Chapter 10: Economic Growth, the Financial System, and Business Cycles

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Learning Objectives

1. Discuss the importance of long-run economic growth.
2. Discuss the role of the financial system in facilitating long-run economic growth.
3. Explain what happens during a business cycle.
One determinant of economic growth is the ability of firms to expand their operations, buy additional equipment, train workers, and adopt new technologies.

To carry out these activities, firms must acquire funds from households, either directly through financial markets—such as the stock and bond markets—or indirectly through financial intermediaries—such as banks.

Financial markets and financial intermediaries together comprise the financial system. In this chapter, we present an overview of the financial system and see how funds flow from HHs to firms through the market for loanable funds.

We also begin to explore two key aspects of macroeconomics: the long-run growth that has steadily raised living standards in the U.S. and the short-run fluctuations of the business cycle.
- **Long-run economic growth**: The process by which rising productivity increases the standard of living (henceforth, SOL) of the typical person.

- **Financial system**: Composed by (1) financial markets (the stock and bond markets) and (2) financial intermediaries (banks).

- **Business cycle**: Alternating periods of economic expansion and economic recession.
Long-run economic growth The process by which rising productivity increases the average standard of living.

The best measure of the standard of living is real GDP per person, which is usually referred to as real GDP per capita.

Figure 10.1

The Growth in Real GDP per Capita, 1900–2010

Measured in 2005 dollars, real GDP per capita in the United States grew from about $5,600 in 1900 to about $42,200 in 2010. The average American in the year 2010 could buy nearly eight times as many goods and services as the average American in the year 1900.
Features of Economic Growth in the U.S.

1. The values in the above figure are measured in prices of 2005, so they represent constant amount of purchasing power.

2. The average American in 2010 could purchase more than 8 times as many G&S as the average American in 1900 ($42,200 vs. $5,600).

3. This increase in real GDP actually understates the true increase in the SOL of American in 2008 compared with 1900. Many of G&S today are not available in 1900.

4. Although GDP is not the perfect measure for happiness, economists rely heavily on comparisons of real GDP per person and ignore the effects of the levels of crime, pollution, and so on on a person’s happiness because real GDP is the best means of the economic performance.
The Connection between Economic Prosperity and Health

Some low-income countries that have begun to experience economic growth have seen dramatic increases in life expectancies. In high-income countries, life expectancy at birth is expected to rise from about 80 years today to about 90 years by the middle of the twenty-first century.

Technological advances will continue to reduce the average number of hours worked per day and the number of years the average person spends in the paid workforce, increasing the proportion of leisure time available for “discretionary hours”—the hours remaining after sleeping, eating, and bathing.

MyEconLab

Your Turn: Test your understanding by doing related problem 1.8 at the end of this chapter.
Connection between Economic Prosperity and Health

1. There is a link between health and economic growth. As people became stronger and healthier, they also became more productive. Today, development economists have put increasing emphasis on the need for low-income countries to reduce disease and increase nutrition if they are to experience growth.

2. The state of human physiology will improve as technology advances. Technology advances will reduce the average number of hours worked per day and the number of years of working in the paid workforce.

3. Discretionary hours (except sleeping, eating, and bathing) are divided between paid work and leisure.

4. Not only will technology and economic growth allow people in the near future to live longer lives, but a much smaller fraction of those lives will need to be spent at paid work.
Calculating Growth Rates and the Rule of 70

The growth rate of real GDP during a particular year is equal to the percentage change from the previous year. Real GDP equaled $12,703 billion in 2009 and rose to $13,088 billion in 2010, so the growth of real GDP in 2010 was:

\[
\left( \frac{\$13,088 \text{ billion} - \$12,703 \text{ billion}}{\$12,703 \text{ billion}} \right) \times 100 = 3.0\%
\]

For longer periods of time, we can use the average annual growth rate. By averaging the growth rate for each year, we get approximately the same answer for shorter periods of time.

For example, real GDP in the United States fell by 0.3 percent in 2008 and by 3.5 percent in 2009, and grew by 3.0 percent in 2010. So, the average annual growth rate of real GDP for the period 2008–2010 was:

\[
\frac{-0.3\% + (-3.5\%) + 3.0\%}{3} = -0.3\%
\]

One easy way to calculate approximately how many years it will take real GDP per capita to double is to use the rule of 70, the formula for which is:

\[
\text{Number of years to double} = \frac{70}{\text{Growth rate}}
\]
Calculating Growth Rates and the Rule of 70

- For longer periods of time, we use the average annual growth rate (AAGR). For example, real GDP in the US equals $2,006 billion in 1950 and $13,312 in 2008, then the AAGR during this 58-year period is 3.3%:

\[ 2,006(1 + X)^{58} = 13,312 \implies X = 3.3\%. \]  (1)

- For shorter periods of time, we use the following procedure. E.g., if real GDP grew by 2.7% in 2006, 2.1% in 2007, and 0.4% in 2008, the AAGR for the period of 2006 – 2008 was

\[ \frac{2.7\% + 2.1\% + 0.4\%}{3} = 1.7\%. \]  (2)
One way to judge how rapidly real GDP per person is growing is to calculate the number of years it would take to double:

\[
\text{Number of years to double} = \frac{70}{\text{Growth rate}}. \quad (3)
\]

For example, if real GDP per capita is growing at a rate of 5% per year, it will double in \(\frac{70}{5} = 14\) years. If real GDP per capita is growing at 2% per year, it will take \(\frac{70}{2} = 35\) years to double.

Conclusion: Small differences in growth rates can have large effects on how rapidly the SOL increase.

Note that the rule of 70 can also be applied to growth in any variable.
What Determines the Rate of Long-Run Growth?

- The basic idea: Increases in *real GDP per capita* depend on increases in *labor productivity*. (We’ll explore the sources of growth in more detail in Chapter 10.)

- *Labor productivity (LP)*: The *quantity* of G&S that can be produced by *one worker* or by *one hour of work*.
  - Economists usually measure LP as *output per hour of work* to avoid fluctuations in the length of the workday and in the fraction of the population employed.

- Two key factors determine LP:
  1. The quantity of capital per hour worked
  2. The level of technology.
Increases in capital per hour worked

- **Capital (also called physical capital):** Manufactured goods that are used to produce other G&S; examples of capital are computers, factory buildings, machine tools, warehouses, and trucks.
  - The total amount of physical capital available in a country is known as *the country’s capital stock*. As the capital stock per hour worked increases, worker productivity increases.

- **Human capital:** The accumulated knowledge and skills that workers acquire from education and training, or from their life experiences.
  - Workers with college education have more skills and are more productive than workers with only high school degrees.
Technological change

- **Technology**: The processes a firm uses to turn inputs into outputs of G&S. And it is more important than capital per hour worked for economic growth.

- **Technological change**: An increase in the quantity of output firms can produce using a *given* quantity of inputs.
  - It could come from many sources (e.g., rearrange the layout of a retail store.)
  - Most technological change is embodied in new machinery, equipment, or software.
(cont.) Just accumulating more inputs (labor, capital, and natural resources) will *not ensure* economic growth unless technological change also occurs.

Entrepreneurs are important in implementing technological changes. (An entrepreneur is someone who operates a business, bringing together the factors of production to produce G&Ss.

In market economies, entrepreneurs make the crucial decisions about:

- Whether or not to introduce new technology to produce better or lower-cost products.
- Whether to allocate the firm’s resources to R&D that can result in new technologies.
Solved Problem 10.1

The Role of Technological Change in Growth

Between 1960 and 1995, real GDP per capita in Singapore grew at an average annual rate of 6.2 percent. This very rapid growth rate results in the level of real GDP per capita doubling about every 11.3 years.

In 1995, Alwyn Young of the London School of Economics published an article in which he argued that Singapore’s growth depended more on increases in capital per hour worked, increases in the labor force participation rate, and the transfer of workers from agricultural to nonagricultural jobs than on technological change.

If Young’s analysis was correct, predict what was likely to happen to Singapore’s growth rate in the years after 1995.

Solving the Problem

Step 1: Review the chapter material.


Increases in the labor force participation rate and the transfer of workers from agricultural to nonagricultural jobs are “one-shot” changes that eventually come to an end, and increases in capital per hour worked cannot sustain high rates of economic growth unless they are accompanied by technological change.

We can conclude that Singapore was unlikely to sustain its high growth rates in the years after 1995. In fact, from 1996 to 2010, the growth of real GDP per capita slowed to an average rate of 3.2 percent per year, leading to a doubling of real GDP per capita only every 21.9 years rather than every 11.3 years.

MyEconLab  Your Turn: For more practice, do related problem 1.12 at the end of this chapter.
An additional requirement for growth is that the government provides secure rights to private property: A market system cannot function unless rights to private property are secure.

In addition, establishing an independent court system that enforces contracts between private individuals, as well as an efficient financial system and systems of education, transportation, and communication are also helpful.
What Explains Rapid Economic Growth in Botswana?

The graph below shows the average annual growth rate in real GDP per capita between 1960 and 2009 for the most populous sub-Saharan countries. For the Democratic Republic of Congo, data are for 1970-2004.

Many economists believe the pro-growth policies of Botswana’s government to protect private property, avoid political instability and corruption, and allow press freedom and democracy are the most important reasons for the country’s success.
Potential GDP  The level of real GDP attained when all firms are producing at capacity.

Figure 10.2

Actual and Potential GDP

Potential GDP increases every year as the labor force and the capital stock grow and technological change occurs. The smooth red line represents potential GDP, and the blue line represents actual real GDP. During the three recessions since 1989, actual real GDP has been less than potential GDP.
Economic growth depends on the ability of firms to expand their operations (output), buy additional equipment (capital), train workers (human capital, labor productivity), and adopt new technologies.

Firms can finance some of these activities from retained earnings, which are profits that are reinvested in the firm rather than paid to the firm’s owners. For many firms, retained earnings are not sufficient to finance the expansion. Firms can acquire funds from HHs, either directly through financial markets (e.g., the stock and bond markets) or indirectly through financial intermediaries (e.g., banks).

Financial system (FS): The system of financial markets (Markets where financial securities, such as stocks and bonds, are bought and sold) and financial intermediaries (Firms, such as banks, mutual funds, pension funds, and insurance companies, that borrow funds from savers and lend them to borrowers.)

- The FS channels funds from savers to borrowers;
- and channels returns on the borrowed funds back to savers.
An Overview of the Financial System

- **Stocks** are financial securities that represent partial ownership of a firm.
- **Bonds** are financial securities that represent promises to repay a fixed amount of funds.
- **Financial intermediaries**, such as banks, mutual funds, pension funds, and insurance companies, act as go-betweens for borrowers and lenders.
- **Mutual funds** sell shares to savers and then use the funds to buy a portfolio of stocks, bonds, mortgages, and other financial securities.
In addition to matching HHs that have excess funds with firms who want to borrow funds, the FS provides *three* key services:

1. **Risk sharing**: Risk is the chance that the value of a financial security will change relative to what you expect. FS allows savers to spread their money among many financial investments.

2. **Liquidity**: is the ease with which a financial security can be exchanged for money. The financial system provides the service of liquidity by providing savers with markets in which they can sell their holdings of financial securities.

3. **Information**: FS provides a service of the collection and communication of information, or facts about borrowers and expectations about asset returns. E.g., the expectation of higher future profits of a firm would boost the prices of the firm’s stock and bonds.
The Macroeconomics of Saving and Investment

- When firms use funds (through FS from saving) to purchase machinery, factories, and office buildings, they are engaging in investment.

- A key point is that *the total value of saving* in the economy must equal to *the total value of investment*:
  - We can use some relationships from national income accounting, the methods the BEA uses to keep track of GDP, or total production and total income in the economy.

- The GDP identity, $Y = C + I + G + NX$, implies that: total investment:

$$I = Y - C - G;$$  \hspace{1cm} (4)

note that in a closed economy ($NX = 0$).
(cont.) *Private saving* is equal to what HHs retain of their income \((Y)\) (HHs receive income for supplying the factors of production to firms. This portion of household income is equal to \(Y\)) after purchasing G&S \((C)\) and paying taxes \((T)\).

- HHs also receive income from gov. in the form of transfer payments \((TR)\) (including UI and SS payments).
- The gov. also engages in saving. *Public saving* equals to the amount of tax revenue the gov retains after paying for gov purchases and making transfer payments to HHs.
\[ S = S_{\text{private}} + S_{\text{public}} \] (5)
\[ S = (Y + TR - C - T) + (T + G - TR) \] (6)
\[ S = Y - C - G \] (7)

**Implications:**

- Total saving must equal to total investment:
  \[ S = I. \] (8)

- When the gov spends the *same* amount that it collects in taxes,
  \[ G + TR = T, \] (9)
  there is a *balanced* budget.
Implications

- When $G + TR > T$, there is a budget *deficit*, which means that public saving is negative (dissaving). When the gov runs a budget deficit, the US Department of Treasury sells bonds to finance the gap between taxes and spending. Negative saving is also known as dissaving.

- Similarly, when $G + TR < T$, there is a budget *surplus*. Holding constant all other factors, investment is highest in the economy where there is a budget surplus.
The Market for Loanable Funds

- We can think of the financial system as being composed of many markets through which funds flow from lenders to borrowers: the market for certificates of deposit at banks (COD), the markets for stocks and bonds, the market for mutual fund shares, and so on.

- For simplicity, we combine these markets into a single market for loanable funds.

- Market for loanable funds: The interaction of borrowers and lenders that determines the market interest rate and the quantity of loanable funds exchanged.

- We can now use the market for loanable funds to analyze the impacts of a government budget deficit.

- Crowding out: A decline in private expenditures as a result of an increase in government purchases.
Market for loanable funds  The interaction of borrowers and lenders that determines the market interest rate and the quantity of loanable funds exchanged.

**Figure 10.3** Demand and Supply in the Loanable Funds Market

The demand for loanable funds is determined by the willingness of firms to borrow money to engage in new investment projects. The supply of loanable funds is determined by the willingness of households to save and by the extent of government saving or dissaving.

Equilibrium in the market for loanable funds determines the real interest rate and the quantity of loanable funds exchanged.

The *nominal interest rate* is the stated interest rate on a loan.

The *real interest rate* corrects the nominal interest rate for the effect of inflation and is equal to the nominal interest rate minus the inflation rate.
Before his reform at the end of Charles Dickens’s *A Christmas Carol*, Ebenezer Scrooge spends very little, investing most of his income in the financial markets, which makes funds available for firms to borrow to build new factories and to carry out research and development.

After his reform, he spends much more—and saves much less—contributing to more consumption goods being produced and fewer investment goods.

We can conclude that Scrooge’s reform caused economic growth to slow down—if only by a little.

Savers provide the funds that are indispensable for the investment spending that economic growth requires, and the only way to save is to not consume.

**MyEconLab**  **Your Turn:** Test your understanding by doing related problem 2.16 at the end of this chapter.
An increase in the demand for loanable funds increases the equilibrium interest rate from $i_1$ to $i_2$, and it increases the equilibrium quantity of loanable funds from $L_1$ to $L_2$. As a result, saving and investment both increase.
Figure 10.5

The Effect of a Budget Deficit on the Market for Loanable Funds

When the government begins running a budget deficit, the supply of loanable funds shifts to the left. The equilibrium interest rate increases from $i_1$ to $i_2$, and the equilibrium quantity of loanable funds falls from $L_1$ to $L_2$. As a result, saving and investment both decline.

Crowding out  A decline in private expenditures as a result of an increase in government purchases.
Solved Problem 10.2
How Would a Consumption Tax Affect Saving, Investment, the Interest Rate, and Economic Growth?

Some economists and policymakers have suggested that the federal government shift from relying on an income tax to relying on a consumption tax. Under the income tax, households pay taxes on all income earned. Under a consumption tax, households pay taxes only on the income they spend. Households would pay taxes on saved income only if they spent the money at a later time. Use the market for loanable funds model to analyze the effect on saving, investment, the interest rate, and economic growth of switching from an income tax to a consumption tax.

Solving the Problem

Step 1: Review the chapter material.

Step 2: Explain the effect of switching from an income tax to a consumption tax. Households are interested in the return they receive from saving after they have paid their taxes.

For example, consider someone who puts his savings in a certificate of deposit at an interest rate of 4 percent and whose tax rate is 25 percent. Under an income tax, this person’s after-tax return to saving is 3 percent \([4 - (4 \times 0.25)]\). Under a consumption tax, income that is saved is not taxed, so the return rises to 4 percent. We can conclude that moving from an income tax to a consumption tax would increase the return to saving, causing the supply of loanable funds to increase.
Solved Problem 10.2

How Would a Consumption Tax Affect Saving, Investment, the Interest Rate, and Economic Growth?

**Step 3:** Draw a graph of the market for loanable funds to illustrate your answer.

The supply curve for loanable funds will shift to the right as the after-tax return to saving increases under the consumption tax. The equilibrium interest rate will fall, and the levels of saving and investment will both increase. Because investment increases, the capital stock and the quantity of capital per hour worked will grow, and the rate of economic growth should increase.

Note that the size of the fall in the interest rate and size of the increase in loanable funds shown in the graph are larger than the effects that most economists expect would actually result from the replacement of the income tax with a consumption tax.

MyEconLab Your Turn: For more practice, do related problem 2.15 at the end of this chapter.
The Effects of Consumption Tax

Consider someone who put his savings in a CD at an IR of 4% and whose tax rate is 25%. Under an income tax, the after-tax return is 3%. Under a consumption tax, income that is saved is not taxed, so the return is 4%.

Hence, moving to a consumption tax would increase the return to savings, causing the supply of loanable funds to increase, i.e., the supply curve shifts to the right.

It would then reduce the equilibrium IR and increase both saving and investment. Because investment increases, the capital stock and the quantity of capital per hour will grow and the rate of EG should increase.
Some Basic Business Cycle Definitions

- Real GDP per capita did not increase every year during this century. (E.g., in the 1930s, real GDP per capita fell for several years.) A related question is that what accounts for these fluctuations in the long-run upward trend.

- A business cycle (BC) consists of alternating periods of expanding and contracting economic activity.

- Because real GDP is the best measure of economic activity, the BC is usually illustrated using the movements in real GDP.

- During the expansion phase of the BC, production, employment, and income are all increasing.
(cont.) The period of expansion ends with a BC peak.
- Following the peak, production, employment, and income decline as the economy enters the recession phase of the cycle.
- The recession comes to an end with a BC trough, after which another expansion begins.
Panel (a) shows an idealized business cycle, with real GDP increasing smoothly in an expansion to a business cycle peak and then decreasing smoothly in a recession to a business cycle trough, which is followed by another expansion. The periods of expansion are shown in green, and the period of recession is shown in red.

Panel (b) shows the actual movements in real GDP for 2005 to 2011. The recession that began following the business cycle peak in December 2007 was the longest and the most severe since the Great Depression of the 1930s.
When Do We Know When the Economy is in a Recession?

- The federal government produces many statistics that make it possible to monitor the economy. However, most economists accept the decisions of the *Business Cycle Dating Committee* of the NBER, a private research group.

- Although writers for newspapers and magazines often define a recession as two consecutive quarters of declining real GDP, the NBER has a broader definition:

**Definition**
A recession is a significant decline in activity spread across the economy, lasting more than a few months, visible in industrial production, employment, real income, and wholesale-retail trade.

The NBER is slow in announcing business cycle dates because it takes time to gather and analyze economic statistics.
How Do We Know When the Economy Is in a Recession?

The Business Cycle Dating Committee of the National Bureau of Economic Research (NBER) defines a recession as a significant decline in activity spread across the economy, lasting more than a few months, visible in industrial production, employment, real income, and wholesale–retail trade. The NBER typically announces that the economy is in a recession well after it has begun.

Table 10.1  The U.S Business Cycle

<table>
<thead>
<tr>
<th>Peak</th>
<th>Trough</th>
<th>Length of Recession</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1953</td>
<td>May 1954</td>
<td>10 months</td>
</tr>
<tr>
<td>August 1957</td>
<td>April 1958</td>
<td>8 months</td>
</tr>
<tr>
<td>April 1960</td>
<td>February 1961</td>
<td>10 months</td>
</tr>
<tr>
<td>December 1969</td>
<td>November 1970</td>
<td>11 months</td>
</tr>
<tr>
<td>November 1973</td>
<td>March 1975</td>
<td>16 months</td>
</tr>
<tr>
<td>January 1980</td>
<td>July 1980</td>
<td>6 months</td>
</tr>
<tr>
<td>July 1981</td>
<td>November 1982</td>
<td>16 months</td>
</tr>
<tr>
<td>July 1990</td>
<td>March 1991</td>
<td>8 months</td>
</tr>
<tr>
<td>March 2001</td>
<td>November 2001</td>
<td>8 months</td>
</tr>
<tr>
<td>December 2007</td>
<td>June 2009</td>
<td>18 months</td>
</tr>
</tbody>
</table>
What Happens During a Business Cycle?

Each business cycle is different, but most BCs share certain characteristics:

- As the economy nears the end of an expansion, interest rates usually are rising, and the wages usually are rising faster than prices. As a result, the profits of firms will be falling.
- Toward the end of expansion both HHs and firms will have substantially increased their debts due to the borrowing they undertake to help finance their spending during the expansion.
- A recession will often begin with a decline in spending (1) by firms on capital goods (machinery, equipment, etc.) or (2) by HHs on new houses and consumer durables (furniture and auto).
(cont.) As spending declines, firms selling these goods will find their sales declining. Consequently, firms cut back on production and begin to lay off workers. Rising unemployment and falling profits reduce income, which leads to further declines in spending.

As the recession continues, economic conditions gradually improve. The declines in spending eventually come to an end; HHs and firms begin to reduce their debts, thereby increasing their ability to spend; and interest rates declines, making it more likely that they will borrow to finance new spending.

Firms begin to increase their spending on capital goods as they anticipate the need for additional production during next expansion. Increased spending by HHs on consumer durables and by businesses on capital goods will finally terminate the recession and begin the next expansion.
The Effect of the BC on Durables and the Boeing Example

- Durables are goods that are expected to last for 3 or more years.
  - Consumer durables include furniture, appliances, autos.
  - Producer durables include machine tools, electronic generators, and commercial airplanes.
- Nondurables are goods that are expected to last for fewer than three years.
  - Consumer nondurables include food and clothing.
- Durables are affected more by the BC than are nondurables. During a recession, workers reduce spending if they lose jobs, fear losing jobs, or suffer wage cuts. Because they can continue to use their existing durables, they are more likely to postpone spending on durables like automobiles. Similarly, firms often cut back on purchases of producer durables during a recession.
- In each recession, airlines suffered declines in ticket sales and cut back on purchases of aircraft. Consequently, Boeing suffered sharp declines in sales.
In addition to making decisions aimed at dealing with the immediate effects of a recession, such as whether to reduce production, cut prices, close facilities, or lay off workers, business managers also have to consider how to prepare for the expansion that will follow.

Intel, the computer chip manufacturer, decided in early 2009 to proceed with a $7 billion expansion of its factories in the United States, while many rival firms were reducing their spending on new factories as computer sales declined.

Although the recovery from the 2007–2009 recession was much slower than typical, over the long run, for many firms, betting on the future of the U.S. economy has paid off.

**MyEconLab Your Turn:** Test your understanding by doing related problem 3.7 at the end of this chapter.
What Happens during the Business Cycle?

Figure 10.7 The Effect of the Business Cycle on Boeing

Panel (a) shows movements in real GDP for each quarter from the beginning of 1990 through the end of 2010. Panel (b) shows movements in the number of passenger aircraft shipped by Boeing for the same years. The effects of the recessions on Boeing are typically more dramatic than the effects on the economy as a whole, although Boeing suffered a relatively mild decline in deliveries during the 2007–2009 recession.
During economic expansions the inflation rate usually increases, particularly *near the end of the expansion*, and during recessions the inflation rate usually decreases.

Recessions have consistently had the effect of lowering the inflation rate.

- During an expansion, spending by businesses and HHs is strong and producers find it easier to raise prices.
- As spending declines during a recession, it is more difficult for firms to sell their products and they are likely to increase prices less.
Recall that the *price level* measures the average prices of goods and services in the economy and that the *inflation rate* is the percentage increase in the price level from one year to the next.

The inflation rate usually decreases during recessions and usually increases by the end of economic expansions.

*Durables*, goods that are expected to last for three or more years, are affected more by the business cycle than are *nondurables*, goods that are expected to last for fewer than three years.

**The Effect of the Business Cycle on the Inflation Rate**

Don’t Let This Happen to You

Don’t Confuse the Price Level and the Inflation Rate

The inflation rate is the *percentage change* in the *price level*, as measured by the consumer price index from one year to the next.

*MyEconLab Your Turn*: Test your understanding by doing related problem 3.6 at the end of this chapter.
Toward the end of a typical expansion, the inflation rate begins to rise. Recessions, marked by the shaded vertical bars, cause the inflation rate to fall. By the end of a recession, the inflation rate is significantly below what it had been at the beginning of the recession.
Recessions cause the inflation rate to fall, but they cause the unemployment rate to increase. As firms see their sales decline, they begin to reduce production and lay off workers.

The unemployment rate continued to rise even after the end of recession. This typical pattern is due to two factors:

1. Even if employment begins to increase as the recession ends, it may be increasing more slowly than the growth in the labor force resulting from population growth.
2. Firms continue to operate well below their capacity even after a recession has ended; consequently, firms may not hire back all the workers they laid off.
The Effect of the Business Cycle on the Unemployment Rate

Unemployment rises during recessions and falls during expansions. The reluctance of firms to hire new employees during the early stages of a recovery means that the unemployment rate usually continues to rise even after the recession has ended.
Is the “Great Moderation” Over?

Figure 10.10 Fluctuations in Real GDP, 1900–2010

Fluctuations in real GDP were greater before 1950 than they have been since then.
The recession that began in December 2007 has been referred to as the Great Contraction. Whether the Great Moderation would return with its end could take years to determine.

Table 10.2  Until 2007, the Business Cycle Had Become Milder

<table>
<thead>
<tr>
<th>Period</th>
<th>Average Length of Expansions</th>
<th>Average Length of Recessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870-1900</td>
<td>26 months</td>
<td>26 months</td>
</tr>
<tr>
<td>1900-1950</td>
<td>25 months</td>
<td>19 months</td>
</tr>
<tr>
<td>1950-2009</td>
<td>61 months</td>
<td>11 months</td>
</tr>
</tbody>
</table>

*Note:* The World War I and World War II periods have been omitted from the computations in the table. The expansion that began in June 2009 is not included.
Will the U.S. Economy Return to Stability?

Economists have offered several explanations for why the U.S. economy experienced a period of relative stability from 1950 to 2007:

• **The increasing importance of services and the declining importance of goods.** Because durable goods are usually more expensive than services, during a recession households will cut back more on purchases of durables than they will on purchases of services.

• **The establishment of unemployment insurance and other government transfer programs that provide funds to the unemployed.** Government programs enacted after the 1930s have made it possible for workers who lose their jobs during recessions to have higher incomes and, therefore, to spend more than they would otherwise.

• **Active federal government policies to stabilize the economy.** In the years since World War II, the federal government has actively tried to use macroeconomic policy measures to end recessions and prolong expansions.

• **The increased stability of the financial system.** During the years after the Great Depression, institutional changes resulted in increased stability in the financial system.
Do You Help the Economy More if You Spend or if You Save?

At the beginning of the chapter, we posed a question: Which of your two roommates is right: The one who argues that you would help the economy more by saving your tax refund check, or the one who argues that you should spend it?

In this chapter, we have seen that consumption spending promotes the production of more consumption goods and services—such as jeans and haircuts—and fewer investment goods and services—such as physical capital and worker education. Saving—and, therefore, not consuming—is necessary to fund investment expenditure.

So, saving your refund check will help the economy over the long run. But if the economy is in a recession, spending your refund check will spur more production of consumption goods.

In a sense, then, both of your roommates are correct: Spending your check will help stimulate the economy during a recession, while saving it will help the economy grow over the long run.