

STUDY GUIDE TO ACCOMPANY

macro
economics

2nd **edition** ◀

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Chapter 5

A Preview of Macroeconomics

CHAPTER OVERVIEW

Macroeconomics is the study of economic growth and economic fluctuations — how the economy grows and changes over time. The topics of macroeconomics — inflation, unemployment, interest rates, exchange rates — are regularly the subject of newspaper headlines and television stories. The study of macroeconomics entails understanding the complex interrelationships between the various macroeconomic variables. This chapter, as indicated by its title, provides a preview of this enterprise. We introduce the two basic concepts of macroeconomics, long-term economic growth and short-term economic fluctuations, or business cycles. We study unemployment, inflation and interest rates, and see how they are related to growth and fluctuations around the economic growth trend line. We consider how the government can use macroeconomic policies to promote economic growth and to smooth economic fluctuations. Remember that this chapter is only a preview. It introduces a number of new concepts and a lot of terminology, but you should not expect to master it all just yet. Try to grasp the big picture at this stage; details and more complete understanding will come later.

LEARNING OBJECTIVES

The **Learning Objectives** for this chapter are to:

1. distinguish between long-term growth and short-term fluctuations in gross domestic product
2. relate the concepts of unemployment, inflation and interest rates, and describe their behaviour over time
3. explain the relationship between macroeconomic theory and policy.

Each objective requires an understanding of key concepts and an analytical approach. You will find the dot points under the **Review** sub-headings very useful in maintaining your focus on the central themes discussed in the chapter. Refer to the **Key Points** towards the end of the chapter which reinforce these central themes. Figure 5.10 (p. 117) in the textbook provides an excellent synopsis of the linkage between the facts, theory and policy, highlighting the importance and relevance of the theory in the broad macroeconomic context.

Suggested Procedure

Before attempting the self-assessment tests you should have studied the chapter carefully, learned the definitions of key concepts and followed the explanations accompanying the various graphs. The **Review** sections provide convenient summaries which you should use as checklists, and Figure 5.10 (p. 117) in the textbook integrates facts, theory and policy, demonstrating the importance of reliable statistics and sound macroeconomic theory in the policy decision-making process.

Definitions are provided sequentially in the page margins of the textbook. These are the building blocks used in the subsequent analysis in Parts 3 and 4. Remember that many terms have unique meanings in economics and that these definitions need to be **accurate** and **complete**. You should now be well equipped to attempt the self-assessment tests.

Familiarity with a concept does not mean that you fully understand what it means. This self-assessment will assist in consolidating your understanding of key concepts and isolating gaps in your knowledge and areas that require further study.

CHAPTER REVIEW

1. Real GDP over time

Real gross domestic product (GDP) is the total value of all **final** goods and services produced in the economy during a specified period of time, usually a year or a quarter. It is called **real** because the measure of production is adjusted for the increase in prices over the same time period. Real GDP is also called **output** or **production**. Real GDP divided by the population is called **real GDP per capita**; it measures average production per person and is a crude measure of living standards.

2. Measuring economic growth

Economic growth refers to increases in real GDP over time. It is measured by the annual **economic growth rate** in real terms — that is, the percentage increase in real GDP each year. For countries with a growing population, real GDP per capita grows more slowly than real GDP. Over the past two centuries, growth in real GDP per capita has greatly improved living standards.

3. Australia's economic growth record

In Australia, real GDP has more than trebled over the period since 1960. However, economic growth was higher from 1960 to the early 1970s than it was from the mid-1970s to the mid-1990s. This **economic growth slowdown** also occurred in many other countries. Reversing the economic growth slowdown is a major — and, as we will see, very difficult — goal of macroeconomic policy.

4. Describing economic fluctuations

Economic fluctuations, also called **business cycles**, are short-run movements around an economy's long-run economic growth path. A **recession** is a fall in real GDP that lasts for six months or more. There have been two recent recessions in Australia, one in 1982/83 and another in 1990/91. Table 5.1 (p. 103) in the textbook provides details of seven distinct Australian business cycles recorded between April 1951 and December 1992. A **peak** is the highest point in the business cycle before the start of a recession, and a **trough** is the lowest point at the end of a recession. An **expansion** is the period between recessions, from the trough to the next peak. The start of an expansion, when the economy is emerging from the recession, is called the **recovery** phase.

5. Recessions versus depressions

A **depression** is an extremely severe recession. The period 1929–39, when real GDP fell by one-third, is called the **Great Depression**. This was a world-wide phenomenon. In Australia, real GDP fell by 9.4 per cent in 1931 and during the recession more than one in five workers was unemployed. The recent Australian recessions of the early 1980s and early 1990s were not comparable in severity with the Great Depression.

6. Unemployment during recessions

The **labour force** consists of those people who are either working or looking for work. If you are out of work and looking for work, you are unemployed, and the **unemployment rate** is the number of unemployed people as a percentage of the labour force. The unemployment rate rises during recessions and falls during expansions.

7. Measuring inflation

The **inflation rate** is the increase in the general price level, measured as a percentage per annum. The **consumer price index** is used as a measure of the general price level in Australia. A decline in inflation is called **disinflation**, while negative inflation, a fall in the price level, is called **deflation**.

8. Australia's inflation record

Inflation is also characterised by long-term trends and short-term fluctuations. Inflation in Australia has been positive during every year since 1955. Australian inflation rose from 5 per cent per annum in 1970 to 17 per cent in 1975, then fell to 3 per cent per annum in 1984. It reached 10 per cent in 1985 but since then has steadily declined and is currently in the region of 2 per cent. Inflation is closely related to the business cycle. Inflation increases during booms and decreases in recessions. Higher inflation has occurred prior to every recession in Australia in the past 40 years.

9. Different types of interest rates

The **interest rate** is the amount charged to borrow money, expressed as a percentage of the amount borrowed. There are many different interest rates, such as the **mortgage interest rate**, the **savings deposit interest rate**, and the **Treasury note** or **bond rate**. The **real interest rate** is the interest rate minus the **expected rate of inflation** — that is, the rate of inflation that people expect to occur. The term **nominal interest rate** is sometimes used to refer to an interest rate that is not adjusted for inflation.

10. Economic growth theory and economic fluctuations theory

Macroeconomic theory consists of economic growth theory and economic fluctuations theory. The goal of **economic growth theory** is to explain the long-term increase in real GDP over time. In the textbook, Figure 5.1 (p. 100) depicts economic growth for Australia for the past 40 years. The slim line represents the long-term growth trend; the booms and recessions have been smoothed out. Over the 40-year period, increases in GDP follow an upward trend. This is termed **long-term economic growth**. Notice the fluctuations around the trend line which track the actual path of real GDP growth. These short-term fluctuations in real GDP are known as **business cycles**. **Economic fluctuations theory** attempts to explain these short-term fluctuations around the long-run growth path.

11. Defining potential GDP

Potential GDP is the average or normal level of real GDP. Despite the use of the word **potential**, it is not the maximum attainable level of real GDP. The growth rate of potential GDP represents the long-run growth rate for the economy. Real GDP falls below potential GDP in recessions and rises above potential GDP in booms.

12. Aggregate supply is determined by labour, capital and technology.

Aggregate supply is the total of all goods and services produced in the economy. Aggregate supply is determined by **labour**, the total number of hours workers are available to work; **capital**, the total available amount of factories, land and machines; and **technology**, the available knowledge, which can be combined to produce real GDP. Potential GDP is, in turn, determined by aggregate supply.

13. The production function and real GDP growth

The **production function** summarises the relationship between the aggregate supply of real GDP and its determinants. According to the production function, real GDP is a function of labour, capital and technology. In symbols, the production function is written as:

$$Y = F(L, K, T)$$

where Y is real GDP, L is labour, K is capital and T is technology. The symbol F represents a function and means that Y is determined by L , K and T . How does this relate to growth theory? If real GDP is determined by labour, capital and technology, then real GDP growth must be determined by the growth of labour, the growth of capital and the growth of technology.

14. Government policy for long-term economic growth

Supply-side economic policies are government policies that attempt to increase long-term economic growth by increasing the available supply of labour, capital and technology. Supply-side policies can affect growth by changing the **incentives** for business firms to invest in capital

or to hire more workers, for workers to work harder or to enter the labour force, and for researchers to invent new technologies. Providing funds for education is another important policy by which the government aims to increase productivity and growth.

15. The roles of fiscal and monetary policy

Fiscal policy is government policies concerning spending, taxing and borrowing. Fiscal policy affects long-term economic growth by affecting the incentives of workers and firms. **Monetary policy** is government policy concerning the money supply and control of inflation. Monetary policy affects long-term economic growth because the inflation rate in the long run depends on the growth rate of the money supply. In the long run, countries with low and stable inflation achieved higher economic growth rates than countries with high and variable inflation.

16. Economic fluctuations and aggregate demand

Most economic fluctuations theories emphasise **changes in aggregate demand**, or the total demand for goods and services in the economy. Why do fluctuations in aggregate demand cause fluctuations in real GDP? Business firms, faced with short-run changes in the demand for their products, adjust their production to meet these short-run fluctuations. If demand declines, firms lay off workers and use their capital at less than full capacity, whereas if demand increases, firms hire more workers and use their capital more intensively. The theory of economic fluctuations describes business cycles as fluctuations of real GDP around potential GDP. Although potential GDP is not constant, most economists place more emphasis on the role of aggregate demand than on changes in potential GDP to explain short-run economic fluctuations.

ZEROING IN

1. The key to mastering the contents of this chapter is to distinguish clearly between economic growth theory and economic fluctuations theory, and to understand how they are related. It is worth revisiting Figure 5.10 (p. 117) in the text to ensure you have a solid grasp of how macroeconomic facts, theory and policy are connected. In short:
 - a. Economic growth theory explains the **long-term** increase in **potential GDP** mainly in terms of a steady rise in **aggregate supply**.
 - b. Economic fluctuations theory explains **short-term** fluctuations in real GDP around **potential GDP** mainly in terms of fluctuations in **aggregate demand**.
2. In general, macroeconomic policy has the twin goals of increasing long-term growth and reducing short-term fluctuations. The tools available to government and its institutions to achieve its macroeconomic policy goals are **fiscal policy** (taxing, spending and borrowing) and **monetary policy** (interest rates and money supply).
3. According to the production function, higher labour, higher capital and higher technological know-how lead to increased aggregate supply of real GDP over time. This is represented graphically by the upward trend of potential GDP. Fiscal policy can promote long-term economic growth by providing incentives to invest in labour, capital and technology. Monetary policy should aim to curb inflation and reduce economic uncertainty which could adversely affect investment.
4. Economic fluctuations can cause hardship, especially in the form of increased unemployment during recessions. Most economic fluctuations theories argue that these short-term changes in real GDP are caused by changes in the aggregate demand from consumers, firms, government and foreigners. The role of fiscal and monetary policy is to minimise economic fluctuations by influencing aggregate demand. For example, increased government spending during a recession (fiscal policy) can reduce the severity of the recession by increasing aggregate demand and real GDP. Similarly, monetary policy can be used to increase aggregate demand by lowering interest rates.

5. Employment, inflation and interest rates are all of great interest to the macroeconomist. Changes in the unemployment rate, the inflation rate and interest rates can be linked to long-term economic growth trends and short-term economic fluctuations. For example, inflation is negatively correlated with economic growth in many countries, while unemployment has risen during every Australian recession. In general, interest rates and inflation rates tend to rise before recessions and fall during and after recessions. It is one of the jobs of macroeconomic theory to explain these relationships.

WORKED PROBLEMS

1. The unemployment rate is one of the most talked about economic statistics. Plotting the unemployment rate over time lets you see how the economy experiences fluctuations. The following data are for the United Kingdom in the 1980s.

Year	Unemployment Rate (per cent)
1980	6.4
1981	9.8
1982	11.3
1983	12.5
1984	11.7
1985	11.2
1986	11.1
1987	10.2
1988	8.3
1989	6.9

Plotting the unemployment rate on the vertical axis and the year on the horizontal axis produces the following picture.

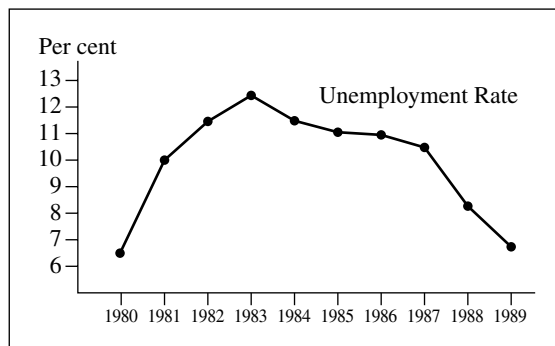


Figure 5.1

Unemployment rises until 1983 and then slowly falls to more normal levels by 1987.

2. The relationship between the real interest rate and the nominal interest rate is an important topic for you to understand.
 - a. The real interest rate is the nominal interest rate minus the expected rate of inflation. For example, if the nominal interest rate is 6 per cent and expected inflation is 2 per cent, the real interest rate is 4 per cent ($6 - 2 = 4$).
 - b. You can also use the formula to calculate the nominal interest rate, which equals the real interest rate plus the expected rate of inflation. Using the same numbers, if the real interest rate is 4 per cent and expected inflation is 2 per cent, the nominal interest rate is 6 per cent ($4 + 2 = 6$).
 - c. Finally, you can use the formula to calculate the expected inflation rate, which equals the nominal interest rate minus the real interest rate. Again, using the same numbers, if the nominal interest rate is 6 per cent and the real interest rate is 4 per cent, expected inflation is 2 per cent ($6 - 4 = 2$).
3. Make sure that you understand the compound economic growth formula as explained below. (For a more detailed exposition, see the Appendix to Chapter 5, 'The Miracle of Compound Growth', on page 121 in the text.) Then attempt the calculation problems and check your solutions against the answers provided.
 - a. If real GDP grows by 10 per cent per year, how long does it take for it to double? Your first thought may be the answer is 10 years, since adding 10 per cent per year would add up to 100 per cent. But you would be wrong; compound growth makes the process faster.

Suppose the real GDP of a country that initially has a real GDP of \$100 billion grows by 10 per cent per year. In year 1, real GDP is \$110 (we will suppress the 'billion'). In year 2, adding 10 per cent to \$110 gives \$121. In year 3, it is \$133.1; in year 4, \$146.4; in year 5, \$161.1; in year 6, \$177.2; in year 7, \$194.9; in year 8, \$214.4; in year 9, \$235.8; and in year 10, \$259.4. Because of compounding, it takes between 7 and 8 years instead of 10 for real GDP to double. Another way of looking at this is to note that after 10 years real GDP increases by 160 per cent, not 100 per cent.

- b. The formula for compound growth is:

$$(\text{Initial level}) \times (1 + g)^n = \text{level at end of } n \text{ years}$$

where g is the annual growth rate stated as a fraction. In the above example, the 10 per cent growth rate stated as a fraction is 0.1, so that:

$$\$100 \times (1.1)^{10} = \$100 \times 2.594 = \$259.4$$

You need a hand calculator with a key that does y^x to do this calculation.

- c. Suppose an economy with per capita GDP of \$2000 grows at a rate of 2 per cent per year.
 - i. What is per capita GDP after 1 year?
 - ii. What is per capita GDP after 10 years?
 - iii. What is per capita GDP after 100 years?

Answers

- i. Although you do not need the formula for compound growth to solve this part, using it is good practice. The formula for compound growth is:

$$(\text{Initial level}) \times (1 + g)^n = \text{level at end of } n \text{ years}$$

With 2 per cent stated as a fraction = 0.02 and $n = 1$,

$$\$2000 \times (1.02) = \$2040$$

ii. Using the compound growth formula, after 10 years:

$$\$2000 \times (1.02)^{10} = \$2000 \times 1.219 = \$2438$$

iii. Again, using the compound growth formula, after 100 years:

$$\$2000 \times (1.02)^{100} = \$2000 \times 7.245 = \$14489$$

SELF-ASSESSMENT TESTS

Fill-in Questions

1. Real _____ is the total of all goods and services produced in the economy during a specified period of time.
2. Real GDP divided by the population is called _____ .
3. The _____ is the percentage increase in real GDP each year.
4. _____ or _____ are short-run movements around an economy's long-run economic growth path.
5. A(n) _____ is a fall in real GDP that lasts for six months or more.
6. A(n) _____ is the highest point in the business cycle before the start of a recession.
7. A(n) _____ is an extremely large recession.
8. The _____ is the number of unemployed people as a percentage of the labour force.
9. _____ is the increase in the general price of goods and services in the economy.
10. The _____ is the amount charged to borrow money, expressed as a percentage.
11. _____ GDP is the average or normal level of real GDP.
12. The total supply of all goods and services in the economy is called _____ .
13. According to the production function, real GDP is a function of _____, _____ and _____ .
14. Fiscal policy is government policy concerning _____, _____ and _____ .
15. Monetary policy is government policy concerning the _____ .

True–False Questions

- | | | |
|----------|----------|---|
| T | F | 1. Real GDP per capita in Australia has not increased since World War II. |
| T | F | 2. Economic growth in Australia has increased since the mid 1970s. |
| T | F | 3. A recession is a decrease in the economic growth rate. |
| T | F | 4. The recession of 1990–1991 was so severe that it can be characterised as a depression. |
| T | F | 5. In recent years, inflation in Australia has always been greater than 2 per cent. |
| T | F | 6. The savings deposit interest rate is the interest rate on Treasury bonds. |
| T | F | 7. Potential GDP is not the maximum attainable level of real GDP. |
| T | F | 8. Aggregate demand is determined by labour, capital and technology. |
| T | F | 9. One goal of economic fluctuations theory is to explain the economic growth slowdown. |
| T | F | 10. The production function is important for understanding economic growth theory. |
| T | F | 11. Supply-side economic policies are government policies that attempt to smooth out short-run economic fluctuations. |
| T | F | 12. In the long run, economic growth is unrelated to inflation. |
| T | F | 13. According to economic fluctuations theory, potential GDP fluctuates around real GDP. |
| T | F | 14. Economic fluctuations are caused by changes in aggregate demand. |
| T | F | 15. Fiscal and monetary policy have little effect on economic fluctuations. |

Short Answer Questions

1. What are two other names for real gross domestic product (GDP)?
2. Describe the phases of a business cycle.
3. What is the difference between disinflation and deflation?
4. When did the inflation rate in Australia reach its highest level?
5. What happens to inflation during the business cycle?
6. What is the real interest rate?
7. Describe the relationship between real GDP and potential GDP.
8. According to the production function, what has caused the slowdown in real GDP growth since the 1970s?
9. How can supply-side policies affect growth?
10. How can fiscal policy affect long-run economic growth?
11. How can monetary policy affect long-term economic growth?
12. What is the relationship between inflation and economic growth in the long run?
13. Why do fluctuations in aggregate demand cause fluctuations in real GDP?
14. How do business firms increase their production in response to an increase in demand?

Practice Problems

1. The following data are for Canada in the 1960s.

Year	Unemployment Rate (per cent)
1962	5.4
1963	5.0
1964	4.3
1965	3.6
1966	3.3
1967	3.8
1968	4.4
1969	4.4
1970	5.6

- Plot the unemployment rate on the vertical axis and the year on the horizontal axis. What is depicted by the figure?
2.
 - a. If the nominal interest rate is 4 per cent and expected inflation is 1 per cent, what is the real interest rate?
 - b. If the real interest rate is 3 per cent and expected inflation is 1 per cent, what is the nominal interest rate?
 - c. If the nominal interest rate is 4 per cent and the real interest rate is 3 per cent, what is expected inflation?

3.
 - a. If the nominal interest rate is 7 per cent and expected inflation is 6 per cent, what is the real interest rate?
 - b. If the real interest rate is 1 per cent and expected inflation is 6 per cent, what is the nominal interest rate?
 - c. If the nominal interest rate is 7 per cent and the real interest rate is 1 per cent, what is expected inflation?
4. Suppose that an economy with real GDP of \$300 billion per year grows at a rate of 4 per cent per year.
 - a. What is real GDP after 1 year?
 - b. What is real GDP after 5 years?
 - c. What is real GDP after 10 years?
5. Suppose an economy with per capita GDP of \$1000 grows at a rate of 3 per cent per year.
 - a. What is per capita GDP after 1 year?
 - b. What is per capita GDP after 10 years?
 - c. What is per capita GDP after 50 years?

Multiple Choice Test

1. The growth in real GDP per capita
 - a. is slower than the growth in real GDP for countries with a growing population.
 - b. is faster than the growth in real GDP for countries with a growing population.
 - c. is about the same as the growth in real GDP for countries with a growing population.
 - d. has greatly decreased living standards over the past two centuries.
2. Economic growth describes
 - a. increases in the labour force.
 - b. increases in real GDP.
 - c. increases in inflation.
 - d. increases in interest rates.
3. A fall in real GDP that lasts six months or more is called
 - a. an expansion.
 - b. a peak.
 - c. an economic growth slowdown.
 - d. a recession.
4. The highest point in the business cycle before the start of a recession is called
 - a. a trough.
 - b. a peak.
 - c. a recovery.
 - d. an expansion.
5. Which of the following groups of people are **not** considered part of the labour force?
 - a. People who are unemployed
 - b. People who are working
 - c. People who are not working and are looking for work
 - d. People who are not working and are not looking for work
6. The unemployment rate
 - a. is always rising.
 - b. is always falling.
 - c. rises during recessions and falls during expansions.
 - d. falls during recessions and rises during expansions.

7. A fall in the price level is called
 - a. a growth slowdown.
 - b. deflation.
 - c. disinflation.
 - d. inflation.
8. Inflation
 - a. increases during booms and decreases during recessions and recoveries.
 - b. decreases during booms and increases during recessions and recoveries.
 - c. increases during booms and recoveries and decreases during recessions.
 - d. decreases during booms and recoveries and increases during recessions.
9. The real interest rate is the interest rate minus
 - a. the cash funds rate.
 - b. the Treasury note interest rate.
 - c. the mortgage interest rate.
 - d. the expected inflation rate.
10. Real GDP
 - a. is the normal or average level of production for an economy.
 - b. is the maximum attainable level of production for an economy.
 - c. is the total of all goods and services produced in an economy during a specified period of time.
 - d. rises above potential GDP in recessions and falls below potential GDP in booms.
11. The goal of economic growth theory is to explain
 - a. short-run movements around the long-run growth path.
 - b. the short-term upward rise of real GDP over time.
 - c. the long-term upward rise of real GDP over time.
 - d. the long-term downward fall of real GDP over time.
12. Government policies that focus on increasing the available supply of labour, capital and technology are
 - a. supply-side economic policies.
 - b. fiscal policies.
 - c. monetary policies.
 - d. demand-side economic policies.
13. Fiscal policy
 - a. is government policy concerning the money supply.
 - b. is government policy concerning money demand.
 - c. is government policy concerning spending, taxing and borrowing.
 - d. affects long-term economic growth because inflation in the long run depends on the growth rate of the money supply.
14. Business cycle theory emphasises
 - a. the inflation rate.
 - b. the interest rate.
 - c. aggregate supply.
 - d. aggregate demand.
15. Economic fluctuations theory
 - a. postulates that business cycles are due to changes in potential GDP.
 - b. postulates that business cycles are due to changes in inflation.
 - c. describes business cycles as fluctuations of real GDP around potential GDP.
 - d. describes business cycles as fluctuations of potential GDP around real GDP.
16. Suppose an economy with per capita GDP of \$4000 grows at a rate of 5 per cent per year. What is the per capita GDP after 2 years?
 - a. \$4200
 - b. \$4400

- c. \$4410
- d. \$4500

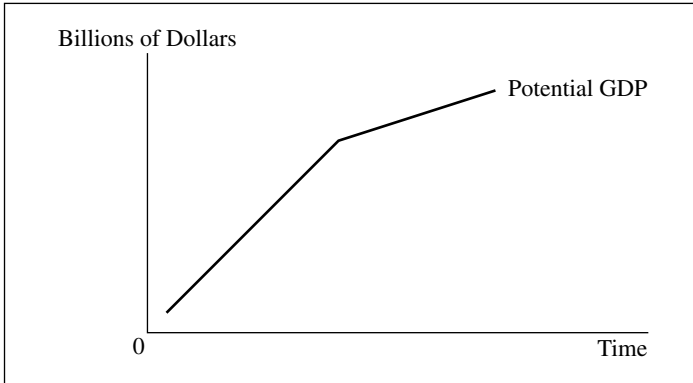


Figure 5.2

17. Figure 5.2 illustrates a(n)
- a. recession.
 - b. recovery.
 - c. expansion.
 - d. economic growth slowdown.

Use Figure 5.3 for questions 18 and 19.

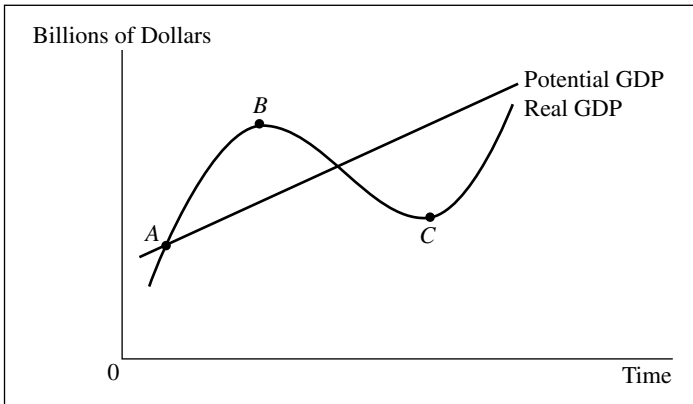


Figure 5.3

18. Point C on Figure 5.3 illustrates
- a. an expansion.
 - b. a trough.
 - c. a peak.
 - d. a recovery.
19. Movement from point A to point B on Figure 5.3 illustrates
- a. an expansion.
 - b. a trough.
 - c. a peak.
 - d. a recovery.

Fundamentals

1. Using an appropriate diagram, distinguish between long-term economic growth and short-term fluctuations in GDP.
2. Define the unemployment rate, the inflation rate and the interest rate, and, using appropriate diagrams, describe recent trends in these variables in Australia.
3. Good macroeconomic policy-making relies on facts and theory. Explain, using an appropriate chart or diagram.

ANSWERS TO THE SELF-ASSESSMENT TESTS

Answers to Fill-in Questions

- | | |
|---|---|
| 1. gross domestic product (GDP) | 9. Inflation |
| 2. real GDP per capita | 10. interest rate |
| 3. economic growth rate | 11. Potential |
| 4. Economic fluctuations; business cycles | 12. aggregate supply |
| 5. recession | 13. labour; capital; technology |
| 6. peak | 14. spending; taxing; borrowing |
| 7. depression | 15. money supply and the control of inflation |
| 8. unemployment rate | |

Answers to True–False Questions

1. **False.** Real GDP per capita has more than doubled during the past 40 years.
2. **False.** There has been an economic growth slowdown in Australia since the mid 1970s.
3. **False.** A recession is a fall in the level, not just the growth rate, of real GDP.
4. **False.** The recession of the early 1990s was not comparable in severity to the Great Depression.
5. **False.** Inflation in Australia fell close to zero in 1997.
6. **False.** The savings deposit interest rate is the interest rate on savings deposits at banks.
7. **True.** Potential GDP is the average or normal level of real GDP.
8. **False.** Labour, capital and technology determine aggregate supply.
9. **False.** Economic fluctuations theory attempts to explain short-run movements around the long-run growth path. The economic growth slowdown is a long-term decrease in the economic growth rate.
10. **True.** The production function is the heart of economic growth theory.
11. **False.** Supply-side economic policies attempt to increase long-run economic growth.
12. **False.** Countries with low inflation have higher long-run economic growth than countries with high inflation.
13. **False.** Real GDP fluctuates around potential GDP.
14. **True.** Changes in aggregate demand cause economic fluctuations.
15. **False.** Macroeconomic policies have large effects on economic fluctuations.

Answers to Short Answer Questions

1. Real GDP is also called output or production.
2. Starting with an expansion, the economy attains its peak. Then real GDP falls, initiating a recession. Once the economy reaches bottom, at the trough, a recovery occurs.
3. Disinflation is a decline in the inflation rate. Deflation, or negative inflation, is a fall in the price level.
4. The inflation rate in Australia reached a peak in the mid 1970s.

5. Inflation increases prior to recessions and then decreases during and after recessions.
6. The real interest rate is the interest rate minus the expected rate of inflation.
7. Real GDP fluctuates above and below potential GDP.
8. The economic growth slowdown is caused by a slowdown in the growth of labour, capital or technology.
9. Supply-side policies can affect growth by changing the *incentives* for business firms to invest in capital or to hire more workers, for workers to work harder or to enter the labour force, and for researchers to invent new technologies.
10. Fiscal policy can affect growth by changing the incentives for firms and workers.
11. Monetary policy can affect growth by keeping inflation low and stable.
12. In the long run, countries with low and stable inflation have higher economic growth than countries with high and variable inflation.
13. In response to fluctuations in aggregate demand, business firms adjust their production, causing fluctuations in real GDP.
14. If demand increases, firms hire more workers and use their capital more intensively.

Answers to Practice Problems

1. The unemployment rate is plotted in Figure 5.4. Unemployment falls until 1966 and then rises to more normal levels.

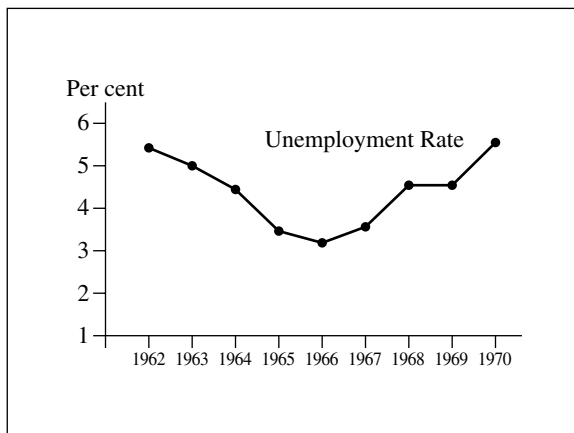


Figure 5.4

2.
 - a. The real interest rate is 3 per cent ($4 - 1 = 3$).
 - b. The nominal interest rate is 4 per cent ($3 + 1 = 4$).
 - c. Expected inflation is 1 per cent ($4 - 3 = 1$).
3.
 - a. The real interest rate is 1 per cent.
 - b. The nominal interest rate is 7 per cent.
 - c. Expected inflation is 6 per cent.
4.
 - a. Real GDP = $\$300 \times (1.04) = \312 billion.
 - b. Real GDP = $\$300 \times (1.04)^5 = \365 billion.
 - c. Real GDP = $\$300 \times (1.04)^{10} = \440 billion.
5.
 - a. Per Capita GDP = $\$1000 \times (1.03) = \1030 .
 - b. Per Capita GDP = $\$1000 \times (1.03)^{10} = \1344 .
 - c. Per Capita GDP = $\$1000 \times (1.03)^{50} = \4384 .

Answers to Multiple Choice Test

- | | | | |
|------|-------|-------|-------|
| 1. a | 6. c | 11. c | 16. c |
| 2. b | 7. b | 12. a | 17. d |
| 3. d | 8. a | 13. c | 18. b |
| 4. b | 9. d | 14. d | 19. a |
| 5. d | 10. c | 15. c | |

Answer Outlines for Fundamentals

- The precise definitions of long-term economic growth and economic fluctuations or the business cycle are given in the page margins adjacent to the discussion in the text. For assignment purposes you need only reproduce these definitions *verbatim*. However, to enhance your economic competency, you will need to learn these definitions.

Having defined the two key concepts contained in the question you now need to identify the relevant diagram, which in this case is Figure 5.1 (p. 100), in the textbook.

Diagrams must be correctly labelled and explained. The slim line shows the long-term growth trend. The upward growth trend demonstrates that real GDP has more than trebled since 1960.

There are fluctuations around the growth trend line reflecting a series of business cycles, each characterised by four distinct phases: a peak, a recession, a trough and a recovery. These business cycles tend to vary in duration and severity.

- The unemployment rate, the inflation rate and the interest rate need to be defined at the outset. There is no scope for originality here so do not waste time trying to devise your own definitions; rather, reproduce the accepted definitions.

In the textbook, Figure 5.6 (p. 106) depicts the unemployment rate in Australia from 1900 to the present. The graph reflects the severe unemployment of the Great Depression in the 1930s peaking at 20 per cent. The unemployment rate averaged 2 per cent over the 30-year period from 1940 to 1970. Since 1970 the unemployment rate has risen steadily and is currently in the region of 7 per cent.

Figure 5.8 (p. 108) in the textbook tracks the inflation rate over the period 1970 to 1997. From approximately 5 per cent in 1970 inflation rose to a peak of 17 per cent in 1975 then followed a downward trend to reach just 3 per cent in 1985. It then climbed steeply, reaching 10 per cent in 1987. Since then inflation has exhibited a downward trend and is presently in the region of 2 per cent.

Figure 5.9 (p. 110) in the textbook shows the interest rate trend from 1970 to 1998. The graph reflects a very erratic path with peaks near 20 per cent in 1975, 1982 and 1986, and a peak at 18 per cent in 1990. Since then the interest rate has been reduced dramatically with Australia currently enjoying a low interest rate regime.

- The macroeconomic facts or statistics tell us **what** has happened but they do not tell us **why**. It is necessary to have a coherent theory to explain the facts. We need to know the determinants of unemployment, the determinants of inflation and the determinants of the interest rate, and to identify what interrelationships, if any, exist between these important variables.

Without an understanding of these causal factors it is impossible to develop good macroeconomic policy.

Figure 5.10 (p. 117) in the textbook shows the linkage between facts, theory and policy. There are facts and theories relevant to the different strands of macroeconomics. Using the theory to interpret and explain the facts provides the means for advising macroeconomic policy-makers. The idea is to steer the economy towards a set of desirable macroeconomic objectives.