

ECONOMY UPDATE: 2009

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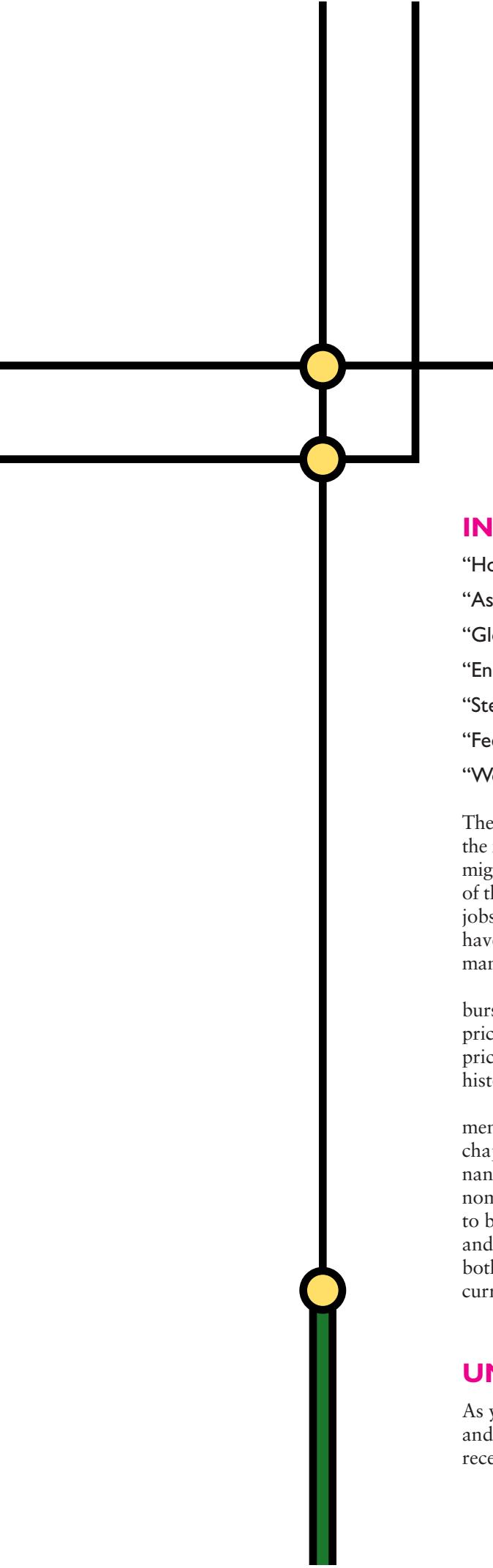
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Economy Update: 2009

INTRODUCTION

“Home Sales and Prices Continue to Plummet.”
“As Jobs Vanish, Motel Rooms Become Home.”
“Global Stock Markets Plummet.”
“Energy Prices Surge, and Stocks Fall Again.”
“Steep Slide in Economy as Unsold Goods Pile Up.”
“Fed Plans to Inject Another \$1 Trillion to Aid the Economy.”
“World Bank Says Global Economy Will Shrink in ’09.”

These headlines from *The New York Times* tell the story: The U.S. economy is in the midst of its worst recession in 25 years and, by the time it ends, this downturn might take its place as the worst economic downturn since the Great Depression of the 1930s. Average incomes have fallen; thousands of Americans have lost their jobs, their health insurance, and even their homes; and governments at all levels have struggled to deal with falling tax collections colliding with increased demands for public services like unemployment benefits and health care.

Two significant factors contributed to this myriad of problems: first, the bursting of the largest house price bubble in American history and, second, an oil price shock that sent the price of oil to its highest level in history. Average home prices fell 30 percent in 18 months. In the summer of 2008, gas prices reached historic highs, hitting \$4 per gallon throughout the United States.

How and why did these two factors, along with other contributing elements, trigger a global upheaval? These are the questions we will explore in this chapter. To do this, we will first examine a timeline of events, starting with financial market troubles in the summer of 2007 and ending with the macroeconomic situation as of the late spring of 2009. Next, we will explore the shocks to both the U.S. and international economies that caused such a severe recession and trace out their effects. Finally, we will analyze the fundamental changes in both the U.S. and international economies that created the situation in which we currently find ourselves.

UNDERSTANDING THE BIG PICTURE

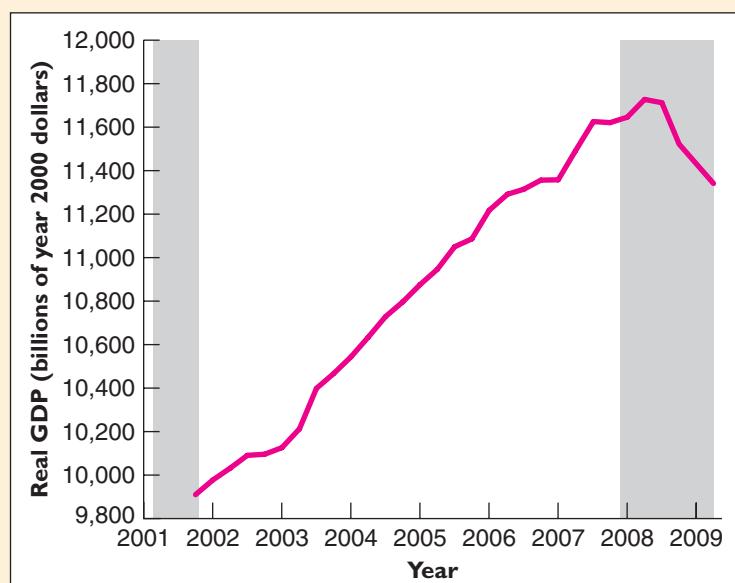
As you recall, recessions happen as part of the business cycle, but their duration and severity are often influenced by external factors. Table 1 shows selected U.S. recessions since 1929. The previous recession ended in November 2001 and

TABLE I
Selected U.S. Recessions since 1929

Peak date (beginning)	Trough date (end)	Duration (months)	Highest unemployment rate (%)	Change in real GDP (%)	Duration of subsequent expansion (months)
Aug. 1929	Mar. 1933	43	24.9	-28.8	50
Nov. 1973	Mar. 1975	16	8.5	-1.1	58
July 1981	Nov. 1982	16	9.7	-2.1	92
Mar. 2001	Nov. 2001	8	5.8	0.8	

SOURCES: Peak and trough dates, National Bureau of Economic Research; unemployment and real GDP, *Historical Statistics of the United States* and *Economic Report of the President*. See Table 22.1 in *Principles of Economics* for a complete list of recessions since 1919.

FIGURE I
Real GDP, Fourth Quarter 2001 through First Quarter 2009.



Shaded areas indicate US recessions.

SOURCE: FRED database, Federal Reserve Bank of St. Louis (<https://research.stlouisfed.org/fred2/>).

categories: households, firms, governments, and the foreign sector (that is, foreign purchasers of domestic products).¹ Corresponding to the four groups of final users are four components of expenditure: consumption, investment, government purchases, and net exports. Three of these four components all declined during the last two quarters of 2008, at accelerating rates:

- Consumption spending decreased by 3.8 percent in the third quarter and 4.3 percent in the fourth quarter;
- Investment spending fell by 1.7 percent in the third quarter and 21.1 percent in the fourth quarter;

¹Rather than writing Brief Edition Chapter X, for the rest of the chapter we will simply refer to BE X.

lasted 8 months. According to the National Bureau of Economic Research (NBER), the current recession began in December 2007. Thus, by late spring of 2009, the U.S. economy had already been in a recession for 15 months, almost twice the length of the previous recession and on track to become the longest recession since the Great Depression of the 1930s.

As of late spring of 2009, real GDP had fallen by 1.7 percent since the beginning of the recession while the unemployment rate was above 8 percent and climbing. This put the current contraction on par with the recessions of 1973–1975 and 1981–1983, which were previously considered the worst recessions since World War II.

REAL GDP SINCE 2001

The decline in real output shows up clearly in Figure 1, which plots U.S. real GDP from the end of the last recession in the fourth quarter of 2001 through the first quarter of 2009.

As we discuss in Chapter 16 (Brief Edition Chapter 12), economic statisticians divide the users of the final goods and services that make up real GDP into four categories: households, firms, governments, and the foreign sector (that is, foreign purchasers of domestic products).¹ Corresponding to the four groups of final users are four components of expenditure: consumption, investment, government purchases, and net exports. Three of these four components all declined during the last two quarters of 2008, at accelerating rates:

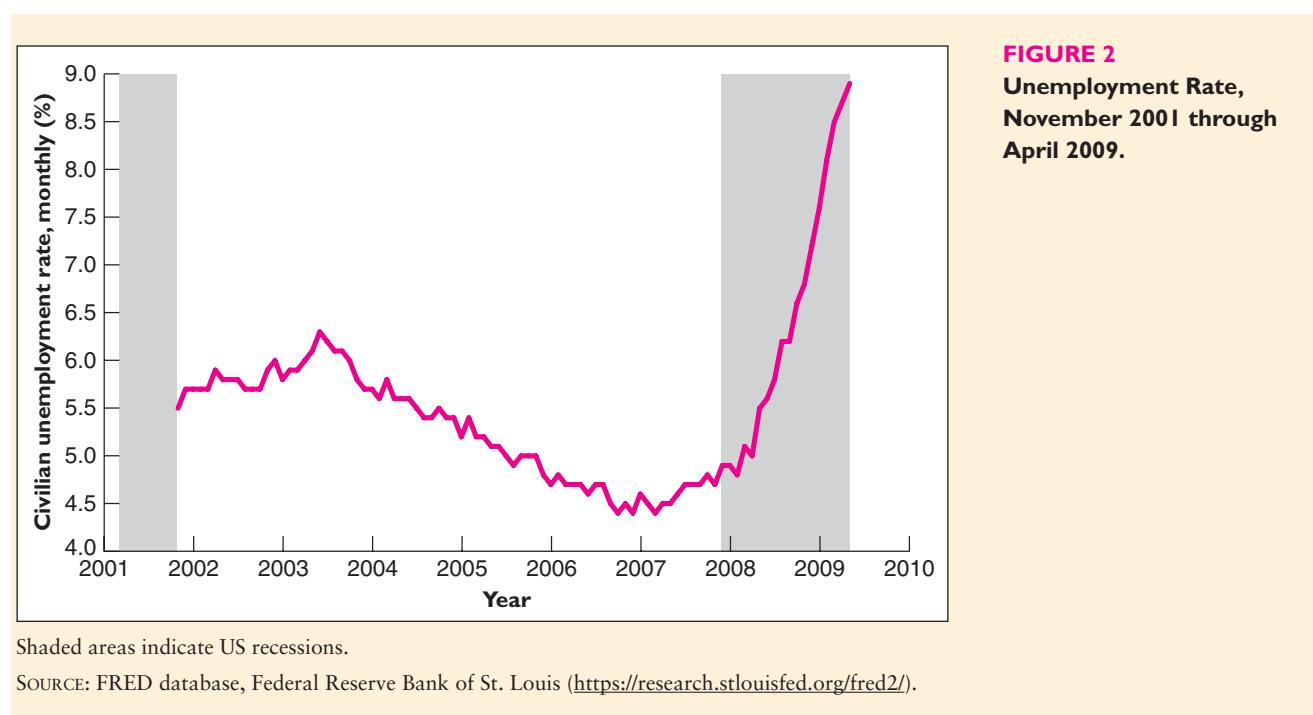
- Consumption spending decreased by 3.8 percent in the third quarter and 4.3 percent in the fourth quarter;
- Investment spending fell by 1.7 percent in the third quarter and 21.1 percent in the fourth quarter;

- Exports rose by 3 percent in the third quarter but declined by 23.6 percent in the fourth quarter; Imports shrank by 3.5 percent in the third quarter and by 16 percent in the fourth quarter.

The only component of GDP to rise over this period was **government expenditures**, which rose by 5.8 percent in the third quarter and 1.6 percent in the fourth quarter.

UNEMPLOYMENT SINCE 2001

The decreases in GDP were matched by increases in the unemployment rate. Figure 2 shows the unemployment rate since the previous recession ended in November 2001. You can see that the unemployment rate rose from 4.9 percent in December 2007 to 8.9 percent in April 2009. This increase was reflected across all demographic and educational groups. Further, when part-time workers who actually wanted to work full time are included, along with discouraged workers who had left the labor force, the unemployment rate rose from 9.0 percent in February 2008 to 15.8 percent in April 2009.

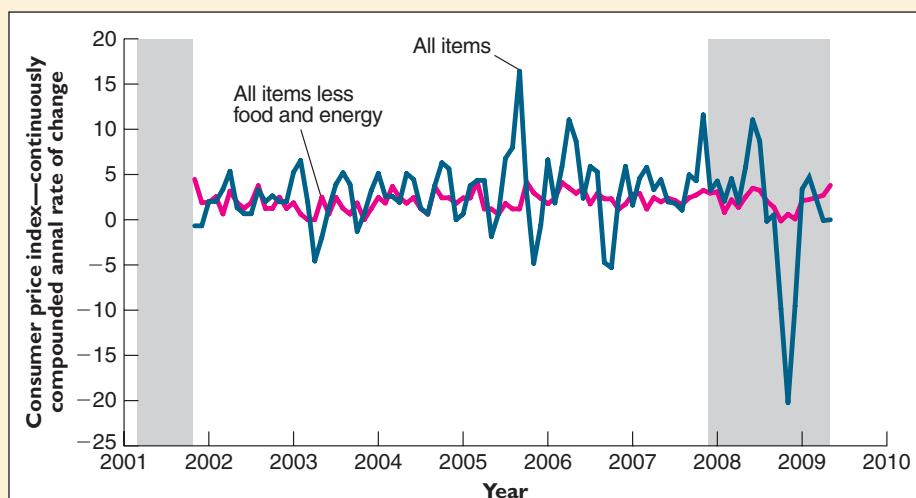


INFLATION SINCE 2001

The only bright spot throughout the recession was the inflation rate. In Chapter 17 (BE 13), we discuss how the Consumer Price Index (CPI) is constructed and how the inflation rate is calculated using the CPI. The inflation rate using the CPI is shown as the blue line in Figure 3, which plots inflation rates since November 2001. Inflation measured by the CPI was quite volatile, with rates as high as 11 percent in November 2007 and June 2008 and as low as -20 percent in November 2008. This volatility was mainly due to large increases in crude oil prices from the fall of 2007 through the summer of 2008, followed by the collapse in oil prices that began in late summer of 2008.

However, the inflation rate calculated directly from the CPI can be misleading (as we explain in Chapter 26 (BE 21)). A more useful measure of the underlying inflation trend is the core rate of inflation, which is equal to the inflation rate

FIGURE 3
Inflation Rate,
November 2001
through April 2009.



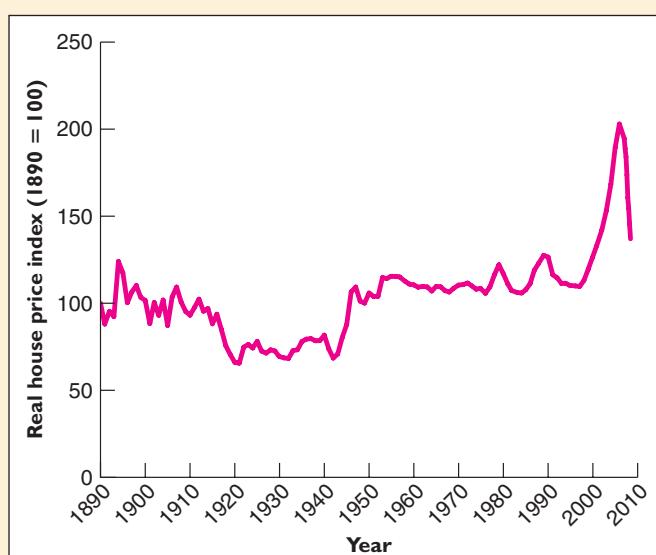
Shaded areas indicate US recessions.

SOURCE: FRED database, Federal Reserve Bank of St. Louis (<https://research.stlouisfed.org/fred2/>).

calculated from the CPI when food and energy prices are removed. This measure remained fairly steady until the last quarter of 2008, when it fell for two months and even indicated deflation in October 2008, but rose back into positive territory in early 2009.

We now have a sense of *what* happened in the past two years. Now, we must turn our attention to some important details and ask *why* the economy peaked in December 2007 and fell deeper into a recession throughout 2008 and early 2009.

FIGURE 4
Index of House Prices,
1890 to 2009.



SOURCE: Robert J. Shiller, data underlying Figure 2.1 of *The Subprime Solution*, available at <http://www.econ.yale.edu/~shiller/data.htm>.

THE HOUSE PRICE BUBBLE

The house price bubble that burst in the summer of 2006 is a primary cause of the current recession. The average price of American homes rose at a spectacular rate from the late 1990s until the summer of 2006; this phenomenon attracted both borrowers and lenders who wished to profit from the record real estate boom. This state of affairs was unprecedented in American history, as shown in Figure 4. The highest average annual rate of increase in house prices previously was the spike of 1976 to 1979, when house prices rose 4.9 percent per year. By contrast, from 2001 to 2006, average house prices rose by an average of 7 percent per year, shown in Figure 5. This number masks the fact that over the period the rate of increase *itself* rose, starting at 4 percent in 2001 and peaking at an annual rate of 12 percent in 2004–2005.

We can use the rule of 72, discussed in Chapter 19 (BE 15) to put these numbers in context. At the growth rates experienced in the 1970s and 1980s, the average price of a house doubles in 15 to 19 years. By contrast, at the growth rates

experienced in the recent house price boom, *the average price of a house doubles in about 10 years*, that is, between 50 percent and 100 percent faster than ever before.

The average home price peaked in July 2006, as shown in Figure 5. Prices at first fell gradually, declining by about 6 percent from July 2006 through May 2007. The decline accelerated, however, and between May 2007 and February 2009 the average home price dropped by 19 percent.

WHY DID THE HOUSE PRICE BUBBLE GROW SO LARGE?

The house price bubble grew so large from 2002 to 2006 because of three factors. First, households began using real estate generally, and their own homes in particular, as the primary means of increasing their wealth rather than doing so through saving. This trend should have led to an increase in interest rates, which in turn would have slowed down the formation of the bubble or perhaps even punctured it. Rates did not rise, however, which leads to the second factor in the story: The globalization of international capital markets, and the consequent increase in the supply of saving available to American borrowers, kept interest rates from rising and pricking the bubble. Third, the Federal Reserve did not begin to raise interest rates until mid-2004, and only then in $\frac{1}{4}$ -percentage-point increments. This action was not enough to stop the bubble from growing.

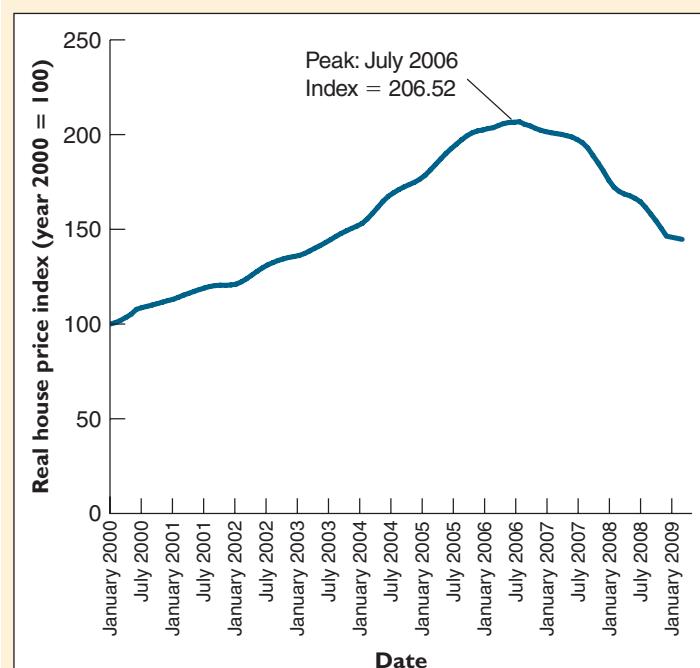
THE HOUSEHOLD SHIFT FROM SAVING TO CAPITAL GAINS

In Chapter 20 (BE 16), we show that a household can increase its wealth in two ways: through saving and through capital gains. Capital gains can accrue rapidly if the price of an asset (such as a stock, bond, or home) is rising quickly. By contrast, saving is a slow, steady process of accumulating wealth that lacks the “get rich quick” cachet of windfall capital gains. The house price increases of the 1997-to-2006 period represented massive capital gains, and this encouraged households to increase the value of their real estate holdings, rather than save, as a way of increasing their wealth. This drove up the demand (and prices) for homes even further, encouraging yet more people to enter the housing market. This is a classic example of how a bubble forms: People believe that the value of an asset (e.g., a house) is going to increase, and the demand for that asset rises, causing the price to increase, encouraging even more demand for the asset and further increases in the asset’s price.²

SAVING, INVESTMENT, AND FINANCIAL MARKETS

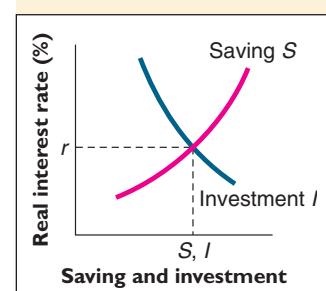
We can use the tools we develop in Chapters 20 and 28 (BE 16 and 22) to analyze how the bubble affected financial markets and, more importantly, why interest rates did not increase. The model is shown in Figure 6, which is a reproduction of Figure 20.7 (BE 16.7). The real interest rate equilibrates the amount of saving that is available in

FIGURE 5
Index of House Prices,
Monthly, January 2000
to February 2009.



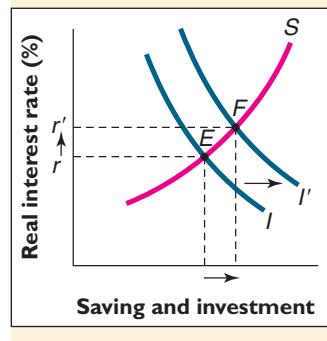
SOURCE: S&P/Case-Shiller Home Price, available at <http://www.metroarea.standardandpoors.com>.

FIGURE 6
The Supply of Saving and
Demand for Investment.



²For a clear discussion of this phenomenon, see Robert J. Shiller, *The Subprime Solution: How Today's Global Financial Crisis Happened, and What to Do about It.* (Princeton, NJ: Princeton University Press, 2008).

FIGURE 7
The Housing Boom.

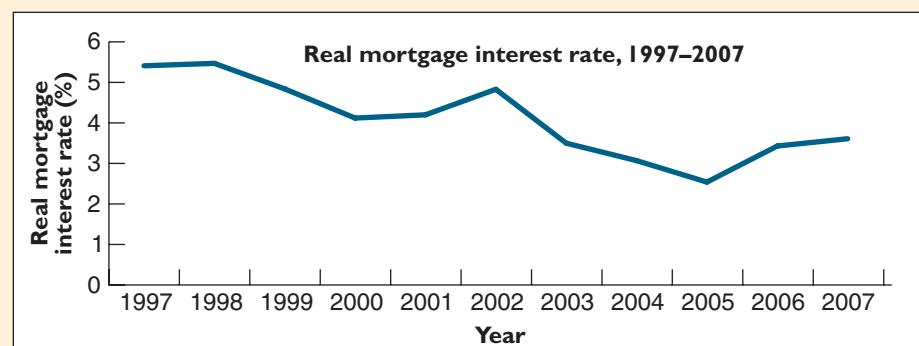


the financial market with the demand for investment; one of the components of investment demand is newly produced housing.

The house price bubble and the attendant increase in the demand for housing thus led to a large increase in the demand for investment. This is shown in Figure 7. According to Figure 7, the housing boom should have caused real interest rates to rise between 2001 and 2006. This is where the bubble could have been slowed or stopped. In particular, an increase in real interest rates would have made loans more expensive for prospective homebuyers, and this would have decreased the benefits of buying a home because the rising value of the home would be offset in part by the rising cost of purchasing the home. This likely would have slowed the demand for homes and kept the house price bubble from inflating at the rate that it did.

That is not what happened to real mortgage rates, however, as shown in Figure 8. There were increases in mortgage rates in 2002 and 2006, but the general trend in real mortgage interest rates was downward. So why did real interest rates not rise and slow down the bubble?

FIGURE 8
Real Mortgage Interest Rates, Annual, 1997–2007.

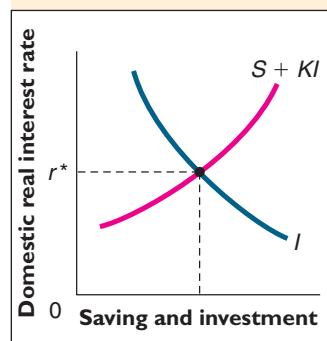


SOURCE: *Economic Report of the President 2009*, Tables B-64 and B-73.

Figure 7 leaves out an important factor in modern financial markets: the globalization of capital markets. Specifically, savers in any country can put their resources into assets throughout the world. This means that savers in such fast-growing economies as China and India could send their savings to the United States, where borrowers such as the U.S. government could use the funds to cover rising budget deficits (caused by tax cuts and military expenditures), and others could purchase homes.³

We can add globalized financial markets to our model by adding international capital flows to the supply of saving; this is shown in Figure 9 where KI represents international capital inflows. We can now explain one reason that real interest rates did not rise and cut short the housing price boom. Figure 10 tells the story using our saving-investment model. First, as we discussed, the housing price boom increased the demand for investment (I). Second, despite declines in private and public saving, the supply of saving ($S + KI$) increased due to large capital inflows from abroad. Thus, the increase in investment demand, driven by the house price bubble, was offset by an increase in the supply of saving, driven by international capital inflows.

FIGURE 9
The Saving-Investment Diagram for an Open Economy.



THE FEDERAL RESERVE AND INTEREST RATES, 2002–2004

There was one other actor that perhaps could have slowed the house price bubble: the Federal Reserve. As we discuss in Chapter 24 (BE 20), the Federal Reserve can control the real interest rate in the short run; thus, the Fed could have started increasing interest rates when it saw signs of a bubble in the housing market in order

³See Ben S. Bernanke, "The Global Saving Glut and the U.S. Current Account Deficit." Speech given on April 14, 2005, as the Homer Jones Lecture, St. Louis, Missouri, available at <http://www.federalreserve.gov/boarddocs/speeches/2005/20050414/default.htm>.

to slow it down or even stop it from forming. John B. Taylor, an economist at Stanford University, has argued forcefully that the Fed should have begun raising interest rates as early as 2002.⁴

The Fed chose not to do this. Rather, in the wake of the September 11, 2001, terrorist attacks, and due to fears of deflation, the Fed chose to keep interest rates low through the summer of 2004. Then, it began raising interest rates in 1/4-percentage-point increments from the summer of 2004 through the summer of 2007.

THE ROLE OF DECLINING HOME PRICES IN THE FINANCIAL CRISES OF 2007 AND 2008

The decline in house prices that began in July 2006 set off a chain of events that led to a severe financial crisis in August 2007 and a worldwide financial panic in the fall of 2008. These financial crises led to sharp declines in aggregate demand throughout the world, pushing the global economy into a deep recession. Here, we will focus on two questions. First, how was the fall in house prices transmitted to the financial markets? Second, why did financial markets stop functioning in the fall of 2008?

THE SECURITIZATION OF THE MORTGAGE MARKET

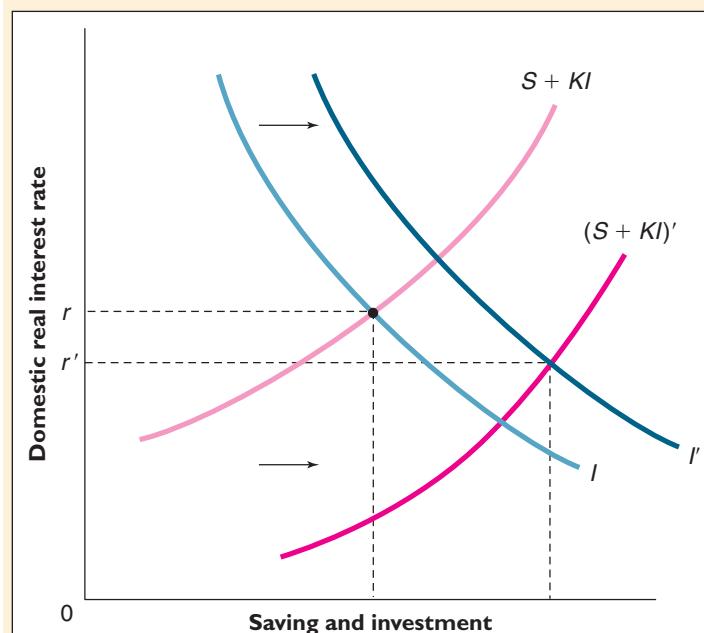
The key connection between the decline in home prices and the meltdown in financial markets is a financial instrument known as a mortgage-backed security. A mortgage-backed security is a bond whose value is determined by a pool of home mortgages. As the value of the mortgages rises, the value of the security rises, and when the value of the mortgages falls, the value of the security falls as well.

The advantage of these securities is that they allow investors to spread their risk. That is, instead of a bank holding on to every mortgage that it writes, it can sell the mortgage to another financial intermediary, which then packages together many mortgages into a mortgage-backed security. Insurance companies, investment banks, and other commercial banks purchased these securities because they were thought to be relatively safe investments. After all, the securities were backed by mortgages, and mortgages were secured by real estate that could always be sold to pay off the bond holders.

Mortgage-backed securities were not entirely without risk, however. In order to protect themselves from the riskiness of the securities, financial institutions purchased a form of insurance called a credit-default swap. It works like this: Suppose that you hold a security that has a risk of default. For a small fee, a company offers to pay you if the security's issuer actually does default. If the security reaches maturity and is paid off, the company gets to keep the fee. Unlike true insurance policies, however, the government did not require issuers of swaps to put aside any reserves to cover defaults. This would come back to haunt the financial markets, as we will see in the next section.

⁴John B. Taylor, *Getting Off Track: How Government Actions and Interventions Caused, Prolonged, and Worsened the Financial Crisis* (Stanford, CA: Hoover Institution Press, 2009).

FIGURE 10
The Housing Boom with International Capital Inflows.



The stage was now set for declining house prices to affect the financial markets in a big way. As house prices began to fall in 2006 and 2007, holders of mortgage-backed securities started to sell their bonds since they (correctly) thought that the value of these bonds would start to fall. This resulted in an increase in the supply of mortgage-backed securities for sale, which decreased the price of the securities and actually made them less valuable to those who continued to hold them. All of the financial intermediaries who held mortgage-backed securities saw the value of their assets shrink as the value of the mortgage-backed securities they held declined, so they started selling these securities even more quickly in order to get them off of their books, depressing the prices further.

THE PANIC OF 2008

The first signs of the trouble caused by mortgage-backed securities appeared in August 2007. A number of financial intermediaries in Europe and the United States reported losses due to the declining value of mortgage-backed securities in their portfolios. A large British bank, Northern Rock, failed, setting off a banking panic in Great Britain. Northern Rock had aggressively purchased real estate debt (both mortgages and mortgage-backed securities), and financial market participants started to ask questions about the viability of other financial institutions that had made similar investments. Their attention soon focused on even larger investment banks like Bear Stearns, Lehman Brothers, and Merrill Lynch.

The Panic Reaches the United States

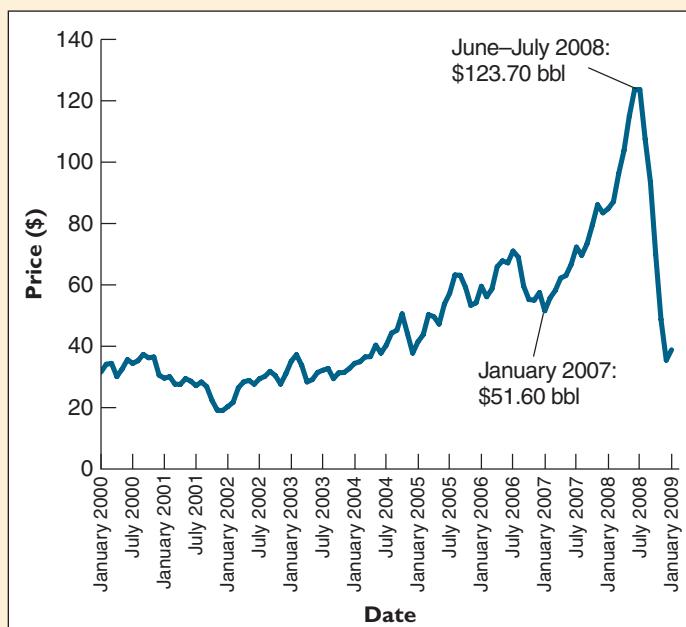
The first of these institutions to collapse was Bear Stearns, in March 2008. Bear Stearns's stock price had been falling since the summer of 2007, when two of its hedge funds collapsed due to the decline in the value of mortgage-backed securities.

By early March, Bear Stearns's stock price was rapidly approaching zero, and officials at the Federal Reserve became concerned that a Bear Stearns bankruptcy would have ripple effects throughout Wall Street and the global financial system. As a result, the Federal Reserve arranged financing and loan guarantees so that fellow bank JP Morgan Chase could purchase Bear Stearns and help them avoid bankruptcy.

Many observers at the time thought this then-unprecedented deal would be the end of the problem. A major investment bank had failed, but the system was intact, and the Federal Reserve had proven that it would take strong action to prevent a financial crisis. But investor confidence was still far from solid when a second problem hit: on top of the declines in home prices, the U.S. economy suffered a record rise in crude oil prices. Figure 11 shows the magnitude of this oil price shock. Because supply in the oil industry had been largely stagnant in the face of sharply rising global demand from China, India, and elsewhere, crude oil prices shot upward. In 2007, this increase in oil prices accelerated, more than doubling in the year and a half between January 2007 and July 2008.

The effect of this oil price shock on financial markets was immediate. Many companies that were dependent on oil for production and sales faced severe challenges; General Motors, Ford, and

FIGURE 11
Real Crude Oil Prices,
Monthly, January 2000 to
January 2009.



SOURCE: Energy Information Administration, U.S. Department of Energy, <http://eia.doe.gov/>.

Chrysler, for example, saw slumping demand for their large cars and trucks as consumers tried to cut back on gas expenditures. Further, higher oil prices made new home construction even less attractive, especially in far-flung places that required long work commutes. The prices of these homes, already in decline, fell even faster as a result of diminished demand.

Government Makes Tough Decisions

As prices of homes fell and prices of oil-dependent activities rose, even more individuals began to default on their home loans. Two pillars of the mortgage finance industry—Fannie Mae (the Federal National Mortgage Association) and Freddie Mac (the Federal Home Loan Mortgage Corporation)—had been driven to the brink of bankruptcy by defaults. Fannie Mae and Freddie Mac were government-sponsored private corporations that were the largest issuers of private home mortgage loans in the world; the far-reaching implications of their potential failure caused the government to take the extraordinary move of seizing operating control of the corporations on September 7, 2008.

One week later, the government again had a tough decision to make. Lehman Brothers, one of the oldest investment banks in the United States, had been a heavy investor in mortgage-backed securities; as the value of these securities declined drastically, so did the company's solvency. On September 14, the Treasury Department and the Federal Reserve allowed Lehman Brothers to enter bankruptcy. This unprecedented decision set off a panic in the financial markets. Previously, many in the industry had assumed that the government would automatically rescue troubled financial giants. If Lehman could fail, who was next?

The answer came quickly. American International Group (AIG) was the largest issuer of credit-default swaps. If these contracts had been true *insurance* contracts, government regulations would have required that AIG put a minimum amount of money in reserve to cover losses if one of their contracts failed. But sellers of credit-default swaps like AIG were not required to hold assets in reserve to cover future claims, so many did not; when mortgage-backed securities began to fail and AIG's default-swap clients demanded payment virtually all at once, the company quickly ran out of money.

Because AIG's debts to other financial firms were so large, policymakers feared that allowing it to go bankrupt could touch off a chain of additional bankruptcies, resulting in a meltdown of the global financial system—a meltdown far beyond the panic caused by the failure of Lehman Brothers. The government felt that it had no choice but to intervene. On September 16, just two days after the failure of Lehman Brothers, the government announced that it would provide \$20 billion (later increased to \$150 billion) in financing for AIG to prevent a domino-effect bankruptcy catastrophe.

At this point, it became startlingly clear that many of the nation's oldest and largest financial firms were on the brink of insolvency. On September 18, then-Treasury Secretary Henry Paulson proposed the Troubled Asset Relief Program (TARP), under which the government would use public funds to buy mortgage-backed securities and other "troubled" assets from banks. If the banks no longer held these problematic assets, the theory went, then they should be in a stronger financial position to successfully weather the turmoil.

Public opinion was sharply divided on the merits of this "bank bailout" plan. Many critics were understandably reluctant to commit taxpayer dollars; others felt that not intervening would have even worse repercussions. The debate raged on; by the time the Senate and the House agreed on a modified version of the plan on October 3, the financial markets had almost ceased to function.

Since the beginning of the economic downturn, the Fed had acted aggressively in an effort to inject additional liquidity into the banking system to keep funds flowing for large corporate investors as well as the average consumer. These measures, however, did little to defuse the economic crisis in the short run. Banks were still

charging 3 percentage points above the interest rate on Treasury bills on loans to each other; typically, the fee is $\frac{1}{4}$ to $\frac{1}{2}$ percent. Companies that relied on short-term debt could not get credit, and banks stopped making loans to even their most credit-worthy customers.

The effects of the panic trickled down from the major investment banks and financial markets to everyday workers. It became difficult, if not impossible, for firms to hire new workers (or, in some cases, even pay existing ones), purchase necessary capital, cover operating costs, and produce goods and services at the same rates as they had been able to in the past.

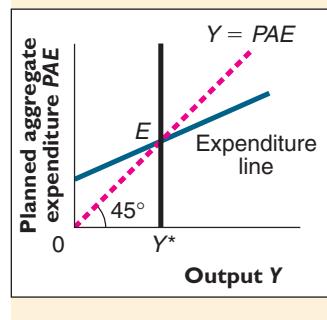
ECONOMIC TOOLS AND THE RECESSION

We've seen how the economy swung from a bubble to a recession, but how do government policy and economic tools work to fix it? To answer this question, we will need to briefly revisit Chapters 21, 23, and 24 (BE 17, 19, and 20).

BANK LENDING

If you recall from Chapter 21's example (BE 17) of the Bank of Gorgonzola, bank lending is essential to creating new money and keeping an economy flowing. Unfortunately, banks became extremely reluctant to assume additional risk in any form, including issuing additional loans. Thus, many conventional sources of credit simply dried up during the fall of 2008, harming companies that relied on credit to keep their operations running. Also, for a recovery to happen, other businesses will need access to credit in order to expand production. This situation is why government policymakers focused so intently on steps to improve the financial condition of the nation's banks.

FIGURE 12
Equilibrium in the Simple Keynesian Model.



APPLYING THE SIMPLE KEYNESIAN MODEL

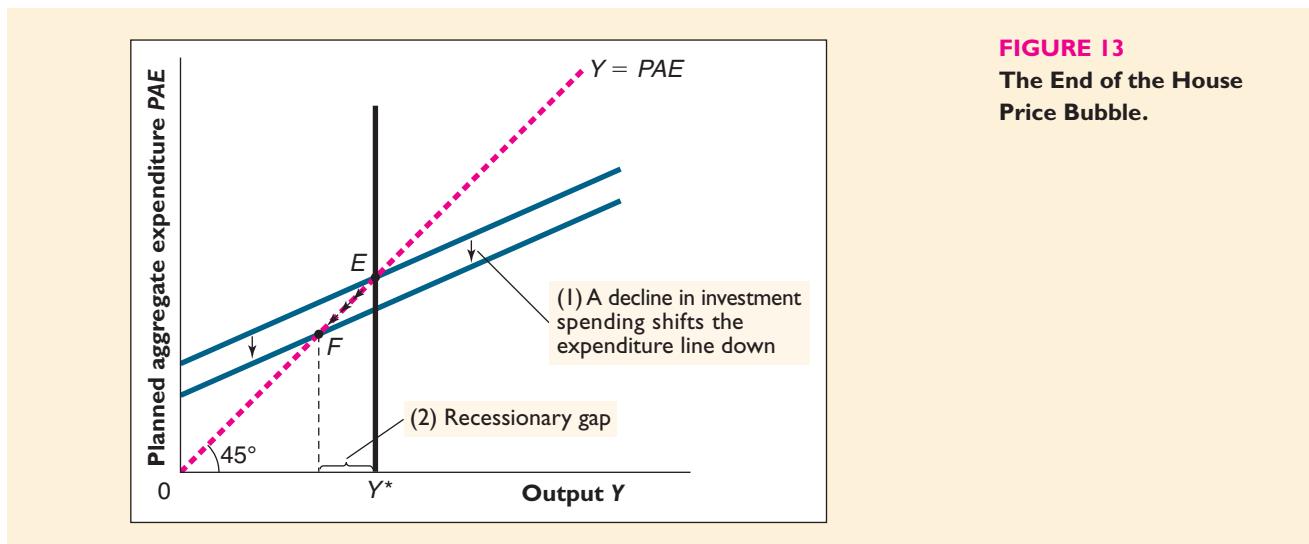
The simple Keynesian model is developed in Chapter 23 (BE 19) and summarized by the diagram in Figure 12. The economy is in both short-run and long-run equilibrium at point E ; this means that the economy's actual output is equal to potential GDP and that unemployment is at the natural rate of unemployment.

The bursting of the housing bubble and the Panic of 2008 caused both businesses and households to cut back on their spending in two ways. First, the financial market disruptions made it difficult for businesses to borrow funds for investment spending and for consumers to borrow funds for purchasing housing and automobiles. Second, the financial crisis increased the level of uncertainty about the future, which led to a reduction in autonomous spending, or spending independent of output. Analytically, this situation can be represented as a downward shift in the planned aggregate expenditure (PAE) line shown in Figure 13. At point E , the economy is in a situation where PAE is less than actual output; the natural response of businesses is to reduce production until their output again meets demand (seen as the movement from point E to point F in Figure 13). At F , the economy is in a recession, with output below potential. Further, since output is below potential, Okun's Law tells us that unemployment has now risen above the natural rate.⁵

RESPONSES TO THE RECESSION

The recession in the United States had wide-reaching implications for other parts of the world. European governments responded to the recession on October 10, 2008, by making direct injections of capital into troubled banks. Instead of buying troubled

⁵Remember: Okun's Law is a relationship between the output gap and cyclical unemployment. We present this relationship in Chapter 22 (BE 18).

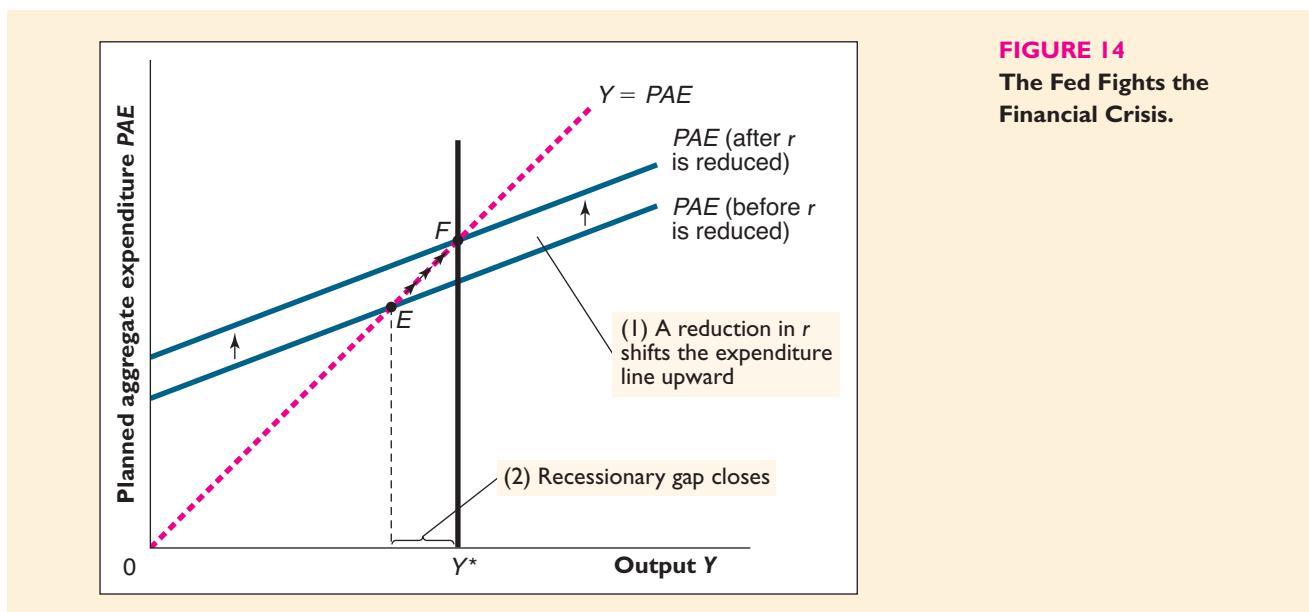


assets as the United States had first done, British and European Union leaders bought actual shares of stock in their banks and investment firms to keep them supplied with capital.

Days later, the United States followed Britain and Europe's lead. The U.S. Treasury Department announced on October 13 that it, too, would inject additional capital directly into financially shaky banks. But the U.S. government did not stop there in its response.

MONETARY POLICY RESPONSES

The Federal Reserve was the “first responder” to both the bursting of the housing price bubble and the Panic of 2008. We can summarize the effects of their actions in the United States by using the simple Keynesian model shown in Figure 14. The



Fed aggressively cut the federal funds rate from 5.25 percent in August 2007 to zero in December 2008, as seen in the table below.

Federal Reserve Meeting Date	Federal Funds Rate	Change	Federal Reserve Meeting Date	Federal Funds Rate	Change
9-01-2007	5.25%		4-30-2008	2.00	-0.25
9-18-2007	4.75%	-0.50%	6-25-2008	2.00	No change
10-31-2007	4.50	-0.25	8-5-2008	2.00	No change
12-11-2007	4.25	-0.25	9-16-2008	2.00	No change
1-18-2008	3.50	-0.75	10-8-2008	1.50	-0.50
1-30-2008	3.00	-0.50	10-29-2008	1.00	-0.50
3-18-2008	2.25	-0.75	12-15-2008	0-0.25	-0.75-1.00

These consistent cuts made it cheaper for both businesses and households to borrow funds to make purchases once the banks started lending again. The results of these actions are shown in Figure 14 by the upward shift in the expenditure line and the movement of the economy from point *E* toward point *F*. Note, however, that the Fed's actions did not actually push the economy back to point *F* in 2008 and 2009; rather, the correct way to think about the role of monetary policy is that it prevented a recession that could have been much, much worse.

As we discuss in Chapter 24 (BE 20), the Fed has traditionally employed three tools to conduct monetary policy: open market operations, changes in the discount rate, and changes in reserve requirements. The Fed repeatedly used the first two of these tools between August 2007 and the spring of 2009 to manage the economic downturn. They also created a variety of new tools, including loosening restrictions on rules for banks to borrow directly from the Fed and enacting a program to purchase unsecured corporate bonds. On March 17, 2009, the Fed took an even bolder step, announcing plans to purchase up to \$1 trillion of long-term U.S. Treasury bonds. All these steps help to match the needs of borrowers with funds available from savers.⁶

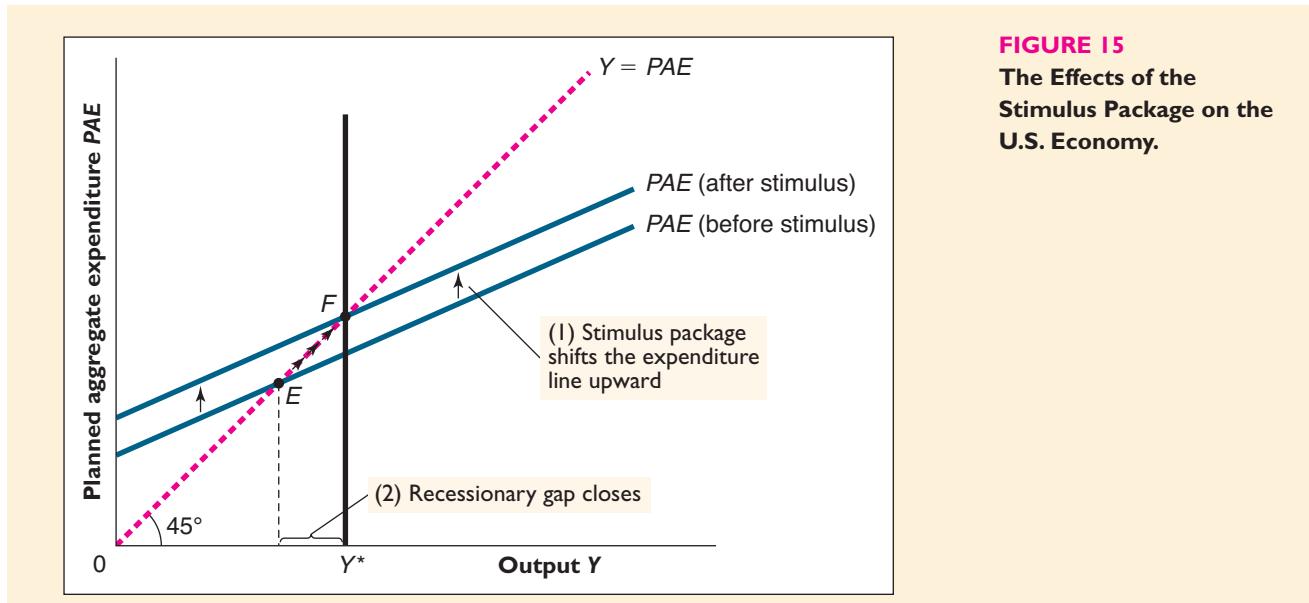
FISCAL POLICY RESPONSES

Monetary policy was critical to preventing an even worse recession from occurring, but the recession was just too severe for monetary policy to succeed by itself. Therefore, the United States also turned to fiscal policy, which, as you recall from Chapter 23 (BE 19), involves changing the levels of government spending and taxation in order to increase spending and push the economy back toward potential output.

On February 17, 2009, the U.S. government passed a stimulus bill that implemented widespread tax relief and initiated billions of dollars in government-funded municipal projects nationwide. The final effects of this particular bill are yet to be seen, but we can visualize what these effects might be in the simple Keynesian model (Figure 15).

Like monetary policy, fiscal policy shifts the expenditure line upward, causing short-run equilibrium output to rise from point *E* to point *F*, ultimately pushing the economy toward an equilibrium closer to its potential output.

⁶A complete list of the Fed's new tools is available at http://www.federalreserve.gov/monetarypolicy/bst_crisisresponse.htm.



WHERE DO WE GO FROM HERE?

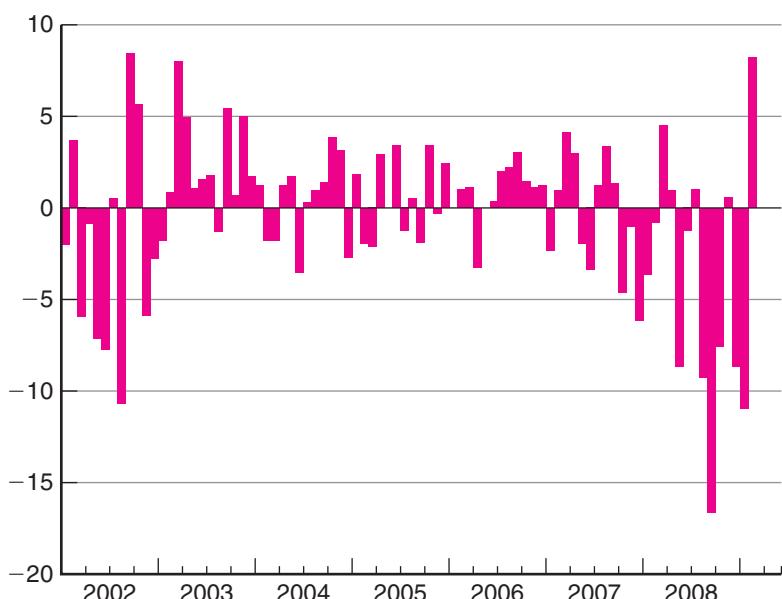
How well have the government's fiscal and monetary policies worked? As this supplement goes to press in mid-May of 2009, it is too early to tell. Some analysts have attempted to gauge the economy's response to stimulus measures by tracking the stock market's reaction to them. As the figure here shows, the market remained solidly pessimistic throughout 2008 and into the first quarter of 2009. Since early March of 2009, however, stocks have staged a general rally, with the S&P 500 having risen more than 25 percent through the beginning of April. While these upturns are a positive signal, however, stock prices alone are not a reliable predictor of economic recovery. Several indicators are still mixed, including GDP, CPI, and unemployment figures. As of late spring 2009, a number of issues still need to be addressed before a true recovery can happen.

DEALING WITH TOXIC ASSETS

The mortgage-backed securities, now known as "toxic assets," that were at the heart of the financial crisis are still on the books of many financial intermediaries. The central problem faced by the holders of these securities is that no one knows exactly how much they are worth. For example, if a mortgage-backed security was worth \$1 million when housing prices were rising, what is it worth today with those prices in free fall? Since no one can answer this question, no one is willing to risk purchasing these securities.

Treasury Secretary Timothy Geithner proposed that the government loan private investors money to purchase toxic assets; if the assets were eventually sold for their face value or higher, the government would be paid back for the full amount of the loan. However, if the assets eventually sold for less

Monthly Returns on S&P 500 Index January 2002 to March 2009.



than their face value, the government would only get back part of the money it loaned and thus would share in the loss with the private investor.

Many economists, among them Paul Krugman of Princeton University, do not believe this plan will work. They argue that the government loans will not encourage enough investors to purchase toxic assets and thus the mortgage-backed securities will continue to fester on bank balance sheets. They recommend the government take over the banks on a temporary basis, splitting them into “good” banks that are free of toxic assets and “bad” banks that become the repositories for all the toxic assets. The good banks could then continue to operate independently without danger, and the bad ones could be overseen by the government for additional security against failure.

THE FUTURE OF REGULATION

A second issue that must be dealt with is the question of how the banks found themselves in this situation in the first place. The main reason seems to be that from the early 1980s to the late 1990s, the regulation of financial intermediaries loosened greatly, and banks were allowed to invest in assets far beyond their usual portfolios of loans and safe securities. Unlike commercial banks, which were prevented from lending out more than 10 times the capital they owned, investment banks often loaned out 30 to 50 times their capital holdings in the years leading up to the downturn.

In addition to new banking regulations, the financial markets themselves may be in for more stringent rules. A clear example of this is the market for credit-default swaps; since these swaps are like insurance contracts, many feel that they should be regulated like traditional insurance policies. However, in the late 1990s, legislation was enacted that prevented credit-default swaps from being regulated by any federal body.

ANOTHER STIMULUS PACKAGE?

Finally, as this update goes to press, we note that many economists are arguing that the economy may require an additional stimulus package. The nation’s employment rolls are continuing to decline sharply and bank balance sheets remain shaky. But by the time you read this, more data will be available, and more analyses will have been conducted on the causes and consequences of the past year’s events.

We hope that you will use the ideas, concepts, and tools that you learn in your economics courses to be an active participant in the debate about which policies our country should pursue in the months and years ahead.