

14

Aggregate Demand and Aggregate Supply

PRINCIPLES OF MACROECONOMICS FOURTH CANADIAN EDITION

N. GREGORY MANKIW
RONALD D. KNEEBONE
KENNETH J. MCKENZIE
NICHOLAS ROWE

PowerPoint® Slides
by Ron Cronovich
Canadian adaptation by Marc Prud'Homme

© 2008 Nelson Education Ltd.

In this chapter, look for the answers to these questions:

- What are economic fluctuations? What are their characteristics?
- How does the model of aggregate demand and aggregate supply explain economic fluctuations?
- Why does the Aggregate-Demand curve slope downward? What shifts the *AD* curve?
- What is the slope of the Aggregate-Supply curve in the short run? In the long run? What shifts the *AS* curve(s)?

© 2008 Nelson Education Ltd.

1

Short-Run Economic Fluctuations

- Economic activity fluctuates from year to year.
 - In most years production of goods and services rises.
 - On average over the past 130 years, production in the Canadian economy as measured by real GDP per person has grown by about 2 percent per year.
 - In some years normal growth does not occur, causing a *recession*.

© 2008 Nelson Education Ltd.

2

Short-Run Economic Fluctuations

- A **recession** is a period of declining real incomes, and rising unemployment.
- A **depression** is a severe recession.

© 2008 Nelson Education Ltd.

3

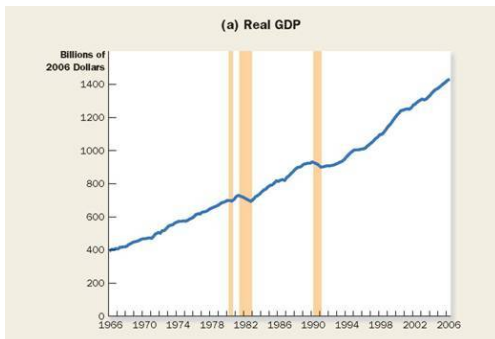
THREE KEY FACTS ABOUT ECONOMIC FLUCTUATIONS

1. Economic fluctuations are irregular and unpredictable.
 - Fluctuations in the economy are often called the business cycle.
2. Most macroeconomic variables fluctuate together.
3. As output falls, unemployment rises.

© 2008 Nelson Education Ltd.

4

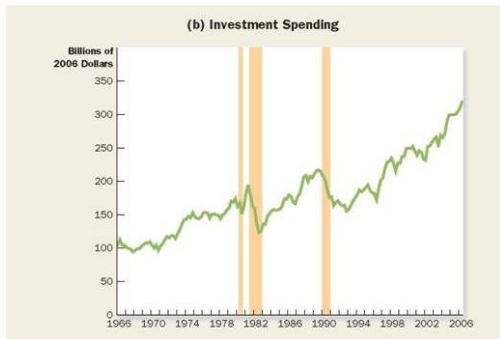
FIGURE 14.1: A Look at Short-Run Economic Fluctuations



© 2008 Nelson Education Ltd.

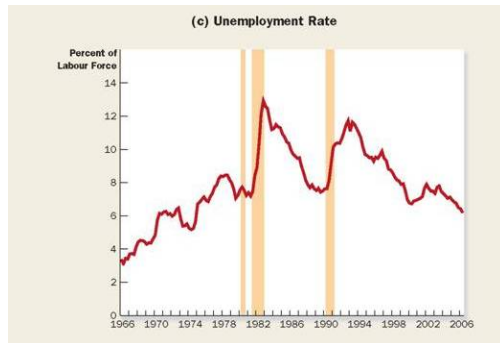
5

FIGURE 14.1: A Look at Short-Run Economic Fluctuations



6

FIGURE 14.1: A Look at Short-Run Economic Fluctuations



7

THREE KEY FACTS ABOUT ECONOMIC FLUCTUATIONS

- Economic fluctuations are irregular and unpredictable
- Most macroeconomic variables fluctuate together, but by different amounts.
- As output falls, unemployment rises.
 - Changes in real GDP are inversely related to changes in the unemployment rate.
 - During times of recession, unemployment rises substantially

© 2008 Nelson Education Ltd.

8

EXPLAINING SHORT-RUN ECONOMIC FLUCTUATIONS

- How the Short Run differs from the Long Run
 - Most economists believe that classical theory describes the world in the long run but not in the short run.
 - Changes in the money supply affect nominal variables but not real variables in the long run.
 - The assumption of monetary neutrality is not appropriate when studying year-to-year changes in the economy.

© 2008 Nelson Education Ltd.

9

The Basic Model of Economic Fluctuations

- Two variables are used to develop a model to analyze the short-run fluctuations.
 - The economy's output of goods and services measured by real GDP.
 - The overall price level measured by the CPI or the GDP deflator.

© 2008 Nelson Education Ltd.

10

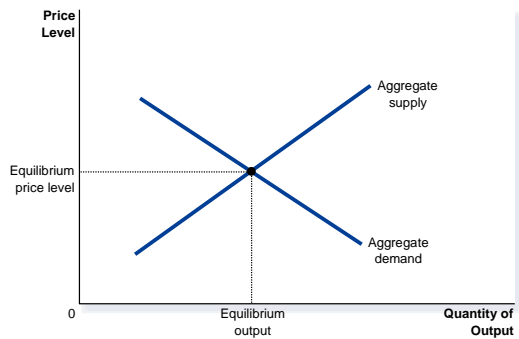
The Basic Model of Aggregate Demand and Aggregate Supply

- Economists use the **model of aggregate demand and aggregate supply** to explain short-run fluctuations in economic activity around its long-run trend.
 - The **aggregate-demand curve** shows the quantity of goods and services that households, firms, and the government want to buy at each price level.
 - The **aggregate-supply curve** shows the quantity of goods and services that firms choose to produce and sell at each price level.

© 2008 Nelson Education Ltd.

11

FIGURE 14.2: Aggregate Demand and Aggregate Supply



THE AGGREGATE-DEMAND CURVE

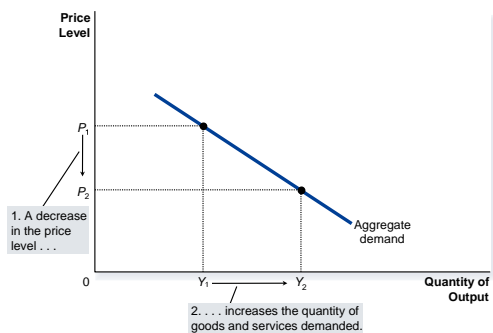
- The four components of GDP (Y) contribute to the aggregate demand for goods and services.

$$Y = C + I + G + NX$$

© 2008 Nelson Education Ltd.

13

FIGURE 14.3: The Aggregate-Demand Curve



Why the Aggregate-Demand Curve Is Downward Sloping

- The Price Level and Consumption: The Wealth Effect
- The Price Level and Investment: The Interest Rate Effect
- The Price Level and Net Exports: The Exchange-Rate Effect

© 2008 Nelson Education Ltd.

15

Why the Aggregate-Demand Curve Is Downward Sloping

- The Price Level and Consumption: The Wealth Effect
 - When the price level falls, consumers feel more wealthy and they spend more.
 - Larger quantities of goods and services are demanded.

© 2008 Nelson Education Ltd.

16

Why the Aggregate-Demand Curve Is Downward Sloping

- The Price Level and Investment: The Interest Rate Effect
 - A lower price level reduces the interest rate, which encourages greater spending on investment goods.
 - This increase in investment spending means a larger quantity of goods and services demanded.

© 2008 Nelson Education Ltd.

17

Why the Aggregate-Demand Curve Is Downward Sloping

- The Price Level and Net Exports: The Exchange-Rate Effect
 - When a fall in the Canadian price level causes interest rates to fall, the real exchange rate depreciates, which stimulates Canadian net exports.
 - The increase in net export spending means a larger quantity of goods and services demanded.

© 2008 Nelson Education Ltd.

18

Why the Aggregate-Demand Curve Is Downward Sloping

- The downward slope of the aggregate demand curve shows that a fall in the price level raises the overall quantity of goods and services demanded.
- Many other factors, however, affect the quantity of goods and services demanded at any given price level.
- When one of these other factors changes, the aggregate demand curve shifts.

© 2008 Nelson Education Ltd.

19

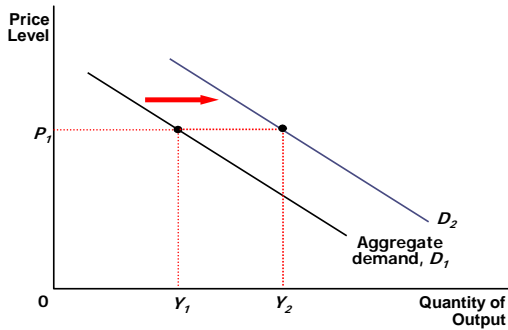
Why the Aggregate-Demand Curve Might Shift

- Shifts arising from
 - Changes from Consumption
 - Changes from Investment
 - Changes from Government Purchases
 - Changes from Net Exports

© 2008 Nelson Education Ltd.

20

Shifts in the Aggregate Demand Curve



© 2008 Nelson Education Ltd.

21

ACTIVE LEARNING 1: Exercise

Try this without looking at your notes.

What happens to the AD curve in each of the following scenarios?

- A ten-year-old investment tax credit expires.
- The Canadian exchange rate falls.
- A fall in prices increases the real value of consumers' wealth.
- Provincial governments replace their sales taxes with new taxes on interest, dividends, and capital gains.

22

ACTIVE LEARNING 1: Answers

- A ten-year-old investment tax credit expires.
 I falls, AD curve shifts left.
- The Canadian exchange rate falls.
 NX rises, AD curve shifts right.
- A fall in prices increases the real value of consumers' wealth.
Move down along AD curve (wealth-effect).
- Provincial governments replace sales taxes with new taxes on interest, dividends, and capital gains.
 C rises, AD shifts right.

23

THE AGGREGATE-SUPPLY CURVE

- In the long run, the aggregate-supply curve is *vertical*.
- In the short run, the aggregate-supply curve is *upward sloping*.

© 2008 Nelson Education Ltd.

24

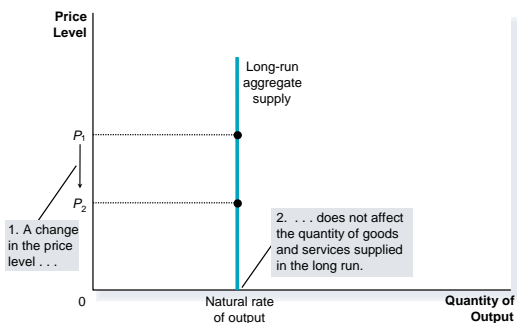
Why the Aggregate Supply Curve is Vertical in the Long Run

- In the long run,
 - an economy's production of goods and services depends on its supplies of labour, capital, and natural resources and on the available technology used to turn these factors of production into goods and services.
 - the price level does not affect these variables.

© 2008 Nelson Education Ltd.

25

FIGURE 14.4: The Long-Run Aggregate-Supply Curve



Why the Aggregate Supply Curve is Vertical in the Long Run

- The Long-Run Aggregate-Supply Curve
 - The long-run aggregate-supply curve is vertical at the natural rate of output.
 - This level of production is also referred to as potential output or full-employment output.

© 2008 Nelson Education Ltd.

27

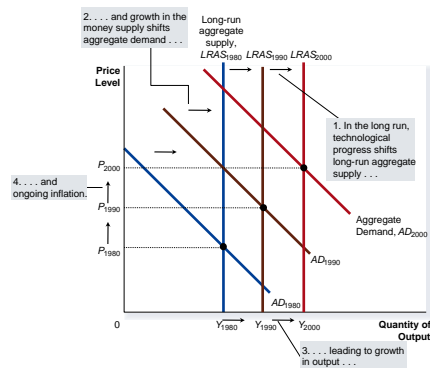
Why the Long-Run Aggregate-Supply Curve Might Shift

- Any change that alters the natural rate of output shifts the long-run aggregate-supply curve.
- Shifts may be categorized according to the various factors in the classical model that affect output.
 - Labour
 - Capital
 - Natural Resources
 - Technological Knowledge

© 2008 Nelson Education Ltd.

28

FIGURE 14.5: Long-Run Growth and Inflation



A New Way to Depict Long-Run Growth and Inflation

- Short-run fluctuations in output and price level should be viewed as deviations from the continuing long-run trends.

© 2008 Nelson Education Ltd.

30

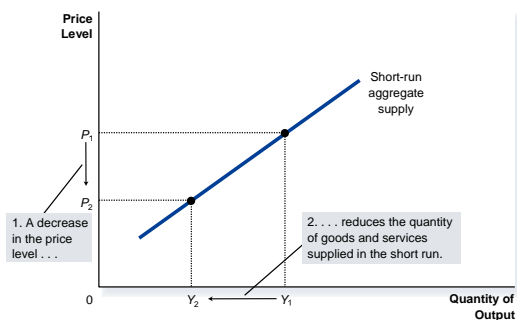
Why the Aggregate-Supply Curve Slopes Upward in the Short Run

- In the short run, an increase in the overall level of prices in the economy tends to raise the quantity of goods and services supplied.
- A decrease in the level of prices tends to reduce the quantity of goods and services supplied.

© 2008 Nelson Education Ltd.

31

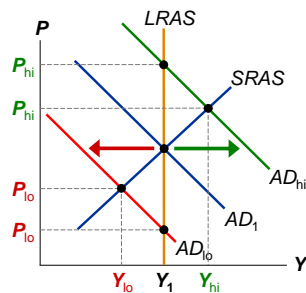
FIGURE 14.6: The Short-Run Aggregate-Supply Curve



Why the Slope of *SRAS* Matters

If *AS* is vertical, fluctuations in *AD* do not cause fluctuations in output or employment.

If *AS* slopes up, then shifts in *AD* do affect output and employment.



© 2008 Nelson Education Ltd.

33

Why the Aggregate-Supply Curve Slopes Upward in the Short Run

- The quantity of output supplied deviates from its 'natural' level when the price level deviates from the level that is expected to prevail
- Economic theories explain these deviations
 - The Sticky-Wage Theory
 - The Sticky-Price Theory
 - The Misperceptions Theory

© 2008 Nelson Education Ltd.

34

Why the Aggregate-Supply Curve Slopes Upward in the Short Run

- The Sticky-Wage Theory
 - Nominal wages are slow to adjust, or are "sticky" in the short run
- The Sticky-Price Theory
 - Prices of some goods and services adjust sluggishly in response to changing economic conditions
- The Misperceptions Theory
 - Changes in the overall price level temporarily mislead suppliers about what is happening in the markets in which they sell their output

© 2008 Nelson Education Ltd.

35

Why the Aggregate-Supply Curve Slopes Upward in the Short Run

$$\text{Quantity of output supplied} = \text{Natural rate of output} + a (\text{Actual price level} - \text{Expected price level})$$

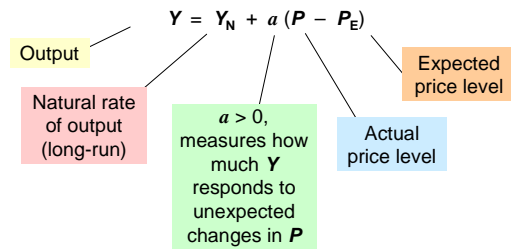
Where a is a number that determines how much output responds to unexpected changes in the price level.

© 2008 Nelson Education Ltd.

36

What the 3 Theories Have in Common:

Each of the 3 theories implies Y deviates from Y_N when P deviates from P_E .



© 2008 Nelson Education Ltd.

37

SRAS and LRAS

- The imperfections in these theories are temporary. Over time,
 - sticky wages and prices become flexible
 - misperceptions are corrected
- In the LR,
 - $P_E = P$
 - AS curve is vertical

© 2008 Nelson Education Ltd.

38

Why the Short-Run Aggregate-Supply Curve Might Shift

- Shifts arising from
 - Changes in Labour
 - Changes in Capital
 - Changes in Natural Resources
 - Changes in Technology
 - Changes in Expected Price Level

© 2008 Nelson Education Ltd.

39

Why the Aggregate Supply Curve Might Shift

- If the expected price level
 - increases, the quantity of goods and services supplied falls and shifts the short-run aggregate supply curve to the left.
 - Decreases, the quantity of goods and services supplied rises and shifts the short-run aggregate supply curve to the right.

© 2008 Nelson Education Ltd.

40

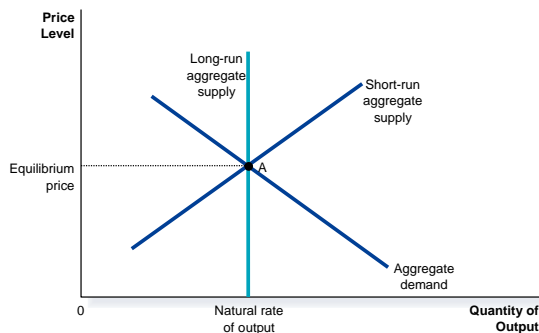
TWO CAUSES OF ECONOMIC FLUCTUATIONS

- Shifts in Aggregate Demand
 - In the short run, shifts in aggregate demand cause fluctuations in the economy's output of goods and services.
 - In the long run, shifts in aggregate demand affect the overall price level but do not affect output.

© 2008 Nelson Education Ltd.

41

FIGURE 14.7: The Long-Run Equilibrium



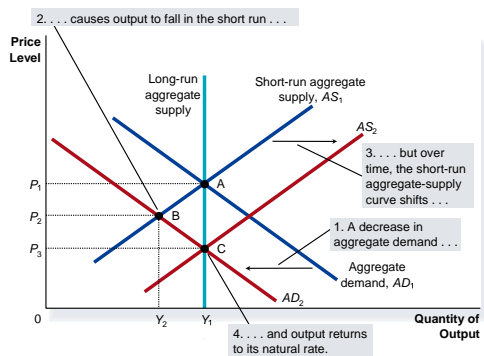
Economic Fluctuations

- Four steps to analyzing economic fluctuations:
 1. Determine whether the event shifts *AD* or *AS*.
 2. Determine whether curve shifts left or right.
 3. Use *AD-AS* diagram to see how the shift changes *Y* and *P* in the short run.
 4. Use *AD-AS* diagram to see how economy moves from new SR eq'm to new LR eq'm.

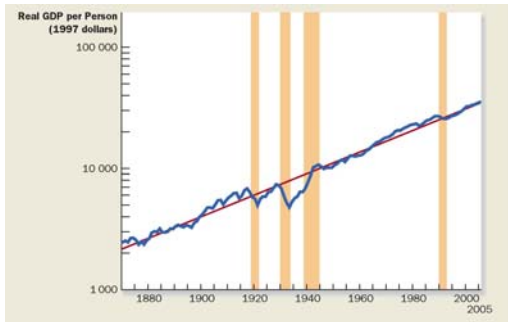
© 2008 Nelson Education Ltd.

43

FIGURE 14.8: Contraction in Aggregate Demand



Case Study: Two Depressions and World War II



© 2008 Nelson Education Ltd.

45

ACTIVE LEARNING 2: Exercise

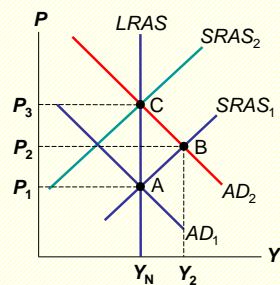
- Draw the AD - $SRAS$ - $LRAS$ diagram for the Canadian economy, starting in a long-run equilibrium.
- A boom occurs in the U.S.. Use your diagram to determine the SR and LR effects on Canadian GDP, the price level, and unemployment.

46

ACTIVE LEARNING 2: Answers

Event: boom in U.S.

- affects NX , AD curve
- shifts AD right
- SR eq'm at point B. P and Y higher, unemp lower
- Over time, P_E rises, $SRAS$ shifts left, until LR eq'm at C. Y and unemp back at initial levels.



47

TWO CAUSES OF ECONOMIC FLUCTUATIONS

- An Adverse Shift in Aggregate Supply
 - A decrease in one of the determinants of aggregate supply shifts the curve to the left:
 - Output falls below the natural rate of employment.
 - Unemployment rises.
 - The price level rises.

© 2008 Nelson Education Ltd.

48

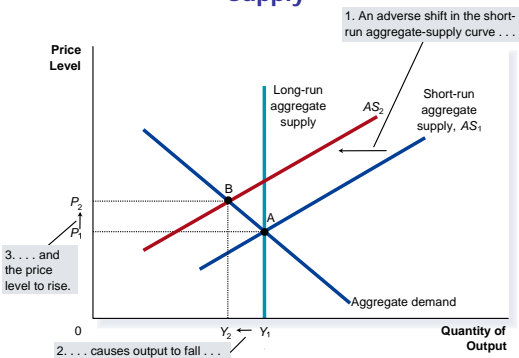
The Effects of a Shift in Aggregate Supply

- Stagflation
 - Adverse shifts in aggregate supply cause **stagflation**—a period of recession and inflation.
 - Output falls and prices rise.
 - Policymakers who can influence aggregate demand cannot offset both of these adverse effects simultaneously.

© 2008 Nelson Education Ltd.

49

FIGURE 14.10: An Adverse Shift in Aggregate Supply



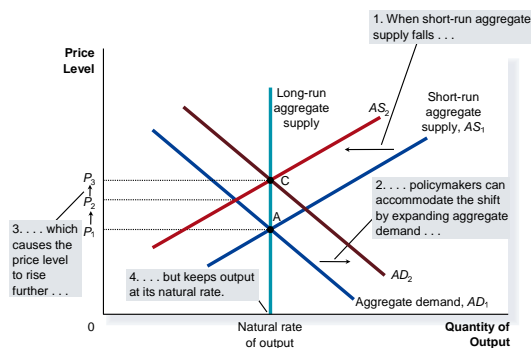
The Effects of a Shift in Aggregate Supply

- Policy Responses to Recession
 - Policymakers may respond to a recession in one of the following ways:
 - Do nothing and wait for prices and wages to adjust.
 - Take action to increase aggregate demand by using monetary and fiscal policy.

© 2008 Nelson Education Ltd.

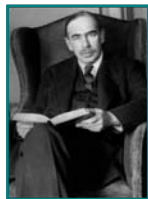
51

FIGURE 14.11: Accommodating an Adverse Shift in Aggregate Supply



John Maynard Keynes, 1883-1946

- *The General Theory of Employment, Interest, and Money*, 1936
- Argued recessions and depressions can result from inadequate demand; policymakers should shift AD.
- Famous critique of classical theory:



The long run is a misleading guide to current affairs. In the long run, we are all dead. Economists set themselves too easy, too useless a task if in tempestuous seasons they can only tell us when the storm is long past, the ocean will be flat.

© 2008 Nelson Education Ltd.

53

CONCLUSION

- This chapter has introduced the model of aggregate demand and aggregate supply, which helps explain economic fluctuations.
- Keep in mind: these fluctuations are deviations from the long-run trends explained by the models we learned in previous chapters.
- In the next chapter, we will learn how policymakers can affect aggregate demand with fiscal and monetary policy.

© 2008 Nelson Education Ltd.

54

CHAPTER SUMMARY

- Short-run fluctuations in GDP and other macroeconomic quantities are irregular and unpredictable. Recessions are periods of falling real GDP and rising unemployment.
- Economists analyze fluctuations using the model of aggregate demand and aggregate supply.
- The aggregate demand curve slopes downward because a change in the price level has a wealth effect on consumption, an interest-rate effect on investment, and an exchange-rate effect on net exports.

© 2008 Nelson Education Ltd.

55

CHAPTER SUMMARY

- Anything that changes **C**, **I**, **G**, or **NX** – except a change in the price level – will shift the aggregate demand curve.
- The long-run aggregate supply curve is vertical, because changes in the price level do not affect output in the long run.
- In the long run, output is determined by labour, capital, natural resources, and technology; changes in any of these will shift the long-run aggregate supply curve.

© 2008 Nelson Education Ltd.

56

CHAPTER SUMMARY

- In the short run, output deviates from its natural rate when the price level is different than expected, leading to an upward-sloping short-run aggregate supply curve. The three theories proposed to explain this upward slope are the sticky wage theory, the sticky price theory, and the misperceptions theory.
- The short-run aggregate-supply curve shifts in response to changes in the expected price level and to anything that shifts the long-run aggregate supply curve.

© 2008 Nelson Education Ltd.

57

CHAPTER SUMMARY

- Economic fluctuations are caused by shifts in aggregate demand and aggregate supply.
- When aggregate demand falls, output and the price level fall in the short run. Over time, a change in expectations causes wages, prices, and perceptions to adjust, and the short-run aggregate supply curve shifts rightward. In the long run, the economy returns to the natural rates of output and unemployment, but with a lower price level.

© 2008 Nelson Education Ltd.

58

CHAPTER SUMMARY

- A fall in aggregate supply results in stagflation – falling output and rising prices. Wages, prices, and perceptions adjust over time, and the economy recovers.

© 2008 Nelson Education Ltd.

59

End: Chapter 14

© 2008 Nelson Education Ltd.

60
