FISCAL POLICY*

Key Concepts

- The Federal Budget
The federal budget is an annual statement of the government’s expenditures and tax revenues. Using the federal budget to achieve macroeconomic objectives such as full employment is fiscal policy. The President proposes a budget to Congress, Congress passes budget acts, and the President vetoes or signs the acts. The Employment Act of 1946 commits the government to strive for full employment. The Council of Economic Advisers is a group of economists who monitor the economy and keep the President informed.

- Tax revenues are received from four sources: personal income taxes, social insurance taxes, corporate income taxes, and indirect taxes.

- Expenditures are classified as transfer payments, purchases of goods and services, and interest payments on the debt.

The budget balance equals tax revenues minus expenditures.

- Government debt is the total amount that the government has borrowed. As a percentage of GDP, the debt declined after World War II until 1974, increased until the mid 1990s and has fallen since then.

- A budget surplus occurs if tax revenues exceed expenditures; a budget deficit occurs if tax revenues are less than expenditures; and a balanced budget occurs if tax revenues equal expenditures.


- Most nations have budget deficits.

Fiscal Policy Multipliers

Automatic fiscal policy is a change in fiscal policy caused by the state of the economy; discretionary fiscal policy is a policy action initiated by an act of Congress. Lump-sum taxes are taxes that do not change when real GDP changes.

- The government purchases multiplier is the magnification effect of a change in government purchases on equilibrium expenditure and real GDP; it is the amount by which a change in government purchases is multiplied to determine the change in equilibrium expenditure and real GDP.

- An increase in government purchases shifts the aggregate expenditure curve upward and increases equilibrium expenditure. Figure 11.1 (on the next page) illustrates this process, in which the AE curve shifts upward to $AE_1$ and the equilibrium expenditure rises from $8$ trillion to $10$ trillion.

- Without income taxes or imports, the government purchases multiplier is \( \frac{1}{1 - MPC} \).

* This is Chapter 26 in Economics.
An increase in lump-sum taxes shifts the aggregate expenditure curve downward and decreases equilibrium expenditure.

The lump-sum tax multiplier is the amount by which a change in lump-sum taxes is multiplied to give the change in equilibrium expenditures.

Without income taxes or imports, the lump-sum tax multiplier is \( \frac{MPC}{1-MPC} \).

The lump-sum transfer payments multiplier is \( \frac{MPC}{1-MPC} \).

Induced taxes change when GDP changes. Entitlement spending is spending that allows qualified people and businesses to receive benefits. Induced taxes and entitlement spending decrease the magnitude of the government purchases and lump-sum tax multipliers. The larger the marginal tax rate, the smaller the multipliers.

Import spending changes when GDP changes by an amount that depends on the marginal propensity to import. The larger the marginal propensity to import, the smaller the multipliers.

Automatic stabilizers are mechanisms that help stabilize GDP and operate without the need for explicit action. The amount of the budget deficit changes with the business cycle. It increases just before, during, and just after a recession. The budget deficit decreases at other times.

The structural surplus or deficit is the budget balance that would occur if the economy were at full employment. The cyclical deficit or surplus is the actual deficit or surplus minus the structural surplus or deficit.

Fiscal Policy Multipliers and the Price Level

- An expansionary fiscal policy is an increase in government purchases or a decrease in tax revenues. Expansionary policy shifts the \( AD \) curve rightward.
- A contractionary fiscal policy is a decrease in government purchases or an increase in tax revenues. Contractionary policy shifts the \( AD \) curve leftward.
- The horizontal amount by which the \( AD \) curve shifts is equal to the multiplied effect on equilibrium expenditure.

The short-run effects of an expansionary fiscal policy are illustrated in Figure 11.2. Starting from an equilibrium in which GDP equals potential GDP, the \( AD \) curve shifts rightward by $2 trillion to \( AD_1 \) and the economy moves along \( SAS_0 \) from its initial equilibrium at point \( a \) to its new equilibrium at point \( b \). The price level rises (from 110 to 120) and real GDP increases (from $10 trillion to $11 trillion). The rise in the price level decreases the size of the multiplier effect on real GDP.
Expansionary Fiscal Policy in the Long Run

The long-run effects of an expansionary policy are illustrated in Figure 11.3. The long-run equilibrium is at point c, and the economy has returned to its potential real GDP along its LAS. The price level rises (to 130 from its initial level of 110) and real GDP does not change (it starts and ends at potential GDP). The long-run multiplier is zero.

Limitations of fiscal policy include the following:

- Implementing fiscal policy is slow and so it is difficult to have the proper policy in place.
- At times it is difficult to determine if GDP is less than, equal to, or greater than potential GDP.

**Supply-Side Effects of Fiscal Policy**

Fiscal policy can also affect aggregate supply. An income tax cut increases the quantities of labor and capital, so an income tax cut increases both aggregate demand and aggregate supply.

- A tax cut that strengthens incentives to supply resources, so that aggregate supply increases, boosts GDP by more and is less inflationary than one that does not change these incentives.

Fiscal policy influences economic growth two ways:

- Taxes affect people’s incentives to save, invest, and develop new technologies.
- If fiscal policy crowds out investment, the nation has both a smaller capital stock and more international debt.

1. **Multipliers**: The previous chapter was the first that discussed the idea of the multiplier. This chapter continues the discussion by introducing additional multipliers, such as the government purchases multiplier. **All multipliers exist for the same reason**: An initial autonomous change that affects people’s disposable income leads them to change their consumption expenditure. In turn, the consumption changes affect other people’s income, which creates yet more induced changes in consumption expenditure.

2. **Why Does the Investment Multiplier Equal the Government Purchases Multiplier?**: The fact that the investment multiplier equals the government purchases multiplier occasionally leads to confusion among students who realize that an increase in investment spending will increase the nation’s capital stock, but that an increase in government purchases might not affect the nation’s capital stock. Remember, however, that multipliers calculate the amount by which the aggregate demand curve shifts when autonomous spending changes. The total demand for goods and services changes by the same amount regardless of whether the initial change in expenditure was by firms (for their investment) or by the government (for its purchases of goods and services). Hence the multiplier, which measures the size of this shift, is identical for investment and government spending. An increase in investment spending will change the capital stock, whereas an increase in government purchases does not necessarily change the capital stock. And it is indeed the case that the aggregate supply curve(s) increases when the nation’s capital stock increases. But even though the aggregate supply curve(s) might respond differently, ignoring any differences is convenient for two reasons. First, time is needed for the capital to be installed and come on-line. So, in the short run, the nation’s capital stock does not change when investment increases and so, in the short run, the aggregate supply curve(s) does not shift. Second, even in the long run the change in investment spending creates only a minuscule fraction of a change in the nation’s total capital stock. With the U.S. capital stock approaching $20 trillion, a $100 billion increase in investment creates only a 0.5 percent change in the...
capital stock. In the analysis of business cycle fluctuations in economic activity, that amount of change generally is ignored as too small to matter. Although important for the topic of long-term economic growth, for multiplier analysis a change in investment spending is treated the same as a change in government purchases.

Questions

True/False and Explain

The Federal Budget

1. The Council of Economic Advisers proposes the federal government’s budget to Congress.

2. If tax revenues exceed government expenditures, the government has a budget deficit.

3. The federal government has run small budget surpluses for most of the last two decades.

4. Most nations are running a government budget deficit.

Fiscal Policy Multipliers

5. The short run government purchases multiplier is greater than 1 because an increase in government purchases leads to an induced increase in consumption expenditure.

6. The larger the marginal propensity to consume, the larger the government purchases multiplier.

7. If the marginal propensity to consume is 0.8 and there are no income taxes nor imports, the government purchases multiplier is 5.0.

8. If the marginal propensity to consume is 0.8 and there are no income taxes nor imports, the lump-sum tax multiplier is –4.0.

9. Although an income tax reduces the magnitude of the government purchases multiplier, it has no effect on the magnitude of the lump-sum tax multiplier.

10. Changes in lump-sum taxes are an example of an automatic stabilizer.

11. By its definition, the structural surplus equals zero when the economy is at full employment.

Fiscal Policy Multipliers and the Price Level

12. A tax increase is an example of an expansionary fiscal policy.

13. In the short run, an increase in government purchases increases real GDP.

Supply-Side Effects of Fiscal Policy

14. An increase in income taxes increases potential GDP.

15. Fiscal policy that crowds out investment can leave the nation with both a smaller capital and less international debt.

Multiple Choice

The Federal Budget

1. In the United States today, which of the following is the largest source of revenue for the federal government?
   a. Corporate income tax
   b. Personal income tax
   c. Indirect tax
   d. Government deficit

2. What is the largest component of federal government expenditures?
   a. Transfer payments
   b. Purchases of goods and services
   c. International purchases
   d. Interest on the debt

3. Suppose that the federal government’s expenditures in a year are $1.5 trillion, and that its tax revenues for the year are $1.3 trillion. Hence the government is running a budget
   a. surplus of $1.3 trillion.
   b. surplus of $0.2 trillion.
   c. deficit of $0.2 trillion.
   d. deficit of $1.5 trillion.

4. Which of the following is largest?
   b. Federal government tax revenues.
   c. The budget deficit.
   d. The federal government’s public debt.
5. Currently the United States has a budget ____ and Japan has a budget ____.
   a. surplus; surplus
   b. surplus; deficit
   c. deficit; surplus
   d. deficit; deficit

**Fiscal Policy Multipliers**

Table 11.1 shows consumption expenditure, investment, and government purchases in a hypothetical nation that has no taxes and no foreign trade (so that both imports and exports equal zero). In Table 11.1 all the entries are in trillions of 1996 dollars. Use this table for the next five questions.

<table>
<thead>
<tr>
<th>Real GDP</th>
<th>Consumption expenditure</th>
<th>Investment</th>
<th>Government purchases</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>2.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>5.0</td>
<td>2.5</td>
<td>1.0</td>
<td>1.0</td>
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<tr>
<td>6.0</td>
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<td>1.0</td>
<td>1.0</td>
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<td>7.0</td>
<td>3.5</td>
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<td>1.0</td>
</tr>
<tr>
<td>8.0</td>
<td>4.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

6. What is the aggregate expenditure when GDP equals $7.0 trillion?
   a. $7 trillion
   b. $5.5 trillion
   c. $3.5 trillion
   d. $1 trillion

7. What is the equilibrium level of expenditure?
   a. $7.0 trillion
   b. $6.0 trillion
   c. $5.0 trillion
   d. $4.0 trillion

8. What is the MPC?
   a. 1.00
   b. 0.90
   c. 0.50
   d. $4.0 trillion

9. What is the government purchases multiplier?
   a. 0.5
   b. 2.0
   c. 5.0
   d. 10.0

10. If government purchases increase by $1 trillion, before the price level changes, what is the new equilibrium level of expenditure?
    a. $7.0 trillion
    b. $6.0 trillion
    c. $5.0 trillion
    d. $4.0 trillion

For the next three questions, there are no income taxes and no foreign trade.

11. If the **MPC** is 0.9, what is the government purchases multiplier?
    a. 10.0
    b. 9.0
    c. −9.0
    d. −10.0

12. If the **MPC** is 0.8, what is the government purchases multiplier?
    a. 10.0
    b. 8.0
    c. 5.0
    d. −9.0

13. If the **MPC** is 0.9, what is the lump-sum tax multiplier?
    a. 10.0
    b. 9.0
    c. −9.0
    d. −10.0

14. Which of the following policies shifts the **AD** curve the farthest rightward?
    a. An increase in taxes of $10 billion
    b. A decrease in taxes of $10 billion
    c. An increase in government purchases of $10 billion
    d. An increase in lump-sum transfer payments of $10 billion
15. How do induced taxes, such as the income tax, affect the size of the government purchases multiplier?
   a. Income taxes increase the size of the multiplier.
   b. Income taxes have no effect on the size of the multiplier.
   c. Income taxes reduce the size of the multiplier.
   d. The answer depends on the presence or absence of lump-sum taxes in the economy in addition to income taxes.

16. Which of the following increases the multiplier?
   a. An increase in the marginal propensity to import
   b. An increase in the marginal tax rate
   c. An increase in the marginal propensity to save
   d. An increase in the marginal propensity to consume

17. Which of the following happens automatically if the economy goes into a recession?
   a. Government purchases of goods and services increase.
   b. Income taxes rise.
   c. A budget surplus falls.
   d. Lump-sum taxes fall.

18. If the federal government’s budget is in deficit even when the economy is at full employment, the deficit is said to be
   a. persisting.
   b. non-cyclical.
   c. discretionary.
   d. structural.

Fiscal Policy Multipliers and the Price Level

19. Contractionary fiscal policy includes ____ government expenditures and ____ tax revenues.
   a. increasing; increasing
   b. increasing; decreasing
   c. decreasing; increasing
   d. decreasing; decreasing

20. Suppose that the government purchases multiplier is 2. Starting from potential GDP, if government purchases increase by $10 billion and prices do not change, equilibrium expenditure
   a. increases by $20 billion.
   b. increases by more than $20 billion.
   c. increases by less than $20 billion.
   d. is unaffected.

21. The government purchases multiplier is 2. Starting from potential GDP, if government purchases increase by $10 billion, in the short run, GDP
   a. increases by $20 billion.
   b. increases by more than $20 billion.
   c. increases by less than $20 billion.
   d. is unaffected.

22. The government purchases multiplier is 2. Starting from potential GDP, if government purchases increase by $10 billion and potential real GDP does not change, in the long run, GDP
   a. increases by $20 billion.
   b. increases by more than $20 billion.
   c. increases by less than $20 billion.
   d. is unaffected.

Supply-Side Effects of Fiscal Policy

23. An increase in income taxes
   a. increases the quantity of labor employed.
   b. has no effect on the quantity of labor employed.
   c. increases the quantity of capital.
   d. decreases the quantity of capital.

24. An income tax cut increases real GDP by more when it
   a. increases aggregate supply.
   b. decreases aggregate supply.
   c. has no effect on aggregate demand.
   d. has no effect on aggregate supply.

25. If fiscal policy purchases crowds out private investment, in the long run the nation’s capital stock is ____ and its international debt is ____.
   a. larger; larger
   b. larger; smaller
   c. smaller; larger
   d. smaller; smaller

Short Answer Problems

1. Igor has been elected finance minister of Transylvania. Igor’s first action is to hire a crack team of economists and to tell them that he wants a prediction of Transylvania’s equilibrium expenditure for next year.
   a. The economists compiled their estimates of next year’s real GDP, consumption expenditure, investment, and government purchases. These
TABLE 11.2
Expenditure in Transylvania

<table>
<thead>
<tr>
<th>Real GDP</th>
<th>Consumption expenditure</th>
<th>Investment</th>
<th>Government purchases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>0.8</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td>1.5</td>
<td>1.2</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td>2.0</td>
<td>1.6</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td>2.5</td>
<td>2.0</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td>3.0</td>
<td>2.4</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td>3.5</td>
<td>2.8</td>
<td>0.3</td>
<td>0.1</td>
</tr>
</tbody>
</table>

TABLE 11.3
Aggregate Planned Expenditure in Transylvania

<table>
<thead>
<tr>
<th>Real GDP (billions of 1996 stakes)</th>
<th>Aggregate planned expenditure (billions of 1996 stakes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td></td>
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<tr>
<td>2.0</td>
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<tr>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td></td>
</tr>
</tbody>
</table>

data are shown in Table 11.2 in billions of 1996 stakes. (The “stake” is the unit of currency in Transylvania.) Transylvania has no foreign trade. Unfortunately, these economists lost their calculator and need your help to complete Table 11.3, which lists real GDP and aggregate expenditure.

b. Based on Table 11.3, what is equilibrium expenditure in Transylvania predicted to be?

2. After receiving the prediction for equilibrium expenditure in problem 1, Igor realizes that to be reelected, equilibrium expenditure needs to be 1 billion stakes higher. Igor once more summons his economists and tells them that he wants three policy proposals to raise equilibrium expenditure by $1 billion stakes. Recall that Transylvania has no foreign trade. All taxes and transfers are lump-sum. Further, the economists have found their calculator so they will be able to make recommendations.

a. What is the $MPC$ in Transylvania?
b. What is the government purchases multiplier?
c. What is the lump-sum tax multiplier?
d. What is the lump-sum transfer multiplier?
e. Assuming that the price level does not change, what are three policies that can raise equilibrium expenditure by 1 billion stakes?

3. In problem 2, Igor had threatened his economists with exile to Canada if they erred, so he’s satisfied that their proposals were accurate. Yet Igor finds to his dismay that after implementing one of the proposals, next year’s equilibrium expenditure actually increased by less than 1 billion stakes. As Igor is sent packing back to his night job, he is wondering what went wrong. Explain to Igor why equilibrium expenditure increased by less than 1 billion stakes.

4. Briefly explain whether the following events will shift the $AE$ curve and/or the $AD$ curve. (For each case, assume that other variables remain constant.)

a. A rise in the price level.
b. A rise in expected future profits for businesses.
c. A tax cut.
d. An increase in government purchases.

5. Because of expectations that future profits will be lower, investment decreases.

a. Without any action on the part of the government, what is the effect on real GDP and the price level?
b. What fiscal policies might the government undertake to offset the effect of the decline in investment on real GDP and the price level?

6. Explain why the multiplier effect on real GDP from an expansionary fiscal policy is smaller when the aggregate supply curve is considered. If the expansionary policy has no incentive effects on aggregate supply, what is the long-run multiplier for real GDP?

7. The economy’s aggregate expenditure curve is $AE_0$, as shown in Figure 11.4 (on the next page), and the aggregate demand curve is $AD_0$, as shown in Figure 11.5 (on the next page). The $MPC$ is 0.75. The government lowers its lump-sum taxes by $2 billion. There are no income taxes and no imports.

a. In Figures 11.4 and 11.5 show the initial effect of the decrease in lump-sum taxes on the aggregate expenditure curve and aggregate demand curve. Draw your answers for the period of time over which the price level does not change.
b. From Figure 11.5, what is the short-run effect on the price level and real GDP? Label the short equilibrium a. Without drawing it, explain the effect of the change in the price level on the $AE$ curve in Figure 11.4.

c. In the long run, ignoring any incentive effects on the supply side, what is the effect on the price level? On real GDP? Without drawing it, what happens to the $AE$ curve in Figure 11.4? Does the $AD$ curve in Figure 11.5 shift as a result of the change in the price level?

8. Suppose that an income tax cut has incentive effects that increase aggregate supply. How does the effect on the price level and real GDP of this policy compare to that from a policy that has no supply side effects?

You’re the Teacher

1. “These multipliers are kind of cool, and I’ve studied them until I really understand them. But there’s just one point that still puzzles me: How come the government can’t use its fiscal policy to eliminate fluctuations in GDP brought by changes in investment? I’d think that this policy would be a good one for the government to follow!” Your friend has certainly hit on a good point; now what’s a good answer?
Answers

True/False Answers

The Federal Budget

1. F The President proposes the budget to Congress. The Council of Economic Advisers helps the President by monitoring the economy and offering policy proposals.

2. F A budget deficit occurs when tax revenues fall short of government expenditures.

3. F The federal government ran a budget deficit each year from 1970 to 1997.

4. T Most nations have government budget deficits.

Fiscal Policy Multipliers

5. T The question presents the explanation of the multiplier.

6. T The larger the MPC, the more people change their consumption expenditure when their disposable income changes, which increases the government purchases multiplier.

7. T The government purchases multiplier is \( \frac{1}{1 - \text{MPC}} \), or, in this case, \( \frac{1}{1 - 0.8} = 5.0 \).

8. T The lump-sum tax multiplier is \( - \frac{\text{MPC}}{(1 - \text{MPC})} \), or \( - \frac{0.8}{(1 - 0.8)} = -4.0 \).

9. F An income tax reduces the magnitude of all multipliers.

10. F Income taxes are automatic stabilizers, falling when income decreases and rising when income increases.

11. F The structural surplus is the value of the surplus at full employment, but it is not necessarily equal to zero at full employment.

Fiscal Policy Multipliers and the Price Level

12. F An increase in taxes decreases consumption expenditure and so this policy is a contractionary one.

13. T An increase in government purchases shifts the AD curve rightward and, in the short run, increases real GDP.

Supply-Side Effects of Fiscal Policy

14. F An increase in income taxes reduces the incentives to supply resources, thereby decreasing potential GDP.

15. F Crowding out does, indeed, reduce the capital stock but it increases the international debt.

Multiple Choice Answers

The Federal Budget

1. b Personal income taxes are the largest source of revenue, closely followed by social insurance taxes.

2. a Transfer payments are by far the largest component of federal government spending.

3. c The government’s deficit equals its expenditures, $1.5 trillion, minus its taxes, $1.3 trillion.

4. d The federal government’s public debt is near $3 trillion, which dwarfs federal government expenditures (approximately $2.2 trillion), tax revenues (about $2.1 trillion), and the current deficit (about $100 billion).

5. d Although both Japan and the United States have budget deficits, as a fraction of GDP the Japanese deficit is much larger than the U.S. deficit.

Fiscal Policy Multipliers

6. b Aggregate expenditure equals the sum of consumption expenditure, investment, and government purchases, so when real GDP equals $7.0 trillion, aggregate expenditure equals $3.5 trillion + $1.0 trillion + $1.0 trillion, or $5.5 trillion.

7. d Equilibrium expenditure is the level of aggregate expenditure that equals real GDP. In Table 11.1 when real GDP is $4.0 trillion, aggregate expenditure also equals $4.0 trillion, the level of equilibrium expenditure.

8. c The \( \text{MPC} \) equals \( \Delta C / \Delta YD \). With no taxes, real GDP equals disposable income. Hence, when real GDP changes by $1 trillion, consumption expenditure changes by $0.5 trillion, so the \( \text{MPC} \) equals \( ($0.5 \text{ trillion}) / ($1 \text{ trillion}) \), or 0.50.

9. b The government purchases multiplier is \( \frac{1}{1 - \text{MPC}} \). Hence, with an \( \text{MPC} \) of 0.50, the government purchases multiplier is 2.0.
10. **b** The equilibrium level of expenditures has increased by an amount equal to the government purchases multiplier times the change in government purchases, or $(2)(\$1\ trillion)$, so the new equilibrium is $\$2\ trillion$ more than the old. Alternatively, $\$1\ trillion$ can be added to the schedule of government purchases. Then the equilibrium expenditure becomes $\$6\ trillion$, the level of real GDP that creates a (new) level of aggregate expenditure equal to real GDP.

11. **a** The government purchases multiplier is 
\[
\frac{1}{1 - MPC}.
\]
When $MPC = 0.9$, this multiplier is 
\[
\frac{1}{(1 - 0.9)} = 10.0.
\]

12. **c** The answer to question 11 shows how to calculate the government spending multiplier. Comparing the answers to questions 11 and 12 shows that the smaller the $MPC$ is, the smaller the government purchases multiplier.

13. **c** The lump-sum tax multiplier is 
\[
-\frac{MPC}{(1 - MPC)},
\]
which equals 
\[
-\frac{0.9}{(1 - 0.9)} = -9.0.
\]

14. **c** The magnitude of the government purchases multiplier exceeds the magnitude of the lump-sum tax and transfer multipliers, so the increase in government expenditures shifts the $AD$ curve the farthest rightward.

15. **c** Induced taxes, such as income taxes, reduce the change in disposable income that results from a change in GDP. Income taxes thus decrease the amount of induced consumption that results from a change in GDP. Hence income taxes reduce the size of the government purchases multiplier.

16. **d** When the marginal propensity to consume increases, each change in disposable income induces a larger change in consumption expenditure, so the multiplier is larger.

17. **c** During a recession, tax revenues fall and transfer expenditures rise, thereby decreasing the budget surplus.

18. **d** A structural deficit is a deficit that exists even when the economy is producing at its full employment.

### Fiscal Policy Multipliers and the Price Level

19. **c** Both decreasing government expenditures and increasing tax revenues decrease aggregate demand.

20. **a** When the price level is constant, equilibrium expenditure (or, equivalently, the shift in the $AD$ curve) equals the government purchases multiplier times the change in government purchases, or $(2)(\$10\ billion) = \$20\ billion$.

21. **c** The $AD$ curve shifts rightward by $\$20\ billion$ and, in the short run, the equilibrium point moves along the upward sloping SAS curve so that the equilibrium level of real GDP increases by less than $\$20\ billion$.

22. **d** In the long run, the equilibrium returns to potential GDP, so, if potential GDP does not change, neither does real GDP.

### Supply-Side Effects of Fiscal Policy

23. **d** Increasing income taxes decreases the quantity of capital and the employment of labor, and thereby decreases potential GDP.

24. **a** If it increases aggregate supply (as well as aggregate demand) a tax cut results in a larger increase in real GDP and a smaller increase in the price level.

25. **c** If fiscal policy decreases the nation’s saving supply, some of the decrease is offset by international borrowing but the capital stock still falls.

### Answers to Short Answer Problems

#### TABLE 11.4

**Aggregate Planned Expenditure in Transylvania**

<table>
<thead>
<tr>
<th>Real GDP (billions of 1996 stakes)</th>
<th>Aggregate planned expenditure (billions of 1996 stakes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>1.2</td>
</tr>
<tr>
<td>1.5</td>
<td>1.6</td>
</tr>
<tr>
<td>2.0</td>
<td>2.0</td>
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<tr>
<td>2.5</td>
<td>2.4</td>
</tr>
<tr>
<td>3.0</td>
<td>2.8</td>
</tr>
<tr>
<td>3.5</td>
<td>3.2</td>
</tr>
</tbody>
</table>

1. **a** Table 11.4 shows the aggregate expenditure schedule in Transylvania. The schedule is computed by adding consumption expenditure, investment, and government purchases. For example, when real GDP is 3.5 billion stakes,
aggregate expenditure equals the sum of consumption expenditure (2.8 billion stakes) investment (0.3 billion stakes) and government purchases (0.1 billion stakes), 3.2 billion stakes.

b. Equilibrium expenditure is 2.0 billion stakes, because that level of real GDP equals aggregate expenditure.

2. a. The $MPC$ equals $(\Delta C)/(\Delta YD)$, where $\Delta$ means “change in,” $C$ is consumption, and $YD$ is disposable income. Because all taxes are lump sum, any change in income translates into an equal change in disposable income; that is, a 0.5 billion stake increase in GDP means that disposable income in Transylvania also increases by 0.5 billion stakes because taxes do not change. In the data, the $MPC$ is the same at all levels of GDP. Hence the $MPC$ between real GDP of 2.0 billion stakes and 2.5 billion stakes is equal to $(2.0 - 1.6)/(2.5 - 2.0) = (0.4)/(0.5) = 0.80$.

b. The government purchases multiplier is $1/(1 - MPC)$, where $MPC = 0.8$.

c. The lump-sum tax multiplier is $-MPC/(1 - MPC) = -0.8/(1 - 0.8) = -4.0$.

d. The lump-sum transfer payments multiplier is $MPC/(1 - MPC) = 0.8/(1 - 0.8) = 4.0$.

e. Three policies that can increase equilibrium expenditure by 1 billion stakes are to:

Increase government purchases by 0.2 billion stakes: The government purchases multiplier shows that this policy increases equilibrium expenditure by $(5.0)(0.2$ billion) = 1.0 billion stakes.

Decrease lump-sum taxes by 0.25 billion stakes: The lump-sum tax multiplier shows that this policy increases equilibrium expenditure by $(-4.0)(-0.25$ billion) = 1.0 billion stakes.

Increase lump-sum transfers by 0.25 billion stakes: The lump-sum tax transfers multiplier shows that this policy increases equilibrium expenditure by $(4.0)(0.25$ billion) = 1.0 billion stakes.

3. Igor’s error was relying upon the assumption that the price level does not change. All three of the policies described in problem 2 increase aggregate demand, thereby shifting the $AD$ curve rightward. If the $AD$ curve shifts rightward, the price level rises, which lowers aggregate expenditure. In other words, Igor’s policy shifted the $AD$ curve rightward by 1.0 billion stakes, but the upward slope of the $SAS$ curve implies that the equilibrium increase in real GDP — and hence the ultimate increase in equilibrium expenditure — is less than 1.0 billion stakes.

4. In general, any change that changes autonomous spending shifts the $AE$ curve. Therefore all the changes shift the $AD$ curve. And any change in autonomous expenditure not the result of a change in the price level shifts the $AD$ curve. Therefore part (a) involves a movement along an $AD$ curve and parts (b) through (d) create shifts in the $AD$ curve.

a. The rise in the price level shifts the $AE$ curve downward and creates a movement upward along the $AD$ curve.

b. The rise in future expected profits increases investment, thereby shifting the $AE$ curve upward and the $AD$ curve rightward.

c. The decrease in taxes increases consumption expenditure and shifts the $AE$ curve upward and the $AD$ curve rightward.

d. An increase in government purchases shifts the $AE$ curve upward and the $AD$ curve rightward.

5. a. The decrease in investment shifts the $AD$ curve leftward, as shown in Figure 11.6. As a result, in the short run, real GDP decreases (in the figure, from $10$ to $9$ trillion) and the price level falls (in the figure, from 150 to 130).
b. In general terms, the government can undertake expansionary fiscal policy to offset the decline in investment. Such a policy would include increasing government purchases and/or government transfer payments, and/or lowering taxes. All of these actions shift the AD curve rightward.

6. The multiplier indicates the size of the change in real GDP relative to the size of an initial change in autonomous expenditure. The AS curve shows that the price level rises as aggregate demand increases. The rise in the price level lowers aggregate expenditure, leading to a smaller increase in real GDP than if the price level had remained constant. Indeed, in the long run, the economy returns to potential GDP. In the absence of effects on aggregate supply, the long-run multiplier is zero.

7. a. Figures 11.7 and 11.8 show the effect of the tax reduction on the AE and AD curves.

In Figure 11.7 the $2 billion reduction in taxes raises disposable income by $2 billion. From the $2 billion increase, with the MPC equal to 0.75, (0.75)($2 billion), or $1.5 billion goes to increased consumption expenditure. Hence, as shown in Figure 11.7, the AE curve shifts upward (by $1.5 billion, the length of the small arrow) to AE. Figure 11.7 also shows that the increase in equilibrium expenditure is $6 billion, from $20 billion to $26 billion. Alternatively, the $6 billion increase in equilibrium expenditure equals the reduction in taxes, –$2 billion, multiplied by the lump-sum tax multiplier, $\frac{MPC}{(1-MPC)}$, which is $-3.0$.

In Figure 11.8, the aggregate demand curve shifts rightward, from AD to AD. As shown by the length of the double-headed arrow, the extent of the rightward shift is $6 billion, the increase in equilibrium expenditure.

b. In Figure 11.8 the short-run equilibrium point is at a. The price level rises to 120, and real GDP increases to $23 billion. The increase in the price level from 110 to 120 decreases aggregate expenditure; that is, in Figure 11.7 the AE curve shifts downward from AE. Indeed, the AE curve shifts downward enough so that the equilibrium level of expenditure is $23 billion, the same level as real GDP in Figure 11.8.

c. In the long run, the economy returns to potential GDP. Hence, in the absence of any supply-side effects, as money wages rise and the SAS curve shifts leftward, the equilibrium eventually returns to the point where the AD curve crosses the LAS curve (point b in Figure 11.9 on the next page). In the long run, the price level equals 130 and real GDP equals $20 billion. The rise in the price level decreases aggregate expenditure, so the AE curve in Figure 11.7 continues to shift downward. Eventually, when the long-run...
equilibrium is reached, the \( AE \) curve has shifted all the way back to \( AE_0 \). At this point, equilibrium expenditure is the same as initially, $20 billion, which also equals the level of potential GDP. The \( AD \) curve does not shift as a result of the higher price level.

8. If the tax cut has incentive effects that increase aggregate supply, the \( AD \) curve shifts rightward and so does the aggregate supply curve. Because the aggregate supply curve shifts rightward, the rise in the price level from a tax cut is less and the increase in real GDP is greater than when the aggregate supply curve does not shift.

### You’re the Teacher

1. “Yeah, I think the multipliers are cool, too. I didn’t have the foggiest idea about them until we started studying them in class.

   “But look, let’s talk about your question. I think the main deal here is that it’s hard for the government to respond in a timely and appropriate fashion. One problem is the time required for the government to enact fiscal policy changes. As the text points out, the federal budget is proposed by the President early in the year and the final spending bills are signed by the President late in the year. It’s got to take time to change the federal budget. I bet that one reason for the delay is the complexity of the budget and the budgeting process. Another reason is politics. You know how we disagree about who to vote for! Well, the political parties might agree that, say, tax cuts are needed, but disagree on precisely which taxes should be cut and by how much.

   “Also, it can’t be real easy to know what is the correct policy to pursue. Some observers might think that we are headed for a recession, and others believe that a strong expansion will occur over the next year or so. And who knows what potential GDP really is? I mean, it’s a great concept for us to learn because it helps us get a lot of ideas straight, but in the real world it’s got to be hard to know what potential GDP equals. So again I can see political parties squabbling — one thinking that we are below potential GDP and need expansionary policies to lower unemployment and the other thinking we are above potential GDP and need contractionary policies to limit inflation.

   “So, I guess there are probably some reasons why the government doesn’t use its fiscal policy to eliminate business cycles even though it would be great if the government could do so.”
**Chapter Quiz**

1. A balanced budget occurs when the government's 
   a. expenditures exceeds its tax revenues. 
   b. expenditures equal its tax revenues. 
   c. expenditures are less than its tax revenues. 
   d. total debt equals zero.

2. As a fraction of GDP, the public debt 
   a. has risen each year for the past 50 years. 
   b. has fallen each year for the past 50 years. 
   c. generally fell until about 1974 and today is 
     higher than it was in 1974. 
   d. generally rose until about 1974 and today is 
     lower than it was in 1974.

3. Which of the following is NOT a problem with 
   using fiscal policy to stabilize the economy? 
   a. Implementing fiscal policy might be slow. 
   b. At times it is difficult to determine if GDP is 
     greater than or less than potential GDP. 
   c. The government spending multiplier can change 
     randomly. 
   d. None of the above because they are all problems 
     with using fiscal policy.

4. If the $MPC$ is 0.80, the government spending multipler equals 
   a. 10.0. 
   b. 8.0. 
   c. 5.0. 
   d. None of the above.

5. If the $MPC$ is 0.80, the lump-sum tax multiplier equals 
   a. –8.0. 
   b. –5.0. 
   c. –4.0. 
   d. None of the above.

6. The presence of income taxes _____ the magnitude 
   of the government spending multiplier and _____ the 
   magnitude of the lump-sum tax multiplier. 
   a. increases; increases 
   b. increases; does not change 
   c. decreases; does not change 
   d. decreases; decreases

7. Income taxes and transfer payments 
   a. act like economic shock absorbers and stabilize 
     fluctuations in income. 
   b. prevent the economy from moving toward equi- 
     librium. 
   c. increase the impact of changes in investment and 
     net exports. 
   d. increase the economy’s growth rate.

8. In an economy with no income taxes nor imports, if 
   the government increases its purchases by $10 bil-
   lion and increases its lump-sum taxes by $10 billion, 
   the $AD$ curve 
   a. shifts rightward by $100 billion. 
   b. shifts rightward by $10 billion. 
   c. shifts leftward by $90 billion. 
   d. does not shift.

9. By definition, a discretionary fiscal policy 
   a. requires action by the Congress. 
   b. is triggered by the state of the economy. 
   c. must involve changes in government purchases. 
   d. must involve changes in taxes.

10. If a tax cut has large incentive effects on the supply 
    of capital and labor, then it 
    a. definitely increases GDP. 
    b. definitely does not change GDP. 
    c. definitely decreases GDP. 
    d. maybe changes GDP, but the direction of the 
        change is uncertain and depends on the size of 
        the $MPC$.

The answers for this Chapter Quiz are on page 310