Chapter 25. Production and Growth

- Standard of living of a country
  - Why are some countries living well, and some countries mired in poverty?
  - What policies encourage growth and raise living standards in the long run?

- Productivity (Y/L)
  - Amount of goods and services produced by a unit of labor input (L)
  - Y is GDP, L is the amount of labor.
  - the most important factor in the standard of living
  - Increasing productivity is key to improving living standards.

<u>Determinants of productivity</u>

- Production function : Y = A*f (L, K, H, N)
  - A is the level of technology, L is the amount of labor, K is the amount of physical capital, H is the amount of human capital, and N is the amount of natural resources.
  - Assume Constant Return to Scale: Changing the amount of all inputs results in the same percentage change in output.
  - Multiply both sides of the production function by 1/L, then we get
  - Y/L = A*f(1, K/L, H/L, N/ L)

- A country's productivity is determined by technology level A, physical capital per worker (K/L), human capital per worker (H/L), and natural resources per worker (N/L).
  - The best way to increase the productivity (= to grow the economy and to improve living standards) is to make these four factors bigger.

- Physical Capital per Worker, K
  - Stock stock of equipment and buildings used to produce goods and services
  - Productivity increases when the average worker has more physical capital.

- Human Capital per Worker, H
  - the knowledge and skills that workers acquire through education, training, and experience.
  - Productivity increases as average worker has more human capital.
- Natural Resources per Worker, N
  - Inputs provided by a country's nature (land, sea, mineral resources, climate, etc.)
  - If the average worker has more natural resources, he or she can produce more Y.
- Technology, A
  - The degree of understanding of how goods and services are produced.
  - H. Ford's assembly line

Growth Policy

- Policies that can affect the long-term growth of a country's productivity and living standards
- Savings and investment
  - Investment is necessary to improve productivity in the future.
  - Creating physical capital (K) with savings is an 'investment'
- The increase in Physical capital enables rapid growth. But the effect is temporary.
- Diminishing Returns to Capital
  - a reduction in extra output produced by a unit of additional physical capital.
  - Catch-up effect: Poor countries tend to grow faster.

- Investment from abroad
  - Foreign Direct Investment FDI, Foreign Direct Investment vs. Foreign portfolio investment
- Pros and cons of foreign investment inflow

- Education: Investment in Public Education
  - More education increases productivity.
  - Brain drain problems in poor countries

- Improvement in health and nutrition
  - Human capital (H) investment policy.
  - Healthier workers are more productive.

- Protection of property rights and political stability

- Free Trade Policy
  - Trade has a similar effect to inventing new technologies.
  - Countries that used free trade policies, such as Korea, Singapore, and Taiwan, succeeded in growing.

- R&D Policy for Technological Progress
  - Patent-related laws, tax incentives, funding for private sector R&D, provision of basic research funds at universities, etc.

Population and economic growth

- Pressure on natural resources
  - T. Malthus
- Capital stock per capita (K/L) dilution
  - The reason why many countries in the early stages of growth use population control policies (ex. China's one-child policy)
- Population and technological progress
  - Michael Kremer's findings
  - Populated areas (ex, East Asia, Western Europe, and the east-west coast of the United States) have relatively higher growth rates.