

## **MODULE 39: GROWTH POLICY: WHY ECONOMIC GROWTH RATES DIFFER**

The purpose of this module is to demonstrate that there are ways for the government to encourage investment in physical capital, human capital, and technological progress.

### **Student learning objectives:**

- The factors that explain why long-run growth rates differ so much among countries
- The challenges to growth posed by scarcity of natural resources, environmental degradation, and the concern for sustainability

### **Key Economic Concepts For This Module:**

- If a nation's government puts a high priority on investment in physical capital, human capital and/or technological progress, that nation is more likely to experience long-term economic growth.
- Economists believe in the power of incentives to change human behavior. If natural resources (oil for example) become more scarce, prices will rise, and consumers will seek less expensive alternatives.
- Economists also believe that negative externalities (like pollution or climate change) can be remedied with economic incentives. For example, if the emission of carbon dioxide is causing global economic damage, tax each ton of carbon that is burned, and people will burn less of it.

### **Common Student Difficulties:**

- Students might believe that some nations just happen to be poor or rich. How the nation got there was just some sort of random coincidence. It is important to stress that nations can make decisions today that have long-term consequences, both good and bad, on economic growth.

## In-Class Presentation of Module and Sample Lecture

Suggested time: This module can be covered in one hour-class session.

- I. Why Growth Rates Differ
  - A. Capital, Technology, and Growth Differences
    - 1. Adding to Physical Capital
    - 2. Adding to Human Capital
    - 3. Technological Progress
  - B. The Role of Government in Promoting Economic Growth
    - 1. Governments and Physical Capital
    - 2. Governments and Human Capital
    - 3. Governments and Technology
    - 4. Political Stability, Property Rights, and Excessive Government Intervention
  
- II. Is World Growth Sustainable?
  - A. Natural Resources and Growth, Revisited
  - B. Economic Growth and the Environment

### I. Why Growth Rates Differ

Some nations have had more rapid economic growth than other nations. How does this happen, and does government policy have a role?

Small differences in growth rates matter.

**Example** Jamal and Angelina both have \$10,000 and they want to save that money for retirement in 30 years.

Jamal can invest his money at an annual rate of 3%.

Angelina can invest her money at a slightly smaller annual rate of 2.5%.

Jamal's money in 30 years grows to:  $\$10,000 \cdot (1.03)^{30} = \$24,272.62$

Angelina's money in 30 years grows to:  $\$10,000 \cdot (1.025)^{30} = \$20,975.69$

The ratio of Angelina's nest egg divided by Jamal's is equal to .86. In other words, after 30 years Angelina's money is 14% below the level of Jamal's.

### A. Capital, Technology, and Growth Differences

Countries that have been able to achieve faster rates of growth have been able to rapidly add to their physical capital, upgrade their educational level, and make fast technological progress.

#### 1. Adding to Physical Capital

Today, China is the fastest-growing major economy.

In 2007, investment spending was 41% of China's GDP, compared with only 15% in the United States.

Where does investment spending come from? From national savings and foreign capital inflow. So nations that have a high saving rate will have a high capital investment rate and faster economic growth.

#### 2. Adding to Human Capital

Nations with higher rates of educational attainment have enjoyed faster rates of economic growth.

Note: refer the class to Table 39-1 to compare Latin American and East Asia.

### **3. Technological Progress**

New technologies, like semiconductors, DNA testing and stuffed-crust pizza are the result of scientific research, or research and development (R & D).

Nations that invest in R & D should experience more economic growth than nations that do not.

#### **B. The Role of Government in Promoting Economic Growth**

Governments can play an important role in promoting—or blocking—all three sources of long-term economic growth: physical capital, human capital, and technological progress.

##### **1. Governments and Physical Capital**

Governments provide infrastructure by building roads, airports, seaports, electrical grids and many others. These systems help consumers and firms engage in economic activity that promotes economic growth.

Private firms also invest in physical capital like building new factories, shopping malls, and housing developments. Firms also purchase computer systems, delivery trucks, forklifts and many other pieces of physical capital.

If the government can provide infrastructure and maintain a financial system that provides for the saving and borrowing that is required for private investment, a nation's physical capital will grow.

##### **2. Governments and Human Capital**

Governments pay for the vast share of primary and secondary education. Any American child can complete high school at very little out-of-pocket expense.

When nations make education a higher priority, they subsidize it. More people acquire the education and the nation prospers with long-run economic growth.

##### **3. Governments and Technology**

While much R & D is done by private companies, the government subsidizes this research with grants. The government also provides direct support and grant money to professors at public and private universities and that research helps to drive technological progress.

##### **4. Political Stability, Property Rights, and Excessive Government Intervention**

Suppose a firm wants to build a factory that produces gadgets in a foreign nation Kreblakistan.

Firms are going to be very hesitant to invest in Kreblakistan if the government might be radically overthrown, or if the government could just claim the factory as government property.

Or maybe Kreblakistan's courts and government bureaucracies are corrupt so that day-to-day business transactions require bribes or hush money. Firms are not going to want to invest in nations such as this.

At the other extreme, a nation's government could excessively intervene in markets with high taxes, tariffs, or other anti-competitive policies. This can also slow down economic growth.

## **II. Is World Growth Sustainable?**

Some skeptics have expressed doubt about whether long-run economic growth is **sustainable**—whether it can continue in the face of the limited supply of natural resources and the impact of growth on the environment.

### **A. Natural Resources and Growth, Revisited**

Most people believe that there is a finite amount of oil and minerals (non-renewable resources) on the planet. But this understanding leads to important questions.

Differing views about the impact of limited natural resources on long-run economic growth turn on the answers to three questions:

*Question 1:* How large are the supplies of key natural resources?

We need to ask geologists or officials in the oil, gas, and mining industries. Some believe that there are vast untapped resources “out there” and others believe that we are close to a plateau of oil and mineral extraction.

*Question 2:* How effective will technology be at finding alternatives to natural resources?

Engineers will determine the answer to this question. Scientists around the world are already developing renewable ways to generate electricity on a large scale.

*Question 3:* Can long-run economic growth continue in the face of resource scarcity?

This is a question for the economists, and most economists are optimistic because they believe in human nature to respond to incentives. When prices are high, people consume less and find better (cheaper) alternatives. So if oil is becoming more and more scarce, oil prices will rise. There will be a huge incentive to consume less oil and entrepreneurs will emerge, responding to a profit incentive, to offer products that use less oil.

## **B. Economic Growth and the Environment**

Human societies have usually placed economic growth ahead of the environment. We tend to expand our local economy to the point where pollution becomes deadly and then we adopt laws and regulations to lessen the local pollution, without harming the local economy. What environmental price do we pay for a strong economy?

But what if the environmental impact is global, not local? Climate change is a result of excessive emissions of greenhouse gases like carbon dioxide and methane. Science tells us that these emissions have dramatically spiked with human use of fossil fuels and deforestation. And these emissions spikes correlate to warming temperatures and changing weather patterns around the world.

If we are concerned about this issue, can we curb emissions without crippling the global economy at the same time?

Economists believe in the usefulness of gradual implementation of policies such as carbon taxes and cap-and-trade legislation that will reduce emissions without major damage to the economy. Pollution is a negative externality that imposes costs on all of us. If we can mitigate these damaging costs, such policies actually improve social welfare, not diminish it.

## **In-Class Activities and Demonstrations**

If the instructor has time, it might be interesting for the students to look at one measure of a nation's level of development, the Human Development Index from the United Nations.

Ask the students what factors might identify a nation as more developed than another. If a student says “a higher standard of living”, press the student on what exactly is meant by that phrase. Since this is an economics class, the students might gravitate toward economic data but the instructor can also steer them to issues like a woman's right to vote, or laws against child labor, as indicators of a developed nation.

Another project might be for small groups of students to be randomly assigned a nation and the students must look at that nation's HDI statistic and present to the class why their nation ranked where it ranked.

<http://hdr.undp.org/en/statistics/>