With this look at the Federal Reserve Banks' consolidated balance sheet, we can now explore how the Fed can influence the money-creating abilities of the commercial banking system. The Fed has three tools of monetary control it can use to alter the reserves of commercial banks:

- Open-market operations
- The reserve ratio
- The discount rate

Open-Market Operations

Bond markets are "open" to all buyers and sellers of corporate and government bonds (securities). The Federal Reserve is the largest single holder of U.S. government securities. The U.S. government, not the Fed, issued these Treasury bills, Treasury notes, and Treasury bonds to finance past budget deficits. Over the decades, the Fed has purchased these securities from major financial institutions that buy and sell government and corporate securities for themselves or their customers.

The Fed's **open-market operations** consist of the buying of government bonds from, or the selling of government bonds to, commercial banks and the general public. (The Fed actually buys and sells the government bonds to commercial banks and the public through two dozen or so large financial firms, called "primary dealers.") Openmarket operations are the Fed's most important instrument for influencing the money supply.

Buying Securities

Suppose that the Fed decides to have the Federal Reserve Banks buy government bonds. They can purchase these bonds either from commercial banks or from the public. In both cases the reserves of the commercial banks will increase.

From Commercial Banks When Federal Reserve Banks buy government bonds *from commercial banks,*

(*a*) The commercial banks give up part of their holdings of securities (the government bonds) to the Federal Reserve Banks.

(*b*) The Federal Reserve Banks, in paying for these securities, place newly created reserves in the

Commercial Banks

Fed Buys Bonds from Commercial Banks

Federal Reserve Banks

Liabilities and Assets net worth

Securities (*a*)	Reserves of commercial banks (*b*)

Liabilities and Assets net worth

Securities (*a*)
Reserves (*b*)

(*a*) Securities (*b*) Reserves

The upward arrow shows that securities have moved from the commercial banks to the Federal Reserve Banks. So we enter " Securities" (minus securities) in the asset column of the balance sheet of the commercial banks. For the same reason, we enter " Securities" in the asset column of the balance sheet of the Federal Reserve Banks.

The downward arrow indicates that the Federal Reserve Banks have provided reserves to the commercial banks. So we enter " Reserves" in the asset column of

the balance sheet for the commercial banks. In the liability column of the balance sheet of the Federal Reserve Banks, the plus sign indicates that although commercial bank reserves have increased, they are a liability to the Federal Reserve Banks because the reserves are owned by the commercial banks. What is most important about this transaction is that when Federal Reserve Banks purchase securities from commercial banks, they increase the reserves in the banking system, which then increases the lending ability of the commercial banks.

From the Public The effect on commercial bank reserves is much the same when Federal Reserve Banks purchase securities from the general public. Suppose the Gristly Meat Packing Company has government bonds

accounts of the commercial banks at the Fed. (These reserves are created "out of thin air," so to speak!) The reserves of the commercial banks go up by the amount of the purchase of the securities.

We show these outcomes as (*a*) and (*b*) on the following consolidated balance sheets of the commercial banks and the Federal Reserve Banks:

that it sells in the open market to the Federal Reserve Banks. The transaction has several elements:

(*a*) Gristly gives up securities to the Federal Reserve Banks and gets in payment a check drawn by the Federal Reserve Banks on themselves.

(*b*) Gristly promptly deposits the check in its account with the Wahoo bank.

(*c*) The Wahoo bank sends this check against the Federal Reserve Banks to a Federal Reserve Bank for collection. As a result, the Wahoo bank enjoys an increase in its reserves.

To keep things simple, we will dispense with showing the balance sheet changes resulting from the Fed's sale or purchase of bonds from the public. But two aspects of this transaction are particularly important. First, as with Federal Reserve purchases of securities directly from commercial banks, the purchases of securities from the public increases the lending ability of the commercial banking system. Second, the supply of money is directly increased by the Federal Reserve Banks' purchase of government bonds (aside from any expansion of the money supply that may occur from the increase in commercial bank reserves). This direct increase in the money supply has taken the form of an increased amount of checkable deposits in the economy as a result of Gristly's deposit.

The Federal Reserve Banks' purchases of securities from the commercial banking system differ slightly from their purchases of securities from the public. If we assume that all commercial banks are loaned up initially, Federal Reserve bond purchases *from commercial banks* increase the actual reserves and excess reserves of commercial banks by the entire amount of the bond purchases. As shown in the left panel in Figure 14.2, a $1000 bond purchase from a

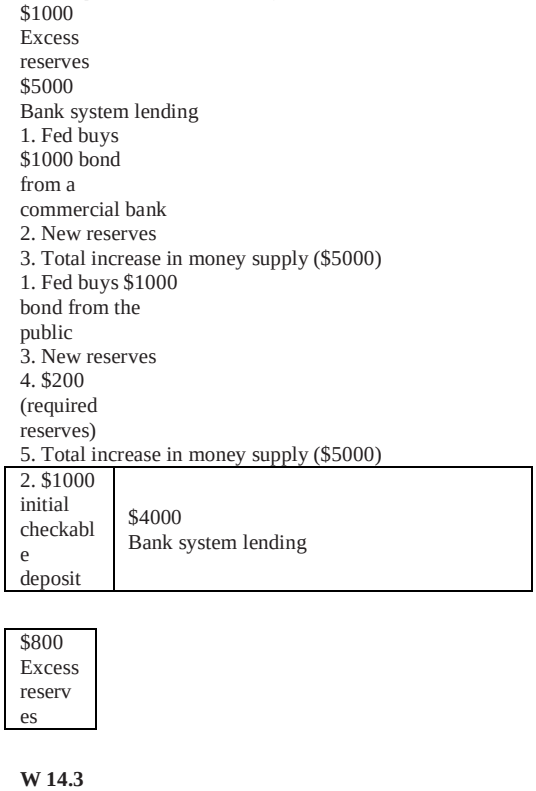
commercial bank increases both the actual and the excess reserves of the commercial bank by $1000.

In contrast, Federal Reserve Bank purchases of bonds from the public increase actual reserves but also increase checkable deposits when the sellers place the Fed's check into their personal checking accounts. Thus, a $1000 bond purchase from the public would increase checkable deposits by $1000 and hence the actual reserves of the loaned-up banking system by the same amount. But with a 20 percent reserve ratio applied to the $1000 checkable deposit, the excess reserves of the banking system would be only $800 since $200 of the $1000 would have to be held as reserves.

However, in both transactions the end result is the same: When Federal Reserve Banks buy securities in the open market, commercial banks' reserves are increased. When the banks lend out an amount equal to their excess reserves, the nation's money supply will rise. Observe in Figure 14.2 that a $1000 purchase of bonds by the Federal Reserve results in a potential of $5000 of additional money, regardless of whether the purchase was made from commercial banks or from the general public.

Selling Securities As you may suspect, when the Federal Reserve Banks sell government bonds, commercial banks' reserves are reduced. Let's see why.

FIGURE 14.2 **The Federal Reserve's purchase of bonds and the expansion of the money supply.** Assuming all banks are loaned up initially, a Federal Reserve purchase of a $1000 bond from either a commercial bank or the public can increase the money supply by $5000 when the reserve ratio is 20 percent. In the left panel of the diagram, the purchase of a $1000 bond from a commercial bank creates $1000 of excess reserves that support a $5000 expansion of checkable deposits through loans. In the right panel, the purchase of a $1000 bond from the public creates a $1000 checkable deposit but only $800 of excess reserves, because $200 of reserves is required to "back up" the $1000 new checkable deposit. The commercial banks can therefore expand the money supply by only $4000 by making loans. This $4000 of checkable-deposit money plus the new checkable deposit of $1000 equals $5000 of new money.



W 14.3
Open-market operations

To Commercial Banks When the Federal Reserve Banks sell securities in the open market to commercial banks,

(*a*) The Federal Reserve Banks give up securities that the commercial banks acquire.

(*b*) The commercial banks pay for those securities by drawing checks against their deposits—that is, against their reserves—in Federal Reserve Banks. The Fed collects those checks by reducing the commercial banks' reserves accordingly.

The balance-sheet changes—again identified by (*a*) and (*b*)—appear as shown below. The reduction in commercial bank reserves is indicated by the minus signs before the appropriate entries.

checkable-deposit money is also reduced by $1000 by the sale. Since the commercial banking system's outstanding checkable deposits are reduced by $1000, banks need keep $200 less in reserves.

Whether the Fed sells bonds to the public or to commercial banks, the result is the same: When Federal Reserve Banks sell securities in the open market, commercial bank reserves are reduced. If all excess reserves are already lent out, this decline in commercial bank reserves produces a decline in the nation's money supply. In our example, a $1000 sale of government securities results in a $5000 decline in the money supply whether the sale is made to commercial banks or to the general public. You can verify this by reexamining Figure 14.2 and tracing the effects of a *sale* of a $1000 bond by the Fed either to commercial banks or to the public.

What makes commercial banks and the public willing to sell government securities to, or buy them from, Federal Reserve Banks? The answer lies in the price of bonds and their interest yields. We know that bond prices and interest rates are inversely related. When the Fed buys government bonds, the demand for them increases. Government bond prices rise, and their interest yields decline. The higher bond prices and their lower interest yields prompt banks, securities firms, and individual holders of government bonds to sell them to the Federal Reserve Banks.

When the Fed sells government bonds, the additional supply of bonds in the bond market lowers bond prices and raises their interest yields, making government bonds attractive purchases for banks and the public.

The Reserve Ratio

The Fed can also manipulate the **reserve ratio** in order to influence the ability of commercial banks to lend. Suppose a commercial bank's balance sheet shows that reserves are $5000 and checkable deposits are $20,000. If the legal reserve ratio is 20 percent (row 2, Table 14.2), the bank's required reserves are $4000. Since actual reserves are $5000, the excess reserves of this bank are $1000. On the basis of $1000 of excess reserves, this one bank can lend $1000; however, the banking system as a whole can create a maximum of $5000 of new checkable-deposit money by lending (column 7).

Raising the Reserve Ratio Now, what if the Fed raised the reserve ratio from 20 to 25 percent? (See row 3.) Required reserves would jump from $4000 to $5000, shrinking excess reserves from $1000 to zero. Raising the reserve ratio increases the amount of required reserves banks must keep. As a consequence, either banks lose excess reserves, diminishing their ability to create money by lending, or they find their reserves deficient and are forced to

To the Public When the Federal Reserve Banks sell securities to the public, the outcome is much the same. Let's put the Gristly Company on the buying end of government bonds that the Federal Reserve Banks are selling:

(*a*) The Federal Reserve Banks sell government bonds to Gristly, which pays with a check drawn on the Wahoo bank.

(*b*) The Federal Reserve Banks clear this check against the Wahoo bank by reducing Wahoo's reserves.

(*c*) The Wahoo bank returns the canceled check to Gristly, reducing Gristly's checkable deposit accordingly.

Federal Reserve bond sales of $1000 to the commercial banking system reduce the system's actual and excess reserves by $1000. But a $1000 bond sale to the public reduces excess reserves by $800, because the public's

Commercial Banks

Fed Sells Bonds to Commerical Banks

Federal Reserve Banks

Liabilities and Assets net worth	
Securities (*a*)	Reserves of commercial banks (*b*)

Liabilities and Assets net worth	
	Reserves (*b*)
	Securities (*a*)

(*a*) Securities (*b*) Reserves

contract checkable deposits and therefore the money supply. In the example in Table 14.2, excess reserves are transformed into required reserves, and the money-creating potential of our single bank is reduced from $1000 to zero (column 6). Moreover, the banking system's money-creating capacity declines from $5000 to zero (column 7).

What if the Fed increases the reserve requirement to 30 percent? (See row 4.) The commercial bank, to protect itself against the prospect of failing to meet this requirement, would be forced to lower its checkable deposits and at the same time increase its reserves. To reduce its checkable deposits, the bank could let outstanding loans mature and be repaid without extending new credit. To increase reserves, the bank might sell some of its bonds, adding the proceeds to its reserves. Both actions would reduce the supply of money.

Lowering the Reserve Ratio What would happen if the Fed lowered the reserve ratio from the original 20 percent to 10 percent? (See row 1.) In this case, required reserves would decline from $4000 to $2000, and

excess reserves would jump from $1000 to $3000. The single bank's lending (money-creating) ability would increase from $1000 to $3000 (column 6), and the banking system's money-creating potential would expand from $5000 to $30,000 (column 7). Lowering the reserve ratio transforms required reserves into excess reserves and enhances the ability of banks to create new money by lending.

The examples in Table 14.2 show that a change in the reserve ratio affects the money-creating ability of the *banking system* in two ways:

- It changes the amount of excess reserves.
- It changes the size of the monetary multiplier.

For example, when the legal reserve ratio is raised from 10 to 20 percent, excess reserves are reduced from $3000 to $1000 and the checkable-deposit multiplier is reduced from 10 to 5. The money-creating potential of the banking system declines from $30,000 ($3000 10) to $5000 ($1000 5). Raising the reserve ratio forces banks to reduce the amount of checkable deposits they create through lending.

The Discount Rate

One of the functions of a central bank is to be a "lender of last resort." Occasionally, commercial banks have unexpected and immediate needs for additional funds. In such cases, each Federal Reserve Bank will make short-term loans to commercial banks in its district.

When a commercial bank borrows, it gives the Federal Reserve Bank a promissory note (IOU) drawn against itself and secured by acceptable collateral—typically U.S. government securities. Just as commercial banks charge interest on their loans, so too Federal Reserve Banks charge interest on loans they grant to commercial banks. The interest rate they charge is called the **discount rate.**

As a claim against the commercial bank, the borrowing bank's promissory note is an asset to the lending Federal Reserve Bank and appears on its balance sheet as "Loans to commercial banks." To the commercial bank the IOU is a liability, appearing as "Loans from the Federal Reserve Banks" on the commercial bank's balance sheet. [See entries (*a*) on the balance sheets below.]

TABLE 14.2 The Effects of Changes in the Reserve Ratio on the Lending Ability of Commercial Banks

(1) Reserve Ratio, %	(2) Checkable Deposits	(3) Actual Reserves	(4) Required Reserves	(5) Excess Reserves (3) (4)	(6) Money-Creating Potential of Single Bank,	(7) Money-Creating Potential of Banking System
(1) 10	$20,000	$5000	$2000	$ 3000	$ 3000	$30,000
(2) 20	20,000	5000	4000	1000	1000	5000
(3) 25	20,000	5000	5000	0	0	0
(4) 30	20,000	5000	6000	1000	1000	3333

Commercial Banks

Commercial Bank Borrowing from the Fed

Federal Reserve Banks

Liabilities and Assets	net worth
Loans to commercial banks (*a*)	Reserves of commercial banks (*b*)

Liabilities and Assets	net worth
Reserves (*b*)	Loans from the Federal Reserve Banks (*a*)

In providing the loan, the Federal Reserve Bank increases the reserves of the borrowing commercial bank. Since no required reserves need be kept against loans from Federal Reserve Banks, all new reserves acquired by borrowing from Federal Reserve Banks are excess reserves. [These changes are reflected in entries (*b*) on the balance sheets.]

In short, borrowing from the Federal Reserve Banks by commercial banks increases the reserves of the commercial banks and enhances their ability to extend credit.

The Fed has the power to set the discount rate at which commercial banks borrow from Federal Reserve Banks. From the commercial banks' point of view, the discount rate is a cost of acquiring reserves. A lowering of the discount rate encourages commercial banks to obtain additional reserves by borrowing from Federal Reserve Banks. When the commercial banks lend new reserves, the money supply increases.

An increase in the discount rate discourages commercial banks from obtaining additional reserves through borrowing from the Federal Reserve Banks. So the Fed may raise the discount rate when it wants to restrict the money supply. **(Key Question 5)**

Relative Importance

Of the three instruments of monetary control, buying and selling securities in the open market is clearly the most important. This technique has the advantage of flexibility—government securities can be purchased or sold daily in large or small amounts—and the impact on bank reserves is prompt. And, compared with reserve-requirement changes, open-market operations work subtly and less directly. Furthermore, the ability of the Federal Reserve Banks to affect commercial bank reserves through the purchase and sale of bonds is virtually unquestionable. The Federal Reserve Banks have very large holdings of government securities ($760 billion in early 2006, for example). The sale of those securities could theoretically reduce commercial bank reserves to zero.

Changing the reserve requirement is a less important instrument of monetary control, and the Fed has used this technique only sparingly. Normally, it can accomplish its monetary goals easier through open-market operations.

The limited use of changes in the reserve ratio undoubtedly relates to the fact that reserves earn no interest. Consequently, raising or lowering reserve requirements has a substantial effect on bank profits. The last change in the reserve requirement was in 1992, when the Fed reduced the requirement from 12 percent to 10 percent. The main purpose was to shore up the profitability of banks and thrifts during recession rather than to increase reserves, expand the money supply, and reduce interest rates.

The discount rate has become a passive, not active,

tool of monetary policy. The Fed now sets the discount rate at 1 percentage point above the Fed's targeted rate of interest on the overnight loans that commercial banks make to other commercial banks that need the funds to meet the required reserve ratio. When the interest rate on overnight loans rises or falls, the discount rate automatically rises or falls along with it. We will say more about interest rate on overnight loans next.

QUICK REVIEW 14.2

- The Fed has three main tools of monetary control, each of which works by changing the amount of reserves in the banking system: (a) conducting open-market operations (the Fed's buying and selling of government bonds to the banks and the public); (b) changing the reserve ratio (the percentage of commercial bank deposit liabilities required as reserves); and (c) changing the discount rate (the interest rate the Federal Reserve Banks charge on loans to banks and thrifts).
- Open-market operations are the Fed's monetary control mechanism of choice; the Fed rarely changes the reserve requirement and it now links the discount rate directly to the interest rate banks pay on overnight loans.

Targeting the Federal Funds Rate

The Federal Reserve focuses monetary policy on the interest rate that it can best control: the **Federal funds rate.** This is the rate of interest that banks charge one another on overnight loans made from temporary excess reserves. Recall from Chapter 13 that the Federal Reserve requires banks (and thrifts) to deposit in the regional Federal Reserve Bank a certain percentage of their checkable deposits as reserves. At the end of any business day, some banks temporarily have excess reserves (more actual reserves than required) and other banks have reserve deficiencies (fewer reserves than required). Because reserves held at the Federal Reserve Banks do not earn interest, banks desire to lend out their temporary excess reserves overnight to other banks that temporarily need them to meet their reserve requirements. The funds being lent and borrowed overnight are called "Federal funds" because they are reserves (funds) that are required by the Federal Reserve to meet reserve requirements. An equilibrium interest rate—the Federal funds rate—arises in this market for bank reserves.

Although individual banks can lend excess reserves to one another, the Federal Reserve is the only supplier of Federal funds—the currency used by banks as reserves. The Fed uses its status as a monopoly supplier of reserves

to target the specific Federal funds rate that it deems appropriate for the economy. The FOMC meets regularly to choose a desired Federal funds rate. It then directs the Federal Reserve Bank of New York to undertake open-market operations to achieve and maintain the targeted rate.

We demonstrate how this works in Figure 14.3, where we initially assume the Fed desires a 4 percent interest rate. The demand curve for Federal funds D_f is downsloping because lower interest rates give commercial banks a greater incentive to borrow Federal funds rather than reduce loans as a way to meet reserve requirements. The supply curve for Federal funds, S_{f1}, is somewhat unusual. Specifically, it is horizontal at the targeted Federal funds rate, here 4 percent. (Disregard supply curves S_{f2} and S_{f3} for now.) The Fed will use open-market operation to provide whatever level of Federal funds the banks desire to hold at the targeted 4 percent interest rate.

In this case, the Fed seeks to achieve an equilibrium Federal funds rate of 4 percent. In Figure 14.3 it is successful. Note that at the 4 percent Federal funds rate, the quantity of Federal funds supplied (Q_{f1}) equals the quantity of funds demanded (also Q_{f1}). This 4 percent Federal funds rate will remain, as long as the supply curve of Federal funds is horizontal at 4 percent. If the demand for Federal funds increases (D_f shifts to the right along S_{f1}), the Fed will use its open-market operations to increase the availability of reserves such that the 4 percent Federal fund rate is retained. If the demand for Federal funds declines (D_f shifts to the left along S_{f1}), the Fed will withdraw reserves to keep the Federal funds rate at 4 percent.

Expansionary Monetary Policy

Suppose that the economy faces recession and unemployment. How will the Fed respond? It will initiate an **expansionary monetary policy** (or "easy money policy"). This policy will lower the interest rate to bolster borrowing and spending, which will increase aggregate demand and expand real output. The Fed's immediate step will be to announce a lower target for the Federal funds rate, say 3.5 percent instead of 4 percent. To achieve that lower rate the Fed will use open-market operations to buy bonds from banks and the public. We know from previous discussion that the purchase of bonds increases the reserves in the banking system. Alternatively, the Fed could expand reserves by lowering the reserve requirement or lowering the discount rate to achieve the same result, but we have seen that the former is rarely used and the latter is not presently used for *active* monetary policy.

The greater reserves in the banking system produce two critical results:

- The supply of Federal funds increases, lowering the Federal funds rate to the new targeted rate. We show this in Figure 14.3 as a downward shift to the horizontal supply curve from S_{f1} to S_{f2}. The equilibrium Federal funds rate falls to 3.5 percent, just as the FOMC wanted. The equilibrium quantity of reserves in the overnight market for reserves rises from Q_{f1} to Q_{f2}.
- A multiple expansion of the nation's money supply occurs (as we demonstrated in Chapter 13). Given the demand for money, the larger money supply places a

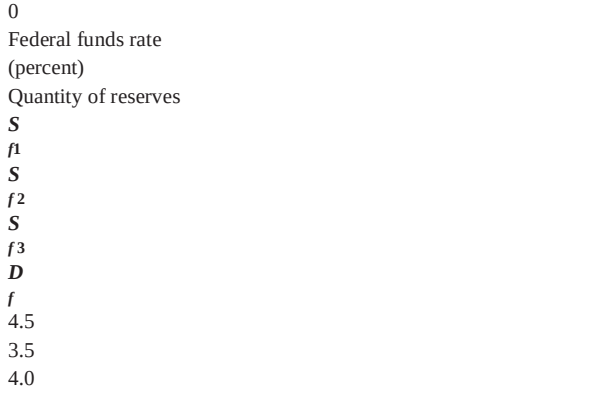
downward pressure on other interest rates.

One such rate is the **prime interest rate**—the benchmark interest rate used by banks as a reference point for a wide range of interest rates charged on loans to businesses and individuals. The prime interest rate is higher than the Federal funds rate because the prime rate involves longer, more risky loans than overnight loans between banks. But the Federal funds rate and the prime interest rate closely track one another, as evident in Figure 14.4.

Restrictive Monetary Policy

The opposite monetary policy is in order for periods of rising inflation. The Fed will then undertake a **restrictive monetary policy** (or "tight money policy"). This policy will increase the interest rate in order to reduce borrowing and spending, which will curtail the expansion of aggregate

FIGURE 14.3 Targeting the Federal funds rate In implementing monetary policy, the Federal Reserve determines a desired Federal funds rate and then uses open-market operations (buying and selling of U.S. securities) to add or subtract bank reserves to achieve and maintain that targeted rate. In an expansionary monetary policy, the Fed increases the supply of reserves, for example, from S_{f1} to S_{f2} in this case, to move the Federal funds rate from 4 percent to 3.5 percent. In a restrictive monetary policy, it decreases the supply of reserves, say, from S_{f1} to S_{f3}. Here, the Federal fund rate rises from 4 percent to 4.5 percent.



demand and hold down price-level increases. The Fed's immediate step will be to announce a higher target for the Federal funds rate, say 4.5 percent instead of 4 percent. Through open-market operations, the Fed will sell bonds to the banks and the public and the sale of those bonds will absorb reserves in the banking system. Alternatively, the Fed could absorb reserves by raising the reserve requirement or raising the discount rate to achieve the same result, but we have seen that the former is rarely used and the latter is not presently used for *active* monetary policy.

The smaller reserves in the banking system produce two results opposite those discussed for an expansionary monetary policy:

• The supply of Federal funds decreases, raising the Federal funds rate to the new targeted rate. We show this in Figure 14.3 as an upward shift of the horizonal supply curve from S_{f1} to S_{f3}. The equilibrium Federal funds rate rises to 4.5 percent, just as the FOMC wanted, and the equilibrium quantity of funds in this market falls to Q_{f3}.
• A multiple contraction of the nation's money supply occurs (as demonstrated in Chapter 13). Given the demand for money, the smaller m

In the previous chapter we saw that an excessive increase in aggregate demand can cause demand-pull inflation and that a significant decline in aggregate demand can cause recession and cyclical unemployment. For these reasons, the Federal government sometimes uses budgetary actions to try to "stimulate the economy" or "rein in inflation." Such countercyclical **fiscal policy** consists of deliberate changes in government spending and tax collections designed to achieve full employment, control inflation, and encourage economic growth. (The adjective "fiscal" simply means "financial.")
We begin this chapter by examining the logic behind fiscal policy, its current status, and its limitations. Then we examine a closely related topic: the U.S. public debt.

IN THIS CHAPTER YOU WILL LEARN:
• The purposes, tools, and limitations of fiscal policy.
• The role of built-in stabilizers in moderating business cycles.
• How the standardized budget reveals the status of U.S. fiscal policy.
• About the size, composition, and consequences of the U.S. public debt.

O 11.1
Fiscal policy

11

CHAPTER 11
Fiscal Policy, Deficits, and Debt **209**

Fiscal Policy and the AD-AS Model

The fiscal policy defined above is *discretionary* (or "active"). It is often initiated on the advice of the president's **Council of Economic Advisers (CEA),** a group of three economists appointed by the president to provide expertise and assistance on economic matters. Discretionary changes in government spending and taxes are *at the option* of the Federal government. They do not occur automatically.
Changes that occur without congressional action are *nondiscretionary* (or "passive" or "automatic"), and we will examine them later in this chapter.

Expansionary Fiscal Policy

When recession occurs, an **expansionary fiscal policy** may be in order. Consider Figure 11.1, where we suppose that a sharp decline in investment spending has shifted the economy's aggregate demand curve to the left from AD_1 to AD_2. (Disregard the arrows and dashed downsloping

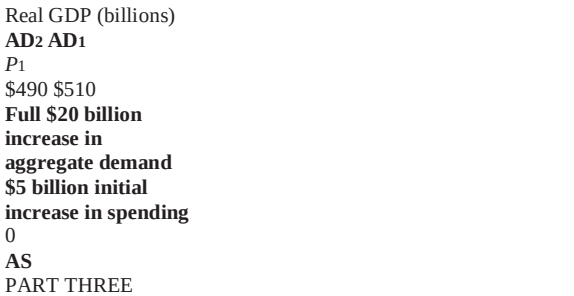
line for now.) The cause of the recession may be that profit expectations on investment projects have dimmed, curtailing investment spending and reducing aggregate demand. Suppose the economy's potential or full-employment output is $510 billion in Figure 11.1. If the price level is inflexible downward at P_1, the broken horizontal line in effect becomes the relevant aggregate supply curve. The aggregate demand curve moves leftward and reduces real GDP from $510 billion to $490 billion. A negative GDP gap of $20 billion ($490 billion $510 billion) arises. An increase in unemployment accompanies this negative GDP gap because fewer workers are needed to produce the reduced output. In short, the economy depicted is suffering both recession and cyclical unemployment.

What fiscal policy should the Federal government adopt to try to stimulate the economy? It has three main options: (1) Increase government spending, (2) reduce taxes, or (3) use some combination of the two. If the Federal budget is balanced at the outset, expansionary fiscal policy will create a government **budget deficit**—government spending in excess of tax revenues.

Increased Government Spending Other things equal, a sufficient increase in government spending will shift an economy's aggregate demand curve to the right, from AD_2 to AD_1 in Figure 11.1. To see why, suppose that the recession prompts the government to initiate $5 billion of new spending on highways, education, and health care. We represent this new $5 billion of government spending as the horizontal distance between AD_2 and the dashed line immediately to its right. At each price level, the amount of real output that is demanded is now $5 billion greater than that demanded before the expansion of government spending.

But the initial increase in aggregate demand is not the end of the story. Through the multiplier effect, the aggregate demand curve shifts to AD_1, a distance that exceeds that represented by the originating $5 billion increase in government purchases. This greater shift occurs because the multiplier process magnifies the initial change in spending into successive rounds of new consumption spending. If the economy's MPC is .75, then the simple multiplier is 4. So the aggregate demand curve shifts rightward by four times the distance between AD_2 and the broken line. Because this *particular* increase in aggregate

FIGURE 11.1 Expansionary fiscal policy. Expansionary fiscal policy uses increases in government spending or tax cuts to push the economy out of recession. In an economy with an MPC of .75, a $5 billion increase in government spending or a $6.67 billion decrease in personal taxes (producing a $5 billion initial increase in consumption) expands aggregate demand from AD_2 to the downsloping dashed curve. The multiplier then magnifies this initial increase in spending to AD_1. So real GDP rises along the horizontal broken aggregate supply segment by $20 billion.



demand occurs along the horizontal broken-line segment of aggregate supply, real output rises by the full extent of the multiplier. Observe that real output rises to $510 billion, up $20 billion from its recessionary level of $490 billion. Concurrently, unemployment falls as firms increase their employment to the full-employment level that existed before the recession.

Tax Reductions Alternatively, the government could reduce taxes to shift the aggregate demand curve rightward, as from AD_2 to AD_1. Suppose the government cuts personal income taxes by $6.67 billion, which increases disposable income by the same amount. Consumption will rise by $5 billion (MPC of .75 $6.67 billion), and saving will go up by $1.67 billion (MPS of .25 $6.67 billion). In this case the horizontal distance between AD_2 and the dashed downsloping line in Figure 11.1 represents only the $5 billion initial increase in consumption spending. Again, we call it "initial" consumption spending because the multiplier process yields successive rounds of increased consumption spending. The aggregate demand curve eventually shifts rightward by four times the $5 billion initial increase in consumption produced by the tax cut. Real GDP rises by $20 billion, from $490 billion to $510 billion, implying a multiplier of 4. Employment increases accordingly.

You may have noted that a tax cut must be somewhat larger than the proposed increase in government spending if it is to achieve the same amount of rightward shift in the aggregate demand curve. This is because part of a tax reduction increases saving, rather than consumption. To increase initial consumption by a specific amount, the government must reduce taxes by more than that amount. With an MPC of .75, taxes must fall by $6.67 billion for $5 billion of new consumption to be forthcoming, because $1.67 billion is saved (not consumed). If the MPC had instead been, say, .6, an $8.33 billion reduction in tax collections would have been necessary to increase initial consumption by $5 billion. The smaller the MPC, the greater the tax cut needed to accomplish a specific initial increase in consumption and a specific shift in the aggregate demand curve.

Combined Government Spending Increases and Tax Reductions The government may combine spending increases and tax cuts to produce the desired initial increase in spending and the eventual increase in aggregate demand and real GDP. In the economy depicted in Figure 11.1, the government might increase its spending by $1.25 billion while reducing taxes by $5 billion. As an exercise, you should explain why this combination will produce the targeted $5 billion initial increase in new spending.

If you were assigned Chapter 9, think through these three fiscal policy options in terms of the recessionaryexpenditure-gap analysis associated with the aggregate expenditures model (Figure 9.7). And recall from the appendix to Chapter 10 that rightward shifts of the aggregate demand curve relate directly to upward shifts of the aggregate expenditures schedule. **(Key Question 2)**

Contractionary Fiscal Policy

When demand-pull inflation occurs, a restrictive or

contractionary fiscal policy may help control it. Look at Figure 11.2, where the full-employment level of real GDP is $510 billion. Suppose a sharp increase in investment and net export spending shifts the aggregate demand curve from AD_3 to AD_4. (Ignore the downsloping dashed line for now.) The outcomes are demand-pull inflation, as shown by the rise of the price level from P_1 to P_2, and a positive GDP gap of $12 billion ($522 billion $510 billion).

FIGURE 11.2 Contractionary fiscal policy.
Contractionary fiscal policy uses decreases in government spending or increases in taxes to reduce demand-pull inflation. In an economy with an MPC of .75, a $5 billion decline in government spending or a $6.67 billion increase in taxes (producing a $5 billion initial decrease in consumption) shifts the aggregate demand curve from AD_4 to the dashed line. The multiplier effect then shifts the curve farther leftward to AD_3. The overall decrease in aggregate demand halts the demand-pull inflation.

If the government looks to fiscal policy to control this inflation, its options are the opposite of those used to combat recession. It can (1) decrease government spending, (2) raise taxes, or (3) use some combination of those two policies. When the economy faces demand-pull inflation, fiscal policy should move toward a government **budget surplus**—tax revenues in excess of government spending.

Decreased Government Spending

Reduced government spending shifts the aggregate demand curve leftward to control demand-pull inflation. In Figure 11.2, the horizontal distance between AD_4 and the dashed line to its left represents a $5 billion reduction in government spending. Once the multiplier process is complete, this spending cut will have shifted the aggregate demand curve leftward from AD_4 all the way to AD_3. If the price level were downwardly flexible, the price level would return to P_1, where it was before demand-pull inflation occurred. That is, deflation would occur.

Unfortunately, the actual economy is not as simple and tidy as Figure 11.2 suggests. Increases in aggregate demand that expand real output beyond the full-employment level of output tend to ratchet the price level upward, but declines in aggregate demand do not seem to push the price level downward. So stopping inflation is a matter of halting the rise of the price level, not trying to lower it to the previous level.

Demand-pull inflation usually is experienced as a continual rightward shifting of the aggregate demand curve. Contractionary fiscal policy is designed to stop a further shift, not to restore a lower price level. Successful fiscal policy eliminates a continuing positive (and thus inflationary) GDP gap and

prevents the price level from continuing its inflationary rise.
Nevertheless, Figure 11.2 displays the basic principle: Reductions in government expenditures can be used as a fiscal
policy action to tame demand-pull inflation.

Increased Taxes Just as government can use tax cuts to increase consumption spending, it can use tax *increases* to *reduce* consumption spending. If the economy in Figure 11.2 has an MPC of .75, the government must raise taxes by $6.67 billion to reduce consumption by $5 billion. The $6.67 billion tax reduces saving by $1.67 billion (the MPS of .25 $6.67 billion). This $1.67 billion reduction in saving, by definition, is not a reduction in spending. But the $6.67 billion tax increase also reduces consumption spending by $5 billion (the MPC of .75 $6.67 billion), as shown by the distance between AD_4 and the dashed line to its left in Figure 11.2. After the multiplier process is complete, aggregate demand will have shifted leftward by $20 billion at each price level (multiplier of 4 $5 billion) and the demand-pull inflation will have been controlled.

Combined Government Spending Decreases and Tax Increases The government may choose to combine spending decreases and tax increases in order to reduce aggregate demand and check inflation. To check your understanding, determine why a $2 billion decline in government spending with a $4 billion increase in taxes would shift the aggregate demand curve from AD_4 to AD_3.
Also, if you were assigned Chapter 9, explain the three fiscal policy options for fighting inflation by referring to the inflationary-expenditure-gap concept developed with the aggregate expenditures model (Figure 9.8). And recall from the appendix to Chapter 10 that leftward shifts of the aggregate demand curve are associated with downshifts of the aggregate expenditures schedule. **(Key Question 3)**

Policy Options: *G* or *T*?

Which is preferable as a means of eliminating recession and inflation? The use of government spending or the use of taxes? The answer depends largely on one's view as to whether the government is too large or too small.
Economists who believe there are many unmet social and infrastructure needs usually recommend that government spending be increased during recessions. In times of demand-pull inflation, they usually recommend tax increases. Both actions either expand or preserve the size of government.
Economists who think that the government is too large and inefficient usually advocate tax cuts during recessions and cuts in government spending during times of demandpull inflation. Both actions either restrain the growth of government or reduce its size.
The point is that discretionary fiscal policy designed to stabilize the economy can be associated with either an expanding government or a contracting government.

G 11.1
Fiscal policy

QUICK REVIEW 11.1

• Discretionary fiscal policy is the purposeful change of government expenditures and tax collections by government to promote full employment, price stability, and economic growth.
• The government uses expansionary fiscal policy to shift the aggregate demand curve rightward in order to expand real output. This policy entails increases in government spending, reductions in taxes, or some combination of the two.
• The government uses contractionary fiscal policy to shift the aggregate demand curve leftward (or to restrain its rightward shift) in an effort to halt demand-pull inflation. This policy entails reductions in government spending, tax increases, or some combination of the two.

Built-In Stability

To some degree, government tax revenues change automatically over the course of the business cycle and in ways that stabilize the economy. This automatic response, or built-in stability, constitutes nondiscretionary (or "passive" or "automatic") budgetary policy and results from the makeup of most tax systems. We did not include this built-in stability in our discussion of fiscal policy because we implicitly assumed that the same amount of tax revenue was being collected at each level of GDP. But the actual U.S. tax system is such that *net tax revenues* vary directly with GDP. (Net taxes are tax revenues less transfers and subsidies. From here on, we will use the simpler "taxes" to mean "net taxes.") Virtually any tax will yield more tax revenue as GDP rises. In particular, personal income taxes have progressive rates and thus generate more-than-proportionate increases in tax revenues as GDP expands. Furthermore, as GDP rises and more goods and services are purchased, revenues from corporate income taxes and from sales taxes and excise taxes also increase. And, similarly, revenues from payroll taxes rise as economic expansion creates more jobs. Conversely, when GDP declines, tax receipts from all these sources also decline.

Transfer payments (or "negative taxes") behave in the opposite way from tax revenues. Unemployment compensation payments and welfare payments decrease during economic expansion and increase during economic contraction.

Automatic or Built-In Stabilizers

A **built-in stabilizer** is anything that increases the government's budget deficit (or reduces its budget surplus) during a recession and increases its budget surplus (or reduces its budget deficit) during an expansion without requiring explicit action by policymakers. As Figure 11.3 reveals, this is precisely what the U.S. tax system does. Government expenditures *G* are fixed and assumed to be independent of the level of GDP. Congress decides on a particular level of spending, but it does not determine the magnitude of tax revenues. Instead, it establishes tax rates, and the tax revenues then vary directly with the level of GDP that the economy achieves. Line *T* represents that direct relationship between tax revenues and GDP.

Economic Importance The economic importance of the direct relationship between tax receipts and GDP becomes apparent when we consider that:

• Taxes reduce spending and aggregate demand.
• Reductions in spending are desirable when the economy is moving toward inflation, whereas increases in

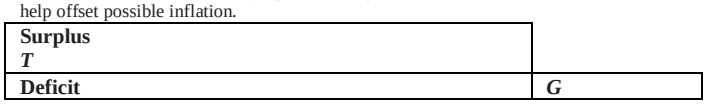
spending are desirable when the economy is slumping. As shown in Figure 11.3, tax revenues automatically increase as GDP rises during prosperity, and since taxes reduce household and business spending, they restrain the economic expansion. That is, as the economy moves toward a higher GDP, tax revenues automatically rise and move the budget from deficit toward surplus. In Figure 11.3, observe that the high and perhaps inflationary income level GDP_3 automatically generates a contractionary budget surplus.

Conversely, as GDP falls during recession, tax revenues automatically decline, increasing spending and cushioning the economic contraction. With a falling GDP, tax receipts decline and move the government's budget from surplus toward deficit. In Figure 11.3, the low level of income GDP_1 will automatically yield an expansionary budget deficit.

Tax Progressivity Figure 11.3 reveals that the size of the automatic budget deficits or surpluses—and therefore built-in stability—depends on the responsiveness of tax revenues to changes in GDP. If tax revenues change sharply as GDP changes, the slope of line *T* in the figure will be steep and the vertical distances between *T* and *G* (the deficits or surpluses) will be large. If tax revenues change very little when GDP changes, the slope will be gentle and built-in stability will be low.

The steepness of *T* in Figure 11.3 depends on the tax system itself. In a **progressive tax system,** the average tax rate (tax revenueGDP) rises with GDP. In a

FIGURE 11.3 Built-in stability. Tax revenues *T* vary directly with GDP, and government spending *G* is assumed to be independent of GDP. As GDP falls in a recession, deficits occur automatically and help alleviate the recession. As GDP rises during expansion, surpluses occur automatically and help offset possible inflation.



GDP_1 GDP_2 GDP_3
Real domestic output, GDP
Government expenditures, *G*, and tax revenues, *T*
0

proportional tax system, the average tax rate remains constant as GDP rises. In a **regressive tax system,** the average tax rate falls as GDP rises. The progressive tax system has the steepest tax line *T* of the three. However, tax revenues will rise with GDP under both the progressive and the proportional tax systems, and they may rise, fall, or stay the same under a regressive tax system. The main point is this: The more progressive the tax system, the greater the economy's built-in stability.

The built-in stability provided by the U.S. tax system has reduced the severity of business fluctuations, perhaps by as much as 8 to 10 percent of the change in GDP that otherwise would have occurred.[1] But built-in stabilizers can only diminish, not eliminate, swings in real GDP. Discretionary fiscal policy (changes in tax rates and expenditures) or monetary policy (central bank–caused changes in

interest rates) may be needed to correct recession or inflation of any appreciable magnitude.

Evaluating Fiscal Policy

How can we determine whether discretionary fiscal policy is expansionary, neutral, or contractionary in a particular period? We cannot simply examine changes in the actual budget deficits or surpluses, because those changes may reflect automatic changes in tax revenues that accompany changes in GDP, not changes in discretionary fiscal policy. Moreover, the strength of any deliberate change in government spending or taxes depends on how large it is relative to the size of the economy. So, in evaluating the status of fiscal policy, we must adjust deficits and surpluses to eliminate automatic changes in tax revenues and compare the sizes of the adjusted budget deficits (or surpluses) to the levels of potential GDP.

Standardized Budget

Economists use the **standardized budget** (also called the *full-employment budget*) to adjust the actual Federal budget deficits and surpluses to eliminate the automatic changes in tax revenues. The standardized budget measures what the Federal budget deficit or surplus would be with existing tax rates and government spending levels if the economy had achieved its full-employment level of GDP (its potential output) in each year. The idea essentially is to compare *actual* government expenditures for each year with the tax revenues *that would have occurred* in that year if the economy had achieved full-employment GDP. That procedure removes budget deficits or surpluses that arise simply because of changes in GDP and thus tell us nothing about changes in discretionary fiscal policy.

Consider Figure 11.4a, where line *G* represents government expenditures and line *T* represents tax revenues. In full-employment year 1, government expenditures of $500 billion equal tax revenues of $500 billion, as indicated by the intersection of lines *G* and *T* at point *a*. The standardized budget deficit in year 1 is zero—government expenditures equal the tax revenues forthcoming at the full-employment output GDP_1. Obviously, the full-employment deficit *as a percentage of potential GDP* is also zero.

Now suppose that a recession occurs and GDP falls from GDP_1 to GDP_2, as shown in Figure 11.4a. Let's also assume that the government takes no discretionary action, so lines *G* and *T* remain as shown in the figure. Tax revenues automatically fall to $450 billion (point *c*) at GDP_2, while government spending remains unaltered at $500 billion (point *b).* A $50 billion budget deficit (represented by distance *bc*) arises. But this **cyclical deficit** is simply a by-product of the economy's slide into recession, not the result of discretionary fiscal actions by the government. We would be wrong to conclude from this deficit that the government is engaging in an expansionary fiscal policy.

That fact is highlighted when we consider the standardized budget deficit for year 2 in Figure 11.4a. The $500 billion of government expenditures in year 2 is shown by *b* on line *G*. And, as shown by *a* on line *T*, $500 billion of tax revenues would have occurred if the economy had achieved its full-employment GDP. Because both *b* and *a* represent $500 billion, the standardized budget deficit in year 2 is zero, as is this deficit as a percentage of potential GDP. Since the standardized deficits are zero in both years, we know that government did not change its discretionary fiscal policy, even though a recession occurred and an actual deficit of $50 billion resulted.

Next, consider Figure 11.4b. Suppose that real output

declined from full-employment GDP_3 to GDP_4. But also suppose that the Federal government responded to the recession by reducing tax rates in year 4, as represented by the downward shift of the tax line from T_1 to T_2. What has happened to the size of the standardized deficit? Government expenditures in year 4 are $500 billion, as shown by *e*. We compare that amount with the $475 billion of tax revenues that would occur if the economy achieved its full-employment GDP. That is, we compare position *e* on line *G* with position *h* on line T_2. The $25 billion of tax revenues by which *e* exceeds *h* is the standardized budget deficit for year 4. As a percentage of potential GDP, the

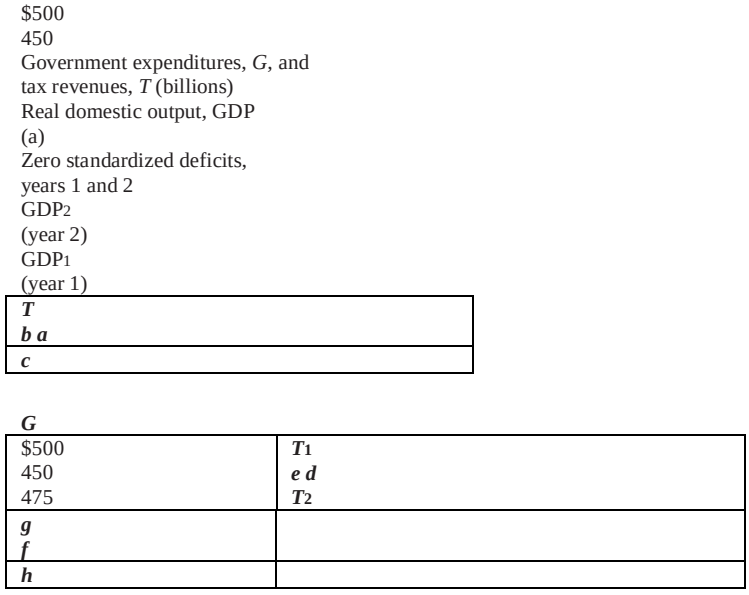
[1]Alan J. Auerbach and Daniel Feenberg, "The Significance of Federal Taxes as Automatic Stabilizers," *Journal of Economic Perspectives*, Summer 2000, p. 54.

standardized budget deficit has increased from zero in year 3 (before the tax-rate cut) to some positive percent [($25 billion$GDP_3$) 100] in year 4. This increase in the relative size of the full-employment deficit between the two years reveals that fiscal policy is *expansionary*.

In contrast, if we observed a standardized deficit (as a percentage of potential GDP) of zero in one year, followed by a standardized budget surplus in the next, we could conclude that fiscal policy is contractionary. Because the standardized budget adjusts for automatic changes in tax revenues, the increase in the standardized budget surplus reveals that government either decreased its spending (*G*) or increased tax rates such that tax revenues (*T*) increased. These changes in *G* and *T* are precisely the discretionary actions that we have identified as elements of a *contractionary* fiscal policy.

Recent U.S. Fiscal Policy

Table 11.1 lists the actual Federal budget deficits and surpluses (column 2) and the standardized deficits and surpluses (column 3), as percentages of actual and potential GDP, respectively, for recent years. Observe that the standardized deficits are generally smaller than the actual deficits. This is because the actual deficits include cyclical



425
Government expenditures, *G*, and
tax revenues, *T* (billions)
Real domestic output, GDP
(b)
Zero standardized deficit, year 3;
$25 billion full-employment deficit, year 4
GDP_4
(year 4)
GDP_3
(year 3)
G

FIGURE 11.4 Standardized deficits. (a) In the left-hand graph the standardized deficit is zero at the full-employment output GDP_1. But it is also zero at the recessionary output GDP_2, because the $500 billion of government expenditures at GDP_2 equals the $500 billion of tax revenues that would be forthcoming at the full-employment GDP_1. There has been no change in fiscal policy. (b) In the right-hand graph, discretionary fiscal policy, as reflected in the downward shift of the tax line from T_1 to T_2, has increased the standardized budget deficit from zero in year 3 to $25 billion in year 4. This is found by comparing the $500 billion of government spending in year 4 with the $475 billion of taxes that would accrue at the full-employment GDP_3. Such a rise in the standardized deficit
(as a percentage of potential GDP) identifies an expansionary fiscal policy.

TABLE 11.1 Federal Deficits () and Surpluses () as Percentages of GDP , 1990–2005

*As a percentage of potential GDP.
Source: Congressional Budget Office, **www.cbo.gov.**

(1) Year	**(2) Deficit or Surplus**	**(3) Actual Deficit or Surplus * Standardized**
1990	3.9%	2.2%
1991	4.4	2.5
1992	4.5	2.9
1993	3.8	2.9
1994	2.9	2.1
1995	2.2	2.0
1996	1.4	1.2
1997	0.3	1.0
1998	0.8	0.4
1999	1.4	0.1
2000	2.5	1.1
2	1	1

001	.3	.1
2002	1.5	1.1
2003	3.4	2.7
2004	3.5	2.4
2005	2.6	1.8

deficits, whereas the standardized deficits do not. The latter deficits provide the information needed to assess discretionary fiscal policy.

Column 3 shows that fiscal policy was expansionary in the early 1990s. Consider 1992, for example. From the table we see that the actual budget deficit was 4.5 percent of GDP and the standardized budget deficit was 2.9 percent of potential GDP. The economy was recovering from the 1990–1991 recession, so tax revenues were relatively low. But even if the economy were at full employment in 1992, with the greater tax revenues that would imply, the Federal budget would have been in deficit by 2.9 percent. And that percentage was greater than the deficits in the prior 2 years. So the standardized budget deficit in 1992 clearly reflected expansionary fiscal policy.

But the large standardized budget deficits were projected to continue even when the economy fully recovered from the 1990–1991 recession. The concern was that the large actual and standardized deficits would cause high interest rates, low levels of investment, and slow economic growth. In 1993 the Clinton administration and Congress increased personal income and corporate income tax rates to prevent these potential outcomes. Observe from column 3 of Table 11.1 that the standardized budget deficits shrunk each year and eventually gave way to surpluses in 1999, 2000, and 2001.

On the basis of projections that actual budget surpluses would accumulate to as much as $5 trillion between 2000 and 2010, the Bush administration and Congress passed a major tax reduction package in 2001. The tax cuts went into effect over a number of years. For example, the cuts reduced tax liabilities by an estimated $44 billion in 2001 and $52 billion in 2002. In terms of fiscal policy, the timing was good since the economy entered a recession in March 2001 and absorbed a second economic blow from the terrorist attacks on September 11, 2001. The government greatly increased its spending on war abroad and homeland security. Also, in March 2002 Congress passed a "recession-relief" bill that extended unemployment compensation benefits and offered business tax relief. That legislation was specifically designed to inject $51 billion into the economy in 2002 and another $71 billion over the following 2 years.

As seen in Table 11.1, the standardized budget moved

from a *surplus* of 1.1 percent of potential GDP in 2000 to a *deficit* of 1.1 percent in 2002. Clearly, fiscal policy had turned expansionary. Nevertheless, the economy remained very sluggish in 2003. In June of that year, Congress again cut taxes, this time by an enormous $350 billion over several years. Specifically, the tax legislation accelerated the reduction of marginal tax rates already scheduled for future years and slashed tax rates on income from dividends and capital gains. It also increased tax breaks for families and small businesses. This tax package increased the standardized budget deficit as a percentage of potential GDP to –2.7 percent in 2003. The purpose of this expansionary fiscal policy was to prevent another recession, reduce unemployment, and increase economic growth. **(Key Question 6)**

Global Perspective 11.1 shows the extent of the standardized deficits or surpluses of a number of countries in a recent year.

Budget Deficits and Projections

Figure 11.5 shows the absolute magnitudes of recent U.S. budget surpluses and deficits. It also shows the projected future deficits or surpluses as published by the Congressional Budget Office (CBO). The United States has been experiencing large budget deficits that are expected to continue for several years. But projected deficits and surpluses are subject to swift change, as government alters its fiscal policy and the GDP growth accelerates or slows. So we suggest that you update this figure by going to the

GLOBAL PERSPECTIVE 11.1

Standardized Budget Deficits or Surpluses as a Percentage of Potential GDP, Selected Nations

In 2005 some nations had standardized budget surpluses, while others had standardized budget deficits. These surpluses and deficits varied as a percentage of each nation's potential GDP. Generally, the surpluses represented contractionary fiscal policy and the deficits expansionary fiscal policy.

Source: Organization for Economic Cooperation and Development, **www.oecd.org.**

Standardized Budget Surplus or Deficit as a Percentage of Potential GDP, 2005

Deficits Surpluses

8 6 4 2 0 4 6 2

New Zealand
Denmark
Canada
Ireland
France
Norway
United Kingdom
United States
Japan

Congressional Budget Office Web site, **www.cbo.gov**, and selecting Current Budget Projections and then CBO's Baseline Budget Projections. The relevant numbers are in the row Surplus () or Deficit ().

Social Security Considerations

The surpluses and deficits in Figure 11.5 include all tax revenues, even those obligated for future Social Security payments. Recall from the Last Word in Chapter 4 that Social Security is basically a "pay-as-you-go plan" in

which the mandated benefits paid out each year are financed by the payroll tax revenues received each year. But current tax rates now bring in more revenue than current payouts, in partial preparation for the opposite circumstance when the baby boomers retire in the next one or two decades. The Federal government saves the excess revenues by purchasing U.S. securities and holding them in the Social Security trust fund.

Some economists argue that these present Social Security surpluses ($175 billion in 2005) should be subtracted from Federal government revenue when calculating present Federal deficits. Because these surpluses represent future government obligations on a dollar-for-dollar basis, they should not be considered revenue offsets to current government spending. Without the Social Security surpluses, the total budget deficit in 2005 would be $523 billion rather than the $318 billion shown.

Problems, Criticisms, and Complications

Economists recognize that governments may encounter a number of significant problems in enacting and applying fiscal policy.

Problems of Timing

Several problems of timing may arise in connection with fiscal policy:

• ***Recognition lag*** The recognition lag is the time between the beginning of recession or inflation and the certain awareness that it is actually happening. This lag arises because of the difficulty in predicting the future course of economic activity. Although forecasting tools such as the index of leading indicators (see this chapter's Last Word) provide clues to the direction of the economy, the economy may be 4 or 6 months into a recession or inflation before that fact appears in relevant statistics and is acknowledged. Meanwhile, the economic downslide or the inflation

200
300
400
500
100
0
100
200
1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012
$300

Actual
(as of March 2006)

Projected
Budget deficit () or surplus, billions
Year

FIGURE 11.5 Federal budget deficits and surpluses, actual and projected, fiscal years 1992–2012 (in billions of nominal dollars). The annual budget deficits of 1992 through 1997 gave way to budget surpluses from 1998 through 2001. Deficits reappeared in 2002 and are projected to continue through 2011.
Source: Congressional Budget Office, **www.cbo.gov.**

Future Policy Reversals

Fiscal policy may fail to achieve its intended objectives if households expect future reversals of policy. Consider a tax cut, for example. If taxpayers believe the tax reduction is temporary, they may save a large portion of their tax saving, reasoning that rates will return to their previous level in the future. At that time, they can draw on this extra saving to maintain their consumption. So a tax reduction

thought to be temporary may not increase present consumption spending and aggregate demand by as much as our simple model (Figure 11.1) suggests.

The opposite may be true for a tax increase. If taxpayers think it is temporary, they may reduce their saving to pay the tax while maintaining their present consumption. They may reason they can restore their saving when the tax rate again falls. So the tax increase may not reduce current consumption and aggregate demand by as much as the policymakers desired.

To the extent that this so-called *consumption smoothing* occurs over time, fiscal policy will lose some of its strength. The lesson is that tax-rate changes that households view as permanent are more likely to alter consumption and aggregate demand than tax changes they view as temporary.

Offsetting State and Local Finance

The fiscal policies of state and local governments are frequently *pro-cyclical*, meaning that they worsen rather than correct recession or inflation. Unlike the Federal government, most state and local governments face constitutional or other legal requirements to balance their budgets. Like households and private businesses, state and local governments increase their expenditures during prosperity and cut them during recession. During the Great Depression of the 1930s, most of the increase in Federal spending was offset by decreases in state and local spending. During and immediately following the recession of 2001, many state and local governments had to increase tax rates, impose new taxes, and reduce spending to offset lower tax revenues resulting from the reduced personal income and spending of their citizens.

Crowding-Out Effect

Another potential flaw of fiscal policy is the so-called **crowding-out effect:** An expansionary fiscal policy (deficit spending) may increase the interest rate and reduce private spending, thereby weakening or canceling the stimulus of the expansionary policy.

may become more serious than it would have if the situation had been identified and acted on sooner.

- ***Administrative lag*** The wheels of democratic government turn slowly. There will typically be a significant lag between the time the need for fiscal action is recognized and the time action is taken. Following the terrorist attacks of September 11, 2001, the U.S. Congress was stalemated for 5 months before passing a compromise economic stimulus law in March 2002. (In contrast, the Federal Reserve began lowering interest rates the week after the attacks.)
- ***Operational lag*** A lag also occurs between the time fiscal action is taken and the time that action affects output, employment, or the price level. Although changes in tax rates can be put into effect relatively quickly, government spending on public works—new dams, interstate highways, and so on—requires long planning periods and even longer periods of construction. Such spending is of questionable use in offsetting short (for example, 6- to 12-month) periods of recession. Consequently, discretionary fiscal policy has increasingly relied on tax changes rather than on changes in spending as its main tool.

Political Considerations

Fiscal policy is conducted in a political arena. That reality not only may slow the enactment of fiscal policy but also may create the potential for political considerations swamping economic considerations in its formulation. It is a human trait to rationalize actions and policies that are in one's self-interest. Politicians are very human—they want to get reelected. A strong economy at election time will certainly help them. So they may favor large tax cuts under the guise of expansionary fiscal policy even though that policy is economically inappropriate. Similarly, they may rationalize increased government spending on popular items such as farm subsidies, health care, highways, education, and homeland security.

At the extreme, elected officials and political parties might collectively "hijack" fiscal policy for political purposes, cause inappropriate changes in aggregate demand, and thereby cause (rather than avert) economic fluctuations. They may stimulate the economy using expansionary fiscal policy before elections and use contractionary fiscal policy to dampen excessive aggregate demand after the election. In short, elected officials may cause so-called **political business cycles.** Such scenarios are difficult to document and prove, but there is little doubt that political considerations weigh heavily in the formulation of fiscal policy. The question is how often, if ever, do those political considerations run counter to "sound economics."

Suppose the economy is in recession and government enacts a discretionary fiscal policy in the form of increased government spending. Also suppose that the monetary authorities hold the supply of money constant. To finance its budget deficit, the government borrows funds in the money market. The resulting increase in the demand for money raises the price paid for borrowing money: the interest rate. Because investment spending varies inversely with the interest rate, some investment will be choked off or crowded out. (Some interest-sensitive consumption spending such as purchases of automobiles on credit may also be crowded out.)

Nearly all economists agree that a budget deficit is inappropriate when the economy has achieved full employment. Such a deficit will surely crowd out some private investment. But economists disagree on whether crowding out exists under all circumstances. Many believe that little crowding out will occur when fiscal policy is used to move the economy from recession. The added amount of government financing resulting from typical budget deficits is small compared to the total amount of private and public financing occurring in the money market. Therefore, interest rates are not likely to be greatly affected. Moreover, both increased government spending and increased consumption spending resulting from tax cuts may improve the profit expectations of businesses. The greater expected returns on private investment may encourage more of it. Thus, private investment need not fall, even though interest rates do rise. (We will soon see that the financing of the entire

public debt, as opposed to the financing of new debt from annual deficits, is more likely to raise interest rates.)

Current Thinking on Fiscal Policy

Where do these complications leave us as to the advisability and effectiveness of discretionary fiscal policy? In view of the complications and uncertain outcomes of fiscal policy, some economists argue that it is better not to engage in it at all. Those holding that view point to the superiority of monetary policy (changes in interest rates engineered by the Federal Reserve) as a stabilizing device or believe that most economic fluctuations tend to be mild and self-correcting.

But most economists believe that fiscal policy remains an important, useful policy lever in the government's macroeconomic toolkit. The current popular view is that fiscal policy can help push the economy in a particular direction but cannot fine-tune it to a precise macroeconomic outcome.

Mainstream economists generally agree that monetary policy is the best month-to-month stabilization tool for the U.S. economy. If monetary policy is doing its job, the government should maintain a relatively neutral fiscal policy, with a standardized budget deficit or surplus of no more than 2 percent of potential GDP. It should hold major discretionary fiscal policy in reserve to help counter situations where recession threatens to be deep and long-lasting or where inflation threatens to escalate rapidly despite the efforts of the Federal Reserve to stabilize the economy.

Finally, economists agree that proposed fiscal policy should be evaluated for its potential positive and negative impacts on long-run productivity growth. The short-run policy tools used for conducting active fiscal policy often have long-run impacts. Countercyclical fiscal policy should be shaped to strengthen, or at least not impede, the growth of long-run aggregate supply (shown as a rightward shift of the long-run aggregate supply curve in Figure 10.3). For example, a tax cut might be structured to enhance work effort, strengthen investment, and encourage innovation. Alternatively, an increase in government spending might center on preplanned projects for public capital (highways, mass transit, ports, airports), which are complementary to private investment and thus support long-term economic growth. **(Key Question 8)**

QUICK REVIEW 11.2

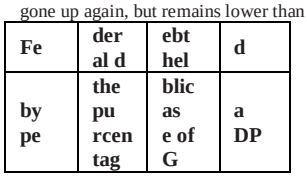
- Automatic changes in net taxes (taxes minus transfers) add a degree of built-in stability to the economy.
- The standardized budget compares government spending to the tax revenues that would accrue if there were full employment; changes in standardized budget deficits or surpluses (as percentages of potential GDP) reveal whether fiscal policy is expansionary, neutral, or contractionary.
- Standardized budget deficits are distinct from cyclical deficits, which simply reflect declines in tax revenues resulting from reduced GDP.
- Time lags, political problems, expectations, and state and local finances complicate fiscal policy.
- The crowding-out effect indicates that an expansionary fiscal policy may increase the interest rate and reduce investment spending.

O 11.2
Crowding out

The Public Debt

The national or **public debt** is essentially the total accumulation of the deficits (minus the surpluses) the Federal government has incurred through time. These deficits have emerged mainly because of war financing, recessions, and fiscal policy. Lack of political will by Congress has also

FIGURE 11.7 Federal debt held by the public as a percentage of GDP , 1970–2005. As a percentage of GDP, the Federal debt held by the public (held outside the Federal Reserve and Federal government agencies) increased sharply over the 1980–1995 period and declined significantly between 1995 and 2001. Since 2001, the percentage has gone up again, but remains lower than it was in the 1990s.



contributed to the size of the debt. In 2005 the total public debt was $7.96 trillion—$3.9 trillion held by the public and $4.06 trillion held by Federal Agencies and the Federal Reserve. (You can find the size of the public debt, to the penny, at the Web site of the Department of Treasury, Bureau of the Public Debt, at **www.publicdebt.treas.gov/opd/opdpenny.htm.**)

Ownership

The total public debt of nearly $8 trillion represents the total amount of money owed by the Federal government to the holders of **U.S. securities:** financial instruments issued by the Federal government to borrow money to finance expenditures that exceed tax revenues. These U.S. securities (loan instruments) are of four types: Treasury bills (short-term securities), Treasury notes (medium-term securities), Treasury bonds (long-term securities), and U.S. saving bonds (long-term, nonmarketable bonds). Figure 11.6 shows that the public held 49 percent of the Federal debt in 2005 and that Federal government agencies and the Federal Reserve (the U.S. central bank) held the other 51 percent. In this case the "public" consists of individuals here and abroad, state and local governments, and U.S. financial institutions. Foreigners held about 25 percent of the total debt in 2005. So, most of the debt is held internally, not externally. Americans owe three-fourths of the debt to Americans.

Debt and GDP

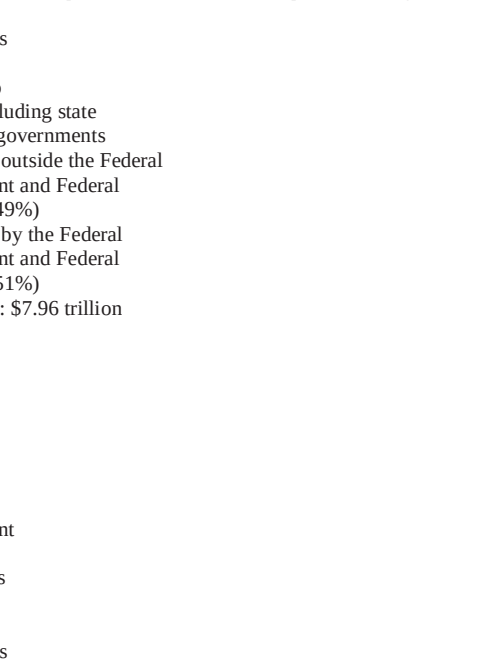
A simple statement of the absolute size of the debt ignores the fact that the wealth and productive ability of the U.S. economy is also vast. A wealthy, highly productive nation can incur and carry a large public debt more easily than a poor nation can. A more meaningful measure of the public debt relates it to an economy's GDP. Figure 11.7 shows the relative size of the Federal debt held by the public (as

opposed to the Federal Reserve and Federal agencies) over time. This percentage—31.4 percent in 2005—has increased since 2001, but remains well below the percentages in the 1990s.

International Comparisons

As shown in Global Perspective 11.2, it is not uncommon for countries to have public debts. The numbers shown are government debts held by the public, as a percentage of GDP.

FIGURE 11.6 Ownership of the total public debt, 2005.
The total public debt can be divided into the proportion held by the public (49 percent) and the proportion held by Federal agencies and the Federal Reserve System (51 percent). Of the total debt, 25 percent is foreignowned.



Source: U.S. Treasury, **www.fms.treas.gov/bulletin.**

are false concerns. People were wondering the same things 50 years ago!

Bankruptcy

The large U.S. public debt does not threaten to bankrupt the Federal government, leaving it unable to meet its financial obligations. There are two main reasons: refinancing and taxation.

Refinancing The public debt is easily refinanced. As portions of the debt come due on maturing Treasury bills, notes, and bonds each month, the government does not cut expenditures or raise taxes to provide the funds required. Rather, it refinances the debt by selling new bonds and using the proceeds to pay holders of the maturing bonds. The new bonds are in strong demand, because lenders can obtain a relatively good interest return with no risk of default by the Federal government.

Taxation The Federal government has the constitutional authority to levy and collect taxes. A tax increase is a government option for gaining sufficient revenue to pay interest and principal on the public debt. Financially distressed private households and corporations cannot extract themselves from their financial difficulties by taxing the

public. If their incomes or sales revenues fall short of their expenses, they can indeed go bankrupt. But the Federal government does have the option to impose new taxes or increase existing tax rates if necessary to finance its debt.

Burdening Future Generations

In 2005 public debt per capita was $26,834. Was each child born in 2005 handed a $26,834 bill from the Federal government? Not really. The public debt does not impose as much of a burden on future generations as commonly thought.

The United States owes a substantial portion of the public debt to itself. U.S. citizens and institutions (banks, businesses, insurance companies, governmental agencies, and trust funds) own about 74 percent of the U.S. government securities. Although that part of the public debt is a liability to Americans (as taxpayers), it is simultaneously an asset to Americans (as holders of Treasury bills, Treasury notes, Treasury bonds, and U.S. savings bonds).

To eliminate the American-owned part of the public debt would require a gigantic transfer payment from Americans to Americans. Taxpayers would pay higher taxes, and holders of the debt would receive an equal

GLOBAL PERSPECTIVE 11.2

Source: Organization for Economic Cooperation and Development, **www.oecd.org/.**

Publicly Held Debt: International Comparisons

Although the United States has the world's largest public debt, a number of other nations have larger debts as percentages of their GDPs.

Public Sector Debt as Percentage of GDP, 2005

0 60 20 80 40 100 120

Belgium
Italy
Japan
United States
Germany
France
Netherlands
Spain
United Kingdom
Canada
Hungary
Poland

Interest Charges

Many economists conclude that the primary burden of the debt is the annual interest charge accruing on the bonds sold to finance the debt. In 2005 interest on the total public debt was $184 billion, which is now the fourth-largest item in the Federal budget (behind income security, national defense, and health).

Interest payments were 1.5 percent of GDP in 2005. That percentage reflects the level of taxation (the average tax rate) required to pay the interest on the public debt. That is, in 2005 the Federal government had to collect taxes equal to 1.5 percent of GDP to service the total public debt. Thanks to relatively low costs of borrowing, this percentage was down from 3.2 percent in 1990 and 2.3 percent in 2000.

False Concerns

You may wonder if the large public debt might bankrupt the United States or at least place a tremendous burden

on your children and grandchildren. Fortunately, these

amount for their U.S. securities. Purchasing power in the United States would not change. Only the repayment of the 25 percent of the public debt owned by foreigners would negatively impact U.S. purchasing power.

The public debt increased sharply during the Second World War. But the decision to finance military purchases through the sale of government bonds did not shift the economic burden of the war to future generations. The economic cost of the Second World War consisted of the civilian goods society had to forgo in shifting scarce resources to war goods production (recall production possibilities analysis). Regardless of whether society financed this reallocation through higher taxes or through borrowing, the real economic burden of the war would have been the same. That burden was borne almost entirely by those who lived during the war. They were the ones who did without a multitude of consumer goods to enable the United States to arm itself and its allies. The next generation inherited the debt from the war but also an equal amount of government bonds. It also inherited the enormous benefits from the victory—namely, preserved political and economic systems at home and the "export" of those systems to Germany, Italy, and Japan. Those outcomes enhanced postwar U.S. economic growth and helped raise the standard of living of future generations of Americans.

Substantive Issues

Although the preceding issues relating to the public debt are false concerns, a number of substantive issues are not. Economists, however, attach varying degrees of importance to them.

Income Distribution

The distribution of ownership of government securities is highly uneven. Some people own much more than the $26,834-per-person portion of government securities; other people own less or none at all. In general, the ownership of the public debt is concentrated among wealthier groups, who own a large percentage of all stocks and bonds. Because the overall Federal tax system is only slightly progressive, payment of interest on the public debt mildly increases income inequality. Income is transferred from people who, on average, have lower incomes to the higher-income bondholders. If greater income equality is one of society's goals, then this redistribution is undesirable.

Incentives

The current public debt necessitates annual interest payments of $184 billion. With no increase in the size of the debt, that interest charge must be paid out of tax revenues. Higher taxes may dampen incentives to bear risk, to innovate, to invest, and to work. So, in this indirect way, a large public debt may impair economic growth.

Foreign-Owned Public Debt

The 25 percent of the U.S. debt held by citizens and institutions of foreign countries *is* an economic burden to Americans. Because we do not owe that portion of the debt "to ourselves," the payment of interest and principal on this **external public debt** enables foreigners to buy some of our output. In return for the benefits derived

from the borrowed funds, the United States transfers goods and services to foreign lenders. Of course, Americans also own debt issued by foreign governments, so payment of principal and interest by those governments transfers some of their goods and services to Americans. **(Key Question 10)**

Crowding-Out Effect Revisited

A potentially more serious problem is the financing (and continual refinancing) of the large public debt, which can transfer a real economic burden to future generations by passing on to them a smaller stock of capital goods. This possibility involves the previously discussed crowding-out effect*:* the idea that public borrowing drives up real interest rates, which reduces private investment spending. If the amount of current investment crowded out is extensive, future generations will inherit an economy with a smaller production capacity and, other things equal, a lower standard of living.

A Graphical Look at Crowding Out

We know from Chapter 8 that the real interest rate is inversely related to the amount of investment spending. When graphed, that relationship is shown as a downward-sloping investment demand curve, such as either ID_1 or ID_2 in Figure 11.8. Let's first consider curve ID_1. (Ignore curve ID_2 for now.) Suppose that government borrowing increases the real interest rate from 6 percent to 10 percent. Investment spending will then fall from $25 billion to $15 billion, as shown by the economy's move from *a* to *b*. That is, the financing of the debt will compete with the financing of private investment projects and crowd out

financing through debt, the stock of public capital passed on to future generations may be higher than otherwise. That greater stock of public capital may offset the diminished stock of private capital resulting from the crowding-out effect, leaving overall production capacity unimpaired.

So-called public-private complementarities are a second factor that could reduce the crowding out effect. Some public and private investments are complementary. Thus, the public investment financed through the debt could spur some private-sector investment by increasing its expected rate of return. For example, a Federal building in a city may encourage private investment in the form of nearby office buildings, shops, and restaurants. Through its complementary effect, the spending on public capital may shift the private investment demand curve to the right, as from ID_1 to ID_2 in Figure 11.8. Even though the government borrowing boosts the interest rate from 6 percent to 10 percent, total private investment need not fall. In the case shown as the move from *a* to *c* in Figure 11.8, it remains at $25 billion. Of course, the increase in investment demand might be smaller than that shown. If it were smaller, the crowding-out effect would not be fully offset. But the point is that an increase in private investment demand may counter the decline in investment that would otherwise result from the higher interest rate. **(Key Question 13)**

QUICK REVIEW 11.3

- The U.S. public debt—nearly $8 trillion in 2005—is essentially the total accumulation of Federal budget deficits minus surpluses over time; about 25 percent of the public debt is held by foreigners.
- As a percentage of GDP, the portion of the debt held by the public is lower today than it was in the mid-1990s and is in the middle range of such debts among major industrial nations.
- The Federal government is in no danger of going bankrupt because it needs only to refinance (not retire) the public debt and it can raise revenues, if needed, through higher taxes.
- The borrowing and interest payments associated with the public debt may (a) increase income inequality, (b) require higher taxes, which may dampen incentives, and (c) impede the growth of the nation's stock of capital through crowding out of private investment.

$10 billion of private investment. So the stock of private capital handed down to future generations will be $10 billion less than it would have been without the need to finance the public debt.

Public Investments and Public-Private Complementarities

But even with crowding out, two factors could partly or fully offset the net economic burden shifted to future generations. First, just as private goods may involve either consumption or investment, so it is with public goods. Part of the government spending enabled by the public debt is for public investment outlays (for example, highways, mass transit systems, and electric power facilities) and "human capital" (for example, investments in education, job training, and health). Like private expenditures on machinery and equipment, those **public investments** increase the economy's future production capacity. Because of the

FIGURE 11.8 The investment demand curve and the crowding-out effect. If the investment demand curve (ID_1) is fixed, the increase in the interest rate from 6 percent to 10 percent caused by financing a large public debt will move the economy from *a* to *b* and crowd out $10 billion of private investment and decrease the size of the capital stock inherited by future generations. However, if the public goods enabled by the debt improve the investment prospects of businesses, the private investment demand curve will shift rightward, as from ID_1 to ID_2. That shift may offset the crowding-out effect wholly or in part. In this case, it moves the economy from *a* to *c*.

Inc	ease	in		
inve dem	stme and	nt	*b*	*c*
C	rowding-ou	t		
ef	fect	ID_2		
ID_1				
a				

r16
14
12
10
8 6 4 2
Real interest rate (percent)
0 5 10 15 20 25 30 35 40
Investment (billions of dollars)

The Leading Indicators

One of Several Tools Policymakers Use to Forecast the Future Direction of Real GDP Is a Monthly Index of 10 Variables That in the Past Have Provided Advance Notice of Changes in GDP.

The Conference Board's *index of leading indicators* has historically reached a peak or a trough in advance of corresponding turns in the business cycle.* Thus changes in this composite index of 10 economic variables provide a clue to the future direction of the economy. Such advance warning helps policymakers formulate appropriate macroeconomic policy.

Here is how each of the 10 components of the index would change if it were predicting a decline in real GDP. The opposite changes would forecast a rise in real GDP.

1. *Average workweek* Decreases in the length of the average workweek of production workers in manufacturing foretell declines in future manufacturing output and possible declines in real GDP.

2. *Initial claims for unemployment insurance* Higher first-time claims for unemployment insurance are associated with falling employment and subsequently sagging real GDP.

3. *New orders for consumer goods* Decreases in the number of orders received by manufacturers for consumer goods portend reduced future production—a decline in real GDP.

4. *Vendor performance* Somewhat ironically, better on-time delivery by sellers of inputs indicates slackening business demand for final output and potentially falling real GDP.

5. *New orders for capital goods* A drop in orders for capital equipment and other investment goods implies reduced future spending by businesses and thus reduced aggregate demand and lower real GDP.

6. *Building permits for houses* Decreases in the number of building permits issued for new homes imply future declines in investment and therefore the possibility that real GDP will fall.

7. *Stock prices* Declines in stock prices often are reflections of expected declines in corporate sales and profits. Also, lower stock prices diminish consumer wealth, leading to possible cutbacks in consumer spending. Lower stock prices also make it less attractive for firms to issue new shares of stock as a way of raising funds for investment. Thus, declines in stock prices can mean declines in future aggregate demand and real GDP.

8. *Money supply* Decreases in the nation's money supply are associated with falling real GDP.

9. *Interest-rate spread* Increases in short-term nominal interest rates typically reflect monetary policies designed to slow the economy. Such policies have much less effect on long-term interest rates, which usually are higher than short-term rates. So a smaller difference between short-term interest rates and long-term interest rates suggests

restrictive monetary policies and potentially a future decline in GDP.

10. *Consumer expectations* Less favorable consumer attitudes about future economic conditions, measured by an index of consumer expectations, foreshadow lower consumption spending and potential future declines in GDP.

None of these factors alone consistently predicts the future course of the economy. It is not unusual in any month, for example, for one or two of the indicators to be decreasing while the other indicators are increasing. Rather, changes in the composite of the 10 components are what in the past have provided advance notice of a change in the direction of GDP. The rule of thumb is that three successive monthly declines or increases in the index indicate the economy will soon turn in that same direction.

Although the composite index has correctly signaled business fluctuations on numerous occasions, it has not been infallible. At times the index has provided false warnings of recessions that never happened. In other instances, recessions have so closely followed the downturn in the index that policymakers have not had sufficient time to make use of the "early" warning. Moreover, changing structural features of the economy have, on occasion, rendered the existing index obsolete and necessitated its revision. Given these caveats, the index of leading indicators can best be thought of as a useful but not totally reliable signaling device that authorities must employ with considerable caution in formulating macroeconomic policy.

*The Conference Board is a private, nonprofit research and business membership group, with more than 2700 corporate and other members in 60 nations. See **www.conferenceboard.org.**

Summary

1. Fiscal policy consists of deliberate changes in government spending, taxes, or some combination of both to promote full employment, price-level stability, and economic growth. Fiscal policy requires increases in government spending, decreases in taxes, or both—a budget deficit—to increase aggregate demand and push an economy from a recession. Decreases in government spending, increases in taxes, or both—a budget surplus—are appropriate fiscal policy for dealing with demand-pull inflation.

2. Built-in stability arises from net tax revenues, which vary directly with the level of GDP. During recession, the Federal budget automatically moves toward a stabilizing deficit; during expansion, the budget automatically moves toward an anti-inflationary surplus. Built-in stability lessens, but does not fully correct, undesired changes in the real GDP.

3. The standardized budget measures the Federal budget deficit or surplus that would occur if the economy operated at full employment throughout the year. Cyclical deficits or surpluses are those that result from changes in GDP. Changes

in the standardized deficit or surplus provide meaningful information as to whether the government's fiscal policy is expansionary, neutral, or contractionary. Changes in the actual budget deficit or surplus do not, since such deficits or surpluses can include cyclical deficits or surpluses.

4. Certain problems complicate the enactment and implementation of fiscal policy. They include (a) timing problems associated with recognition, administrative, and operational lags; (b) the potential for misuse of fiscal policy for political rather than economic purposes; (c) the fact that state and local finances tend to be pro-cyclical; (d) potential ineffectiveness if households expect future policy reversals; and (e) the possibility of fiscal policy crowding out private investment.

5. Most economists believe that fiscal policy can help move the economy in a desired direction but cannot reliably be used to fine-tune the economy to a position of price stability and full employment. Nevertheless, fiscal policy is a valuable backup tool for aiding monetary policy in fighting significant recession or inflation.

6. The large Federal budget deficits of the 1980s and early 1990s prompted Congress in 1993 to increase tax rates and limit government spending. As a result of these policies, along with a very rapid and prolonged economic expansion, the deficits dwindled to $22 billion in 1997. Large budget surpluses occurred in 1999, 2000, and 2001. In 2001 the Congressional Budget Office projected that $5 trillion of annual budget surpluses would accumulate between 2000 and 2010.

7. In 2001 the Bush administration and Congress chose to reduce marginal tax rates and phase out the Federal estate tax. A recession occurred in 2001, the stock market crashed, and Federal spending for the war on terrorism rocketed. The Federal budget swung from a surplus of $127 billion in 2001 to a deficit of $158 billion in 2002. In 2003 the Bush administration and Congress accelerated the tax reductions scheduled under the 2001 tax law and cut tax rates on capital gains and dividends. The purposes were to stimulate a sluggish economy. In 2005 the budget deficit was $318 billion and deficits are projected to continue through 2011 before surpluses again reemerge.

8. The public debt is the total accumulation of the government's deficits (minus surpluses) over time and consists of Treasury bills, Treasury notes, Treasury bonds, and U.S. savings bonds. In 2005 the U.S. public debt was nearly $8 trillion, or $26,834 per person. The public (which here includes banks and state and local governments) holds 49 percent of that Federal debt; the Federal Reserve and Federal agencies hold the other 51 percent. Foreigners hold 25 percent of the Federal debt. Interest payments as a percentage of GDP were about 1.5 percent in 2005. This is down from 3.2 percent in 1990.

9. The concern that a large public debt may bankrupt the government is a false worry because (a) the debt needs only to be refinanced rather than refunded and (b) the Federal government has the power to increase taxes to make interest payments on the debt.

10. In general, the public debt is not a vehicle for shifting economic burdens to future generations. Americans inherit not only most of the public debt (a liability) but also most of the U.S. securities (an asset) that finance the debt.

11. More substantive problems associated with public debt include the following: (a) Payment of interest on the debt may increase income inequality. (b) Interest payments on

the debt require higher taxes, which may impair incentives.
(c) Paying interest or principal on the portion of the debt held by foreigners means a transfer of real output abroad.
(d) Government borrowing to refinance or pay interest on the debt may increase interest rates and crowd out private investment spending, leaving future generations with a smaller stock of capital than they would have otherwise.

12. The increase in investment in public capital that may result from debt financing may partly or wholly offset the crowding-out effect of the public debt on private investment. Also, the added public investment may stimulate private invest