LEARNING OBJECTIVES

After reading this chapter, you should be able to:

8.1 Explain long-run aggregate supply and its relation to potential GDP and macroeconomic performance outcomes.

8.2 Identify how macroeconomic players choose short-run aggregate supply plans and differentiate the choices and supply shocks that change aggregate supply.

8.3 Explain the difference between a change in aggregate quantity demanded and a change in aggregate demand, and list five shocks that change aggregate demand.

8.4 Use the aggregate supply and aggregate demand model to explain the macroeconomic performance of real GDP, unemployment, and inflation.

8.5 Describe the “Yes — Markets Self-Adjust” and “No — Markets Fail Often” answers about origins, expectations, and market responses to business cycles.
WHAT MADE WAYNE GRETZKY the highest-scoring hockey player of all time? Talent, discipline, and hard work, of course. Some say his greatness came from following this father's advice: “Skate to where the puck is going, not to where it is.” By anticipating the play — seeing two steps ahead — Gretzky was able to be in the right place at the right time to score goals. Similarly, success in business depends on anticipating the market. You can get rich if you supply products or services that consumers want, when they want them, or if you correctly anticipate where stock prices or real estate values are going.

This chapter examines the choices not behind the hockey performance outcomes of goals and assists, but behind the key macroeconomic performance outcomes of real GDP, unemployment, and inflation. Macroeconomic outcomes begin two steps earlier, with supply choices made by consumers, businesses, and governments. You will examine the choices that these macroeconomic players make, and how the players’ separate smart choices add up to aggregate supply and aggregate demand.

Think about how it would be if you watched a sport where you don’t know the rules. Cricket? Lacrosse? Curling? The players’ actions would seem incomprehensible. Aggregate supply and aggregate demand provide a framework for thinking about macroeconomics. This framework will help you understand the action in the economy — when and why it hits the targets of steady growth in living standards, full employment, and stable prices, and when it misses with business cycles, unemployment, and inflation. You may not achieve Gretzky’s greatness, but understanding his father’s advice will help you make smarter choices on the economic field of play and evaluate economic policies that politicians will ask you to vote for.
8.1 Macroeconomic Performance Targets: Potential GDP and Long-Run Aggregate Supply

When hockey players perform well, they score goals and win championships. When the macro economy performs well, real GDP equals potential GDP, and there is full employment, stable prices, and steady growth in living standards. What causes the macro economy to sometimes hit these targets, and other times to miss?

From Production Possibilities Frontier to Long-Run Aggregate Supply

The aggregate supply and aggregate demand framework is a model — a simplified representation of the real world — that allows us to understand the macro economy’s performance. To build this model, we return to the macro production possibilities frontier (PPF) from Chapter 6, reproduced in Figure 8.1a.

Figure 8.1 Production Possibilities Frontier and Long-Run Aggregate Supply

Production Possibilities Frontier

The macro PPF shows the maximum combinations of consumer goods and capital goods that the economy can produce. At any point on the PPF, inputs are fully employed and the economy is producing at potential GDP. Points inside the PPF represent unemployed inputs — workers without jobs, factories not operating, farmland not producing crops. Notice two things about the PPF. First, inputs do not appear on the graph. The PPF takes the quantity and quality of inputs as given to focus attention on potential GDP — the outputs that those inputs can produce. Second, there are no prices on the graph, only quantities of outputs.
Long-Run Aggregate Supply  

Figure 8.1b transfers the potential GDP of the PPF to a new graph with the economy’s real GDP on the horizontal axis and price level on the vertical axis. Real GDP is measured in constant 2002 dollars. The price level is measured by the Consumer Price Index (CPI), where the price level in 2002 equals 100. Again, inputs do not directly appear on the graph.

Long-run aggregate supply is the economy’s potential GDP — the quantity of real GDP supplied when all inputs are fully employed. The long-run aggregate supply curve — LAS — is a vertical line at potential GDP. No matter what the price level is at potential GDP, the quantity of real GDP does not change. If the price level rises from 100 to 140, the quantity of real GDP remains at $1500 billion.

Just as all points inside the PPF in Figure 8.1a represent unemployed inputs, all quantities of real GDP less than potential GDP in Figure 8.1b represent unemployed inputs, including unemployed workers.

Long-run aggregate supply represents two of the macroeconomic performance targets — potential GDP and full employment. The macroeconomic targets of economic growth and stable prices will appear as we develop the rest of the aggregate supply and aggregate demand model.

Long Run versus Short Run

The aggregate supply choices of the macroeconomic players depend on the time period. That is why the words “long run” are in the definition of long-run aggregate supply.

In macroeconomics, the long run is a period of time long enough for all prices and wages to adjust so that Adam Smith’s invisible hand works well. In the long run, prices adjust to equilibrium prices that coordinate smart choices, and the economy is producing at potential GDP. The short run is a period of time where some input prices do not change — they have not adjusted to clear all markets and some choices are not coordinated.

Long run and short run are not defined in calendar time as a number of months or years. They are defined in terms of whether all prices have adjusted to equilibrium prices (long run) or whether some prices have not adjusted (short run).

Long-run aggregate supply is the full-employment outcome of coordinated smart choices, while short-run aggregate supply, coming next, looks at the choices that consumers, businesses, and governments make two steps before.

1. In your own words, explain the macroeconomic terms long run and short run.

2. Are points inside the production possibilities frontier (PPF) short-run or long-run points? What about points on the PPF? Explain.

3. What happens to the long-run aggregate supply curve (LAS) if the population increases? Can you predict what that will do to living standards? Explain your thinking.
If You Plan and Build It . . .

Short-Run Aggregate Supply

Businesses are the most important players for aggregate supply plans. They make supply plans in the short run. Imagine a photo of the economy at a moment in time. There are existing inputs (which determine production possibilities and long-run aggregate supply), and businesses face given input prices. They know what the wage rate is if they want to hire more labour; they know what electricity costs are if they want to use more power. Input prices do not change in the short run.

Once a business looks, Gretzky-like, two steps ahead and anticipates what consumers will demand, it starts planning its supply choices. Based on the existing inputs, the first choice is what products or services to produce and in what quantities. Those output choices, in turn, determine choices about how intensively to use inputs. A business might run a single eight-hour shift, a double shift, or even a triple shift operating 24 hours a day to produce outputs.

Businesses such as the one operating this giant digger in the Alberta oil sands must plan far ahead in order to have the right machines in the right place at the right time.

Short-Run Supply Plans with Existing Inputs

Macroeconomic supply plans with existing inputs are similar to microeconomic choices about quantity supplied (Chapter 3). Microeconomics’ law of supply states that as the price of a product or service rises, the quantity supplied increases. Macroeconomics supply plans connecting price and quantity supplied are added together for all of the macroeconomic players. For prices, we use the average price level in the economy, as measured by the Consumer Price index. For quantities, we use real GDP, which adds together the quantities of all final products and services produced in an economy, valued at constant prices.

Short-Run Aggregate Supply Curve

Short-run aggregate supply is the quantity of real GDP that macroeconomic players plan to supply at different price levels. Figure 8.2 adds a short-run aggregate supply curve (SAS) to the long-run aggregate supply curve of Figure 8.1b. Each point on the SAS curve corresponds to a row on the table in Figure 8.2. For example, look at point A on the SAS curve and row A of the table. If the price level is 100, short-run aggregate quantity supplied is $1300 billion of real GDP. If the price level rises to 110 (point and row B), short-run aggregate quantity supplied increases to $1400 billion.

The short-run aggregate supply curve is upward-sloping because input prices are fixed in the short run. When the price level rises, higher output prices with fixed input prices mean more profits, so businesses plan to increase the quantity supplied of real GDP. A fall in the price level has the opposite effect, and decreases the quantity supplied of real GDP.
The LAS curve and SAS curve intersect at point C, with a price level of 120 and real GDP of $1500 billion. Only at this intersection will short-run supply plans hit the target of potential GDP. The supply plans at points A and B are less than potential GDP and the supply plans at points D and E are greater than potential GDP. All of these combinations of price levels and quantities of real GDP are just plans — we will see whether or not the plans work out after adding information about aggregate demand.

**Figure 8.2  Short-Run and Long-Run Aggregate Supply**

<table>
<thead>
<tr>
<th>Price Level (CPI)</th>
<th>Short-Run Real GDP Supplied (billions of 2002 dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100 1300</td>
</tr>
<tr>
<td>B</td>
<td>110 1400</td>
</tr>
<tr>
<td>C</td>
<td>120 1500</td>
</tr>
<tr>
<td>D</td>
<td>130 1600</td>
</tr>
<tr>
<td>E</td>
<td>140 1700</td>
</tr>
</tbody>
</table>

**The Law of Short-Run Aggregate Supply** The law of short-run aggregate supply states that as the price level rises, the aggregate quantity supplied of real GDP increases. With fixed input prices, higher output prices create incentives for increased production through higher profits and by covering higher marginal opportunity costs of production.

**Supply Plans to Increase Inputs**

With existing inputs, macroeconomic players make output decisions about the quantity of real GDP they plan to supply. The players also make decisions that change the quantities and qualities of inputs available in the future.

**Increase in Potential GDP and Aggregate Supply** If you complete your post-secondary education, you add to your human capital and make yourself, and the economy, more productive. If a mining company develops a technologically advanced drilling machine, or if the government builds new transit lines that make it faster and cheaper to transport people and products, those choices increase future productivity. Any decision that increases the quantity or quality of inputs increases an economy’s potential GDP. In the language of the aggregate demand and aggregate supply model, supply plans that increase input quantity or quality increase in aggregate supply.
An increase in aggregate supply is economic growth — the expansion of the economy’s capacity to produce products and services. Figure 8.3 shows the effects of an increase in the quantity or quality of inputs.

In Figure 8.3a, the increase in inputs shifts the production possibilities frontier to the right, from $PPF_0$ to $PPF_1$. It is now possible to produce greater combined quantities of consumer goods and capital goods. In Figure 8.3b, the increase in inputs shifts both the long-run aggregate supply curve ($LAS_0$) and the short-run aggregate supply curve ($SAS_0$) together rightward to $LAS_1$ and $SAS_1$. The rightward shift of $LAS$ represents an increase in potential GDP. With the rightward shift in $SAS$, at any price level, businesses plan to supply more real GDP. For example, at a price level of 120, real GDP supplied with the original inputs was $1500$ billion (point C on $SAS_0$). With additional or more productive inputs, real GDP supplied is $1700$ billion (point C’ on $SAS_1$).

Changes in the quantity or quality of inputs, including technological change, shift both $LAS$ and $SAS$ in the same direction. An increase in inputs shifts both $LAS$ and $SAS$ rightward. We will assume that after the shifts, the intersection between $LAS$ and $SAS$ is at a lower price level because of cost reductions — in this example, the price level falls from 120 to 110. A decrease in inputs (for example, from a natural disaster) shifts both $LAS$ and $SAS$ leftward.

When government invests in building or repairing infrastructure, it is easier and less expensive for everyone to do business, thus increasing aggregate supply.
Moving Along Curves versus Shifting Curves  

I am hoping you notice the parallels to the microeconomic language of supply. In microeconomics, we distinguish between a change in quantity supplied (caused by a change in the price of the product or service) and a change in supply (caused by a change in any other factor). A change in quantity supplied is a movement along an unchanged supply curve. A change in supply shifts the curve.

In macroeconomics, with existing inputs and fixed input prices, a change in aggregate quantity supplied is caused by a change in the price level — a movement along an unchanged short-run aggregate supply curve (SAS). A change in aggregate supply — a shift of both the LAS and SAS curves — is caused by changes in the quantity or quality of inputs. A change in the quantity or quality of inputs changes short-run aggregate supply plans and shifts SAS, but also changes potential GDP and shifts LAS — changing the performance target for the economy. There is one more important change we haven’t looked at.

Changes in Input Prices and Aggregate Supply  

What happens to aggregate supply if input prices change? Before I tell you, can you figure out the effect on short-run aggregate supply plans (the SAS curve) and long-run aggregate supply (the LAS curve)? Here is a hint: The effect is different on SAS versus LAS.

The short-run aggregate supply curve (SAS) assumes input prices are fixed. So if input prices change, the SAS curve shifts. Figure 8.4 shows the effect of a rise in input prices.

Originally, the short-run aggregate supply curve is $SAS_0$ and the long-run aggregate supply curve is $LAS$. A rise in input prices — for example, a rise in wage rates — decreases short-run aggregate supply and shifts the short-run aggregate supply curve leftward to $SAS_1$. With the original input prices ($SAS_0$), at a price level of 120, businesses plan to supply $1500$ billion of real GDP. After input prices rise ($SAS_1$), businesses plan to supply only $1300$ billion of real GDP. At any price level, rising input prices reduce profits so businesses decrease their real GDP supplied. SAS shifts leftward. Falling input prices have the opposite effect, increasing short-run aggregate supply and shifting SAS rightward.

But rising (or falling) input prices do not affect potential GDP, so long-run aggregate supply and the LAS curve do not shift. When input prices change, short-run aggregate supply changes but long-run aggregate supply does not. Changing input prices shift SAS but do not shift LAS.

Figure 8.4  

<table>
<thead>
<tr>
<th>Input Prices and Aggregate Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price Level (CPI, 2002 = 100)</td>
</tr>
<tr>
<td>Real GDP (billions of 2002 dollars)</td>
</tr>
<tr>
<td>LAS</td>
</tr>
<tr>
<td>SAS'</td>
</tr>
<tr>
<td>150</td>
</tr>
<tr>
<td>140</td>
</tr>
<tr>
<td>130</td>
</tr>
<tr>
<td>120</td>
</tr>
<tr>
<td>110</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>90</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1300</td>
</tr>
<tr>
<td>1500</td>
</tr>
<tr>
<td>1700</td>
</tr>
</tbody>
</table>

Note  
Changing input prices shift SAS but do not shift LAS. Rising input prices shift SAS leftward. Falling input prices shift SAS rightward.
Supply Shocks and Short-Run Aggregate Supply

Short-run aggregate supply is largely determined by the plans and choices that macroeconomic players — Canadian businesses, consumers, and government — make. But events beyond the players’ control also affect aggregate supply. These supply shocks, which you read about in Chapter 7, are events that directly affect business costs, prices, and supply. There are negative and positive supply shocks that shift the aggregate supply curves. Supply shocks can affect long-run aggregate supply and short-run aggregate supply, but we will focus on the effect on short-run aggregate supply and the SAS curve.

Figure 8.5  Supply Shocks and Short-Run Aggregate Supply

Negative Supply Shocks Decrease Short-Run Aggregate Supply

Some negative supply shocks are caused by natural disasters, while others are created by rising input prices. Examples include droughts that decrease the supply of agricultural products, earthquakes that destroy inputs, and energy price increases. A negative supply shock in macroeconomics is similar to a decrease in supply (not quantity supplied) in microeconomics. Negative supply shocks shift SAS leftward.

Positive Supply Shocks Increase Short-Run Aggregate Supply

Positive supply shocks can come from new ideas and new resources or falling input prices. Examples include scientific discoveries that lead to more productive, lower-cost technologies and lower world prices for resource inputs. A positive supply shock in macroeconomics is similar to an increase in supply (not quantity supplied) in microeconomics. Positive supply shocks shift SAS rightward.
Figure 8.6 is a good study device for reviewing differences between the law of short-run aggregate supply (focusing on aggregate quantity supplied and movement along an unchanged SAS curve) and the factors that change short-run aggregate supply — negative and positive supply shocks (shifting the SAS curve).

**Will Supply Create Its Own Demand?** The plans made by businesses, consumers, and government, together with supply shocks, combine to create short-run aggregate supply. Plans are made two Gretzky-like steps ahead, in anticipation of what demand will be. Will supply create its own demand, as Say’s Law claims? Will these supply choices create enough demand so that the plans of the macroeconomic players are realized? Will the economy hit the target of potential GDP and full employment? If there are supply shocks that disrupt an economy at potential GDP, will markets quickly adjust to restore full employment, stable prices, and steady growth? To answer these questions, we must first look at aggregate demand — in the next section.

### Figure 8.6  Law of Short-Run Aggregate Supply and Changes in Short-Run Aggregate Supply

<table>
<thead>
<tr>
<th>The Law of Short-Run Aggregate Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreases if:</td>
</tr>
<tr>
<td>• price level falls</td>
</tr>
<tr>
<td>Increases if:</td>
</tr>
<tr>
<td>• price level rises</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Changes in Short-Run Aggregate Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreases if:</td>
</tr>
<tr>
<td>• businesses do not replace depreciating equipment and inputs</td>
</tr>
<tr>
<td>• negative supply shock raises price for resource inputs</td>
</tr>
<tr>
<td>• negative supply shock destroys inputs</td>
</tr>
<tr>
<td>Increases if:</td>
</tr>
<tr>
<td>• businesses plan to increase quantity or quality inputs</td>
</tr>
<tr>
<td>• positive supply shock lowers price for resource inputs</td>
</tr>
<tr>
<td>• positive supply shock improves technologies</td>
</tr>
</tbody>
</table>

### Refresh 8.2

1. Explain the difference between a change in aggregate quantity supplied and a change in aggregate supply.
2. All supply shocks shift the short-run aggregate supply curve (SAS). Which supply shocks also shift long-run aggregate supply? Explain their effect on LAS.
3. You own a pickle business and currently supply (sell) 1000 jars a month at a price of $5 per jar. Pick a specific supply shock (negative or positive) and explain your willingness — or not — to supply pickles at that same $5 price after the shock.

MyEconLab
For answers to these Refresh Questions, visit MyEconLab.
How much money are you planning to spend this month? We may not have Wayne Gretzky’s ability to see two steps ahead, but we do still plan. As consumers, we set budgets, planning how much to spend and how much to save. Every business project has a plan — and success depends on delivering that project on time and on budget. Governments also plan. The finance minister presents a budget in Parliament outlining the government’s taxing and spending plans for the year.

Of course, life happens and plans don’t always work out. Your car may break down; you could lose your job; you may win the lottery. All of these events will change your actual spending from your planned spending. Before we see how plans work out, let’s look at demand plans.

**Demand Plans and the Circular Flow**

To explain demand plans we’ll use the enlarged circular flow diagram. Figure 8.7 is the same as Figure 6.7.
Once short-run aggregate supply decisions are made, workers have earned incomes in input markets, and products and services are available in output markets. Demand plans are mostly about buying products and services in output markets. Consumers are the most important players, but businesses, government, and the rest of the world (R.O.W.) also demand Canadian-produced products and services. The green ($) spending arrows from all of these players in Figure 8.7 flow through output markets.

**Only One Aggregate Demand**  All macroeconomic players make their supply plans and demand plans in the short run. For aggregate demand, there is no distinction between the long run and the short run. Long-run aggregate supply (LAS) is a performance target — potential GDP — where we want the economy to end up. That target is the same for aggregate supply or aggregate demand choices. So you will be happy to know that there is only one concept of aggregate demand to learn.

**Aggregate Demand Curve**

Macroeconomic demand plans for spending are similar to microeconomic choices about *quantity demanded* (Chapter 2). The microeconomic *law of demand* states that, as the price of a product or service rises, the quantity demanded decreases. For macroeconomics we must add together the demand plans connecting price and quantity demanded for all of the macroeconomic players. As in aggregate supply, for price we use the economy’s price level as measured by the Consumer Price Index. For quantities we use real GDP.

**Aggregate Demand**  Aggregate demand is the quantity of Canadian real GDP that macroeconomic players plan to demand at different price levels. in Figure 8.8, each point on the aggregate demand curve (AD) corresponds to a row on the table of numbers. For example, look at point A on the AD curve and row A of the table. if the price level is 100, aggregate quantity demanded is $1700 billion of real GDP. if the price level rises to 110 (point and row B'), aggregate quantity demanded decreases to $1600 billion.
The Law of Aggregate Demand

The law of aggregate demand states that as the price level rises, aggregate quantity demanded of real GDP decreases. While the macroeconomic law of aggregate demand looks just like the microeconomic law of demand, there is a surprising difference in the explanations behind them.

Microeconomics looks at the demand for one particular product. For example, when the price of Beats headphones rises, you switch to cheaper substitutes like other headphones, or the not-so-great earbuds that came with your phone. Macroeconomics looks at the aggregate demand for all products and services. When the price level rises for all products and services produced in Canada, there are no cheaper Canadian substitutes to switch to.

Substitutions from R.O.W.

Fortunately, you can still use microeconomics’ inverse relation (when one goes up, the other goes down) between price and quantity demanded. But the macroeconomic law of demand works for a different reason: Canada’s connection to the rest of the world. When average prices of all Canadian products and services rise, imported products and services produced in other countries become relatively cheaper for Canadian consumers. And as prices of Canadian exports rise, the rest of the world buys less of them, switching to cheaper substitutes from other countries. When Canadians buy more imports and R.O.W. buys fewer Canadian exports, the aggregate quantity demanded of Canadian products and services decreases.

This difference in the explanations behind the microeconomic law of demand and the macroeconomic law of aggregate demand is an example of the fallacy of composition — what is true for one is not necessarily true for all.

Let’s look at the demand plans for each of the macroeconomic players, using the letters from the mantra of C, I, G, X, and IM.

Consumer Demand Choices: C is for Consumer Spending

Consumer spending plans begin with income earned in input markets. The income that consumers can choose to spend is disposable income — income after paying net taxes. Consumers plan to save a fraction of their disposable income, and spend the rest. At the top left of Figure 8.7 on page 210, you can see the flows of consumer savings to banks, and of net taxes to government. Net taxes take about 22 percent of income. Of the disposable income left, Canadian consumers have been saving about 4 percent, and spending the other 96 percent.

For our macroeconomic focus, once consumers plan to spend, the choice between buying burgers from McDonald’s or Wendy’s makes no difference to Canadian real GDP as long as products and services of both businesses are made in Canada. Consumers, however, also buy imports. To measure consumers’ spending plans for only Canadian products and services, we need to subtract the planned spending on imports from total consumer spending plans.
Consumer spending is by far the largest part of aggregate demand. It accounts for about 60 percent of the aggregate quantity demanded of Canadian real GDP. Consumer spending plans are also the most stable, reliable part of aggregate demand from year to year. Whether the economy is booming or busting, consumers still need to eat, have places to live, wear clothes, and use transportation. This constancy in year-to-year spending is not true for business investment spending.

**Business Demand Choices:**

**I** is for Business Investment Spending

Business's role in aggregate demand is planned investment spending — building new factories or buying new machinery that adds inputs and increases the economy's potential to produce real GDP. New inputs increase aggregate supply (long-run and short-run), but because the machinery that businesses buy are outputs produced by other businesses, the purchases are also part of aggregate demand. That is why the arrow in Figure 8.7 for planned investment spending goes from businesses to output markets and back to businesses.

Business investment spending accounts for between 15 and 25 percent of the aggregate quantity demanded of real GDP. What is important about the business investment spending numbers is how much they can change from one year to the next. Investment spending is the most volatile, unpredictable part of aggregate demand.

**Investment Can Be Postponed**

One reason investment spending fluctuates so much compared to consumer spending is that it can be postponed. When a business postpones its plans to build a new factory, it can continue to operate its existing factories. Business investment is a marginal choice about adding to existing inputs. Consumers can't really postpone their plans to eat.

**Government Demand Choices:**

**G** is for Government Spending on Products and Services

Government spending plans are set by Parliament when it passes its yearly budget. Government spending that contributes to aggregate demand under the category of G is plans for buying products and services in output markets. On Figure 8.7, that is the flow on the left side from government, through output markets, to businesses.

Government transfer payments (like the Canada Pension Plan and Employment insurance) go to consumers, and show up in aggregate demand as part of planned consumer spending (C) from that transfer payment income. Transfer payments are *not* part of the spending category G.

Government spending on products and services accounts for about 20 percent of the quantity of real GDP demanded. That percentage has remained relatively stable in Canada since the 1990s.
R.O.W. Demand Choices:

X is for R.O.W. Spending on Canadian Exports

Canadian exports are products and services produced here, but sold to the rest of the world. Italian spending plans to buy Molson Export beer fall under the category $X$. R.O.W. is the macroeconomic player (Italian or other nationalities) planning to demand our exports. On Figure 8.7, that planned spending is the flow on the bottom left side from R.O.W. through output markets to businesses.

Canada is a trading nation, and trade with the rest of the world is very important for aggregate demand. Spending by R.O.W. for Canadian exports accounts for over one-third of the quantity of real GDP demanded.

Imports:

IM Eliminates Canadian Choices from R.O.W. Spending

Imports — products and services produced in the rest of world and bought in Canada — do not contribute to Canadian planned aggregate demand or real GDP. However, imports are included in the planned spending categories of consumption, investment, and government purchases of products and services. To eliminate import purchases in output markets from aggregate demand, we must subtract imports. Rather than subtracting imports from the separate categories of $C$, $I$, and $G$, it is easier to subtract them in the single flow in Figure 8.7 from R.O.W. through output markets to businesses.

The flow from R.O.W. through output markets to businesses is labelled $X$ — $IM$ to represent the net flow between R.O.W. and Canada. Spending on exports flows from R.O.W. to Canada and is part of aggregate demand for Canadian real GDP. Spending on imports flows from Canada to R.O.W. and must be subtracted to calculate the net impact of R.O.W. on aggregate demand for Canadian products and services.

Repeat Your Mantra:

$C + I + G + X - IM = Y$

Planned spending on aggregate demand is the sum of planned consumer spending, planned business investment spending, planned government purchases of products and services, and planned net exports. For any price level, there is a planned aggregate quantity demanded. As the price level rises, the aggregate quantity demanded of Canadian real GDP decreases.
**Demand Shocks and Aggregate Demand**

Holding other factors constant, a change in the price level changes the aggregate quantity demanded of Canadian products and services, moving along an unchanged aggregate demand curve. **Demand shocks** are changes in any factor other than the price level that change aggregate demand and shift the aggregate demand curve.

Figure 8.9 illustrates how demand shocks shift the aggregate demand curve (AD). Negative demand shocks are factors that decrease aggregate demand and shift the aggregate demand curve leftward, from \( AD_0 \) to \( AD_1 \). Positive demand shocks are factors that increase aggregate demand and shift the aggregate demand curve rightward, from \( AD_0 \) to \( AD_2 \).

The five most important factors that cause demand shocks and change aggregate demand are expectations, interest rates, changes in government policy, GDP in R.O.W., and exchange rates between the Canadian dollar and other currencies.
Expectations  investment plans are based on expectations about an uncertain future. When an entrepreneur decides about the profitability of investing in a factory that will produce output and revenues lasting for 10 years, she must estimate costs and prices 10 years into the future. Even if she hires the best accountant in the world, those estimates are ultimately guesses, based on expectations.

Because investment plans are based on expectations, and expectations are mostly based on informed guesses, expectations can shift quickly and dramatically. That's what happened in the Global Financial Crisis, when expectations inflated about ever-rising real estate values and then all of a sudden burst — investors all began expecting values to fall. Business investment then dropped like a lead balloon. See Economics Out There for another example from the Global Financial Crisis.

More pessimistic expectations about future economic conditions are a negative demand shock — investment spending decreases and aggregate demand decreases. More optimistic expectations are a positive demand shock — investment spending increases and so does aggregate demand.

Expectations can also affect consumer spending. When consumers become more pessimistic about their economic future — expecting to lose their jobs, for example — they may decrease spending and increase savings. When consumers become more optimistic about their economic future, they increase spending and decrease savings.

Interest Rates  interest rates affect aggregate demand largely through their impact on business investment spending. Factories and machinery must be paid for before they will produce revenues for a business. Most businesses have to borrow the money to finance long-term investments, just as most consumers must borrow money to finance buying a house.

Rising interest rates are a negative demand shock. Borrowing to finance investment projects becomes more expensive and fewer investment projects are profitable. Aggregate demand decreases. Falling interest rates are a positive demand shock. Borrowing becomes cheaper and more investment projects become profitable. Aggregate demand increases.

Interest rates affect consumer spending plans for similar reasons. When interest rates on borrowed money (on your Visa bill, student loan, car loan, or mortgage, for example) rise, you borrow less and spend less. Aggregate demand decreases. When interest rates fall, you borrow more and spend more. Aggregate demand increases.
**Economics Out There**

**Putting Off Business Investment**

Expenditures on machinery and equipment dropped from $254 billion in 2008 to $228 billion in 2009, a drop of $26 billion or 10.4 percent. This is evidence of “how quickly the views and expectations changed for the worst during a period of unprecedented uncertainty,” said Aron Gampel, deputy chief economist with Bank of Nova Scotia.

Yet companies have not said they are actually cancelling big projects, only shelving them for better days, said Yves Gauthier, the Statistics Canada official responsible for the survey. “We don’t want to get to the point that we are cutting off good investments, and of course there is program capital that is required to be spent, but we are cutting or delaying discretionary capital,” said Vince Galifi, chief financial officer of Magna International.


**Government Policy** Government policy changes affect aggregate demand. Fiscal policies involve tax and spending changes. Higher taxes are a negative demand shock. Consumers and businesses have less money to spend, decreasing aggregate demand. Decreases in government spending on products and services are also a negative demand shock. Tax cuts and more government spending are positive demand shocks, increasing aggregate demand.

Monetary policy by the Bank of Canada (coming in Chapter 10) affects interest rates and exchange rates, which in turn affect aggregate demand.

**GDP in R.O.W.** R.O.W. plans to demand Canadian exports change with changes in real GDP in other countries. If China’s economy is booming, it increases demand for Canadian oil, potash, Bombardier trains, and other exports. Recessions in any country that Canada trades with decrease demand for Canadian exports.

Decreases in GDP in R.O.W. are a negative demand shock, decreasing the demand for Canadian exports and decreasing Canadian aggregate demand. Increases in GDP in R.O.W. are a positive demand shock.

**Exchange Rates** Exchange rates among currencies change R.O.W. planned demand for Canadian exports and Canadians’ purchases of imports. When the Canadian dollar rises in value relative to the U.S. dollar or other currencies, Canadian exports become more expensive, so Americans and R.O.W. will buy fewer of them. Imports become cheaper, so Canadians buy more of them. When the Canadian dollar falls in value relative to other currencies, our exports become cheaper and R.O.W. will demand more of them. Imports become more expensive and we buy fewer of them. Exchange rates are the topic of Chapter 10.

A rise in the exchange rate is a negative demand shock, decreasing exports and increasing imports, decreasing Canadian aggregate demand. A fall in the exchange rate is a positive demand shock, increasing exports and decreasing imports, increasing Canadian aggregate demand.
Aggregate Demand Summary

You might feel overwhelmed by the choices behind aggregate supply and aggregate demand, and the lists of factors that change or “shock” aggregate supply and aggregate demand. But as we move on, I will help you absorb this information, which will be amazingly helpful for thinking about the fundamental macroeconomic question. The model of aggregate supply and aggregate demand will help you understand business cycles and government policy options — hands-off or hands-on — for responding to them.

Figure 8.10 is a good study device for reviewing the difference between the law of aggregate demand (focused on aggregate quantity demanded and movement along an unchanged \( AD \) curve) and the factors that change aggregate demand — negative and positive demand shocks (shifting the \( AD \) curve).

**Figure 8.10  Law of Aggregate Demand and Changes in Aggregate Demand**

<table>
<thead>
<tr>
<th>The Law of Aggregate Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The aggregate quantity demanded of real GDP</strong></td>
</tr>
<tr>
<td><strong>Decreases if:</strong></td>
</tr>
<tr>
<td>• price level rises</td>
</tr>
<tr>
<td><strong>Increases if:</strong></td>
</tr>
<tr>
<td>• price level falls</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Changes in Aggregate Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The aggregate demand for real GDP</strong></td>
</tr>
<tr>
<td><strong>Decreases if negative demand shock:</strong></td>
</tr>
<tr>
<td>• expectations more pessimistic</td>
</tr>
<tr>
<td>• interest rates rise</td>
</tr>
<tr>
<td>• government spending on products and services decreases or taxes increase</td>
</tr>
<tr>
<td>• GDP in R.O.W. decreases</td>
</tr>
<tr>
<td>• value of Canadian dollar rises</td>
</tr>
<tr>
<td><strong>Increases if positive demand shock:</strong></td>
</tr>
<tr>
<td>• expectations more optimistic</td>
</tr>
<tr>
<td>• interest rates fall</td>
</tr>
<tr>
<td>• government spending on products and services increases or taxes decrease</td>
</tr>
<tr>
<td>• GDP in R.O.W. increases</td>
</tr>
<tr>
<td>• value of Canadian dollar falls</td>
</tr>
</tbody>
</table>

**Refresh 8.3**

MyEconLab

For answers to these Refresh Questions, visit MyEconLab.

1. Explain the difference between a change in aggregate quantity demanded and a change in aggregate demand. Identify five positive demand shocks that increase aggregate demand.

2. Use the fallacy of composition to explain the difference between the law of demand (microeconomic) and the law of aggregate demand (macroeconomic).

3. How does a rise in the value of the Canadian dollar relative to the U.S. dollar change your personal consumption plans? What might you buy more of? Less of? Explain your decisions.
Hit or Miss the Macroeconomic Performance Targets?
The Aggregate Supply and Aggregate Demand Model

The model of aggregate supply and aggregate demand enables you to explain real-world macroeconomic events. For example, if there is a recession in the United States, what happens to GDP in Canada, to our unemployment, or to inflation? The aggregate supply and aggregate demand model gives you a framework for analyzing economic news and making smarter choices for your personal success.

Hitting the Targets: Long-Run Macroeconomic Equilibrium

Let’s start using the model to explain the best possible macroeconomic outcome — when the smart choices of all players are coordinated and the economy hits the performance targets for real GDP, unemployment, and inflation.

Equilibrium Economists describe the outcome of macroeconomic equilibrium as aggregate demand matching the aggregate supply choices made two Gretzky-like steps earlier. Equilibrium means balance — there is no tendency for change. My favourite definition of equilibrium is by Joan Robinson: “in a situation which is in equilibrium, no one is kicking himself.” Figure 8.11 shows an example that is both a short-run macroeconomic equilibrium and a long-run macroeconomic equilibrium.

Figure 8.11 Short-Run and Long-Run Macroeconomic Equilibrium

The combination of a price level of 120 and real GDP of $1500 billion is both a short-run equilibrium and a long-run equilibrium.
Short-Run Equilibrium with Existing Inputs

Short-run equilibrium is the point where short-run aggregate supply (SAS) and aggregate demand (AD) intersect. In Figure 8.11 it is at real GDP of $1500 billion and a price level of 120.

To see why this is an equilibrium — with no tendency to change — look at what would happen if the price level were different. At a higher price level like 140, SAS would be $1700 billion (point E) while AD would be only $1300 billion (point E'). With short-run aggregate quantity supplied greater than aggregate quantity demanded, there is a surplus of products and services. Surpluses create pressure for output prices to fall. Competition between suppliers to get rid of unsold output drives down the price level, increasing aggregate quantity demanded and decreasing aggregate quantity supplied. The surplus, and the pressure for the price level to fall and real GDP to increase, only disappear when the economy reaches the equilibrium point.

At a lower price level like 110, SAS would be $1400 billion (point B) while AD would be $1600 billion (point B'). With aggregate quantity demanded greater than short-run aggregate quantity supplied, there is a shortage of products and services. Shortages create pressure for output prices to rise. Competition among consumers for scarce products and services drives up the price level, decreasing aggregate quantity demanded and increasing aggregate quantity supplied. The shortage, and the pressure for the price level to rise and real GDP to decrease, only disappear when the economy reaches the equilibrium point. At the equilibrium combination of real GDP of $1500 billion and price level of 120, there is no tendency for change.

Long-Run Equilibrium with Existing Inputs

In long-run equilibrium, the intersection of short-run aggregate supply (SAS) and aggregate demand (AD) also intersects long-run aggregate supply (LAS). In long-run equilibrium, the aggregate quantity supplied and aggregate quantity demanded of real GDP also equal potential GDP of $1500 billion.

The price level (120) and aggregate demand ($1500 billion) turn out to be exactly what suppliers expected when they made their production plans. Suppliers are happy because their products and services get sold at expected prices, and demanders are happy because their spending plans are realized. Consumers earned enough income in input markets to buy the products and services they planned for in output markets. Input prices, especially the wage rate, have adjusted so that all inputs — labour, capital, land/resources, and entrepreneurial ability — are fully employed. The price level is stable — there are no pressures for output prices or input prices to change. This long-run equilibrium with existing inputs is the world of Say’s Law, where macroeconomic dreams come true.

Equilibrium over Time with Increasing Inputs

To fully explain the “Yes, Markets Self-Adjust” answer to the fundamental macroeconomic question — if left alone by government, do the price mechanisms of market economics quickly adjust to maintain steady growth in living standards, full employment, and stable prices? — we also must look at changes over time in this macroeconomic equilibrium and the role of the banking system.
Living Standards  The best measure of “growth in living standards” is increasing real GDP per person. Over time real GDP must grow faster than the population. An increase in real GDP per person is also economic growth — an increase in potential GDP.

Stable Prices  “Stable prices” means that the Consumer Price index — the average price level — is either constant, or increasing at a low, predictable rate of inflation (1 to 3 percent per year) from year to year.

Loanable Funds Market  The banking system can also be described as the market for loanable funds. Banks take in money (funds) in the form of savings from the macroeconomic players — consumer households, businesses, government, and R.O.W. Banks then loan out money (funds) to borrowers. Businesses do most of the borrowing in this market to finance investment spending (I) on new factories or new machinery. The interest rate is the price of money in the loanable funds market and is determined by the interaction between the demand for loanable funds (by borrowers) and the supply of loanable funds (from savers). Figure 8.12 is a graph of the loanable funds market.

The horizontal axis measures the quantities of money that are saved or borrowed for business investment. The interest rate is on the vertical axis. The supply curve of savings (S) in the loanable funds market is an upward-sloping line, like any supply curve. When rewarded with higher interest rates, people save more money. The demand curve of loanable funds for business investment spending (I) is a downward-sloping line, like any demand curve. Higher interest rates increase the cost of borrowing, leading businesses to borrow less and to cancel some investment projects that are no longer profitable. The interest rate is the equilibrium “price” in the loanable funds market, equalizing quantity supplied and quantity demanded. In this example, that interest rate is 3 percent and $300 billion is the quantity saved and invested.

When macroeconomic players, especially consumers, save instead of spend, Say’s Law appears to be in trouble. If the income earned by supplying inputs in input markets is not all spent in output markets buying the products and services produced with those inputs, how does supply create its own demand?
**Rescuing Say’s Law over Time**  Banks can save the day (pun intended). Banks can loan out the saved funds to business borrowers who use the money to finance investment in new factories and equipment. That additional business investment spending ($I$), beyond what consumers spend, replaces consumer savings. Aggregate incomes earned in input markets are once again equal to aggregate spending in output markets. Aggregate supply equals aggregate demand.

**Rising Living Standards**  Business investment spending based on borrowed funds can also explain “steady growth in living standards.” As business investment increases the quantity and quality of inputs, potential GDP increases.

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**Figure 8.13**  Economic Growth, Rising Living Standards, and Stable Prices

- **Potentials and Shifts:**
  - Business investment that increases the quantity and quality of inputs shifts $SAS_0$ and $LAS_0$ together rightward, to $SAS_1$ and $LAS_1$.
  - Potential real GDP increases.
  - Increased employment in new and improved factories increases incomes in input markets, so aggregate demand shifts rightward, from $AD_0$ to $AD_1$.
  - The new short-run and long-run equilibrium is at real GDP of $1900$ billion, and a constant price level of 120.
  - As long as the increase in real GDP is greater than any increase in population, real GDP per person grows, and the price level is stable at 120.

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222 CHAPTER 8  SKATING TO WHERE THE PUCK IS GOING
The story of rising living standards in Figure 8.13 begins with long-run and short-run equilibrium at the point where \(SAS_0\), \(AD_0\), and \(LAS_0\) all intersect. Real GDP is originally $1500 billion and the price level is 120. Business investment that increases the quantity and quality of inputs shifts \(SAS_0\) and \(LAS_0\) together rightward, to \(SAS_1\) and \(LAS_1\). Potential real GDP increases to $1900 billion. But will that increased aggregate supply create its own increased aggregate demand? Yes. increased employment in new and improved factories increases incomes in input markets, so aggregate demand shifts rightward, from \(AD_0\) to \(AD_1\). The new long-run (and short-run) equilibrium is at real GDP of $1900 billion. The quantity supplied of real GDP equals the quantity demanded. There is no excess demand pulling up average prices; no excess supply pulling down average prices. The price level stays constant at 120.

As long as the increase in real GDP is greater than any increase in population, real GDP per person grows. Since the economy is once again at potential GDP (on the \(LAS_1\) curve), unemployment remains at the natural rate of (full) employment and the price level is stable. When Say’s Law remains true — even with savings — the circular flow of real GDP increases smoothly from year to year, producing economic growth, rising living standards, full employment, and stable prices. The equilibrium over time with expanding inputs in Figure 8.13 is the world described in Chapter 7 where bigger and better macroeconomic dreams keep coming true.

**Missed Targets and Business Cycles**

Business suppliers will be kicking themselves if aggregate demand does not match short-run aggregate supply at the potential GDP target (\(LAS\)). Maybe they produced too many products and services that are sitting unsold on shelves and the price level falls below expectations. Or business suppliers did not produce enough to satisfy unexpected consumer demand and the price level rises above expectations. Consumer household demanders will also be kicking themselves. Either businesses begin laying off workers and reducing consumer households’ incomes, or consumers will be disappointed at not finding enough of the products and services they planned to buy. There is disappointment all around.

When expectations are not realized, macroeconomic outcomes do not work out as planned. What the macroeconomic players expected were smart choices turn out to be not-smart choices. Adjustments are necessary to get back to smart choices, and these adjustments are the stuff business cycles are made of. Recessions and expansions — the world of Keynes’s business cycles — are the result of mismatches between aggregate demand and aggregate supply.

There are four mismatch cases that move an economy away from the long-run equilibrium targets: a negative demand shock, a positive demand shock, a negative supply shock, and a positive supply shock.

**Negative Demand Shocks** What happens if, after macroeconomic players make short-run aggregate supply decisions in input markets, there is a negative aggregate demand shock before products and services arrive for sale in output markets?
The supply decisions result in the short-run (SAS₀) aggregate supply curve in Figure 8.14. Those decisions were based on the expectation that aggregate demand would be AD₀. AD₀ is a dotted line because the expectation did not come true. Aggregate demand turns out to be AD₁.

At the originally expected price level of 120, aggregate quantity demanded (AD₀) is $1300 billion) is less than aggregate quantity supplied ($1500 billion). There is a $200 billion surplus of products and services in output markets. Businesses cut output prices to get rid of unsold products. Surpluses create pressure for average prices to fall. Businesses decrease the quantity supplied of real GDP, and reduce their hiring of labour and other inputs. The short-run equilibrium, where SAS₀ and AD₁ intersect, is real GDP of $1400 billion and a price level of 110.

The results of the negative demand shock are that the price level falls (from 120 to 110), aggregate quantity supplied decreases (from $1500 billion to $1400 billion), and unemployment increases. Since real GDP is below potential GDP ($1500 billion), there is a recessionary gap.

This is the scenario of the Global Financial Crisis described in Chapter 5. The bursting U.S. housing price bubble caused expectations to fall. Because of deeply pessimistic expectations, business investment spending fell dramatically. Expectations of hard times ahead, coupled with dramatically falling values of consumers’ savings invested in their houses or the stock market, caused consumers to cut back spending and increase savings. These new choices caused a negative demand shock, decreasing aggregated demand. Decreased aggregate demand put downward pressure on average prices. Aggregate quantity supplied decreased, businesses laid off workers, and the economy fell into a recessionary gap.

**Note**
Negative demand shocks cause a recessionary gap: falling average prices, decreased real GDP, and increased unemployment.

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**Figure 8.14** Negative Demand Shock

![Figure 8.14](image-url)
Positive Demand Shocks  What happens if, after macroeconomic players make short-run aggregate supply decisions, there is a positive aggregate demand shock — an increase in aggregate demand — before products and services arrive for sale in output markets?

Starting with the same supply decisions ($SAS_0$ and $LAS_0$) and expected aggregate demand ($AD_0$) in Figure 8.14, Figure 8.15 shows what happens when aggregate demand turns out to be $AD_2$.

At the originally expected price level of 120, aggregate quantity demanded ($1700$ billion) is greater than aggregate quantity supplied ($1500$ billion). There is a $200$ billion shortage of products and services in output markets. Businesses experience products flying off the shelves and inventories quickly disappear. Consumers experience long lineups and out-of-stock items at stores. In trying to get the scarce products, consumers compete against each other and bid up prices. Businesses raise prices and still sell everything they have produced. Shortages create pressure for average prices to rise. Businesses increase the quantity supplied of real GDP, and hire more labour and other inputs. The short-run equilibrium, the point where $SAS_0$ and $AD_2$ intersect, is real GDP of $1600$ billion and a price level of $130$.

The results of the positive demand shock are that the price level rises (from $120$ to $130$), aggregate quantity supplied increases (from $1500$ billion to $1600$ billion), and the unemployment rate decreases temporarily below the natural rate. Since real GDP is above potential GDP, there is an inflationary gap.
Demand shocks, whether negative or positive, move unemployment and inflation in opposite directions, as the Phillips Curve suggests. Higher unemployment is associated with lower inflation, and lower unemployment is associated with higher inflation.

**Negative Supply Shocks**

What happens if, after macroeconomic players make short-run aggregate supply decisions, there is an unexpected negative aggregate supply shock — such as a decrease in aggregate supply caused by rising resource input prices?

In Figure 8.16, rising input prices decrease short-run aggregate supply from $SAS_0$ to $SAS_1$, but do not change potential GDP or long-run aggregate supply ($LAS_0$).

At the originally expected price level of 120, with higher input prices business are now only willing to supply $1300\text{ billion}$ of real GDP. Aggregate quantity demanded ($1500\text{ billion}$) is greater than aggregate quantity supplied ($1300\text{ billion}$). There is a $200\text{ billion}$ shortage of products and services in output markets. Businesses raise output prices to cover higher input costs. Rising prices lead consumers to reduce their quantity demanded of products and services. Output decreases and businesses reduce their hiring of labour and other inputs. The result is a rise in the average price level, a decrease in real GDP and in aggregate quantity demanded, and an increase in unemployment. Real GDP falls below potential GDP. This combination of higher inflation and increased unemployment creates stagflation — inflation and recession together. The language of gaps — recessionary gaps versus inflationary gaps — does not apply to the outcomes of supply-side shocks.

The oil price shocks of the 1970s set up the classic scenario of a negative supply shock. In response to rising oil prices, businesses raised prices to cover rising energy costs. But consumers couldn't buy the same quantities of products and services as before, since they were using more of their income to pay dramatically higher gasoline and home energy bills. Quantity demanded decreased. Inflation stayed high, output decreased, and unemployment increased. Stagflation!
**Positive Supply Shocks**  Starting from long-run equilibrium, what happens if there is a positive aggregate supply shock — such as an increase in aggregate supply caused by technological improvements that increase the quality of capital and dramatically lower costs?

![Figure 8.17 Positive Supply Shock — Increase in Potential GDP](image)

In Figure 8.17, the economy is originally in long-run equilibrium at point C, where $LAS_0$, $SAS_0$, and $AD_0$ all intersect. Real GDP is $1500$ billion, the price level is 120, and there is full employment since the economy is at potential GDP. Then technological change decreases costs and increases productivity, shifting both the long-run aggregate supply curve and the short-run aggregate supply curve together rightward to $LAS_1$ and $SAS_1$. The rightward shift of $LAS$ is an increase in potential GDP.

The new long-run equilibrium is at point $B'$, where $LAS_1$, $SAS_1$ and unchanged $AD_0$ all intersect. Real GDP increases to $1600$ billion and the price level falls to 110. The economy remains at full employment at the increased potential GDP. The result is a fall in the average price level to 110, an increase in real GDP to $1600$ billion, and an increase in potential GDP. With lower costs and falling output prices, aggregate quantity demanded increases from $1500$ billion to $1600$ billion. The economy stays at full employment, at the natural rate of unemployment. Instead of stagflation’s combination of two undesirable outcomes (unemployment and inflation), the outcome of a positive supply shock is two desirable outcomes: maintaining full employment and lower inflation.

The technology boom in the late 1990s was due, in part, to a positive aggregate supply shock. Technological advances in digital information and computer technologies increased productivity and lowered costs. Although you probably can’t imagine life without it, the internet only began to operate effectively for businesses and consumers in 1995. As a result, businesses were able to lower prices, increase production, and hire more workers.

*Note*  Positive supply shocks cause falling average prices, increased real GDP, and continued full unemployment.
Economic Life Is Full of Shocks

in the real world, demand and supply shocks rarely happen one at a time — they usually happen together. For example, in the 1970s, the negative supply shock of rising oil prices combined with the negative demand shock of rising interest rates. In late 1990s, the positive supply shock of technology combined with the positive demand shock of increased exports. The North American Free Trade Agreement (NAFTA) among Canada, the United States, and Mexico allowed R.O.W. buyers in the United States and Mexico to demand more Canadian exports and increase aggregate demand.

Multiple shocks of the same type can also happen together. For example, there could be a negative demand shock of more pessimistic expectations combined with a positive demand shock of increasing GDP in R.O.W. in the late 1990s, a positive supply shock of digital technology combined with a positive supply shock of falling oil prices.

The impact on the economic performance targets of real GDP, unemployment, and inflation depends on the combined effects of the shocks. But to be able to work through these more complex scenarios, you still use the model of aggregate supply and aggregate demand. Break down the scenario into the separate effects of demand shocks and supply shocks, and then combine the results.

Agreement between Camps? Both camps of macroeconomists, the “Yes — Markets Self-Adjust” believers in Say’s Law and the “No — Market Fail Often” followers of Keynes, largely agree in describing macroeconomic equilibrium when aggregate supply and aggregate demand match. And both camps agree in describing the effects of demand and supply shocks.

But the “Yes” and “No” camps still disagree on the fundamental macroeconomic question — if left alone by government, do the price mechanisms of market economics quickly adjust to maintain steady growth in living standards, full employment, and stable prices? Those disagreements are the topics of the last section of the chapter.

Refresh 8.4

MyEconLab
For answers to these Refresh Questions, visit MyEconLab.

1. Explain the difference between a short-run and a long-run macroeconomic equilibrium.

2. Describe the impact of a positive demand shock on average prices, real GDP, and unemployment.

3. If consumers choose to start saving more, explain how the market for loanable funds can rescue Say’s Law.
Shocking Starts and Finishes: Origins and Responses to Business Cycles

Business cycles are triggered by shocks to short-run aggregate supply and aggregate demand. Both the “Yes — Markets Self-Adjust” and the “No — Markets Fail Often” camps agree on that. The differences between the camps, and their differing hands-off and hands-on roles for government policy, have to do with the origins of the shocks and the responses of markets to the shocks.

Yes — Markets Self-Adjust, So Hands-Off

The “Yes” camp emphasizes the long-run, Say’s Law, and the ability of the economy to hit the macroeconomic performance targets given enough time. But in the short run, this camp recognizes that business cycles do happen.

Origins of Shocks and Business Cycles — “Yes” Camp

According to the “Yes — Markets Self-Adjust” camp, shocks to aggregate supply and aggregate demand that trigger business cycles largely come from outside of the economy — aggregate supply shocks caused by nature or scientific discoveries, and aggregate demand shocks caused by mistaken government policies.

Nature-based supply shocks include natural disasters like droughts, floods, and earthquakes that destroy inputs. Scientific discoveries allow for technological change as a supply shock.

The “Yes” camp also views mistaken government fiscal and monetary policies as demand shocks that trigger business cycles. A tax increase is a negative demand shock that can cause a recession. Increased government spending is a positive demand shock that increases inflation if the economy is already at potential GDP. Government does not intend to cause economic problems, but it is difficult to time policy decisions, and unintentional policy mistakes can cause business cycles. For the “Yes” camp, government is part of the problem, not part of the solution.

Rational Expectations

The “Yes” camp sees individuals and businesses as making logical, rational choices, based on the best information available. Like Mr. Spock, the Vulcan of Star Trek, even investment choices with limited information are made coolly and efficiently. The “Yes” camp downplays changing expectations as a source of demand shocks. Investors, for the “Yes” camp, are clear-thinking, steady calculators of profits and losses.

Note

For the “Yes — Markets Self-Adjust” camp, the origins of shocks are external to the economy.
Market Price Responses to Business Cycles

When external shocks or government policy mistakes trigger contractions or expansions, the “Yes” camp argues that price adjustments in separate markets — input, output, international trade, and loanable funds markets — all work together to quickly restore the match between short-run aggregate supply and aggregate demand. Consider a recessionary gap example, when a negative demand shock causes real GDP to decrease below potential GDP, increasing unemployment and putting downward pressure on average prices.

With increasing unemployment, there is a surplus of labour. The wage rate falls, increasing business hiring. Similar price adjustments occur in all input markets, until all inputs are once again fully employed.

The international trade market also helps to increase production back to the level of potential GDP. Falling Canadian prices make our exports more competitive and attractive to R.O.W. Falling Canadian prices also mean consumers will substitute more domestically produced products and services in place of imports. Those additional net export sales increase aggregate quantity demanded and Canadian real GDP.

Finally, price adjustment in the loanable funds market provides a solution to the problem of saving for Say’s Law. Additional savings are deposited in banks, increasing the supply of loanable funds. The interest rate — the price of loanable funds — falls, increasing consumer and especially business borrowing for investment spending. Increased spending offsets the increased saving, returning the economy to long-run equilibrium.

Price mechanisms in markets function like an economic thermostat. If the weather outside gets hotter or colder, a thermostat automatically adjusts the cooling or heating systems to maintain the indoor temperature right where it should be, at the perfect comfortable temperature. Price mechanisms in markets adjust to aggregate supply and demand shocks, bringing the economy back to potential GDP, full employment, and stable prices — right where it should be.

No — Markets Fail Often, So Hands-On

Following Keynes, the “No” camp emphasizes the short run, when the self-adjusting mechanisms of market economies can be slow and weak. Business cycles of boom and bust, long periods of unemployment, reduced living standards, and rising or falling prices occur regularly unless the government steps in.

Origins of Shocks and Business Cycles — “No” Camp

The “No — Markets Fail Often” camp believes that shocks to short-run aggregate supply and aggregate demand are largely **internally generated** as unintended byproducts of markets. Expectations, the role of money, and connections between different market economies in R.O.W. create shocks.

Because no one can foretell the future, investment plans are based on expectations, or informed guesses. The “No” camp sees investment decisions as based largely on a gut-level instinct to act, which Keynes called *animal spirits* — “a spontaneous urge to action rather than inaction.”

For the “Yes — Markets Self-Adjust” camp, price adjustments in markets work to quickly restore long-run macroeconomic equilibrium and a match between short-run aggregate supply and aggregate demand.

For the “No — Markets Fail Often” camp, the origins of shocks are internal to the economy.

Professors George Akerlof and Robert Shiller (both Nobel Prize winners) returned to Keynes’s ideas in their 2009 book explaining business cycles and the Global Financial Crisis.
Volatile Expectations and Money  With few solid facts, investors look for guidance to what other investors are doing. This “herd mentality” causes boom and bust cycles like the Global Financial Crisis. When housing prices were rising and everyone was making money in the real estate market, it was easy to jump on the bandwagon and start investing. But without solid facts, when pessimism appears, it can easily spread, causing prices to fall quickly.

Fundamental uncertainty about the future, relying on the “herd” of other equally uncertain investors for guidance, and the postponable nature of investments all combine to make expectations and investment spending decisions very volatile. Quickly changeable expectations coming from inside the economy create fluctuating positive and negative aggregate demand shocks.

The “No — Markets Fail Often” camp also emphasizes the role of money put into savings in dealing with the fundamental uncertainty about the future. When consumers and businesses worry about the future, they save more from their incomes and earnings. Ironically, pessimistic expectations and higher savings can become a self-fulfilling prophecy, causing a negative demand shock and recession.

Market Price Responses to Business Cycles  The “No — Markets Fail Often” camp does not have much faith in markets to quickly adjust to shocks. The adjustment stories for the “No” camp to a recessionary gap example are very different from the “Yes” camp for the input, output, international trade, and loanable funds markets.

in labour markets, wages don’t fall often or easily. Economists describe these as sticky wages. it is much easier to raise wages than to cut them. There are many reasons for sticky wages. Union and other contracts can’t be quickly changed. Workers resist having their wages and incomes reduced. Employers also resist wage cuts so as not to demoralize workers, hurt productivity, or lead employees to start looking elsewhere for jobs.

When prices don’t adjust, quantities do. Unemployment is a quantity adjustment in labour markets. Workers and employers accept layoffs instead of lower wages in response to a negative demand shock.

The “No — Markets Fail Often” camp argues layoffs in labour markets mean less income for workers to spend, which decreases demand for products and services in output markets. Falling output prices from unsold goods may not be enough to restore sales in output markets. The “No” camp sees the connections between input and output markets as slowing market adjustments to a negative demand shock. It may take a long time to restore employment and output to the target level of potential GDP.

in international trade markets, the “No” camp worries about the destabilizing effects of fluctuating Canadian exports due to business cycles in R.O.W. These additional demand shocks from R.O.W. may be worse than the stabilizing role of price adjustments in export and import markets.

Finally, the “No — Markets Fail Often” camp argues that increased saving in the loanable funds market does not turn into increased investment spending. On its own, an increase in saving — the supply of loanable funds — puts pressure on interest rates to fall. But if the increase in saving is caused by more pessimistic expectations about the future, then business investment spending may decrease, not increase, even if interest rates fall. This is actually what happened during the Global Financial Crisis. For the “No” camp, expectations are more important than interest rates in influencing business investment spending.
With internally generated shocks regularly causing business cycles, and with weak or slow price adjustment mechanisms, the "No — Markets Fail Often" camp sees an obvious role for government in market economies: The thermostat needs adjusting and only government can do it. Government fiscal and monetary policies can be used to counter the shocks that have triggered recessionary or inflationary gaps. Government action is necessary to bring short-run aggregate supply, aggregate demand, and the economy back into balance to hit the macroeconomic performance targets.

**Yes or No: How Do You Decide?**

If I have done my job properly, you will find yourself agreeing with some of the arguments of both the "Yes — Markets Self-Adjust" and the "No — Markets Fail Often" camps. Both camps have insights about how economies work. However, this chapter does not contain enough evidence, especially data about the Canadian and other market economies, to allow you to come to an informed conclusion.

As you learn more in coming chapters, and in your own observations of the economy, you will be able to clarify your own opinions. It is easier to make judgments about individual arguments than to pass a single judgment on the whole "Yes–No" macroeconomic question. With those informed opinions, you will better understand how to think like a macroeconomist, make better personal economic choices, and be better able to choose among politicians whose economic policy choices will enhance your personal economic success.

**Comparing Camps: Origins of Shocks and Business Cycles**

Figure 8.18 is a good study device for reviewing the differences between the two camps regarding the origin of shocks and their effect on business cycles. It extends Figure 5.3 (on page 119) comparing the two camps on their answers to the fundamental macroeconomic question.

<table>
<thead>
<tr>
<th>Answer to Fundamental Macroeconomic Question</th>
<th>Yes — Left Alone, Markets Self-Adjust (Say)</th>
<th>No — Left Alone, Markets Fail Often (Keynes)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time focus</strong></td>
<td><strong>Long run</strong></td>
<td><strong>Short run</strong></td>
</tr>
<tr>
<td>Origin of shocks</td>
<td>External to economy</td>
<td>Internal to economy</td>
</tr>
<tr>
<td>Most important shocks</td>
<td>Supply shocks</td>
<td>Demand shocks</td>
</tr>
<tr>
<td>Expectations</td>
<td>Rational; steady</td>
<td>Based on animal spirits, herd mentality; volatile</td>
</tr>
<tr>
<td>Price adjustments in response to business cycles</td>
<td>Work together to quickly restore long-run equilibrium — match between aggregate supply and demand</td>
<td>Adjustment problems in all markets fail to restore long-run equilibrium</td>
</tr>
<tr>
<td>Most important influence on business investment spending</td>
<td>Interest rates as cost of borrowing</td>
<td>Expectations of future profits</td>
</tr>
<tr>
<td>Saving and loanable funds market</td>
<td>Interest rate in loanable funds market adjusts so investment spending offsets saving, maintaining aggregate demand</td>
<td>Saving causes negative demand shock; falling sales and expectations decrease investment spending</td>
</tr>
</tbody>
</table>
1. Identify the origins of shocks causing business cycles for the “Yes — Markets Self-Adjust” camp.

2. Describe the role of animal spirits in the “No — Markets Fail Often” camp explanation of volatile expectations for investors.

3. Based on your current understanding of the “Yes” and “No” camps, which of their individual arguments do you find most convincing? If you had to pick, which camp would you support? Why?
8.1 Macroeconomic Performance Targets: Potential GDP and Long-Run Aggregate Supply

Long-run aggregate supply models the macroeconomic target outcomes of potential GDP and full employment with existing inputs.

- The full-employment output of an economy can be modelled as:
  - points on a production possibilities frontier (PPF).
  - long-run aggregate supply — potential GDP — the quantity of real GDP supplied when all inputs are fully employed.
  - long-run aggregate supply curve (LAS) — vertical line at potential GDP; quantity of potential GDP does not change when the price level changes.

- Existing inputs
  - determine the position of the PPF and LAS curves.
  - are unused or unemployed at points inside a PPF.
  - are unused or unemployed at any quantity of real GDP less than potential GDP.

- Time periods for macroeconomic analysis are the
  - long run — a period of time long enough for all prices and wages to adjust to equilibrium; the economy is at potential GDP, the full employment outcome of coordinated smart choices.
  - short run — a period of time when some input prices do not change; all prices have not adjusted to clear all markets.

8.2 If You Plan and Build It . . .

Aggregate Supply

Supply plans for existing inputs determine aggregate quantity supplied. Supply plans to increase the quantity and quality of inputs, together with supply shocks, change aggregate supply.

- Macroeconomic players — consumers, businesses, government — make two kinds of plans for supplying Canadian real GDP:
  - supply plans for existing inputs
  - supply plans to increase inputs

- Business supply plans for existing inputs with fixed input prices are similar to microeconomic choices about quantity supplied.
  - Short-run aggregate supply — quantity of real GDP macroeconomic players plan to supply at different price levels
  - Law of short-run aggregate supply — as the price level rises, aggregate quantity supplied of real GDP increases.
  - Changes in price level cause movement along an unchanged short-run aggregate supply curve (SAS).

- Supply plans to increase quantity or quality of inputs cause an increase in aggregate supply — increase in economy's capacity to produce real GDP.
  - Changes in the quantity or quality of inputs shift both the long-run aggregate supply curve (LAS) and short-run aggregate supply curve (SAS) in the same direction.
  - Both aggregate supply curves shift rightward for increase in inputs, leftward for decrease in inputs.

- Changes in input prices shift the short-run aggregate supply curve (SAS) but do not shift the long-run aggregate supply curve (LAS)
  - Rising input prices shift SAS leftward.
  - Falling input prices shift SAS rightward.

- Negative supply shocks directly increase costs or reduce inputs, decreasing short-run aggregate supply and shifting SAS leftward.

- Positive supply shocks directly decrease costs or improve productivity, increasing short-run aggregate supply and shifting SAS rightward.

8.3 . . . Will They Come and Buy It?

Aggregate Demand

Demand plans by macroeconomic players determine aggregate quantity demanded. Demand shocks — from changes in expectations, interest rates, government policy, GDP in R.O.W., exchange rates — change aggregate demand.
All macroeconomic players — consumers, businesses, government, R.O.W. — make demand plans for spending, similar to microeconomic choices about quantity demanded.
- All aggregate demand plans are in the short run.
- Aggregate demand — quantity of real GDP macroeconomic players plan to demand at different price levels.
- Law of aggregate demand — as the price level rises, aggregate quantity demanded of real GDP decreases.

Fallacy of composition makes macroeconomic law of aggregate demand different from microeconomic law of demand.
- When average prices rise for all Canadian products and services, the only substitutes are imports from R.O.W.
- Decreased aggregated quantity demanded of Canadian real GDP is due to Canadians buying more imports, and R.O.W., buying fewer Canadian exports due to higher prices.

Consumers plan to spend (C) a fraction of disposable income — earned income plus transfer payments less taxes — and save the rest.
- Consumer spending is largest, most stable component of aggregate demand.

Businesses plan investment spending (I) for new factories and equipment. Investment spending plans change quickly because they are easily postponed.

Government spending plan (G) for products and services is set by the government budget.
- Transfer payments are not part of G.

R.O.W. spending plans (X) for Canadian exports:
- must subtract imports (IM) from all other planned spending to get net exports (X – IM); the difference between what Canada exports and imports.

Planned spending on aggregate demand = planned C + planned I + planned G + planned (X – IM).

Demand shocks — changes in factors other than the price level that change aggregate demand and shift the aggregate demand curve (AD) — expectations, interest rates, government policy, GDP in R.O.W., and exchange rates.
- Negative demand shocks decrease aggregate demand and shift AD leftward: more pessimistic expectations, higher interest rates, lower government spending or higher taxes, decreased GDP in R.O.W., higher value of Canadian dollar.
- Positive demand shocks increase aggregate demand and shift AD rightward: more optimistic expectations, lower interest rates, higher government spending or lower taxes, increased GDP in R.O.W., lower value of Canadian dollar.

8.4 Hit or Miss the Macroeconomic Performance Targets: The Aggregate Supply and Aggregate Demand Model

The loanable funds market allows the economy to hit long-run equilibrium performance targets over time. Aggregate demand and aggregate supply shocks move the economy away from long-run equilibrium targets.
- in macroeconomic equilibrium, aggregate demand matches aggregate supply and there is no tendency for change.
  - Short-run equilibrium with existing inputs is the point where short-run aggregate supply (SAS) and aggregate demand (AD) intersect.
  - Long-run equilibrium with existing inputs is the point where SAS, AD, and LAS all intersect. The aggregate quantity supplied and aggregate quantity demanded of real GDP also equal potential GDP.

To explain macroeconomic equilibrium over time with increasing inputs we must add the banking system.
- market for loanable funds — banks coordinate the supply of loanable funds (saving) with the demand for loanable funds (borrowing for investment spending). The interest rate is the price of loanable funds.
- if banks loan out savings to business borrowers who use the money for investment spending on new factories and equipment, that spending replaces consumer saving. Short-run aggregate supply remains equal to aggregate demand.
- Business investment spending also increases quantity and quality of inputs, so potential GDP and living standards increase over time. Full employment continues and average prices stay stable.

Four mismatches between aggregate demand and aggregate supply move the economy away from long-run equilibrium targets.
- Negative demand shocks cause a recessionary gap: falling average prices, decreased real GDP, and increased unemployment.
- Positive demand shocks cause an inflationary gap: rising average prices, increased real GDP, and decreased unemployment.
- Negative supply shocks cause stagflation: rising average prices, decreased real GDP, and increased unemployment.
- Positive supply shocks cause falling average prices, increased real GDP, continued full unemployment.
8.5 Shocking Starts and Finishes: Origins and Responses to Business Cycles

The "Yes — Markets Self-Adjust" and "No — Markets Fail Often" camps disagree about the external/internal origins of shocks, about rational/volatile expectations, and about how quickly price adjustments restore the match between aggregate supply and aggregate demand.

- "Yes — Markets Self-Adjust" camp, so government should be hands-off.
  - Long-run focus.
  - Origins of shocks are external to economy — in nature, science, and mistaken government policies.
  - Emphasizes rational expectations of investors and logical choices.
  - When shocks occur, price adjustments in markets work to quickly restore match between aggregate supply and aggregate demand.
  - In labour market, unemployment causes wage rate to fall, increasing hiring of labour until full employment restored.

- "No — Markets Fail Often" camp, so government should be hands-on.
  - Short-run focus.
  - Origins of shocks are internal to economy — from changing expectations, role of money, and connections with R.O.W.
  - Emphasizes volatile expectations of investors based on fundamental uncertainty; changeable "herd mentality" of investors; postponable nature of investments; investment based on animal spirits — gut-level instinct to act.
  - When shocks occur, price adjustments are difficult and slow, so role for government to bring short-run aggregate supply and aggregate demand back into balance.
  - In labour market, wages are sticky (don’t fall easily) even with unemployment — workers and employers accept layoffs instead of lower wages.

TRUe/FALSE

Circle the correct answer. Solutions to these questions are available at the end of the book and on MyEconLab. You can also visit the MyEconLab Study Plan to access additional questions that will help you master the concepts covered in this chapter.

You are skating on an outdoor ice rink when suddenly hockey superstar Sidney Crosby comes by and offers to teach you how to anticipate where the puck is going. After the lesson he notices your economics textbook in your gym bag and says,

I own a small hockey equipment business, and I would like to anticipate where the economy is going in order to make supply plans for my business. If I read an interesting story in the news, I’d like to send you a text message so you can confirm if my statement about the macro economy is true.

Use this scenario to answer questions 1–15.

8.2 Short-Run Aggregate Supply

3. An improved hockey stick technology increases the short-run and long-run aggregate supply of real GDP. T F

4. Rising input prices shift both the SAS and LAS curves rightward. T F

5. Rising average prices, including prices of ticket to hockey games, increases the aggregate quantity supplied of real GDP. T F

8.3 Aggregate Demand

6. Optimistic expectations about the Maple Leafs winning the Stanley Cup spread to the business sector and increase business investment spending. This increases aggregate quantity demanded. T F

7. Positive demand shocks shift the aggregate demand curve (AD) leftward. T F
8. An increase in business investment in new hockey rinks increases aggregate demand.  
9. An increase in the value of the Canadian dollar relative to the U.S. dollar increases aggregate demand for Canadian GDP.

8.4 Aggregate Supply and Aggregate Demand

10. In long-run macroeconomic equilibrium, the SAS, AD, and LAS curves all intersect.
11. A negative supply shock like rising electricity prices (including for hockey rinks) increases unemployment in the short run.
12. All economists agree on descriptions of equilibrium and on the impact of demand and supply shocks.

8.5 Origins and Responses to Business Cycles

13. All economists agree that government expenditures quickly lead to steady growth in living standards, full employment, and stable prices.
14. In a recession, the “Yes — Markets Self-Adjust” camp believes that full employment is restored quickly because unemployment causes wages to fall and employment to increase.
15. In a recession, the “No — Markets Fail Often” camp believes that potential GDP is restored because surpluses of products and services cause prices to fall and sales to increase.

M U L T I P L E  C H O I C E

Circle the best answer. Solutions to these questions are available at the end of the book and on MyEconLab. You can also visit the MyEconLab Study Plan to access similar questions that will help you master the concepts covered in this chapter.

8.1 Long-Run Aggregate Supply

1. The long run is a period of time  
   a) greater than 1 year.  
   b) greater than 10 years.  
   c) when the economy is at potential GDP.  
   d) when some input prices do not change.

2. Points inside the macroeconomic PPF  
   a) represent unemployed inputs.  
   b) correspond to quantities of real GDP less than potential GDP.  
   c) represent short-run choices.  
   d) are all of the above.

8.2 Short-Run Aggregate Supply

3. Business supply plans to increase inputs increase aggregate  
   a) supply.  
   b) demand.  
   c) quantity supplied.  
   d) quantity demanded.

4. Aggregate supply of real GDP increases if  
   a) productivity increases.  
   b) input prices increase.  
   c) output prices increase.  
   d) all of the above.

5. Suppose that, in the future, businesses only pay high wages to people with college and university degrees. If people plan ahead and start increasing their years of schooling, this increases aggregate  
   a) quantity demanded.  
   b) demand.  
   c) quantity supplied.  
   d) supply.

8.3 Aggregate Demand

6. If your income is $20 000, your taxes are $6000, and your transfer payments are $3000, then your disposable income is  
   a) $11 000.  
   b) $14 000.  
   c) $17 000.  
   d) $20 000.

7. Of all components of aggregate demand, investment spending is the  
   a) largest component.  
   b) most volatile, unpredictable component.  
   c) component that is not postponable.  
   d) least affected by interest rates and expectations.
8. Aggregate demand in Canada increases if
   a) China buys more Canadian oil.
   b) aggregate demand in India decreases.
   c) Canada buys more Porsches from Germany.
   d) the value of the Canadian dollar increases.

8.4 Aggregate Supply and Aggregate Demand

9. ING Direct was known for its slogan “save your money.” Suppose a new competitor, BLING Direct, advertises with the slogan “spend your money.” If BLING Direct’s advertisement encourages households to spend more of their income, this will be a
   a) positive supply shock.
   b) negative supply shock.
   c) positive demand shock.
   d) negative demand shock.

10. In the Global Financial Crisis, changes in unemployment and inflation moved in the opposite directions — unemployment went up and inflation went down. This suggests the Global Financial Crisis was a result of a
   a) positive supply shock.
   b) negative supply shock.
   c) positive demand shock.
   d) negative demand shock.

11. Which shock causes stagflation?
   a) positive supply shock
   b) negative supply shock
   c) positive demand shock
   d) negative demand shock

12. When consumers save some of their income, what can save Say’s Law?
   a) consumer spending
   b) consumer saving
   c) business investment spending based on borrowed funds
   d) Superman

8.5 Origins and Responses to Business Cycles

13. Why are wages “sticky”?
   a) Employment contracts can’t be quickly changed.
   b) Workers resist having their wages reduced.
   c) Employers resist wage cuts because wage cuts hurt productivity.
   d) All of the above.

14. The “Yes — Markets Self-Adjust” camp of economists emphasizes
   a) animal spirits.
   b) that individuals and businesses make rational choices based on the best information available.
   c) that expectations are more important than interest rates.
   d) that shocks are generated from inside the economy.

15. Two businesses, Dunder and Mifflin, need to reduce input costs because of economic conditions. The boss of Dunder announces, “The bad news is that I need to lay off some of you, but the good news is that wages will remain the same for those of you that I don’t lay off.” The boss of Mifflin announces, “The bad news is that I need to reduce everyone’s wages, but the good news is that no one will lose their job.”
   a) Dunder’s announcement resembles the Keynesian view that wages are sticky and do not fall much during a recession.
   b) Mifflin’s announcement resembles the Keynesian view that wages are sticky and do not fall much during a recession.
   c) Dunder’s announcement resembles the Keynesian view that jobs are sticky and do not fall much during a recession.
   d) Mifflin’s announcement resembles the Keynesian view that jobs are sticky and do not fall much during a recession.