

**Chapter 25: Production and Growth**  
**Principles of Economics, 6<sup>th</sup> Edition**  
**N. Gregory Mankiw**  
**Page 1**

1. Introduction
  - a. *This is a straight forward and readable chapter.*
  - b. *We are going to start out by looking at the real economy in the long run.*
  - c. *Although not rigorously presented, this is an important chapter.*
  - d. Over the past century, real GDP per capita has increased at 2 percent per year, which results in income doubling every 35 years.
  - e. We proceed in three steps:
    - i. We examine international data on real GDP per person.
    - ii. We examine the role of productivity.
    - iii. We consider the link between productivity and the economic policies that a nation pursues.
2. Economic Growth Around the World
  - a. **Table 1: The Variety of Growth Experiences. P. 533**
    - i. *Please note Argentina.*
  - b. **FYI: A Picture is Worth a Thousand Statistics, P. 534**
    - i. Family Size
  - c. **FYI: Are You Richer than the Richest American? P. 536**
    - i. Rockefeller may have been rich, but he did not have many of the conveniences that we have today.
3. Productivity: Its Role and Determinants
  - a. Why productivity is so important
    - i. Def: Productivity is the amount of goods and services produced from each hour of a worker's time. P. 537
  - b. How productivity is determined by
    - i. Physical capital is the stock of equipment and structures that are used to produce goods and services. P. 537
    - ii. Human capital is the knowledge and skills that workers acquire through education, training, and experience. P. 538
    - iii. Natural resources are the inputs into the production of goods and services that are provided by nature, such as land, rivers, and mineral deposits. P. 538
      - (1) At one time these were viewed as a dominant reason for prosperity, a view that has changed.
    - iv. Technological knowledge is society's understanding of the best ways to produce goods and services. P. 538
    - v. *Output increases when you have more inputs and you use them more efficiently.*
  - c. The production function
    - i. **FYI: The Production Function, P. 539**
  - d. **Case Study: Are Natural Resources a Limit to Growth? P. 539**

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**Page 2**

- i. Fifty years ago people worried about what we would do when we ran out of tin and copper.
  - ii. *The prices of most natural resources adjusted for inflation are stable or falling.*
- 4. Economic Growth and Public Policy
  - a. The importance of saving and investment
    - i. The data can be confusing because it is not clear whether high investment cause high growth, but it is also possible that high growth causes high investment.
    - ii. **Figure 1: Illustrating the Production Function, P. 561**
  - b. Diminishing returns and the catch up effect
    - i. Def: Diminishing returns is the property whereby the benefit from an extra unit of an input declines as the quantity of the input increases. P. 541
      - (1) *However, technological progress can neutralize diminishing returns.*
    - ii. Def: Catch up effect: The property whereby countries that start off poor tend to grow more rapidly than countries that start off rich. P. 541
    - iii. There can be periods when there are increasing returns as investments build on each other.
  - c. Investment from abroad
    - i. An investment is desirable so long as the rate of return exceeds the cost of capital.
    - ii. The source of the capital is not important although a local sacrifice is not necessary if the funds are borrowed from abroad.
    - iii. When third world countries restrict trade, the investment environment is so bad that wealthy locals shift their capital out of the country.
  - d. Education
    - i. There are positive externalities, but
    - ii. there can be a brain drain.
  - e. Health and Nutrition
    - i. **In the News : Promoting Human Capital, P. 545**
  - f. Property rights and political stability
    - i. *This is the key as many of the others follow from it.*
  - g. Free trade
    - i. Outward oriented policies are better than inward oriented ones.
  - h. Research and development
    - i. Knowledge is a public good.
  - i. Population Growth

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**Page 3**

- i. **In the News : One Economist's Answer, P. 550**
    - (1) The key to economic development is proper incentives supported by the government.
  - ii. Stretching Natural Resources
    - (1) Malthus
  - iii. Diluting the Capital Stock
    - (1) Human Capital
  - iv. Promoting Technological Progress
5. Conclusion: The Importance of Long Run Growth.
6. Summary