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

• What are the facts about living standards and growth rates around the world?
• Why does productivity matter for living standards?
• What determines productivity and its growth rate?
• How can public policy affect growth and living standards?

Production and Growth

• A country’s standard of living depends on its ability to produce goods and services.
• Within a country there are large changes in the standard of living over time.
• In the United States over the past century, average income as measured by real GDP per person has grown by about 2 percent per year.
• Productivity refers to the amount of goods and services produced from each unit of labor input.
• A nation’s standard of living is determined largely by the productivity of its workers.

Production and Growth

FACT 1: There are vast differences in living standards around the world.
Incomes and Growth Around the World
Since growth rates vary, the country rankings can change over time:
- Poor countries are not necessarily doomed to poverty forever – e.g., Singapore, incomes were low in 1960 and are quite high now.
- Rich countries can’t take their status for granted: They may be overtaken by poorer but faster-growing countries.

Productivity: Its Role and Determinants
- Why Productivity Is So Important
  - Productivity plays a key role in determining living standards for all nations in the world.
  - To understand the large differences in living standards across countries, we must focus on the production of goods and services.
  - When a nation’s workers are very productive, real GDP is large and incomes are high.
  - When productivity grows rapidly, so do living standards.
  - What, then, determines productivity and its growth rate?

How Productivity Is Determined
- The inputs used to produce goods and services are called the factors of production.
- The factors of production include:
  - Physical capital
  - Human capital
  - Natural resources
  - Technological knowledge
- The factors of production directly determine productivity.

How Productivity Is Determined
- Physical capital per worker is the stock of equipment and structures that are used to produce goods and services.
- Physical capital includes:
  - Tools used to build or repair automobiles.
  - Tools used to build furniture.
  - Office buildings, schools, etc.
- Physical capital is a produced factor of production.
  - It is an input into the production process that in the past was an output from the production process.

How Productivity Is Determined
- Human capital per worker is the economist’s term for the knowledge and skills that workers acquire through education, training, and experience.
- Like physical capital, human capital raises a nation’s ability to produce goods and services.

How Productivity Is Determined
- Natural resources are inputs used in production that are provided by nature, such as land, rivers, and mineral deposits.
  - Renewable resources include trees and forests.
  - Nonrenewable resources include petroleum and coal.
- Natural resources can be important but are not necessary for an economy to be highly productive in producing goods and services.
How Productivity Is Determined

- Technological knowledge includes society’s understanding of the best ways to produce goods and services.
- Human capital includes the resources expended transmitting this understanding to the labor force.

ECONOMIC GROWTH AND PUBLIC POLICY

- Government policies that raise productivity and living standards
  - Encourage saving and investment.
  - Encourage investment from abroad.
  - Encourage education and training.
  - Establish secure property rights and maintain political stability.
  - Promote free trade.
  - Promote research and development.

Saving and Investment

- One way to raise future productivity is to invest more current resources in the production of capital.
- Since resources are scarce, producing more capital requires producing fewer consumption goods.
- Reducing consumption = increasing saving.
- Hence, a tradeoff between current and future consumption.
- As the stock of capital rises, the extra output produced from an additional unit of capital falls; this property is called diminishing returns.
- In the long run, the higher saving rate leads to a higher level of productivity and income, but not to higher growth in these areas.

Diminishing Returns and the Catch-Up Effect

- The catch-up effect refers to the property whereby countries that start off poor tend to grow more rapidly than countries that start off rich.
- The government can implement policies that raise saving and investment. Then $K$ will rise, causing productivity and living standards to rise.
- But this faster growth is temporary, due to diminishing returns to capital:
  - As $K$ rises, the extra output from an additional unit of $K$ falls.

Example of the Catch-Up Effect

- Over 1960-1990, the U.S. and S. Korea devoted a similar share of GDP to investment, so you might expect they would have similar growth performance.
- But growth was >6% in Korea and only 2% in the U.S.
- Explanation: the catch-up effect. In 1960, $K/L$ was far smaller in Korea than in the U.S., hence Korea grew faster.
Investment from Abroad

- Governments can increase capital accumulation and long-term economic growth by encouraging investment from foreign sources.
- Investment from abroad takes several forms:
  - **Foreign Direct Investment**
    - Capital investment owned and operated by a foreign entity.
  - **Foreign Portfolio Investment**
    - Investments financed with foreign money but operated by domestic residents.
- Especially beneficial in poor countries that cannot generate enough saving to fund investment projects themselves.
- Also helps poor countries learn state-of-the-art technologies developed in other countries.

Education

- For a country’s long-run growth, education is at least as important as investment in physical capital.
- In the United States, each year of schooling raises a person’s wage, on average, by about 10 percent.
- Thus, one way the government can enhance the standard of living is to provide schools and encourage the population to take advantage of them.

Education

- An educated person might generate new ideas about how best to produce goods and services, which in turn, might enter society’s pool of knowledge and provide an external benefit to others.
- One problem facing some poor countries is the **brain drain** — the emigration of many of the most highly educated workers to rich countries.

Health and Nutrition

- Healthier workers are more productive.
- Good investments in the health of the population can lead to increase living standards.
- Countries can get caught in a vicious cycle.

Health and Nutrition

- Health care expenditure is a type of investment in human capital – healthier workers are more productive.
- In countries with significant malnourishment, raising workers’ caloric intake raises productivity:
  - Over 1962-95, caloric consumption rose 44% in S. Korea, and economic growth was spectacular.
  - Nobel winner Robert Fogel: 30% of Great Britain’s growth from 1790-1980 was due to improved nutrition.

Property Rights and Political Stability

- Property rights refer to the ability of people to exercise authority over the resources they own.
- An economy-wide respect for property rights is an important prerequisite for the price system to work.
- It is necessary for investors to feel that their investments are secure.
Property Rights and Political Stability

- In many poor countries, the justice system doesn’t work very well:
  - contracts aren’t always enforced
  - fraud, corruption often go unpunished
  - in some, firms must bribe govt officials for permits
- Political instability (e.g., frequent coups) creates uncertainty over whether property rights will be protected in the future.
- When people fear their capital may be stolen by criminals or confiscated by a corrupt govt, there is less investment, including from abroad, and the economy functions less efficiently.
- Result: lower living standards.
- Economic stability, efficiency, and healthy growth require law enforcement, effective courts, a stable constitution, and honest govt officials.

Free Trade

- Trade is, in some ways, a type of technology.
- A country that eliminates trade restrictions will experience the same kind of economic growth that would occur after a major technological advance.
- Some countries engage in . . .
  - . . . inward-orientated trade policies, avoiding interaction with other countries.
  - . . . outward-orientated trade policies, encouraging interaction with other countries.

Research and Development

- The advance of technological knowledge has led to higher standards of living.
- Most technological advance comes from private research by firms and individual inventors.
- Government can encourage the development of new technologies through research grants, tax breaks, and the patent system.

Population Growth

- Economists and other social scientists have long debated how population growth affects a society.
- Population growth interacts with other factors of production:
  - Stretching natural resources
  - Diluting the capital stock
  - Promoting technological progress