Economic Growth

Introduction and Description
In this lesson, the students learn the main sources of long-term economic or real GDP growth and the policies that governments might use to increase economic growth. The students should be aware that there is a difference between the short-term fluctuations in real GDP that result from the business cycle and the long-run growth in real GDP discussed here.

Activity 47 emphasizes the alternative measures of output growth and incorporates long-run economic growth into the aggregate demand and aggregate supply models. The activity also brings in the production possibilities curve discussed at the beginning of the course.

Objectives
2. Explain growth accounting.
3. Explain that growth accounting shows that to achieve increased economic growth, economies must increase the growth rate of capital stock or increase technological development.
4. Explain how policy can help achieve increases in the growth rate of the capital stock and increases in technological development.
5. Relate economic growth to the long-run aggregate supply curve and the production possibilities curve.

Time required
Two class periods or 90 minutes

Materials
Activity 47

Procedure
1. Summarize the long-term growth trend of the United States. The average growth rate in per-capita real GDP has been above 2 percent a year for the last four decades. However, the annual rate of growth has varied considerably during this same period. The increase in the average standard of living represented by the increase in per capita real GDP is important. The distribution of the increase in real GDP is also important.

2. Explain that for growth to occur, economic agents — producers and consumers — must have the appropriate incentives. Growth accounting focuses on three sources of long-run economic growth: supply of labor, supply of capital and the level of technology. Increases in any one of these elements will increase real GDP. The growth in the supply of labor is primarily the population growth rate. Increases in capital or in technology increase labor productivity and thus increase real GDP. Have the students complete Part A of Activity 47. Review the answers with the students.

3. Explain how these levers of growth can be stimulated.
(A) Increasing savings will increase the supply of loanable funds, decrease interest rates and spur investment or increases in the capital stock. In the United States, tax incentives are the principal method to increase savings. IRAs and Roth IRAs are examples. During the 1970s and 1980s, stockholders in gas and electric utility companies received a tax break if they reinvested their dividends in the companies.

(B) Increasing government support for basic research will stimulate research and development. National Science Foundation grants are one mechanism used in the United States.

(C) Getting the most from comparative advantage by encouraging international trade will also stimulate growth throughout the world.
(D) Growth can also be stimulated by improving the quality and capabilities of the labor force so workers can be more productive with a given level of capital and technology. Improving the quality of education is the primary tool used here. The United States has focused on improving the quality of public education and, using education IRAs, provides incentives for people to obtain more education.

4. Now relate the changes in the labor force and technology to the assumptions underlying a production possibilities curve (see Unit 1).

Increases in the labor force and advances in technology can be shown as an outward shift in the PPC or as an outward shift in the LRAS. Both shifts demonstrate that total output has increased.

5. Have the students complete Question 5 on Activity 47. Be sure they draw the curves on Figure 47.5. Go over the answers and discuss the relationship between shifts of the LRAS curve and shifts of the PPC curve.

6. Have the students complete Activity 47. Review the answers with the students.
Economic Growth and the Determinants of Productive Capacity

Part A
Measuring Economic Growth in Hamilton County and Jefferson County

Figure 47.1

<table>
<thead>
<tr>
<th>Year</th>
<th>Hamilton</th>
<th>Hamilton</th>
<th>Jefferson</th>
<th>Jefferson</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Real GDP</td>
<td>Population</td>
<td>Real GDP</td>
<td>Population</td>
</tr>
<tr>
<td>1</td>
<td>$2.1 billion</td>
<td>70,000</td>
<td>$500,000</td>
<td>15</td>
</tr>
<tr>
<td>2</td>
<td>2.5 billion</td>
<td>80,000</td>
<td>525,000</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>2.8 billion</td>
<td>90,000</td>
<td>600,000</td>
<td>17</td>
</tr>
<tr>
<td>4</td>
<td>2.7 billion</td>
<td>86,000</td>
<td>650,000</td>
<td>18</td>
</tr>
</tbody>
</table>

1. Using Figure 47.1 as a reference, fill out the tables in Figures 47.2, 47.3 and 47.4.

Figure 47.2

<table>
<thead>
<tr>
<th>Time period</th>
<th>Hamilton % Change in Real GDP</th>
<th>Jefferson % Change in Real GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Year 1 to Year 2</td>
<td>19%</td>
<td>5%</td>
</tr>
<tr>
<td>From Year 2 to Year 3</td>
<td>12%</td>
<td>14.3%</td>
</tr>
<tr>
<td>From Year 3 to Year 4</td>
<td>-3.6%</td>
<td>8.3%</td>
</tr>
</tbody>
</table>

Figure 47.3

<table>
<thead>
<tr>
<th>Year</th>
<th>Hamilton Per Capita Real GDP</th>
<th>Jefferson Per Capita Real GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$30,000</td>
<td>$33,333.33</td>
</tr>
<tr>
<td>2</td>
<td>$31,250</td>
<td>$32,812.50</td>
</tr>
<tr>
<td>3</td>
<td>$31,111</td>
<td>$35,294.12</td>
</tr>
<tr>
<td>4</td>
<td>$31,395</td>
<td>$36,111.11</td>
</tr>
</tbody>
</table>

Figure 47.4

<table>
<thead>
<tr>
<th>Time period</th>
<th>Hamilton % Change in Per Capita Real GDP</th>
<th>Jefferson % Change in Per Capita Real GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Year 1 to Year 2</td>
<td>4.17%</td>
<td>-1.6%</td>
</tr>
<tr>
<td>From Year 2 to Year 3</td>
<td>-0.44%</td>
<td>7.56%</td>
</tr>
<tr>
<td>From Year 3 to Year 4</td>
<td>0.91%</td>
<td>2.31%</td>
</tr>
</tbody>
</table>
2. When did Hamilton County experience the largest growth in real GDP? __From Year 1 to Year 2__
   In per capita real GDP? __From Year 1 to Year 2__
   Are these growth rates different? Explain. Both increased the most from Year 1 to Year 2. However, per capita real GDP increased by less than real GDP because of population growth.

3. When did Jefferson County experience the largest growth in real GDP? __From Year 2 to Year 3__
   In per capita GDP? __From Year 2 to Year 3__
   Are these growth rates different? Explain. The per capita growth rate is smaller than the GDP growth rate because the population has increased.

4. The residents of Hamilton County believe they live in a wealthier community than small rural Jefferson County. Based on these numbers, do they? Explain. No. Real GDP per capita is larger in Jefferson County than in Hamilton County.
Part B
Analyzing the Reasons for Economic Growth

Economic growth can be illustrated by a rightward shift of the long-run aggregate supply curve or a shift outward of the production possibilities curve of consumption goods vs. capital goods.

5. Draw a graph that includes AD, SRAS and LRAS and then draw a graph of a PPC.

(A) On each graph you drew, show the effect of an increased investment in education that makes the work force more productive. Explain your reasoning.

Both long-run and short-run aggregate supply increase. The PPC shifts outward. The increase in education makes the labor force more productive with the same natural resources. This means that workers can produce more, thus increasing real GDP.

(B) Of the five factors that affect economic growth, which factor is increased by this investment in education? Human resources or human capital
6. Explain how fewer government regulations will affect economic growth. Cite an example to support your explanation. Show the effect of fewer government regulations on the graphs in Figure 47.6.

Figure 47.6
Relationship Between LRAS and PCC: Fewer Government Regulations

A reduction in government regulation will reduce the cost of production for firms. This will result in an increase in production at every price level, causing increases in short-run and long-run aggregate supply. The PPC curve will shift outward. Examples are a decrease in regulation of environmental pollution or a reduction in the required testing for new drugs.

7. Briefly explain how the following policies will affect economic growth and why.

(A) Higher taxes on businesses
    Economic growth would decrease because firms have fewer resources to invest in producing more products or in providing educational opportunities for employees.
(B) Improvements in technology
   Economic growth should increase. Firms should be able to produce more with fewer resources.

(C) Less savings by people who want to enjoy the good life
   Consumption expenditures increase, reducing the level of capital goods; thus, future production is reduced.

(D) Higher productivity of labor because of improved management styles
   Economic growth would increase because labor can produce more with the same inputs.

(E) Lower interest rates
   Lower interest rates sustained over time will encourage investment, which will increase the capital stock, and encourage people to invest in education.