Chapter 11: Changes in Income and the Multiplier

Learning Objectives

After studying this chapter, you should be able to

11.1 Discuss the effects of changes in investment on the equilibrium level of income

11.2 Understand the effects of changes in saving on the equilibrium level of income

11.3 Understand the concept of the multiplier and its relationship with the *MPC* and the *MPS*

11.4 Explain the inflationary and deflationary gaps and understand the need for active economic policy to close them

Assess Your Knowledge

1. What effect will an increase in investment have on the equilibrium level of income?
2. Is it possible for an initial increase in spending of $5 million to result in an increase in income of more than $5 million?
3. Can an increase in planned aggregate saving ultimately result in a fall in actual saving?

Table 11.1

Table 11.1 Saving and Investment Schedules (hypothetical data, $ mil)

ome	Consumption	Saving	Original Level of Investment	New Level of Investment
40	50	–10	10	20
50	55	–5	10	20
60	60	0	10	20
70	65	5	10	20
80	70	10	10	20
90	75	15	10	20
00	**80**	**20**	**10**	**20**
10	85	25	10	20
20	90	30	10	20

The Income Effects of Changes in Investment

LO 11.1 Discuss the effects of changes in investment on the equilibrium level of income

The Impact of Increased Investment

An increase in investment raises the equilibrium level of income, but it also expands the overall spending flow in the economy. Consider the saving and investment schedules shown in Table 11.1. At an investment level of $10 million, the equilibrium income is $80 million. Suppose firms raise investment to $20 million. This decision may reflect greater business confidence, reduced borrowing costs, or targeted tax incentives. Investment remains autonomous—determined independently of income. The higher investment produces a multiplied increase in income as each round of spending generates further rounds of expenditure.

When investment increases to $20 million, the level of income at which saving equals investment is $100 million—an increase of $20 million over the initial level. Thus, an increase in investment of $10 million has generated an even greater increase in income—$20 million.

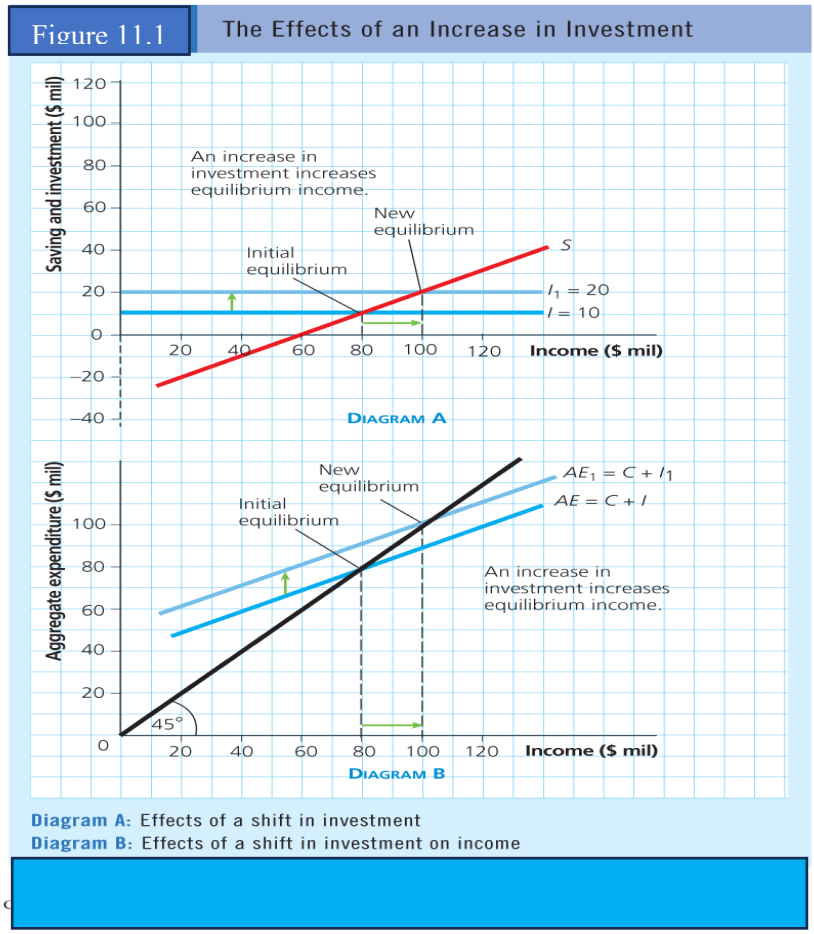
This disproportionate response reflects a multiplier effect in the income–expenditure process.

Figure 11.1 The Effects of an Increase in Investment

Diagram A: Effects of a shift in investment

Diagram B: Effects of a shift in investment on income

Note that if investment had fallen to $5 million, total income would have declined from its initial level of $80 million to $70 million. A reduction in investment results in a greater contraction in equilibrium income, underscoring the responsiveness of output to changes in autonomous expenditure.



A change in investment, other things being equal, will result in an even greater change in equilibrium income.

Graphical Illustration of Investment Changes

Look at Figure 11.1. In Diagram A, the S and I curves represent the initial saving and investment lines. The equilibrium income is $80 million, where S and I intersect. When investment increases, the new investment line, I_1, intersects the unchanged saving line at $100 million, indicating a higher equilibrium level of income. This shift illustrates how increased investment moves the economy to a new equilibrium with higher income.

Diagram B shows the AE–AO framework. Initially, AE intersects the 45-degree line at $80 million. When investment rises, the AE line shifts upward to AE_1, leading to a new equilibrium at $100 million.

The upward shift in AE reflects greater total planned spending, which raises output.

You should now work through the same exercise to demonstrate the effect on income of a reduction in investment. Throughout the analysis, the saving function remains fixed; only investment changes.

Reading Comprehension

1. What effect will an increase in investment have on the equilibrium level of income?
2. Why might firms decide to increase their investment spending?
3. How is an increase in investment shown on (a) a savings–investment graph? (b) an aggregate expenditure–aggregate output graph?

The Income Effects of Changes in Saving

LO 11.2 Understand the effects of changes in saving on the equilibrium level of income

Table 11.

Table 11.2 Saving and Investment Schedules (hypothetical data, $ mil)

Income	Initial Saving	New Saving	Investment
40	–10	–5	10
50	–5	0	10
60	0	5	10
70	**5**	**10**	**10**
80	10	15	10
90	15	20	10
100	20	25	10
110	25	30	10
120	30	35	10

The Effect of Increased Saving on Income

We have learned that an increase in saving reduces the equilibrium level of income, other things being equal. Why? Saving acts as a withdrawal from the circular flow of income. But there is more to it.

In this analysis, we focus on changes in saving driven by non-income factors. An increase in saving means

that, at each level of income, households choose to save more. A decrease means they save less. In both cases, the entire saving schedule shifts.

Table 11.2 reproduces the original saving and investment schedules from Table 11.1 and adds a new saving schedule, reflecting an upward shift of $5 million at every income level. Investment remains unchanged. Under the original saving schedule, equilibrium income was $80 million. With the higher saving at each level, the new equilibrium is $70 million—where the increased saving again equals planned investment.

Other things being equal, a given increase in saving results in an even greater reduction in equilibrium income.

Graphical Illustration of Higher Saving

This conclusion can also be illustrated graphically. In Figure 11.2, S and I are the original saving and investment lines derived from the saving and investment schedules in Table 11.2. They intersect to give the equilibrium level of income of $80 million.

The new saving curve, S_1, lies above the original and intersects the unchanged investment line at $70 million—indicating a lower equilibrium income.

The Paradox of Thrift

An increase in intended saving leads to a decrease in equilibrium income, a result that appears contradictory but is logically consistent. This outcome is known as the **paradox of thrift**—a situation in which greater saving intentions result in lower actual saving due to a reduction in income.

When households attempt to save more at each level of income—because of uncertainty, future expectations, or a change in preferences, aggregate expenditure falls. Firms reduce output in response to lower demand, and national income declines. As income falls, the amount households are able to save also declines, even though they initially intended to save more.

This paradox highlights a key feature of Keynesian theory: what is rational at the individual level may lead to unintended aggregate outcomes. In this case, greater thrift lowers the overall capacity to save, not because of individual behavior failing, but because the economy contracts.

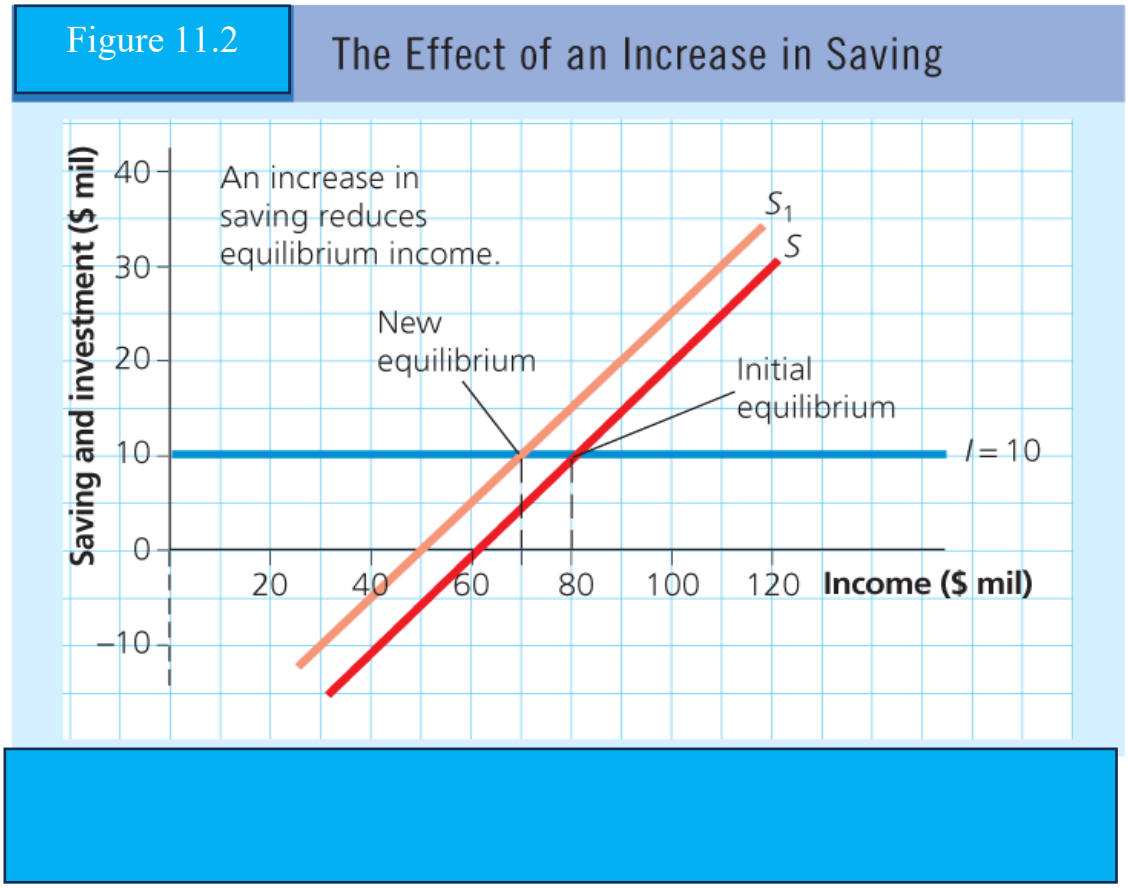


Figure 11.2 The Effect of an Increase in Saving

The contradiction vanishes when we distinguish between intended and actual saving: plans to save more reduce income, and with lower income, actual saving may fall.

paradox of thrift or paradox of saving the apparent contradiction in the fact that an increase in intended aggregate saving results in a decrease in actual saving

The paradox of thrift has another dimension. Saving by individuals makes them better off in the future (provided that inflation does not severely reduce the value of their saving) and is therefore considered a virtue. But from a macroeconomic perspective, higher saving can reduce total demand, lower output, and leave the economy worse off—making thrift a collective burden rather than a private benefit.

Graphical Illustration of the Paradox of Thrift

To do this, we relax our assumption that investment is independent of income and assume instead that investment is induced by changes in income. Thus, investment increases as income increases. Induced investment refers to investment that changes with income, rising when income rises and falling when income falls.

induced investment *investment that varies with the level of income*

In Figure 11.3, the investment curve *I* is upward sloping, indicating that as income increases, investment also increases. The saving curve has the usual shape.

The saving curve *S* and the investment curve *I* intersect at point *E*, where the equilibrium level of income is 0Y. The curve S_1 represents a higher level of saving at every income level. This upward shift reduces equilibrium income from 0Y to $0Y_o$, as the new intersection occurs at a lower level of output. Note that the new level of saving, Y_oA, is less than the initial level, YE.

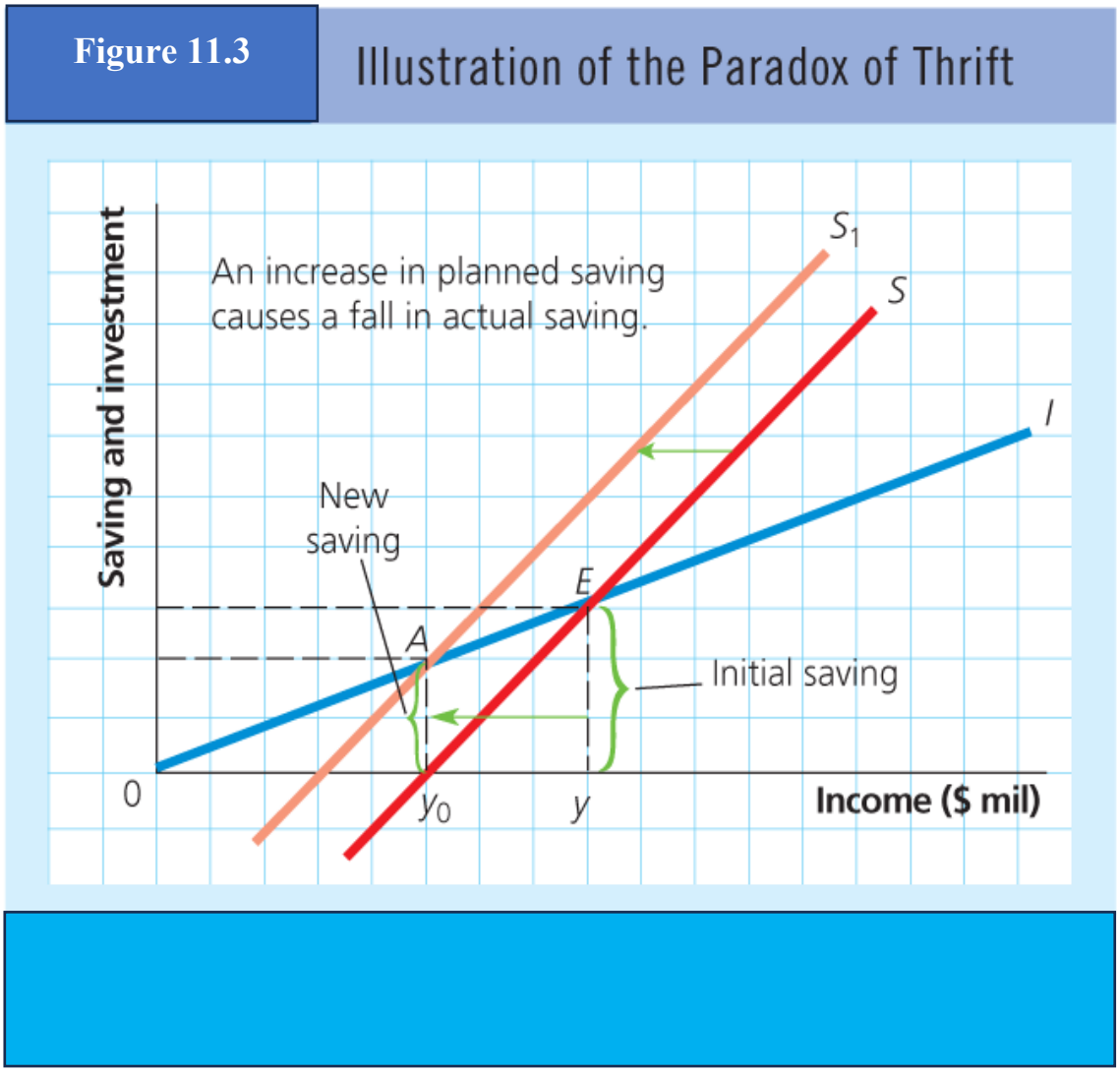
This result illustrates the paradox of thrift: an increase in intended saving causes actual saving to fall due to reduced income. Now you can try to demonstrate graphically the effect of a reduction in aggregate saving on the equilibrium level of income.

Extending the Paradox of Thrift

The paradox of thrift arises only under specific conditions. Most importantly, it applies when an increase in saving is not matched by an equivalent rise in investment. If investment remains constant, the resulting increase in withdrawals from the spending stream lowers equilibrium income.

Although the discussion has centered on saving and investment, the same logic applies more broadly to all forms of injections and withdrawals. Any increase in injections—whether through investment, government expenditure, or exports—raises aggregate expenditure and shifts the AE curve upward,

Figure 11.3 Illustration of the Paradox of Thrift



increasing income. Any rise in withdrawals—saving, taxes, or imports—lowers aggregate expenditure and shifts the AE curve downward, reducing income.

In short, **equilibrium income rises when injections increase and falls when withdrawals rise**. The paradox of thrift is a particular case of this broader relationship.

BUSINESS SITUATION 11.1

Statistics Canada reports that consumer saving has risen over the past two years and is expected to remain elevated for at least two more years.

Why might businesspeople see this as good news?

The answer to this Business Situation can be found in Appendix A.

The Multiplier

LO 11.3 Understand the concept of the multiplier and its relationship with the *MPC* and the *MPS*

The Multiplier Process

How does a change in spending lead to a larger change in income? In the earlier example, an increase in investment of $10 million raised equilibrium income by $20 million. This outcome demonstrates the **multiplier effect**.

The multiplier effect describes a situation in which an initial change in autonomous spending—such as investment—triggers successive rounds of spending. Each round generates additional income, which in turn fuels further spending. As a result, the total change in equilibrium income exceeds the original change in spending. This process lies at the core of Keynesian income determination.

> ***multiplier effect*** *the ultimate change in equilibrium income is greater than the change in spending that caused it*

Suppose that there is an increase in expenditure of $100 million on investment goods. This may come about because of an anticipated increase in the demand for automobiles. Automobile dealers purchase more cars from auto manufacturers, and inventories at the manufacturer level fall unexpectedly. In response to this decline, producers raise their output.

To manufacture additional automobiles, producers hire more workers or extend existing hours. They also purchase more steel, tires, tin, leather or fabric, and electrical parts. Higher production leads to increased wages, and part of this income is spent—raising planned aggregate expenditure.

Extra production raises income, which supports further spending on consumer goods and services. Households purchase more furniture, appliances, televisions, shoes, computers, clothing, and even suitcases for travel. Retailers reduce inventories and submit new orders. Firms respond by expanding production again, and income rises further, magnifying the original investment.

Table 11.3

Table 11.3 The Multiplier Process

Expenditure	Expenditure ($ mil)	Income Generated ($ mil)
1 round spending	100	100
2 round spending	80	80
3 round spending	64	64
4 round spending	51.2	51.2
5 round spending	40.96	40.96
6 round spending	32.768	32.768
...		
TOTAL (all rounds)		500

The Amplifying Effect of Investment on Income

What should be clear from our analysis so far is that an increase in planned investment results in an increase in output and expenditure that is greater than the initial investment. But how much income increases depends on how much of each additional dollar is spent. In other words, it depends on the marginal propensity to consume.

Arithmetic Illustration of the Multiplier

Let us suppose that the economy's marginal propensity to consume (MPC) is constant at 0.8. If firms initially spend $100 million, then under this assumption, this initial spending will stimulate a second round of spending of $80 million (0.8 of $100 million). This additional spending will result in another increase in income, which will again lead to additional expenditure, and so on. The process is demonstrated in Table 11.3.

An initial investment of $100 million generates total income of $500 million, which implies a multiplier of 5. A formula for finding the total income generated will be presented shortly.

Graphical Representation of the Multiplier

Graphical Illustration of the Multiplier Effect In Figure 11.4, S and I are the initial saving and investment lines. The equilibrium level of income associated with these levels of saving and investment is Y. The diagram shows that an increase in investment from I to I1 causes income to increase from Y to Y_1.

Reading Comprehension

1. What would happen to the equilibrium level of income in Canada if Canadians increased their saving?
2. Carefully explain the paradox of thrift.
3. Explain why saving might be good on an individual level but not necessarily good on an economy-wide level.

The rise in income exceeds the rise in investment, illustrating the multiplier effect. The number by which the change in spending is multiplied to get the change in income is called the multiplier. If an initial investment of $10 causes income to increase by $30, then the multiplier is 3.

multiplier the number by which a change in spending is multiplied to arrive at the change in income

The multiplier can be calculated from the following formula:

$$\text{Multiplier} = \frac{\Delta Y}{\Delta I} = \frac{Y_1 - Y}{}$$

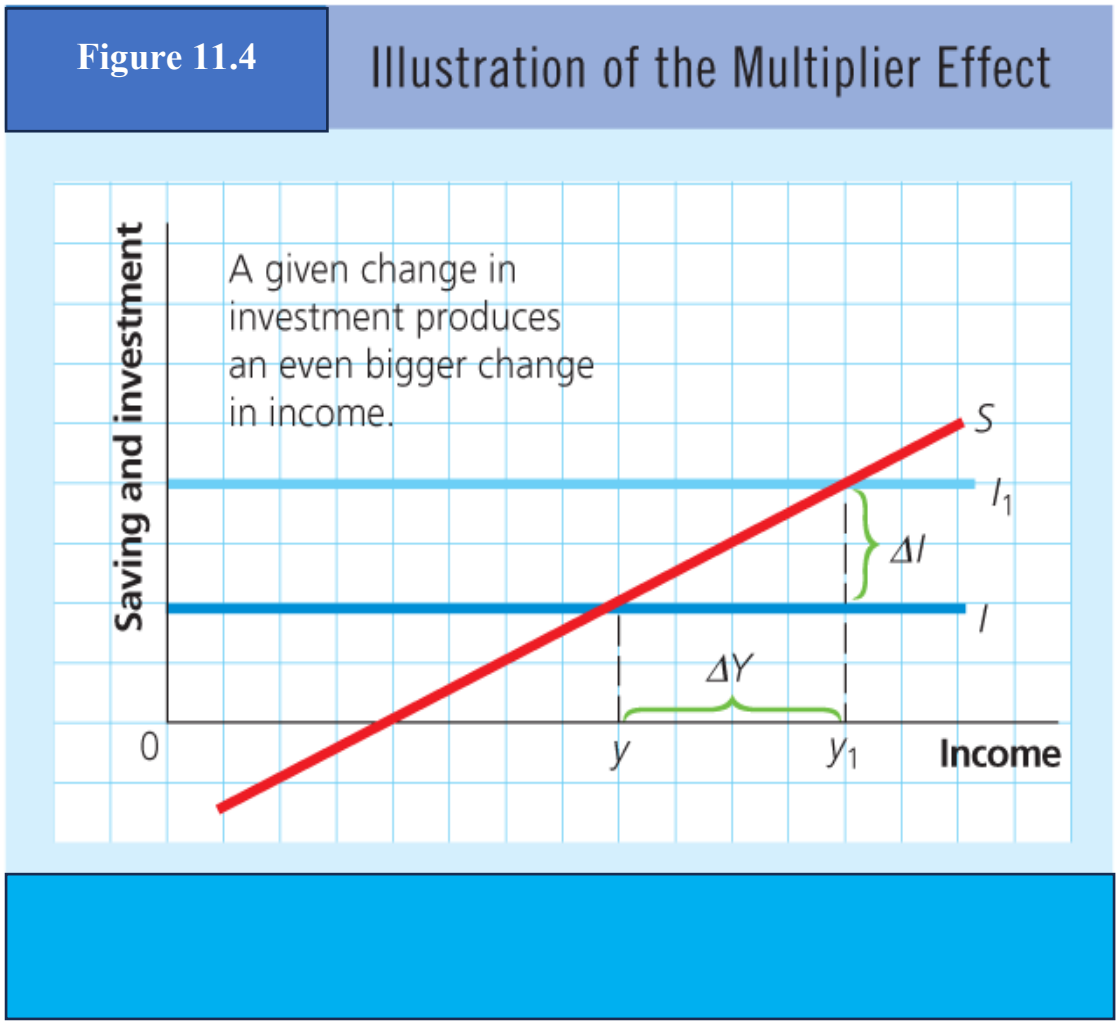
The Multiplier, the MPC, and the MPS

The arithmetic demonstration of the multiplier process suggests a relationship between the multiplier and the MPC. If the marginal propensity to consume (MPC) in Table 11.3 were greater than 0.8, the resulting increase in income would exceed $500 million. In other words, the multiplier would be greater than 5.

We have just defined the multiplier as the change in income divided by the change in investment. That is, the multiplier is:

$$\frac{\Delta Y}{\Delta I}$$

Figure 11.4 Illustration of the Multiplier Effect



If we use *k* to represent the multiplier, then $k = \Delta Y/\Delta I$, from which we obtain

$$\Delta Y = k\Delta I$$

Refer to Figure 11.4 and you will observe that the slope of the saving line, which is the *MPS*, is

$$\frac{\Delta I}{\Delta Y}$$

Hence, the multiplier is the inverse of the marginal propensity to save:

$$\text{Multiplier} = \frac{1}{MPS}$$

The multiplier is the reciprocal of the *MPS*.

Because *MPC* + *MPS* = 1, it follows that *MPS* = 1 – *MPC*. Hence, the formula for the multiplier can be expressed as follows:

$$\text{Multiplier} = \frac{1}{1 - MPS}$$

For example, given a marginal propensity to consume of 7/9, the marginal propensity to save would be

$$1 - \frac{7}{9} = \frac{2}{9}$$

And the multiplier would be 9/2 = 4.5.

Example 1: In a certain economy, the *MPC* is 5/8. What effect will an increase in investment expenditure of $54 million have on the equilibrium level of income?

Solution: Because the *MPC* is 5/8, the *MPS* is 3/8. The multiplier (*k*) is then 8/3. We need to find the change in income (*ΔY*). The change in income (*ΔY*) is given by:

$$\Delta Y = k\Delta I$$

$$= 8/3 \times \$54 = \$144 \text{ million}$$

Therefore, income will increase by $144 million.

Example 2: You are told that consumers spend 4/7 of every extra dollar they receive. How will an investment expenditure of $105 million affect the level of income in that economy?

Solution: From the information given, we know that the *MPC* is 4/7. Therefore, the *MPS* is 1–4/7 = 3/7. Since the multiplier (*k*) is the reciprocal of the *MPS*, we know that *k* = 7/3.

$$\Delta Y = k\Delta I$$

But ΔI = \$105 million, therefore

$$\Delta Y = 7/3 \times \$105 = \$245 \text{ million}$$

Income will increase by \$245 million.

It is easy to see that the smaller the marginal propensity to save, the larger the multiplier will be. Mathematically, the *MPS* measures the slope (steepness) of the saving curve. The steeper the saving curve (that is, the higher the *MPS*), the less the multiplier effect will be. Figure 11.5 shows two saving curves, *S* and S_1, with different slopes.

With the less steep saving curve *S*, an increase in investment from *I* to I_1 causes an increase in income from Y_3 to Y_4. With the steeper saving curve S_1, a similar increase in investment causes a much lower increase in income—from Y_1 to Y_2.

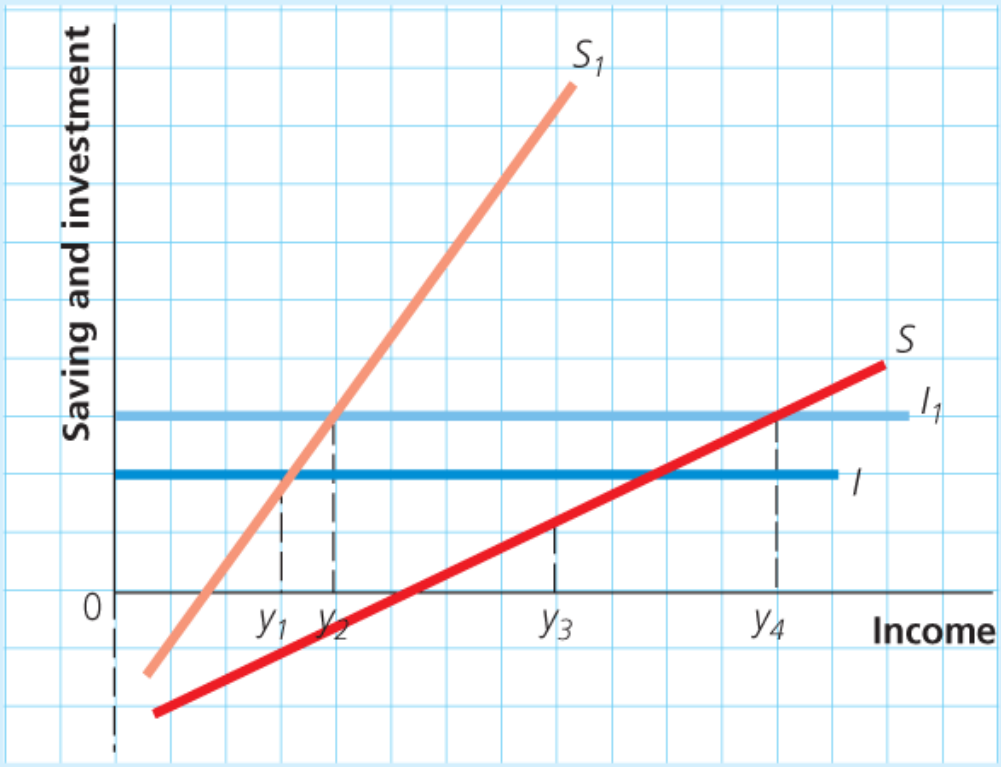
The flatter the saving curve, the greater the multiplier effect.

A More Realistic Multiplier

How realistic is the simple multiplier? The earlier discussion assumed that **saving** was the only withdrawal from the income–expenditure stream. In reality, **taxes** and **imports** also reduce the income recycled into domestic spending. To capture the full range of leakages, we use a broader concept—the **generalized multiplier**.

Figure 11.5 The Effect of an Increase in Investment with Saving Lines of Different Slopes

Figure 11.5 The Effect of an Increase in Investment with Saving Lines of Different Slopes



When all major withdrawals are considered—saving, taxes, and imports—the formula **1 / MPS** no longer applies. Instead, we define the **marginal propensity to withdraw (MPW)** as the fraction of additional income diverted to all leakages:

Multiplier = 1 / MPW

Where:

MPW = MPS + MPT + MPM

- **MPS**: marginal propensity to save
- **MPT**: marginal propensity to tax
- **MPM**: marginal propensity to import

This version provides a more accurate estimate of how a change in autonomous spending affects national income. The larger the MPW, the smaller the multiplier—because more income is removed from the spending stream at each round.

Example: If **MPS = 0.2**, **MPT = 0.2**, and **MPM = 0.1**, then, **MPW = 0.5**, and,

Multiplier = 1 / 0.5 = 2

A $10 million increase in investment would raise national income by only $20 million—because half of each dollar is withdrawn from further spending.

Table 11.4 Estimating the Multiplier for Canada, 2022–2023

Item	Value ($ billion)
Change in GDP (ΔY)	137.1
Change in Withdrawals (ΔW)	66.8

The Generalized Multiplier

The generalized multiplier refers to the multiplier that results from considering all withdrawals—saving, taxes, and imports. It is the reciprocal of the marginal propensity to withdraw. Because income is not only saved but also taxed and spent on imports, the generalized multiplier is smaller than the simple multiplier.

Estimating the Multiplier for Canada

Calculation:

To estimate the multiplier, we use the generalized formula:

Multiplier = 1 / MPW, where **MPW = ΔW / ΔY**

Substituting the values:

MPW = 66.8 / 137.1 ≈ 0.49

Multiplier = 1 / 0.49 ≈ 2.04

So, based on this data, the estimated multiplier for Canada in **2022–2023** was approximately **2.04**.

Recent estimates from the **Bank of Canada** place the **fiscal multiplier**—the GDP increase from a $1 rise in government spending—at around **1.12** in normal times (Government of Canada Publications). During low-interest rate periods or downturns, it may rise to **1.5** or higher (Bank of Canada).

In short, Canada's fiscal multiplier ranges from **1.1 to 1.5**, but periods of slack capacity may yield higher responses.

The Full-Employment Gaps

LO 11.4 Explain the inflationary and deflationary gaps and understand the need for active economic policy to close them

Short-Run Equilibrium and Full Employment

In the AD–AS model, an economy may reach short-run equilibrium at, above, or below the full-employment level of GDP. Whether this equilibrium reflects full employment depends on the relationship between total spending and productive capacity.

If aggregate expenditure exceeds output, firms respond by increasing production. This raises income and pushes the economy toward higher output. If aggregate expenditure falls short, firms reduce output, and income declines. Equilibrium occurs when planned expenditure equals output, but this point may not correspond to full employment.

These variations arise when the economy does not operate under conditions of idle capacity. Earlier models assumed underused resources and constant prices—conditions under which output could rise without inflation. This corresponds to the horizontal portion of the AS curve.

To extend the analysis, we now relax the assumptions of constant prices and excess capacity. In the short run, both prices and output adjust. As a result, the economy can settle into equilibrium even when it deviates from the full-employment level. The following section examines the implications of this more flexible short-run framework.

The Inflationary Gap

When the economy operates at full employment and aggregate expenditure exceeds the full-employment level of output, further increases in demand cannot produce a proportional increase in real output. Resource constraints prevent output from rising significantly beyond this level. Instead, excess demand generates upward pressure on prices.

This condition produces what is known as an inflationary gap—the amount by which planned expenditure exceeds the output that can be produced at full employment. Because the economy lacks idle resources, firms respond not by expanding output but by raising prices, triggering inflation.

Table 11.5

Table 11.5 Aggregate Expenditure and Aggregate Output (hypothetical data, $ mil)

Output	Consumption	Investment
40	50	10
50	55	10
60	60	10
70	65	10
80	70	10
90	75	10
100	80	10
110	85	10
120	90	10

Table 11.5 illustrates this situation for a simple closed economy without government activity. At the full-employment level of output, any increase in desired aggregate expenditure beyond what can be supplied leads to inflationary pressure. The table quantifies how demand surpasses the economy's capacity, signaling the presence of an inflationary gap.

Aggregate Expenditure

60
65
70
75
80
85
90
95
100

The equilibrium level of income is $80 million where intended aggregate expenditure equals aggregate output. Now, let us suppose that the full-employment level of output is $60 million. At that level of output, desired aggregate expenditure is $70 million. Desired consumption and investment spending together exceed the full-employment output.

The $10 million excess demand places upward pressure on prices, since output cannot expand further without straining capacity. This gap is referred to as an inflationary gap.

The inflationary gap is the amount by which intended aggregate expenditure exceeds the full-employment level of output.

inflationary gap *the amount by which desired aggregate expenditure exceeds aggregate output at full employment*

In our example, intended aggregate expenditure would have to fall by $10 million to reach the full-employment level of output. With a multiplier of 2, this $10 million excess expenditure leads to a $20 million increase in income—from $60 million to $80 million. Of course, this increase is not in real terms but in nominal terms. The gap reflects inflationary pressure rather than real growth, as prices rise rather than output.

Reading Comprehension

1. What is the multiplier? Briefly explain how it works.
2. What is the relationship between the *MPC*, the *MPS*, and the multiplier in a simple closed economy in which government neither spends nor imposes taxes?
3. Explain why the reciprocal of the *MPS* would not be an accurate measure of the multiplier for Canada.
4. Explain how you would estimate the multiplier for Canada.

Illustrating the Inflationary Gap

Look at Figure 11.6. At the full-employment level of output (Y_f = $60 million), intended aggregate expenditure exceeds full-employment output by GH; hence, GH is the inflationary gap.
This vertical distance shows the excess demand at full employment.
The gap between the full-employment level of output, Y_f, and the equilibrium level of output, Y, is the output gap. When measured horizontally, this difference also represents the income gap—the amount by which income exceeds its full-employment level.

output gap the difference between the potential output and the actual output of an economy

income gap the difference between the equilibrium level of income and the full-employment level of income

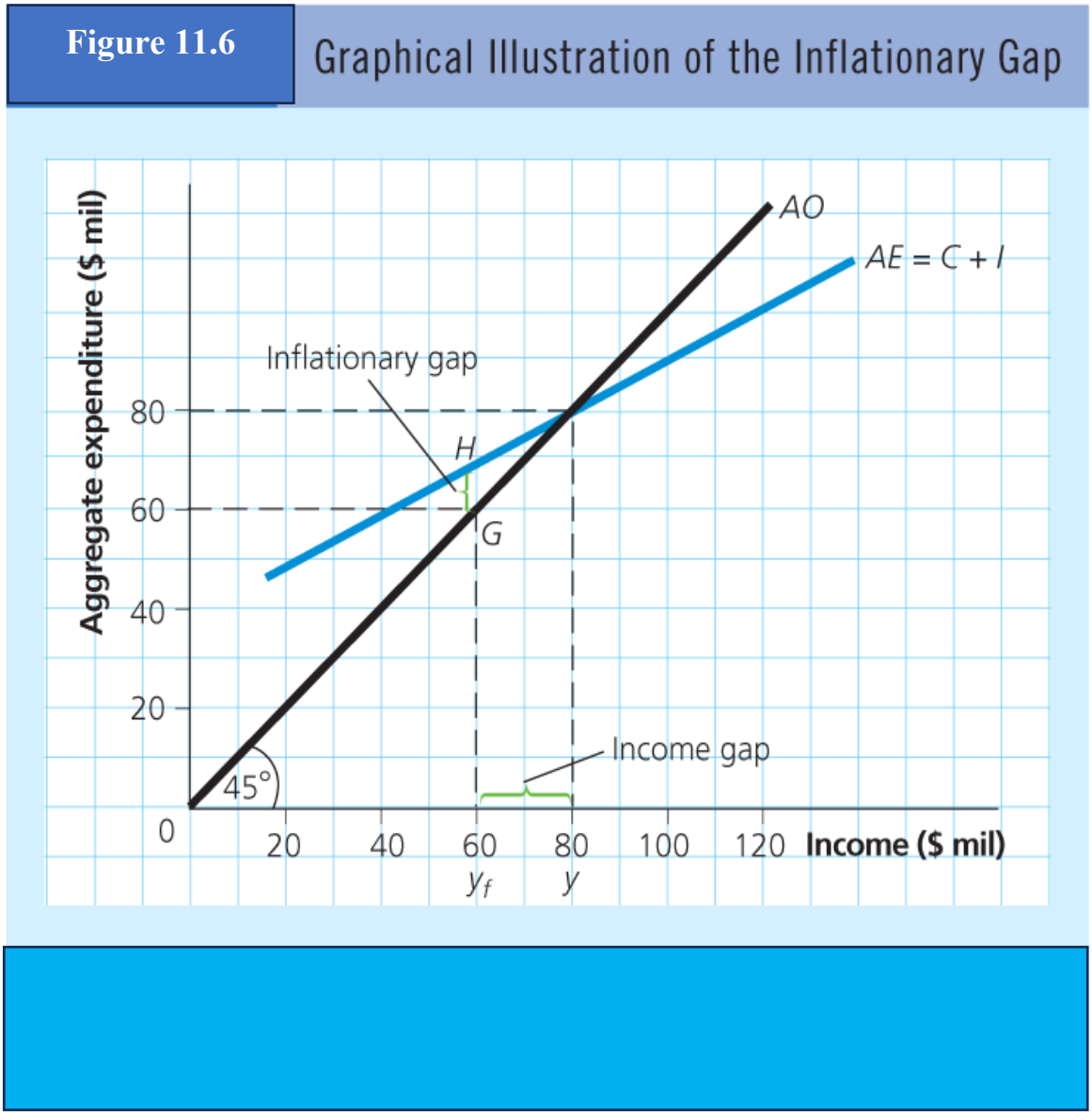
Recessionary Gap

A recessionary gap arises when aggregate expenditure falls short of aggregate output at the full-employment level. In this situation, the economy cannot absorb all the goods and services produced with its fully employed resources. As total spending lags behind potential output,

firms accumulate unsold inventories, prompting them to scale back production. This leads to declining income, rising unemployment, and idle capacity across industries. Although prices may eventually fall, wage contracts, menu costs, and institutional rigidities slow the adjustment process in the short run.

The term recessionary gap emphasizes the immediate outcomes: falling output, job losses, and underused resources, rather than the slower process of deflation.

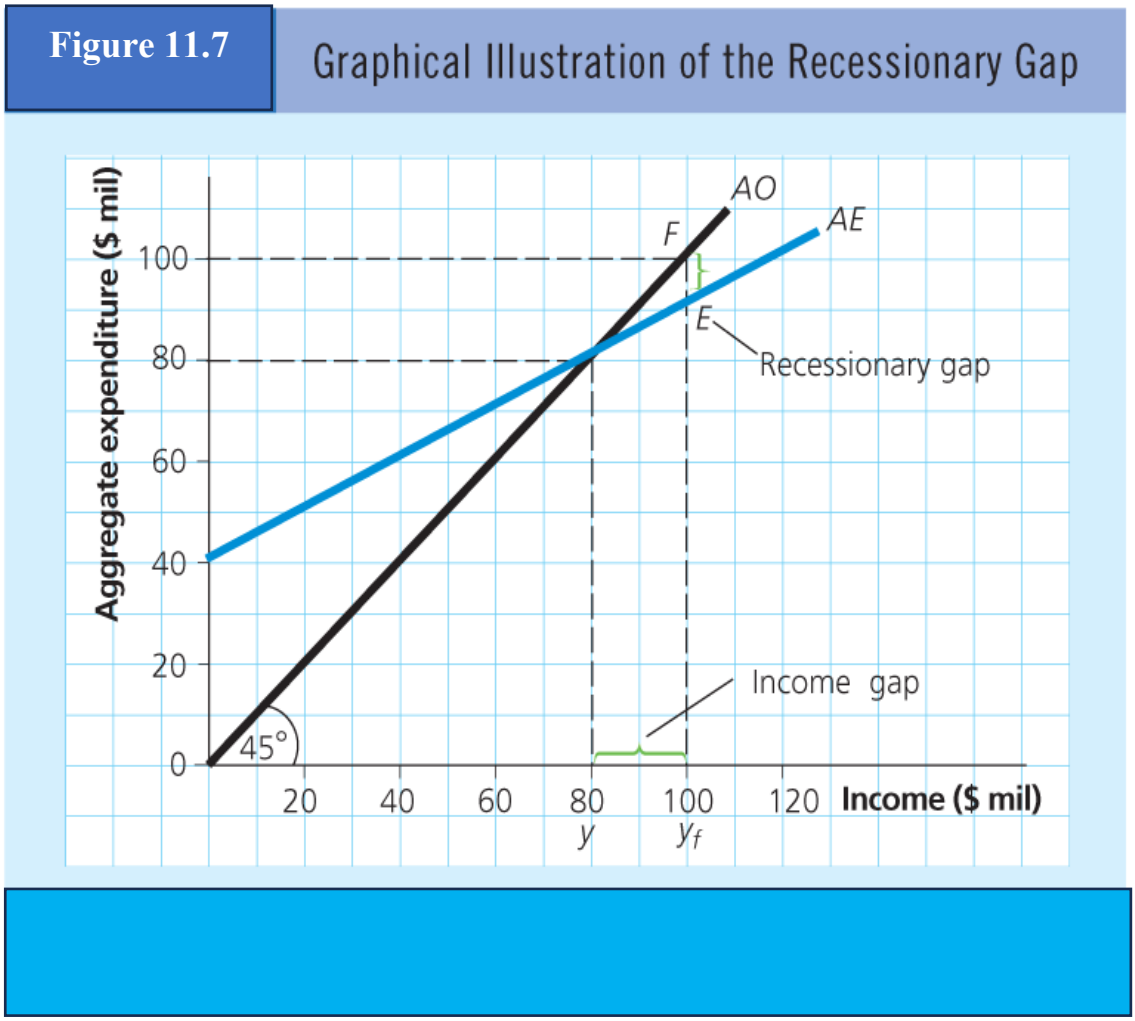
Figure 11.6 Graphical Illustration of the Inflationary Gap



Let us return for a moment to Table 11.5. Suppose that the full-employment level of output is $100 million. At that level of output, desired aggregate expenditure is $90 million. Because intended spending falls short of full-employment output, the economy operates below potential. Some labour and capital remain unused. There is a deflationary gap or a recessionary gap. The recessionary gap is the shortfall between aggregate expenditure and full-employment output—the $10 million difference in this example.

deflationary gap or recessionary gap *the amount by which aggregate expenditure falls short of aggregate output at full employment*

Figure 11.7 Graphical Illustration of the Recessionary Gap



In our example, aggregate expenditure would have to increase by $10 million to reach the full-employment level of output; hence, the size of the recessionary gap is $10 million. With a multiplier of 2, this $10 million shortfall in spending produces a $20 million gap between the full-employment output of $100 million and the equilibrium income of $80 million.

Let's consider Figure 11.7. At the full-employment level of output (Yf = $100 million), desired aggregate expenditure falls short of full-employment output by EF. The vertical distance EF represents the recessionary gap, the amount of additional spending required to bring the economy to full employment.

The Need for Macroeconomic Policy

Inflationary and recessionary gaps signal misalignments between aggregate expenditure and the economy's productive capacity. When spending surpasses full-employment output, inflation pressures mount. When it falls short, output contracts and unemployment increases.

Graphical Illustration of the Recessionary Gap

Figure 11.8 Closing the Full-Employment Gaps

Diagram A: The effects of a reduction in aggregate expenditure on an inflationary gap

Diagram B: The effects of a rise in aggregate expenditure on a recessionary gap

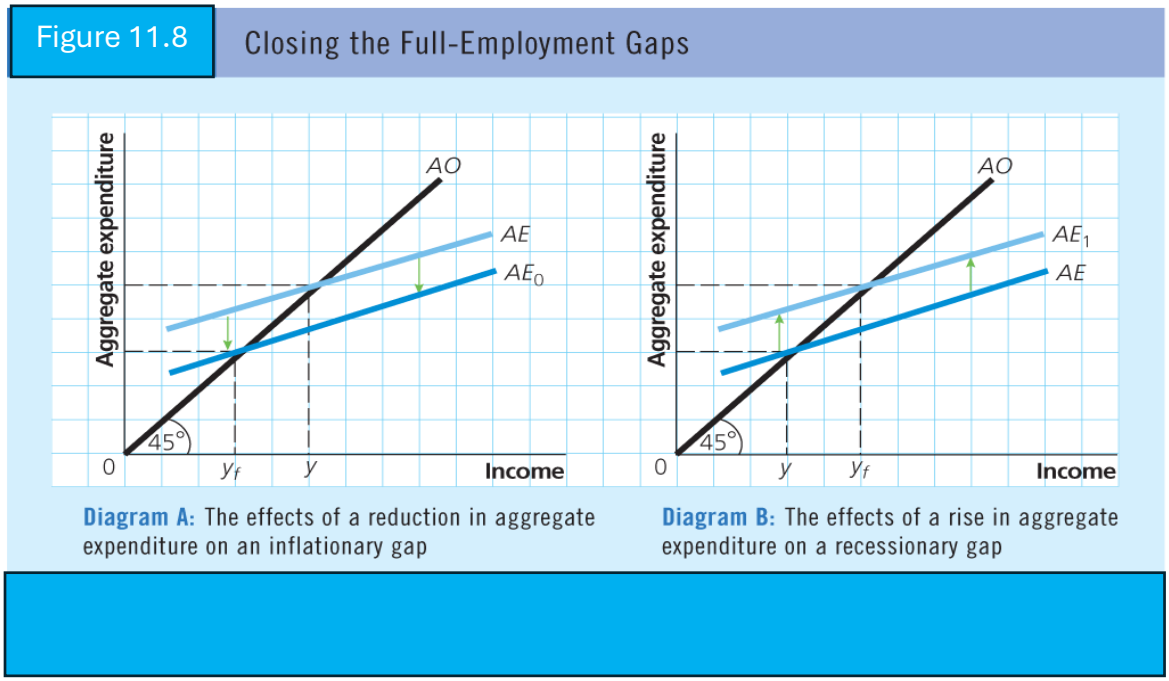


Diagram A: The effects of a reduction in aggregate expenditure on an inflationary gap

Diagram B: The effects of a rise in aggregate expenditure on a recessionary gap

Macroeconomic policy aims to correct these imbalances. Fiscal policy—adjustments in government spending and taxation—and monetary policy—changes in interest rates and money supply—serve as tools to influence aggregate demand.

To close a recessionary gap, governments can increase spending or reduce taxes, raising total demand. To reduce an inflationary gap, they can cut spending or tighten monetary policy, tempering excess expenditure and stabilizing prices. Figure 11.8 will help with the analysis.

Inflationary and Recessionary Gaps in Policy Context

In the inflationary gap scenario illustrated in Diagram A of Figure 11.8, macroeconomic policy must reduce desired aggregate expenditure from AE to AE_0. This adjustment would align total spending with full-employment output, eliminating inflationary pressures without reducing output.

In the recessionary gap scenario shown in Diagram B, macroeconomic policy must raise desired aggregate expenditure from AE to AE_1. This shift would restore full employment without pushing prices upward.

Canada's experience during the recent global recession illustrates a substantial recessionary gap. The shortfall between actual and full-employment expenditure was unusually wide. In response, the federal government adopted fiscal stimulus programs designed to raise spending and reduce the gap. Later chapters will detail how both fiscal and monetary policies can shift aggregate expenditure to stabilize output.

Reading Comprehension

1. Explain how full-employment gaps (inflationary gaps and recessionary gaps) can originate.
2. What is the difference between the inflationary gap and the recessionary gap?
3. What is the difference between the recessionary gap and the output or income gap?
4. What is the implication of the full-employment gaps for macroeconomic policy?

Review

1. Review the learning objectives listed at the beginning of the chapter.
2. Have you accomplished all the objectives? One way to determine this is to answer the Reading Comprehension Questions at the end of each section. This will help you assess the extent to which you have accomplished the learning objectives.
3. If you have not accomplished an objective, review the relevant material before proceeding.

Key Points to Remember

1. **LO 11.1** A given change in investment will generate an even greater change in the equilibrium level of income.
2. **LO 11.2** The paradox of thrift refers to the fact that an increase in desired aggregate saving, other things being equal, leads to a fall in total income and hence to a fall in actual aggregate saving.
3. **LO 11.3**

The multiplier effect refers to the fact that an increase in spending generates an even greater increase in equilibrium income. For a simple closed economy with neither government spending nor taxation, the multiplier is the reciprocal of the MPS. More generally, the multiplier is the reciprocal of the marginal propensity to withdraw (MPW). **Recent estimates for Canada place the fiscal multiplier between 1.1 and 1.5, depending on economic conditions and the stance of monetary policy** (Bank of Canada, *On the Size and Effectiveness of Fiscal Stimulus Packages*, bankofcanada.ca).
This range reflects a broader view that includes taxes, imports, and saving as withdrawals from the income–expenditure stream.

4. **LO 11.4** The inflationary gap is the amount by which aggregate expenditure exceeds aggregate output at full employment. When an inflationary gap exists, prices will tend to rise.