U.S. economy. The high inflation of the 1970s and the deep recession caused by the disinflation of the 1980s joined the Great Depression in the history books. Economists often referred to the 1990s and 2000s as the “Great Moderation” because of its low inflation and steady output growth.

Over 2007–2009, everything changed. The United States experienced a 55 percent fall in the stock market, the failures of some of the country's most prestigious financial institutions, and a disruption in lending throughout the economy. The worst recession since the 1930s pushed the unemployment rate from under 5 percent in 2007 to over 10 percent in late 2009.



As with any disaster, controversy abounds about what events were critical and who deserves the blame. With hindsight, however, we can see that a series of adverse events had central roles in the financial crisis. The timeline in Figure 19-2 summarizes these events and also shows the unprecedented responses of the government and Federal Reserve to the crisis. Some economists have bitterly criticized these actions, although others think they saved the economy from an even worse fate—a collapse that could have rivaled the 1930s for the worst economic disaster in U.S. history.

## 2006-2007

### The Subprime Crisis and the First Signs of Panic

In 2006 and 2007, as housing prices fell and defaults on subprime mortgages rose, it became increasingly clear that institutions that had made subprime loans would suffer large losses. Two large finance companies that specialized in subprime mortgages, New Century Financial and Ameriquest, declared bankruptcy in April and August 2007, respectively. Other financial institutions that held securities backed by subprime mortgages suffered billions of dollars of losses, leading firms such as Citigroup and Morgan Stanley to fire their chief executives in 2007.

Yet few saw the subprime crisis as a threat to the entire financial system or economy. In mid-2007, economists estimated that financial institutions might lose a total of \$150 billion on subprime mortgages—not pocket change, but not a lot compared to the U.S. annual GDP of \$14 trillion.

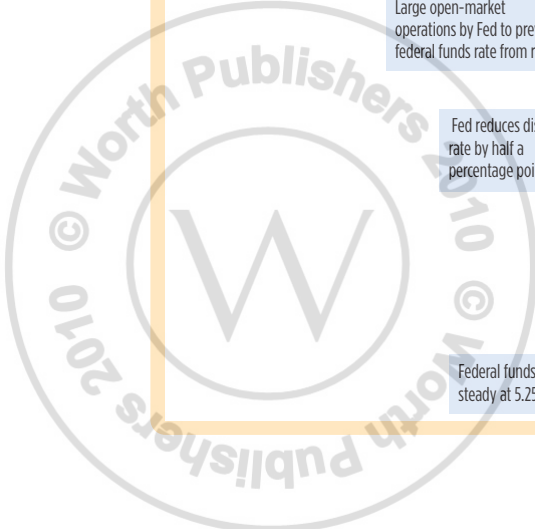
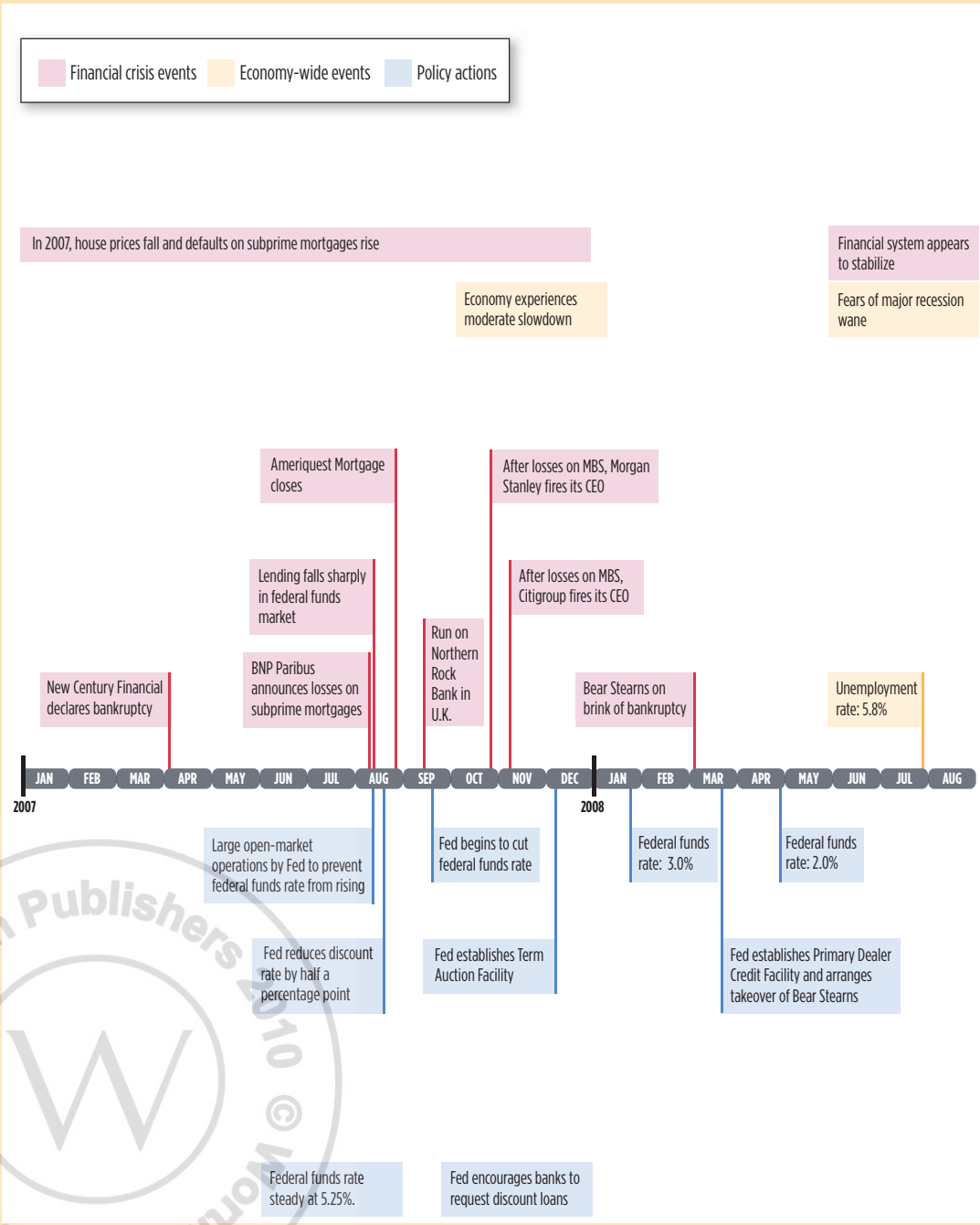
**The Liquidity Crisis of August 2007** Warning signs of the economic disaster to come showed up in the summer of 2007. As losses on subprime mortgages rose, banks started to worry about one another. Could losses grow to the point that they pushed major institutions into insolvency? On August 9, the huge French investment bank BNP Paribas announced large losses on subprime mortgages, news that ratcheted up the fears of U.S. bankers. These fears showed up in the federal funds market, in which banks lend to one another. Lenders suddenly became scarce because banks questioned whether borrowers would be able to repay their loans.

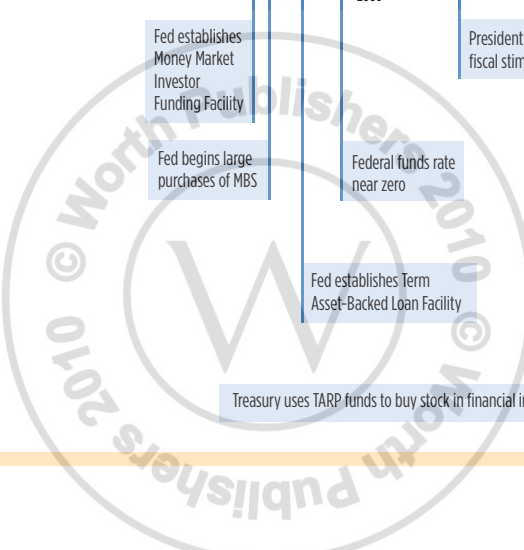
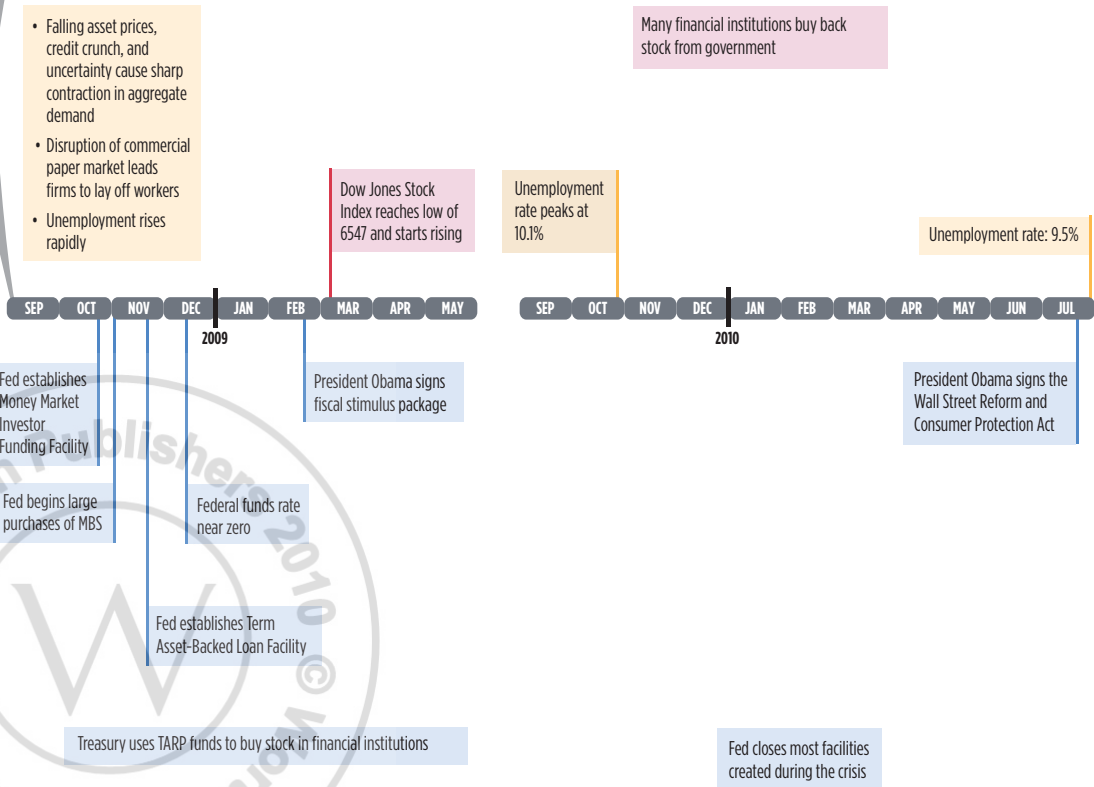
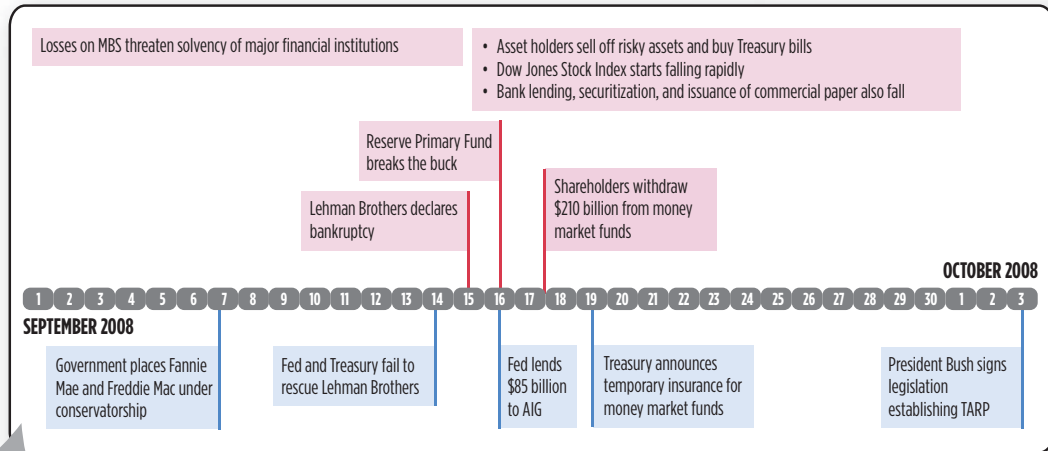
On August 9 and 10, the scarcity of lenders pushed the federal funds rate far above the Federal Reserve's target of 5.25 percent. The Fed responded to this development with *open-market operations* in which it purchased large amounts of government bonds, pushing cash into the banking system and reducing interest rates.

Banks around the world remained worried about one another's solvency for the rest of 2007 and into 2008, causing some banks to have trouble raising funds. In September 2007, Northern Rock Bank in the United Kingdom ran short of liquid assets and asked the Bank of England, the nation's central bank, for a loan. News of this request caused depositors to lose confidence in Northern Rock, producing the United Kingdom's first bank run in over a century (see Chapter 18).

**The Fed's Response** In the United States, the Federal Reserve responded to the disruption of interbank lending by vigorously playing its role as lender of last

**FIGURE 19-2 A Timeline of the U.S. Financial Crisis, 2007–2009**







resort. It encouraged banks to request discount loans if they needed cash, and on August 16 it reduced the discount rate by half a percentage point. Yet few banks sought discount loans, apparently fearing that this action would signal weakness. The Northern Rock episode showed that requesting help from the central bank could backfire.

The low level of discount lending prompted the Fed to create the *Term Auction Facility (TAF)* in December 2007. Under this program, the Fed lent to banks through auctions. Every two weeks, it provided a predetermined level of loans (typically between \$25 billion and \$75 billion) to banks that submitted the highest interest rate bids. Banks were more eager to bid in these auctions than to take out traditional discount loans because the Fed took the lead in lending. Also, participation in auctions was not publicized as widely as requests for discount loans were.

**Effects on the Economy** Late 2007 also saw a moderate slowdown in the U.S. economy. Housing prices had started to fall, and the resulting reduction in wealth reduced consumption. Consumption and investment were also dampened by uncertainty about the economy, which partly reflected the signs of trouble in the financial system and partly the unfortunate coincidence that world oil prices were rising. Concerned about these developments, the Federal Reserve began easing monetary policy to boost aggregate demand. Between August 2007 and January 2008, it reduced its target for the federal funds rate from 5.25 percent to 3.0 percent.

## 2008

### Bear Stearns and the Calm Before the Storm

The next unpleasant surprise was the near-failure of the investment bank Bear Stearns. As we discussed in Chapter 17, Bear held large quantities of subprime mortgage-backed securities and suffered mounting losses as the prices of these securities fell over 2007. In March 2008, rumors spread that Bear might become insolvent, and these fears produced a liquidity crisis. Bear relied heavily on short-term borrowing to fund its asset holdings, and much of this funding disappeared as lenders lost confidence in the firm. As Bear Stearns ran out of liquid assets, its lawyers prepared to file for bankruptcy.

On March 16, Bear Stearns's predicament produced the first financial rescue of the crisis: the Fed's risky loan to JP Morgan Chase to purchase Bear. The Fed acted out of fear that a failure of Bear would hurt other institutions that had lent it money. It also feared a blow to confidence that would trigger liquidity crises at other investment banks.

Some economists, however, thought the Fed's fears about Bear Stearns were overblown. They criticized the rescue for the risk that the Fed took on and the moral hazard created by saving Bear's creditors from losses. In April 2008, former Fed official Vincent Reinhart called the Bear Stearns rescue "the worst policy mistake in a generation."

Shortly after the Bear Stearns deal, the Fed made other efforts to head off problems in the financial system and economy. It once again reduced its target





for the federal funds rate, taking it down to 2.0 percent at the end of March 2008. In the same month, the Fed sought to prevent liquidity crises by expanding its role as lender of last resort. It established the *Primary Dealer Credit Facility (PDCF)*, which offered loans to *primary dealers* in the government securities market—the institutions that trade with the Fed when it performs open-market operations. Primary dealers include the largest investment banks as well as commercial banks, so investment banks also became eligible for emergency loans from the Fed.

After the Bear Stearns rescue, no major shocks hit the financial system for six months. Over the summer of 2008, fears about the solvency of financial institutions receded, and policymakers became hopeful that the economic damage from the financial drama would be modest. In June, Fed Chair Ben Bernanke said, “The risk that the economy has entered a substantial downturn appears to have diminished over the last month or so.”

### Disaster Strikes: September 7–19, 2008

Over two weeks in September 2008, optimism about the economy vanished as the financial crisis exploded. Bad news arrived at a dizzying pace.

**Fannie and Freddie Face Insolvency** Mounting losses on mortgage-backed securities threatened the solvency of Fannie Mae and Freddie Mac, the government-sponsored enterprises that securitize a large share of U.S. mortgages. On September 7, the government took Fannie and Freddie into conservatorship. Under this arrangement, the Treasury promised to cover Fannie and Freddie’s losses with public funds so they wouldn’t default on bonds they had issued. Default would have caused catastrophic losses to commercial banks and other financial institutions that held trillions of dollars of Fannie’s and Freddie’s bonds. A bankruptcy of Fannie or Freddie would also have disrupted mortgage lending, because many banks made loans with the expectation of selling them to Fannie or Freddie.

The government received stock that gave it 80 percent ownership stakes in Fannie and Freddie. Nonetheless, its action was in essence a pure giveaway of government funds. It was clear that Fannie and Freddie were insolvent and that the government would be giving them more money than their stock was worth. As of 2010, the Fannie and Freddie rescues had cost the government more than \$200 billion.

**Lehman Brothers’ Bankruptcy** Then came what many now consider the key blow to the financial system: the declaration of bankruptcy by the investment bank Lehman Brothers on September 15. Like Bear Stearns, Lehman had had large losses on mortgage-backed securities, taking it to the brink of failure. And once again, the Federal Reserve sought to arrange a takeover, in this case by the British bank Barclay’s. But the deal fell through at the last minute, in part because of objections from British bank regulators.

It is unclear whether the Fed or the Treasury could still have saved Lehman. Ben Bernanke and Henry Paulson, the Secretary of the Treasury at the time, have



said they did not have the legal authority to provide funds to Lehman after the Barclay's deal fell through. Critics contend that policymakers could have done something and that they misjudged the harm of letting Lehman fail. The Fed and the Treasury may have hesitated about acting aggressively because of the earlier negative reaction to the Bear Stearns rescue. A new rescue would have sparked harsh criticism that policymakers were worsening moral hazard yet again.

Lehman's failure shocked financial markets. The firm had been a pillar of the U.S. financial system since 1850, and it was the largest U.S. firm in any industry ever to file for bankruptcy. Everyone on Wall Street knew that Lehman was in trouble in September 2008, but many presumed that, like Bear Stearns, the firm would be taken over by a healthier institution.

Bankruptcy meant that Lehman defaulted on its borrowings from other financial institutions. Few people knew exactly how much Lehman owed or what institutions were its creditors, so fears arose that many institutions could suffer losses that threatened their solvency. In addition to the direct effects of Lehman's defaults, the failure of such a prestigious firm suggested that *any* financial institution could fail.

The events that followed Lehman's failure were sufficiently dire that it was the last big institution to declare bankruptcy throughout the crisis. Seeking to stem the financial panic, the Fed and the Treasury acted aggressively to save other institutions from Lehman's fate.

**The Rescue of AIG** Policymakers' new activism began on September 16, the day after the Lehman bankruptcy. The American International Group (AIG), the giant insurance conglomerate, was the next institution in line to fail until the Fed made an emergency loan of \$85 billion. In explaining this action, Ben Bernanke said that a failure of AIG "could have resulted in a 1930s-style global financial and economic meltdown, with catastrophic implications for production, income, and jobs."

A bankrupt AIG would have defaulted on the \$20 billion of commercial paper that it had issued. In addition, it would not have made promised payments on the credit default swaps it had sold on mortgage-backed securities. As a result, other institutions would not have been compensated for losses on the securities. Individuals and businesses that had purchased insurance policies from AIG would have seen their insurance coverage disappear suddenly.

**The Money Market Crisis** A final part of the September 2008 debacle involved money market mutual funds. These funds hold Treasury bills (short-term government bonds) and commercial paper (short-term corporate bonds) and sell shares to savers. The funds generally yield low returns but are considered safe because their assets have short maturities and low default rates. Since money market funds were invented in the 1970s, almost nobody who put a dollar in a money market fund ended up with less than a dollar. Many people have come to view money market funds as similar to bank accounts, which also yield low but safe returns.

The same day as the AIG rescue, however, one large money market fund, the Reserve Primary Fund, *broke the buck*: the value of a share in the fund, which originally cost \$1, fell to 97 cents. The reason was simple: the fund owned large quantities of Lehman Brothers' commercial paper, which plummeted in value when Lehman declared bankruptcy. Suddenly people were reminded that a



money market fund was *not* a bank account with a guaranteed return. And unlike bank deposits, government insurance does not cover shares in money market funds.

The result of the Reserve Primary Fund's breaking of the buck was a run on money market funds. In two days, September 17 and 18, panicked holders of money market shares withdrew \$210 billion from the funds, reducing the funds' total assets by approximately 22 percent. This outflow slowed on September 19, when the Treasury Department announced it would temporarily offer insurance to money market funds. But confidence remained shaky, and the funds' assets slipped further over the next few months.

**A Flight to Safety** The quick succession of crises at major institutions created panic. Nobody knew what shock would come next, when the crisis would end, or how devastating it would be for the economy. This atmosphere led to a *flight to safety*. Financial institutions became fearful of any assets that appeared risky, including stocks, the bonds of corporations without top credit ratings, and securities backed by any kind of bank loans. Institutions dumped these assets and bought those they considered safest: three- and six-month Treasury bills. These Treasury bills were considered safe because it was unlikely that the government would default on its debt over the next six months, even in a financial crisis.

We can see some effects of the flight to safety in Figure 19-3, which shows data from financial markets over the period 2007–2009. Starting in September 2008, the Dow Jones Index of stock prices plummeted for six months, shown in panel (a). Securitization fell dramatically as demand for securitized loans disappeared, shown in panel (b). The prices of BAA-rated corporate bonds (bonds with moderate default risk) fell, which implied a sharp rise in their interest rates as measured by yield to maturity, shown in panel (c). In contrast, the flight to Treasury bills pushed their prices up and interest rates on them fell almost to zero, shown in panel (d).

### An Economy in Freefall

Much of the financial crisis played out in the Wall Street area of lower Manhattan and in Washington, D.C., where financial institutions and policymakers grappled with the crisis. In the fall of 2008, however, the problems of Wall Street spread to Main Streets across the country, plunging the economy into a deep recession.

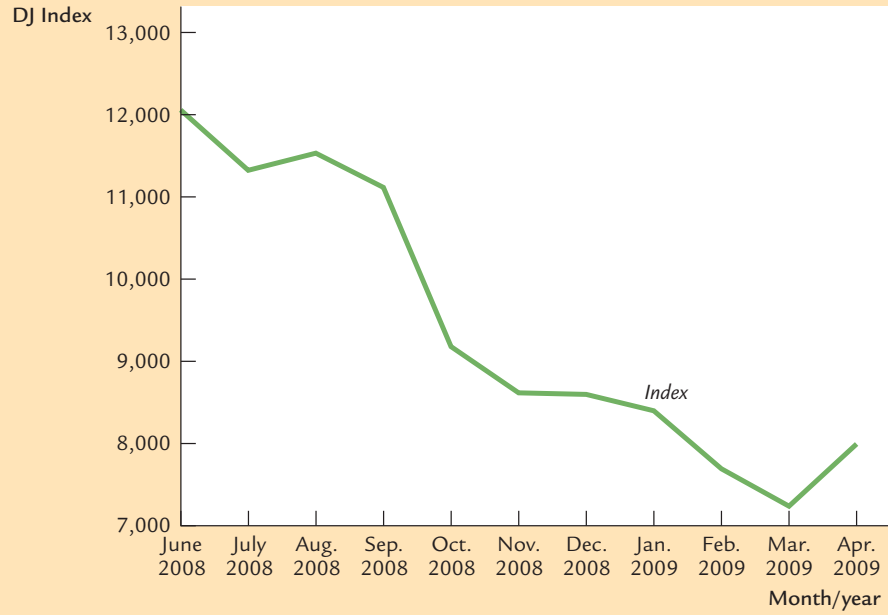
The story followed the broad pattern outlined in our basic model of a financial crisis, Figure 19-1, and in our review of the Great Depression of the 1930s. The stock market plunge and the accelerating decline in housing prices reduced consumers' wealth. The dramatic news from the financial system hit consumer confidence hard: from September to November 2008, the University of Michigan's survey of consumer confidence revealed one of the largest drops in the survey's 60-year history. Falling wealth and falling confidence caused a contraction in consumption spending.

Financial panic also caused a credit crunch with many dimensions. Banks became fearful of lending because losses on mortgages had reduced their capital,

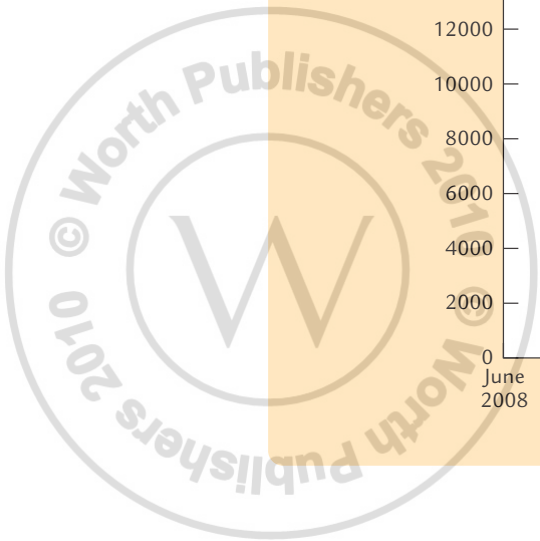
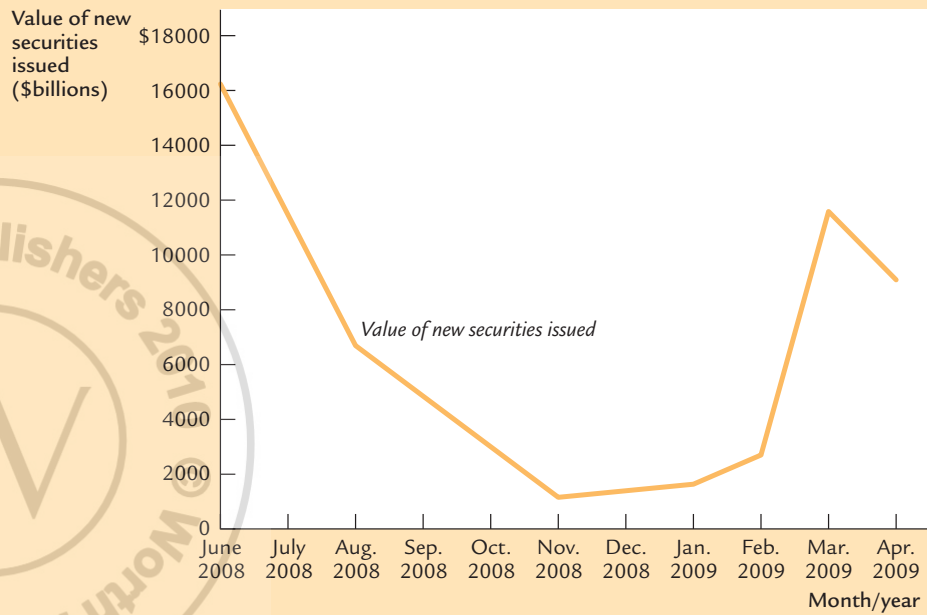


**FIGURE 19-3**

**(a) Dow Jones Index of Stock Prices**

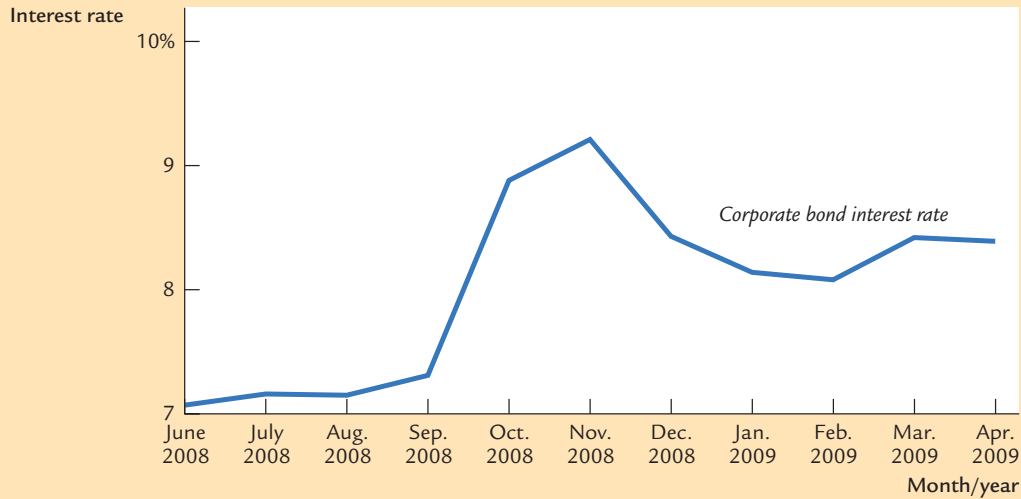


**(b) Securitization of Bank Loans**

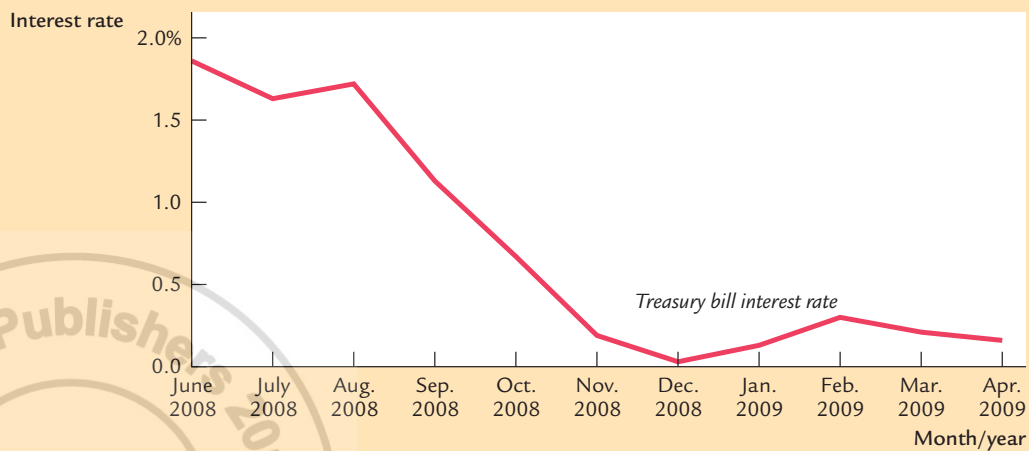


**FIGURE 19-3** (continued)

**(c) Corporate Bond (BAA) Interest Rate**



**(d) 90-day Treasury Bill Interest Rate**



**The Flight to Safety, Fall 2008** In the panic following the failure of Lehman Brothers, financial institutions dumped any assets that appeared risky, causing a sharp fall in stock prices (panel a), a collapse in securitization of bank loans (panel b), and higher interest rates on corporate bonds with moderate default risk (panel c). A surge in the demand for Treasury bills, a safe asset, pushed the interest rate on Treasury bill near zero (panel d).

Sources: finance.yahoo.com, Securities Industry and Financial Market Association, and Federal Reserve Bank of St. Louis.

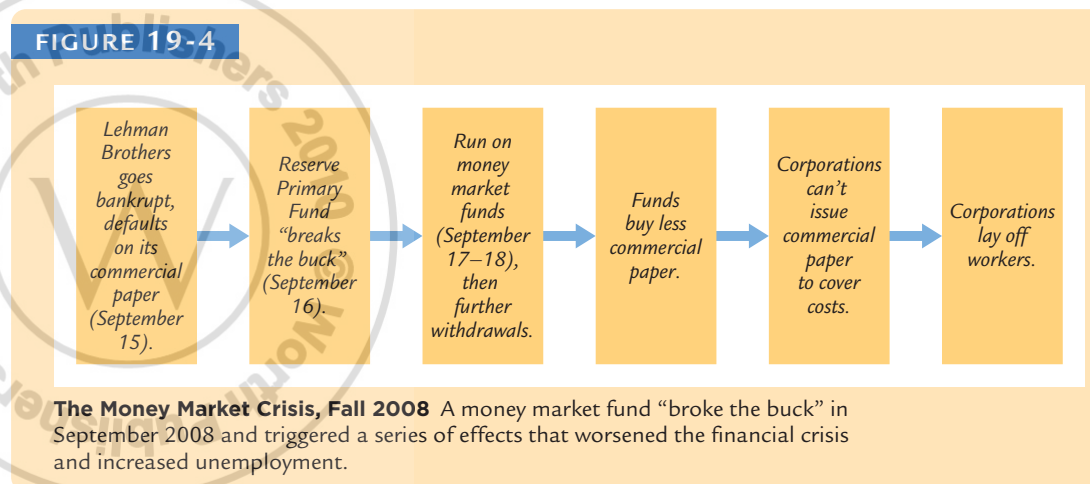


meaning further losses could push them into insolvency. With financial institutions fearful of securities backed by bank loans, investment banks stopped securitizing auto loans, credit-card debt, and student loans. Because they could not sell loans to securitizers, banks had fewer funds to lend. Finally, the rise in interest rates on risky corporate bonds made investment projects too costly for many firms. With both investment and consumption falling, aggregate demand fell and the economy plunged into a recession.

Some economists think the run on money market mutual funds following the Lehman Brothers failure was one of the most damaging events of the crisis. It set off a chain of effects that are summarized in Figure 19-4. Money market funds needed to make large payments to panicked shareholders, and this depleted the cash they would normally have used to purchase new commercial paper from corporations. Companies across the country—including those in industries far removed from finance, such as manufacturing—suddenly had difficulty selling commercial paper.

The purpose of commercial paper is to cover firms' short-term needs for cash. For example, firms use commercial paper to cover production costs, such as wages and materials, while they wait for revenue to come in from selling their output. The sudden breakdown of the commercial paper market in September 2008 caused firms around the country to join Wall Street in panicking. Businesses feared that they wouldn't have enough cash to pay their bills. They responded by slashing costs, which required sharp reductions in output and layoffs of workers. The unemployment rate started rising, which added yet another channel from the financial crisis to aggregate demand: consumption fell among laid-off workers and those who feared they might be laid off next.

Through the end of 2008 and into 2009, the vicious circle of a financial crisis was in full swing. The deteriorating economy had feedback effects on the financial system: it caused stock and housing prices to continue to fall and it caused more borrowers to default on bank loans, increasing banks' risk of insolvency. In turn, the worsening problems of the financial system pushed aggregate demand even lower and caused unemployment to rise rapidly.





## The Policy Response

As the financial crisis accelerated in late 2008, so did the response of policymakers. Worries about excessive government interference in the economy were swept aside as the Federal Reserve and the Bush and Obama administrations took unprecedented actions to stave off disaster.

**The TARP** On October 3, 2008—18 days after the Lehman failure—President Bush signed an emergency Act of Congress establishing the *Troubled Asset Relief Program (TARP)*. The TARP committed \$700 billion of government funds to rescue financial institutions.

The initial plan behind the TARP was for the government to purchase “troubled assets,” primarily mortgage-backed securities. After the program was established, however, the Treasury decided to use most of the funds for equity injections: instead of purchasing the assets of financial institutions, it purchased shares in the institutions themselves. In late 2008 and early 2009, the Treasury became a major shareholder in most of the country’s large financial institutions, ranging from Citigroup to Goldman Sachs to AIG.

**Federal Reserve Programs** Before the Lehman panic, the Fed had already sought to support the financial system with the Term Auction Facility (TAF) and the Primary Dealer Credit Facility (PDCF). In the fall of 2008, the Fed added half a dozen new programs, most with the bureaucratic title of “facility” in their names and with ugly acronyms. (This flurry of activity was reflected in the title of a speech by Fed Governor Kevin Warsh: “Longer Days and No Weekends.”) The goals of the Fed’s programs included repairing the commercial paper market, rejuvenating securitization, and pushing down interest rates on mortgages.

**Monetary and Fiscal Policy** Policymakers also sought to counter the economic downturn with the traditional tools of monetary and fiscal policy. From September to December 2008, the Federal Reserve cut its target for the federal funds rate from 2 percent to almost zero. The target was still near zero in the summer of 2010, as this book was going to press.

When President Obama took office in January 2009, one of his first priorities was fiscal stimulus. The next month, he signed a fiscal package passed by Congress that allocated about 5 percent of GDP to tax cuts and spending on infrastructure, such as roads and schools. The effects of the stimulus package are controversial, but one nonpartisan source, the Congressional Budget Office, estimated that it boosted real GDP by 1.5 to 3.5 percent.

## 2009 and Beyond

### The Aftermath

Economists and policymakers will long debate the wisdom of Fed and Treasury actions during the financial crisis. Whatever the role of these policies, the financial system started returning to normal in 2009. Yet the broader economy remained troubled.



## Specifics of Some Federal Reserve Responses to the Financial Crisis

The Federal Reserve's many actions in the fall of 2008 included the following:

- ▶ In October 2008, the Fed established the Money Market Investor Funding Facility (MMIFF). This program addressed the disruption of the commercial paper market after the run on money market funds. Under the MMIFF, the Fed lent money to banks that agreed to purchase commercial paper from money market funds. This arrangement helped the funds ensure that they could raise cash if their shareholders demanded it. In turn, as funds became less worried about withdrawals, they became more willing to buy commercial paper from corporations.
- ▶ In November, the Fed established the Term Asset-Backed Loan Facility (TALF). Under this program, the Fed lent to financial institutions such as hedge funds to finance purchases of securities backed by bank loans. The goal was

to ease the credit crunch by encouraging the securitization process, which broke down during the post-Lehman panic. The Fed accepted the securities purchased under the program as collateral and its loans were without recourse, which meant the Fed took on the risk that the securities would fall in value.

- ▶ Also in November 2008, the Fed began purchasing mortgage-backed securities issued by Fannie Mae and Freddie Mac. The goal was to drive down interest rates on these securities and ultimately reduce rates on the mortgages behind the securities. Over a year, the Fed bought more than a trillion dollars' worth of mortgage-backed securities. Studies estimate that these purchases reduced mortgage rates by three- or four-tenths of a percentage point. The Fed hoped that lower rates would increase the demand for housing and help slow the fall in U.S. housing prices.<sup>2</sup>

FYI

**The Financial Crisis Eases** One sign that the financial system was beginning to recover was found in stock prices. The Dow Jones Index of stock prices hit a low of 6,547 in March 2009 and then rose 65 percent over the following 12 months. Fears of further failures of financial institutions waned, and institutions such as Goldman Sachs and Citigroup, which had lost billions of dollars in 2008, returned to profitability in 2009.

As the financial crisis eased, so did the need for the Federal Reserve's emergency lending programs. Borrowing under such programs as the TAF and PDCF dwindled over 2009, and the Fed quietly ended the programs in early 2010. Many financial institutions bought back the stock they had sold to the government under TARP. In the end, the government made money on many of these transactions, selling back the stock at higher prices than it paid.

Much of the money that the Fed and the Treasury poured into the most troubled institutions, including AIG, Fannie Mae, and Freddie Mac, will probably never be recouped. But overall, the direct costs of financial rescues proved modest relative to the economic damage (in terms of lost output and high unemployment) caused by the financial crisis. A government audit of TARP in 2010 estimated that it will eventually cost taxpayers \$40 billion, a small fraction of the \$700 billion put into the program.

<sup>2</sup> "Credit and Liquidity Policies," a page on the Fed Web site, [www.frb.gov](http://www.frb.gov), catalogs the full range of Fed responses to the crisis.



**Unemployment Persists** After rising from under 5 percent before the crisis to 10 percent in late 2009, unemployment stayed high. In July 2010 (as this book was going to press), the unemployment rate was 9.5 percent, and economic forecasters predicted rates of 8 to 9 percent into 2011 and beyond.

Because the unemployment rate stayed high, more and more people found themselves jobless for long periods. In July 2010, workers who had been unemployed more than half a year accounted for 4.3 percent of the labor force, up from 0.7 percent two years earlier.

In most models of economic fluctuations—including those in Chapters 9–12 of this book—a recession causes a short-run rise in unemployment, but in the long run, unemployment returns to an unchanged natural rate. Since World War II, most U.S. recessions have followed this pattern. For example, unemployment rose from 6 percent in 1980 to over 10 percent in 1982, but then fell to 7 percent in 1984 and to 6 percent in 1987. The crisis of 2007–2009, however, may have longer-lasting effects. Chapter 12 discussed the theory of *hysteresis*, which posits that a recession can leave permanent scars on the economy, causing unemployment rates to remain high. Time will tell whether the aftermath of the financial crisis leads to a more prominent role for hysteresis in macroeconomic theory.

**Constraints on Macroeconomic Policy** With unemployment lingering at a high level, one might think that policymakers would seek to reduce it through expansionary fiscal or monetary policy. Unfortunately, in 2009–2010, both types of policy were severely constrained. The combination of the recession and the fiscal stimulus pushed the 2009 government budget deficit to about 10 percent of GDP, by far the highest level since World War II. This deficit exacerbated the problem of rising government debt, a long-term trend resulting from the costs of Social Security, Medicare, and Medicaid (see Chapter 14). Most economists and political leaders believed that the government couldn't afford further fiscal stimulus.

Starting in October 2008, monetary policy was constrained by the simple fact that the Fed's target for the federal funds rate was close to zero. As discussed in Chapter 11, a nominal interest rate cannot fall below zero because nobody would make a loan in return for negative interest. In 2009 and 2010, this **zero-bound problem** (also known as the *liquidity trap*) prevented the Fed from stimulating the economy. A zero interest rate was not low enough to produce a surge in aggregate demand that would push down unemployment.

As shown in Figure 13-2, a simple formula based on output and inflation—the Taylor rule—captures the broad movements in the federal funds rate from the mid-1980s until 2007. In 2009–2010, economists who used this rule to compute the appropriate federal funds rate came up with numbers around  $-3$  or  $-4$  percent. In effect, the zero bound was forcing the Federal Reserve to keep interest rates several points above the level needed to restore full employment.

**Moral Hazard Problems** Another legacy of the crisis was the precedent set by the government's rescues of financial institutions. Economists and political leaders agreed that these actions had worsened the problem of moral hazard, potentially setting the stage for increased risk taking and future crises. A consensus emerged that new government regulations were needed to protect the financial system and the economy.



## 19-4 The Future of Financial Regulation

The crisis of 2007–2009 sparked intense debate about government regulation of financial institutions. How can the government prevent future crises or at least minimize the damage they inflict on the economy? Unfortunately, although many economists and political leaders advocate reform, there is little consensus about *what* new regulations are desirable. This section outlines the major ideas for financial reform in recent debates. Some of these ideas are being implemented under the Dodd-Frank Act (formally named the Wall Street Reform and Consumer Protection Act), which President Obama signed into law in July, 2010.

We can classify many proposals for financial reform within four broad categories: increased regulation of nonbank financial institutions, policies to prevent institutions from becoming too big to fail, rules that discourage excessive risk taking, and new structures for regulatory agencies. Table 19-1 lists some of the major reform proposals in each category.

### Regulating Nonbank Financial Institutions

Commercial banks are heavily regulated in the United States. To reduce the risk of bank failures, regulators restrict the assets that banks can hold, impose capital

**TABLE 19-1**

**Financial Reform Proposals**

Problem	Proposed Reforms
Nonbank financial institutions are insufficiently regulated.	<ul style="list-style-type: none"> <li>Impose regulations similar to those for commercial banks: restrictions on assets, capital requirements, supervision.</li> <li>Give a government agency resolution authority over failing institutions.</li> </ul>
Some institutions are considered too big to fail.	<ul style="list-style-type: none"> <li>Limit size of institutions.</li> <li>Tie capital requirements to size.</li> <li>Limit scope of institutions.</li> </ul>
Financial institutions have incentives to take too much risk.	<ul style="list-style-type: none"> <li>Require security issuers to have skin in the game.</li> <li>Reform ratings agencies.</li> <li>Restrict executive pay.</li> </ul>
Multiple regulators lead to gaps in regulation.	<ul style="list-style-type: none"> <li>Consolidate agencies that regulate financial institutions.</li> <li>Create new agency to oversee existing agencies and address systemic risk.</li> <li>Tighten regulation of financial holding companies.</li> </ul>



requirements, and subject banks to frequent examinations to be sure they are not taking on too much risk. Nonbank financial institutions, such as investment banks, hedge funds, and insurance companies, do not face the same regulations. As a result, they have been able to engage in riskier behavior. They have held low levels of capital and high levels of risky assets, such as subprime mortgage-backed securities.

Why are banks and nonbank financial institutions treated differently? Part of the justification for bank regulation is the existence of government deposit insurance. The government is committed to compensating depositors if a commercial bank fails, so it has an interest in preventing risky behavior that might lead to failure. In addition, deposit insurance makes risky behavior more likely because it eliminates the incentive of depositors to monitor banks. In contrast, institutions such as investment banks have no deposits, so the government has not promised to pay anyone if the institutions fail. And without insurance, lenders to nonbank financial institutions have incentives to monitor their behavior.

The financial crisis has led economists and policymakers to question this traditional thinking. The crises at investment banks such as Bear Stearns and Lehman Brothers and at insurance giant AIG revealed that lenders to these institutions had not monitored them well enough to prevent excessive risk taking. And the absence of insurance did not mean the government could be indifferent to failures. The aftermath of the Lehman bankruptcy showed that the failure of an investment bank can potentially have significant adverse repercussions. To keep the financial crisis from getting worse, the government felt it had to rescue other institutions even though it was not obligated to them for any insurance payments.

To prevent this situation from recurring, many economists argue that the types of regulations previously reserved for commercial banks should be extended to other financial institutions. In the future, institutions such as investment banks and hedge funds may be required to hold more capital and fewer risky assets, and regulators may scrutinize their activities more closely.

Not surprisingly, financial institutions generally dislike the idea of greater regulation because restrictions on risky activities limit their profit-seeking opportunities. In addition, financial institutions and some economists argue that stricter regulation could stifle financial innovation. When financial engineers create new securities, their actions may appear risky but may actually improve the functioning of the financial system.

An example is the invention of junk bonds, an innovation of the 1970s that increased the number of corporations that could fund investment through the bond market. Securitization is another innovation that has, in some cases, been beneficial to borrowers and asset holders. Although the securitization of subprime mortgages proved disastrous, securitization of auto loans and student loans appears to have been a success. Securitization has provided funds for people to buy cars and go to school, and owners of securities have earned healthy returns. Overly restrictive regulations could impede such innovations, making the financial system less effective in channeling funds from savers to investors.

Ideally, regulations should be strict enough to prevent excessive risk taking yet not so restrictive that they impede productive financial innovation. Implementing this principle is difficult, however, because it is hard to predict which innovations will be successful and which will cause problems.



Another proposed reform would change how the government deals with failed financial institutions. Once again, the basic idea is to treat nonbank institutions more like commercial banks. As discussed in Chapter 18, an insolvent bank is taken over by the FDIC, which attempts to minimize the costs to taxpayers and the disruption of the economy. The FDIC can take time, for example, to find another institution that will take over the failed bank and keep the profitable parts of its business running.

In contrast, when a nonbank financial institution fails, it declares bankruptcy. This outcome may be inefficient, because it triggers a complicated legal process and increases uncertainty about the ultimate losses to creditors. Bankruptcy is also likely to bring the business of the financial institution to a halt, thus disrupting the activities of other institutions with which it does business. Bankruptcy can shake confidence in the whole financial system, as the Lehman bankruptcy revealed.

In the crisis of 2007–2009, Fed and Treasury officials felt it necessary to save financial institutions from failure with emergency loans and equity injections. Such risky rescues might become unnecessary if a regulatory agency gains *resolution authority* over nonbank institutions such as investment banks and hedge funds—the right to take them over when they become insolvent. Regulators could close or sell troubled institutions in an orderly fashion and potentially avoid a panic that threatens the financial system and the economy.

### Addressing Too Big To Fail

Starting with Continental Illinois in 1984, policymakers have rescued institutions they deemed too big to fail. Institutions such as Continental, and later Bear Stearns and AIG, had large debts to other institutions and agreements such as promised payments on credit default swaps. The size of these firms and their interconnectedness with other institutions meant that their failure could trigger insolvencies throughout the financial system. Failures of smaller institutions may be less likely to pose this *systemic risk*.

One way for regulators to address TBTF is to prevent financial institutions from becoming too large or interconnected. Possible tools include restrictions on institutions' size or restrictions on their scope.

**Restricting Size** Some economists suggest limits on the amounts of assets or liabilities held by financial institutions. Currently, if a U.S. bank holds more than 10 percent of all deposits in the country, it cannot expand by acquiring another commercial bank. As of 2010, Bank of America was the only institution that had hit the 10 percent limit. To lessen the too-big-to-fail problem, this limit could be reduced to a level such as 5 or 2 percent. In addition, limits on assets or liabilities could be extended to nonbank institutions.

Regulators could also adopt less rigid policies. Rather than banning institutions above a certain size, they could create disincentives to growth. For example, capital requirements might be more stringent at larger institutions. The need to have more capital would reduce the risk that large institutions will fail. It would also discourage institutions from becoming overly large in the first place, because higher capital requirements reduce an institution's return on equity (see Chapter 18).





Such regulations would counter a half-century-long trend in which financial institutions have grown larger through mergers. The trend was facilitated by the repeal of past regulations, such as limits on the number of branches a bank can have and on interstate banking. Deregulation was motivated by a belief in *economies of scale*, the idea that large banks have lower costs per customer than small banks. Today, some economists argue that the danger that large banks pose to the financial system outweighs the benefits from economies of scale.

**Restricting Scope** Other proposed reforms would limit the scope of financial institutions by restricting the range of different financial businesses that one firm can operate. Such regulation would reduce the danger that problems in one part of an institution will hurt the other parts.

Arguably, such spillovers exacerbated the financial crisis of 2007–2009. For example, the investment banking unit within Citigroup, a giant financial conglomerate, lost billions of dollars on subprime mortgage-backed securities, reducing Citigroup's capital. The shortage of capital reduced lending in Citigroup's commercial banking units. These units include Citibank and the Student Loan Corporation, which stopped lending to students at two-year colleges. If Citigroup's investment banking and commercial banking divisions had been separate companies, the mistakes of investment bankers might not have made it harder for college students to borrow.

Like restrictions on institutions' size, restrictions on their scope would reverse a historical trend. The financial crisis of the early 1930s led to the Glass-Steagall Act of 1933, which required the separation of commercial banks from investment banks and insurance companies. This law was repealed in 1999, however, and many commercial banks merged with nonbank institutions to create conglomerates like Citigroup. Supporters of such mergers suggest that they create *economies of scope*: a conglomerate can operate as a *financial supermarket* where customers efficiently receive a range of financial services. For example, a corporation can establish a relationship with a single institution that lends to it and also underwrites its securities.

Once again, the recent financial crisis has led some economists to advocate reregulation in which conglomerates are required to break up or reduce their range of activities. Others believe that limits on institutions' scope are not necessary if regulation is improved along other dimensions.

### Discouraging Excessive Risk Taking

In the view of most economists, excessive risk taking by financial institutions is a key cause of financial crises. In addition to extending regulation to more institutions and limiting their size and scope, reformers have proposed a variety of curbs on risky behavior. Here, we briefly review three of these ideas.

**Requiring "Skin in the Game"** Some financial reformers think that institutions that arrange risky transactions should take on some of the risk themselves: these firms should be required to have "skin in the game." For example, an investment bank that securitizes loans should have to hold a certain amount of the securities it creates. Behind this idea is the view that before the financial crisis,



buyers of mortgage-backed securities were unaware of how risky the securities were. Requiring skin in the game gives financial institutions a disincentive to create overly risky products.

**Reforming Ratings Agencies** This idea, too, arises from the belief that buyers of mortgage-backed securities did not understand their risks. *Ratings agencies* such as Moody's Investor Services and Standard & Poor's evaluate the risk of securities and assign them letter grades. Before the financial crisis, ratings agencies gave many subprime mortgage-backed securities the highest possible rating, AAA, which greatly understated their riskiness.

Critics suggest that one reason this happened stemmed from the way ratings agencies earn money: they are hired and paid by the issuers of the securities they rate. Raters are likely to get more business if they inflate the grades they assign. This conflict of interest could be lessened through a new source of revenue for ratings agencies—a tax on financial institutions is one idea—or by having regulators review the agencies' ratings.

**Reforming Executive Compensation** Executives at many financial institutions receive annual bonuses of millions of dollars if profits for the year are high. This practice encourages the executives to take high-risk gambles that may yield high returns. (They aren't required to pay millions of dollars if the gambles fail.) Recall that in 2008 the Treasury imposed limits on executive compensation as a condition for equity injections under the TARP. Some economists and Congress members think that such limits should exist all the time, while others object to allowing the government to regulate pay at private firms.

## Changing Regulatory Structure

A variety of federal and state agencies regulate banks in a complex system that reflects the historical evolution of regulation rather than any logical plan. At the federal level alone, some commercial banks are regulated by the Office of the Comptroller of the Currency and some by the Federal Reserve. Until 2010, the Office of Thrift Supervision regulated savings institutions.

Investment banks are regulated by the federal Securities and Exchange Commission (SEC). The Federal Reserve has sometimes resisted calls to restrict risk taking by investment banks on the grounds that they are the SEC's responsibility. Yet the SEC's main objective has been to prevent fraudulent activities by securities market participants, such as the falsification of accounting information by companies that issue stock. The SEC has not focused on ensuring the solvency of nonbank financial institutions.

Many economists argue that gaps and inconsistencies in regulation enabled the risky behavior that produced the financial crisis of 2007–2009. Some believe the government should abolish existing regulatory agencies and consolidate their responsibilities in one new agency. An alternative is to preserve existing agencies but add one that coordinates regulation. The creation of such an agency, the Financial Services Oversight Council (FSOC), was a centerpiece of the 2010 regulatory reforms. The FSOC will watch for dangers to the entire financial system, not just insolvency risk at individual institutions.



One gap in current regulation involves *financial holding companies (FHCs)*, conglomerates such as Citigroup that have units in different financial businesses. The Federal Reserve is responsible for regulating FHCs, but in the past it has largely confined itself to reviewing FHC mergers with and acquisitions of other institutions. Different units of FHCs are regulated by different agencies—commercial banking units by various bank regulators, investment banking by the SEC, and insurance businesses by state insurance commissions. As we have discussed, problems in one unit of an FHC can hurt other units. In the future, the Federal Reserve may take responsibility for monitoring risky activities in all parts of an FHC.

### CASE STUDY

## The Financial Reforms of 2010

In July 2010, Congress passed the Dodd-Frank Act and President Obama signed it into law. The act puts into practice some of the reform ideas discussed in this section. Its most important provisions include the following:

- As mentioned earlier, a new Financial Services Oversight Council (FSOC) will coordinate financial regulation. The Secretary of the Treasury will chair the council and it will include representatives from the Federal Reserve, the SEC, the FDIC, the Office of the Comptroller of the Currency, and other agencies. To streamline regulation, the Office of Thrift Supervision is abolished.
- A new Office of Credit Ratings will examine rating agencies annually and publish reports on their performance.
- The FDIC gains the authority to take over and close a nonbank financial institution if its troubles create systemic risk. Costs to the FDIC will be repaid through fees from financial institutions. Most failures of financial institutions—failures that do not endanger the financial system—will still trigger traditional bankruptcy proceedings.
- Financial holding companies that own banks are prohibited from sponsoring hedge funds, a step toward separating banks and securities firms.
- Issuers of certain risky securities, including mortgage-backed securities, must have skin in the game: they must retain at least 5 percent of the default risk on the securities.

The new legislation also empowers the FSOC and the Federal Reserve to create additional regulations, including stricter capital requirements and supervision of nonbank financial institutions. The FSOC and Fed can also force a large financial holding company to break up if it poses a grave threat to the financial system. The Office of Credit Ratings has the right to create new regulations governing rating agencies. In the coming years, we will see how aggressively the FSOC, Fed, and Office of Credit Ratings use their new authority.



The Senate passed the financial reforms by a vote of 60 to 39 and the House of Representatives by 237 to 192. Almost all Democrats supported the act and almost all Republicans opposed it. Democrats hailed the act as a foundation for a healthy financial system; Republicans predicted it would reduce efficiency and innovation at financial institutions.<sup>3</sup> ■

## 19-5 Financial Crises in Emerging Economies

Previous sections in this chapter have emphasized financial crises in the United States, but crises occur all over the world. They are especially common in *emerging-market economies*—countries in the middle of the world income distribution (not as rich as the United States, but not as poor as many African countries). Crises occurred in Mexico in 1994, many East Asian countries in 1997–1998, Russia in 1998, and Argentina in 2001. In 2008–2009, the U.S. financial crisis spread around the world, and many emerging economies were hit hard.

Emerging-economy crises have much in common with U.S. crises, including bank failures and declines in asset prices. However, they also have another key element: **capital flight**, a sharp increase in net capital outflow that occurs when asset holders lose confidence in an economy. Capital flight creates additional channels in the vicious circle of a financial crisis.

### Capital Flight

As discussed in Chapter 5, a country's net capital outflow is its capital outflow (purchases of foreign assets by the country's citizens and firms) minus its capital inflow (purchases of the country's assets by foreigners). In many emerging economies, net capital outflow is negative: inflow exceeds outflow. Capital inflow is high because foreigners expect the economies to grow and their assets to yield high returns.

Capital flight occurs when asset holders (typically led by foreigners) lose confidence in a country's economy. They sharply cut their purchases of the country's assets and start selling the ones they own. This decrease in capital inflow typically shifts net outflow from negative to positive, because inflow becomes less than outflow.

Asset holders' loss of confidence can have various causes, and financial crises often involve more than one. Some leading causes of capital flight are the following:

- **Government debt.** Rising debt levels create fears that the government will default, so foreign financial institutions stop buying government bonds. Foreigners also worry that default will hurt the economy, so they stop buying corporate securities.

<sup>3</sup> For more on the Dodd-Frank Act, see David Huntington, "Summary of Dodd-Frank Financial Regulation Legislation," Harvard Law School Forum on Corporate Governance and Financial Regulation, [blogs.law.harvard.edu/corpgov/](http://blogs.law.harvard.edu/corpgov/), posted 7/7/2010.



- *Political risk.* Political instability can bring bad governments to power or produce armed conflicts that disrupt the economy. Signs of instability make a country's assets more risky, which can spark capital flight.
- *Banking problems.* Loans to a country's banks from foreign banks are one kind of capital inflow. This source of funds is cut off if domestic banks encounter trouble, such as threats to their solvency from defaults on loans they have made.

**Effects on Interest Rates and Exchange Rates** When a loss of confidence causes foreigners to sell a country's assets, it drives down asset prices, including bond prices. As we learned in Chapter 16, lower bond prices imply higher interest rates on bonds.

Capital flight typically affects a country's exchange rate as well. Foreigners that sell the country's assets are paid in the country's currency, which they then trade for foreign currency to obtain foreign assets. Sales of the domestic currency cause the currency to depreciate; that is, it falls in value relative to other currencies.<sup>4</sup>

**Contagion** Just as a bank run can trigger runs at other banks, capital flight can spread from one country to others in a process called **contagion**. When asset holders see that one country's exchange rate and asset prices have fallen, they worry that the same thing could happen in countries in the same region or in countries with similar problems. Capital flight hits these countries as asset holders try to sell before prices fall.

For example, in July 1997, the East Asian financial crisis began in Thailand when capital flight caused the value of the Thai bhat to collapse. In the following months, capital flight spread to countries including South Korea, Indonesia, and the Philippines, driving down exchange rates and raising interest rates throughout the region.

## Capital Flight and Financial Crises

Capital flight is often part of a broader financial crisis. It interacts with the basic causes of crises summarized in Figure 19-1. One of the typical causes—banking problems—can trigger capital flight. At the same time, capital flight causes declines in asset prices, another key feature of crises.

The increases in interest rates caused by capital flight are often dramatic; in South Korea, for example, short-term rates jumped from 12 percent in November 1997 to 31 percent in December 1997. Higher interest rates cause investment to fall sharply. In addition, lower confidence in the economy works to reduce both consumption and investment.

The currency depreciation caused by capital flight also has deleterious effects. In emerging economies, foreign loans to the government and to domestic banks

<sup>4</sup> The effects of capital flight on a country's interest rate and exchange rate can be captured in the model of a large open economy in the appendix to Chapter 5. Specifically, Figure 5-23 shows that a *fall* in net capital outflow reduces the interest rate and raises the exchange rate. Capital flight is a *rise* in net capital outflow and therefore has the opposite effects: the interest rate rises and the exchange rate falls.



and firms are usually made in U.S. dollars, so many debts are fixed in dollars. When the exchange rate falls, each dollar costs more in local currency, so debt levels rise when measured in local currency. Higher debts hurt the economy by worsening the problems of banks and pushing corporations into bankruptcy. Higher government debt increases fears of default, worsening capital flight.

In sum, capital flight adds a number of channels through which financial crises reduce aggregate demand and build on themselves. The vicious circle becomes more vicious, and economies rarely escape without a deep recession. The following case study recounts a particularly traumatic financial crisis.

### CASE STUDY

## Argentina's Financial Crisis, 2001–2002

Argentina has a long history of economic crises. For decades, a central problem has been large government budget deficits. The government has sometimes financed deficits with bank loans or bonds, but at other times it has not been able to borrow. In these periods, it has financed deficits with seignorage revenue—by printing money. Rapid money growth causes high inflation, which in turn hurts economic efficiency and long-run growth.

In the 1980s, Argentina's budget deficits produced annual inflation rates in the hundreds of percent. The situation deteriorated at the end of the decade, with inflation over 2,000 percent per year in both 1989 and 1990. In 1991, a new president, Carlos Menem, decided that Argentina needed major reforms. His government attacked the budget deficit with spending cuts and higher taxes. It also sought to make the economy more productive by privatizing government-owned industries and eliminating barriers to international trade.

The government's most radical action was to create a *currency board*, an arrangement that rigidly fixed the exchange rate between Argentina's peso and the U.S. dollar at 1.0. The government promised to maintain this exchange rate by holding large quantities of dollars—enough so it could trade a dollar for a peso with anyone who asked. Policymakers believed that the currency board would curb inflation: the value of the peso could not fall rapidly if it was tied to the dollar, because the value of the dollar was stable.

Initially, Menem's policies were highly successful. Inflation fell to 25 percent in 1992 and 4 percent in 1994. At the same time, output grew rapidly. Confidence in Argentina's economy soared, and capital flowed into the country. Foreign financial institutions started buying Argentine government debt, which they had shunned in the 1980s.

But then several problems developed:

- Budget deficits started to rise again. This resulted largely from spending by the governments of Argentina's provinces, which the national government could not control.
- Argentine inflation, although falling, remained above U.S. inflation for several years, affecting Argentina's *real* exchange rate. This variable equals  $e \times (P/P^*)$ , where  $e$  is the nominal exchange rate,  $P$  is the domestic price





level, and  $P^*$  is the foreign price level (see Chapter 5). The real exchange rate rose because the nominal rate  $e$  was fixed at 1.0 and  $P$  (Argentina's price level) rose faster than  $P^*$  (the U.S. price level). The rising real exchange rate made Argentina's goods more expensive relative to foreign goods and reduced Argentina's net exports, thus slowing output growth and raising unemployment.

- A financial crisis in Mexico in 1994 produced contagion. Capital flight occurred throughout Latin America, including Argentina, pushing up interest rates and reducing consumption and investment. Combined with the fall in net exports, lower consumption and investment produced a recession in the mid-1990s.

As usual in a financial crisis, all these different problems reinforced one another. In the late 1990s, the recession reduced tax revenue, worsening the problem of budget deficits. The currency board precluded expansionary monetary policy: policymakers could not create additional pesos because they did not hold enough U.S. dollars to back them. Without monetary stimulus, the recession worsened and the unemployment rate rose above 15 percent. Capital flight increased because of worries about rising government debt and about a possible end of the currency board. In 1999, Fernando de la Rúa replaced Carlos Menem as president, but it made little difference for the deteriorating economy.

In late 2001, Argentina's problems spiraled out of control. In October, the government defaulted by failing to make promised payments on its debt. November brought a banking crisis. Argentina's banks had been weakened by the long recession and by losses on their holdings of government bonds. Fearing bank failures, and with no deposit insurance, Argentines rushed to withdraw their money.

The government's response to the bank panic was drastic: it imposed a limit on withdrawals. A depositor could withdraw only \$250 in cash per week. This policy provoked a political crisis. The long recession had made many Argentines furious at the government, and the denial of access to their money was the last straw. Riots and looting erupted in December 2001: 26 people died and President de la Rúa resigned. In January 2002, an interim president, Eduardo Duhalde, ended the currency board.

The immediate economic consequences were disastrous. The value of a peso fell from its fixed level of \$1 to 27 cents in 2002. This exchange-rate collapse caused a large rise in import prices, reducing living standards for Argentine consumers. It also caused a huge rise in the peso values of dollar-denominated debts, leading to a wave of corporate bankruptcies. Output fell by 15 percent from 2000 to 2002, and unemployment rose above 20 percent.

At the time, some economists predicted a long depression for Argentina. However, the fall in the exchange rate set the stage for more-rapid-than-expected recovery. It made Argentine goods cheap relative to foreign goods, and exports boomed. From 2003 to 2007, output grew rapidly and unemployment fell below 10 percent. During this period, the government also managed to reduce budget deficits, the problem underlying Argentina's history of instability. Time will tell whether strong growth and low budget deficits prove to be durable. ■





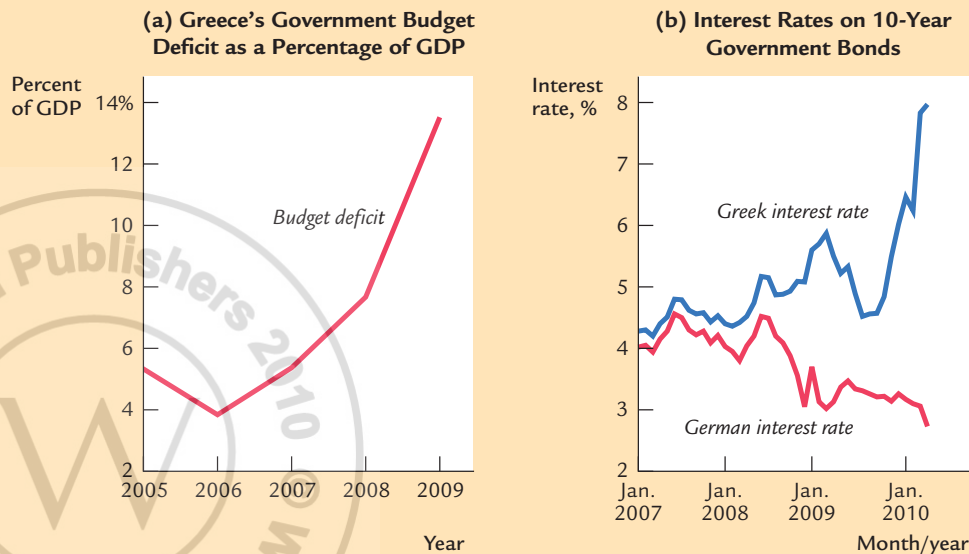
### Recent Crises

The U.S. financial crisis of 2007–2009 triggered crises in many other countries, largely by causing capital flight. As we discussed, the panic following the failure of Lehman Brothers produced a flight to safety, with financial institutions selling any assets that appeared risky. These assets included many in emerging economies, where assets are generally considered risky because the economies are less stable than advanced economies. Countries in eastern Europe and Asia, for example, experienced capital flight and sharp recessions.

In 2009–2010, a financial crisis struck Greece (which is sometimes categorized as an emerging economy, because its income is low by western European standards). The trigger for this crisis was rising government budget deficits, which produced fears that Greece might default on its debt. Asset holders around the world dumped Greek debt, pushing up the interest rates that Greece had to pay on new debt. In May 2010, Greek long-term government bonds paid 8.0 percent, compared to 2.7 percent for German government bonds (see Figure 19-5).

In the summer of 2010, it appeared that Greece was heading for a severe recession. Making matters worse, Greek policymakers could not support their economy with traditional policy tools. They could not pursue expansionary fiscal policy because that would worsen the problem of rising debt; indeed, Greece’s government was trying to cut its spending. Policymakers could not

**FIGURE 19-5**



**Greece's Crisis, 2009–2010** Greece's financial crisis was triggered by rising government debt, which created fears of default and pushed interest rates on Greek government bonds above other European bond rates.

Source: OECD.



pursue expansionary monetary policy because Greece does not have its own currency. Its currency is the euro, which it shares with 15 other European countries. Monetary policy for all euro countries is set by the European Central Bank, so Greece has no independent policy tool to wield against recession.

As Greece's government struggled to make debt payments, Europeans worried that the crisis would worsen dramatically if the government actually defaulted. In addition to wrecking Greece's economy, a default could produce contagion. Some other European countries, such as Spain and Portugal, also have high debt levels. Default by Greece would shake confidence in these countries' debt, and they could be hit by capital flight. Uncertainty hangs over Europe's economies as this book goes to press.

### The Role of the International Monetary Fund

When financial crises threaten the United States, the Federal Reserve and Treasury Department try to contain them. When emerging economies experience crises, governments and central banks often don't have the resources to respond. In particular, they lack foreign currency, which is needed to pay debts set in dollars. Therefore, countries in crisis often seek help from the **International Monetary Fund (IMF)**, an international institution that lends to countries experiencing financial crises.

The IMF was established in 1944 to oversee a system of fixed exchange rates among 44 nations, including the United States and other leading economies. That system ended in the 1970s, and since then aiding countries in financial crises has been the IMF's primary function. Most of the world's countries are members of the IMF and contribute funds to it, but rich countries provide most of the money. A country's votes on the IMF board of directors are proportional to its financial contribution, so rich countries hold most of the power.

In recent decades, the IMF has intervened in most crises involving capital flight, including those in Argentina and Greece. As we've seen, private financial institutions are wary of lending to countries in crisis. These countries turn to the IMF for emergency loans, which are made in dollars. The IMF is sometimes called the "international lender of last resort."

Countries use IMF loans in various ways depending on their circumstances:

- The government can use the loans to make payments on its debt, preventing default.
- If a country's banks have debts denominated in dollars, the central bank can lend them dollars to repay those debts.
- The central bank can use dollars to buy its own currency in foreign-exchange markets (if, unlike Greece, the country has its own currency). Increased demand for the currency dampens the fall in the exchange value of the currency.

Each of these actions attacks a part of the financial crisis. In addition, IMF loans are intended to boost confidence in the economy, reducing capital flight. The overall goal is to slow down the vicious circle and hasten financial and economic recovery.



Most IMF loans have strings attached. To obtain a loan, a country must sign an economic agreement with the IMF. The country agrees to reforms that address the problems underlying its crisis. For example, a government with a high debt level may be required to cut spending. This condition was a key part of the IMF's agreement with Greece in May 2010. Loan provisions may also include stricter bank regulation, monetary tightening to control inflation, or privatization of government-owned industries.

IMF loans are controversial. Some economists believe they significantly reduce the damage caused by financial crises, for example, by curbing the length of recessions. Others criticize the IMF on the grounds that it creates moral hazard. They criticize IMF loans to countries for essentially the same reason that many criticize rescues of U.S. financial institutions by the Federal Reserve and the Treasury. Aid to countries that get in trouble encourages other countries to behave the same way. Still others criticize the IMF for the conditions it imposes on loans, which can be painful. Reducing budget deficits, for example, may force governments to cut spending on antipoverty programs. The IMF argues that painful reforms are needed for long-run economic growth, but again, not everyone agrees.

## 19-6 Conclusion

Financial crises have caused many of history's worst recessions and highest unemployment rates, both in the United States and around the world. Often monetary and fiscal policies are inadequate tools for ending these recessions. To stem crises, governments and central banks take drastic actions, ranging from a bank holiday to emergency loans and equity injections for financial institutions. When emerging economies face a financial crisis, the International Monetary Fund lends to the countries' governments.

The events of 2007–2009 drove home the lesson that, despite its strong financial institutions and extensive regulatory system, the United States is susceptible to severe financial crises. Seeking to reduce this risk, economists and political leaders have proposed many reforms of financial regulation. Some of these proposals, such as a new government agency to monitor financial risk, were enacted in 2010. It remains to be seen how greatly these reforms will change the behavior of financial institutions, how effective they will be in preventing crises, and whether further changes in regulation will occur. You will surely hear much about these issues in the years to come.

### Summary

1. A financial crisis typically begins with declines in asset prices, failures of financial institutions, or both. Failures can result from insolvency or liquidity crises. A financial crisis can produce a credit crunch and reduce aggregate demand, causing a recession. The recession reinforces the causes of the crisis.
2. Policymakers may seek to stem a crisis by rescuing troubled financial institutions. Rescues range from riskless loans to institutions facing liquidity



crises to giveaways of government funds. Risky rescues, including risky loans and equity injections, are an intermediate type of policy that may or may not cost the government money.

3. Financial rescues are controversial because of their potential costs to taxpayers and because they increase moral hazard: firms may take on more risk, thinking the government will bail them out if they get in trouble.
4. Over 2007–2009, the subprime mortgage crisis evolved into a broad financial and economic crisis in the United States. The stock market fell drastically, some of the country's most prestigious financial institutions failed or came close to failing, lending was disrupted throughout the economy, and the unemployment rate rose to 10 percent.
5. The 2007–2009 crisis produced an intense debate about government regulation of financial institutions. Many proposals for financial reform fall into four broad categories: increased regulation of nonbank financial institutions, policies to prevent institutions from becoming too big to fail, rules that discourage excessive risk taking, and new structures for regulatory agencies.
6. Financial crises in emerging-market economies typically include capital flight and sharp decreases in exchange rates. Causes of capital flight include high government debt, political instability, and banking problems. Capital flight adds new channels to the vicious circle of a financial crisis. The International Monetary Fund makes emergency loans to countries struck by capital flight.

### KEY CONCEPTS

Financial crisis	Too big to fail (TBTF)	Contagion
Credit crunch	Equity injection	International Monetary Fund (IMF)
Lender of last resort	Zero-bound problem	
Discount loan	Capital flight	

### QUESTIONS FOR REVIEW

1. What two types of events are the typical triggers for financial crises?
2. Explain how a financial crisis leads to a fall in aggregate demand and a recession.
3. Explain how the central bank can ease liquidity crises at solvent financial institutions.
4. How can the central bank or government prevent failures of insolvent financial institutions or reduce the costs of failures to the economy?
5. Why are some financial institutions “too big to fail” and what are the implications for central bank and government policy?
6. Is the following statement true or false? Explain your answer. “The only costs of financial rescues are the direct payments from the government.”
7. List the four broad categories of financial reform. Describe a proposed reform in each category and explain how it would help prevent a financial crisis.
8. What effects does capital flight have on interest rates and exchange rates? Explain these effects.
9. What are the leading causes of capital flight?
10. Describe the IMF's role in the financial crises of emerging economies.



## PROBLEMS AND APPLICATIONS

1. Many economists argue that a rescue of a financial institution should protect the institution's creditors from losses but *not* protect its owners: they should lose their equity. Supporters of this idea say it reduces the moral hazard created by rescues.
  - a. Explain how this approach reduces moral hazard compared to a rescue that protects both creditors and equity holders.
  - b. Does this approach eliminate the moral hazard problem completely? Explain.
2. What could U.S. policymakers have done to prevent the Great Depression or at least reduce its severity? Specifically:
  - a. What government or Fed policies might have prevented the stock market crash and bank panics that started the financial crisis? (*Hint:* Think of policies that exist today.)
  - b. Once the crisis began, what could policymakers have done to dampen the effects on the financial system and economy? Explain.
3. Some Congress members think the government should not risk taxpayer money to rescue financial firms whose highly paid executives have behaved irresponsibly. Instead, the government should aid middle- and low-income people hurt by the financial crisis, such as homeowners facing foreclosure. Discuss the arguments for this position and against it.
4. In 2010, Senator Blanche Lincoln (D-AR) proposed that commercial banks be forbidden to trade derivative securities. Discuss the arguments for and against this proposal.
5. Of the proposed financial reforms discussed in Section 19-4, which would have significantly dampened the financial crisis of 2007–2009 if they had been in place before the crisis? Could any of the reforms have prevented the crisis entirely? Explain.
6. Draw an expanded version of Figure 19-1 (the outline of a typical financial crisis) for emerging economies. The figure should include capital flight and show how this phenomenon interacts with the other elements of a crisis.
7. In the late 1990s, some economists advised Argentina to dollarize, that is, to eliminate the peso and use the U.S. dollar as its currency. Discuss how dollarization might have changed the course of events in 2001–2002.
8. Find out what has happened to Greece's financial system and economy since this book was published. Has Greece's crisis worsened or eased? Has the crisis affected other European or non-European economies? Have events followed the typical pattern of financial crises described in this chapter? Explain.

