Professional Development Course in Knowledge Enrichment for Senior Secondary Economics Teachers

Outline of Lecture 3 –

Macroeconomics : Economic Growth and Development

2 June 2009

Topics covered:

I. Measurement of economic growth and development
II. Factors affecting growth of an economy
III. The desirability and costs of economic growth
IV. International and regional comparison

Teaching Tips:

1. Define clearly the concept of economic growth and development (Economic growth can simply be defined as a rise in GDP or GDP per capital. Economic development is a broad concept encompassing economic growth and other developmental dimensions. It can be defined as "a multidimensional process involving major changes in social structure, popular attitudes, and national institutions, as well as the acceleration of economic growth, the reduction of inequality, and the eradication of poverty (Todaro and Smith 2009: 16)."

2. Tell student why we concern economic growth and development (about 3 billion of population is in a state of underdevelopment. The world population is about 6.8 billion in 2009).

3. Use empirical data and cases as far as possible to illustrate your discussion.

I. Measurement of economic growth and development

- **Change in real GDP**

- **Change in per capita real GDP**
  - GDP per capita: A measure of living standard
  - GDP per worker: A measure of productivity

- **Human Development Index: A comprehensive measure of socioeconomic development**

- **Human Development Index (HDI)** is developed by the United Nations Development Program (UNDP) to analyze systematically and comprehensively the comparative status of socioeconomic development in different countries.

- The HDI attempts to rank all countries on a scale of 0 (lowest human development) to 1 (highest human development) based on three goals or end products of development:

    1. ***longevity*** as measured by life expectancy at birth;

    2. ***knowledge*** as measured by a weighted average of adult literacy (two-thirds) and mean years of schooling (one-third), and

    3. ***standard of livin****g* as measured by real per capita gross domestic product adjusted for the differing purchasing power parity of each country's currency to reflect cost of living and for the assumption of diminishing marginal utility of income (well-being increases with income but at a decreasing rate).

- Using these three measures of development and applying a formula to data for 177 countries, the HDI ranks countries into three groups: low human development (0.0 to 0.499), medium human development (0.50 to 0.799), and high human development (0.80 to 1.0).

- **Income Index**

  Adjusted income is found by simply taking the natural log of current income. Then, to find the income index, one subtracts the natural log of 100 from the natural log of current income. Real per capita income could not possibly have been less than $100 PPP. The difference gives the amount by which the country has exceeded this “lower goalpost.”

- **Life expectancy Index**

  To find the life expectancy (health proxy) index, the UNDP starts with a country’s current life expectancy at birth and subtracts 25 years. The latter is the lower goalpost, the lowest that life expectancy could have been in any country over the last generation.

- **Adult Literacy Index**
  - Education index
  - Gross enrollment index

- **Advantages of HDI**

(1) It does reveal that a country can do much better than might be expected at a low level of income and that substantial income gains can still accomplish relatively little in human development.

(2) The HDI points up clearly that disparities in income are greater than disparities in other indicators of development, at least health and education measures.

(3) The HDI reminds us that by *development* we clearly mean *broad human development,* not just higher income. Many countries, such as some of the higher-income oil producers, have been said to have experienced “growth without development.”

- **Criticisms of the HDI**

(1) One is that gross enrollment in many cases overstates the amount of schooling because in many countries a student who begins primary school is counted as enrolled without considering whether the student drops out at some stage.

(2) Equal (one-third) weight is given to each of the three components, which clearly has some value judgment behind it, but it is difficult to determine what this is. Note that because the variables are measured in very different types of units, it is difficult even to say precisely what equal weights mean.

(3) There is no attention to the role of quality. For example, there is a big difference between an extra year of life as a healthy, well-functioning individual and an extra year with a sharply limited range of capabilities (such as being confined to bed).

(4) It should be noted that while one could imagine better proxies for health and education, measures for these variables were chosen partly on the criterion that sufficient data must be available to include as many countries as possible.

- **Some further remarks**
  - If country rankings did not vary much when the HDI is used instead of GDP per capita, the latter would serve as a reliable proxy for socioeconomic development, and there would be no need to worry about such things as health and education indicators.

  - The HDI has a strong tendency to rise with per capita income, as wealthier countries can invest more in health and education, and this added human capital raises productivity.

II. Factors affecting growth of an economy

(1) Productivity: Its Role and Determinants

(a) Why Productivity Is So Important

- Definition of **<u>productivity</u>:** the amount of goods and services produced for each hour of a worker's time.

- A country's standard of living depends on its ability to produce goods and services.

(b) How Productivity Is Determined

1. Physical Capital

- Definition of **physical capital**: the stock of equipment and structures that are used to produce goods and services.

2. Human Capital

- Definition of **human capital**: the knowledge and skills that workers acquire through education, training, and experience.

3. Natural Resources

- Definition of **natural resources:** the inputs into the production of goods and services that are provided by nature, such as land, rivers, and mineral deposits.

4. Technological Knowledge

- Definition of **technological knowledge**: society's understanding of the best ways to produce goods and services.

(c) ***For Teachers Only:*** *The Production Function*

1. A production function describes the relationship between the quantity of inputs used in production and the quantity of output from production.

2. The production function generally is written like this:

$$Y = A\,F(L, K, H, N)$$

where Y = output, L = quantity of labor, K = quantity of physical capital, H = quantity of human capital, N = quantity of natural resources, A reflects the available production technology, and $F(\cdot)$ is a function that shows how inputs are combined to produce output.

3. Many production functions have a property called constant returns to scale.

   a. This property implies that as all inputs are doubled, output exactly double.

   b. This implies that the following must be true:

$$xY = A\,F(xL, xK, xH, xN)$$

   where x =2 if inputs are doubled.

   c. This also means that if we want to examine output per worker we could set $x = 1/L$ and we would get the following:

$$Y/L = A\,F(1, K/L, H/L, N/L)$$

   This shows that output per worker depends on the amount of physical capital per worker (K/L), the amount of human capital per worker (H/L), and the amount of natural resources per worker (N/L).

(2) Economic Growth and Public Policy

(a) The Importance of Saving and Investment

1. Because capital is a produced factor of production, a society can change the amount of capital that it has.
2. However, there is an opportunity cost of doing so; if resources are used to produce capital goods, fewer goods and services are produced for current consumption.

(b) Diminishing Returns and the Catch-Up Effect

- Definition of **diminishing returns:** the property whereby the benefit from an extra unit of an input declines as the quantity of the input increases.
  - (i) As the capital stock rises, the extra output produced from an additional unit of capital will fall.
  - (ii) In the long run, a higher saving rate leads to a higher level of productivity and income, but not to higher growth rates in these variables.
- An important implication of diminishing returns is the Catch-Up Effect.
  - (i) Definition of **catch-up effect:** the property whereby countries that start off poor tend to grow more rapidly than countries that start off rich.
  - (ii) When workers have very little capital to begin with, an additional unit of capital will increase their productivity by a great deal.

(c) Investment from Abroad

- Investment in the country by foreigners
  - (i) Foreign direct investment occurs when a capital investment is owned and operated by a foreign entity.
  - (ii) Foreign portfolio investment occurs when a capital investment is financed with foreign money but operated by domestic residents.
- Some of the benefits of foreign investment flow back to foreign owners. But the economy still experiences an increase in the capital stock, which leads to higher productivity and higher wages.
- The World Bank is an organization that tries to encourage the flow of investment to poor countries.

(d) Education

- Investment in human capital also has an opportunity cost.
- Because there are positive externalities in education, the effect of lower education on the economic growth rate of a country can be large.
- Many poor countries also face a “brain drain”—the best educated often leave to go to other countries where they can enjoy a higher standard of living.
- *In the News: Promoting Human Capital*

  Gary Becker has proposed that the governments of less-developed countries pay families to send their children to school rather than to work. The government should provide financial support to the parents who allow their children to attend school regularly.

(e) Property Rights and Political Stability

- Protection of property rights and promotion of political stability are two other important ways that policymakers can improve economic growth.

(f) Free Trade

- We know that trade allows a country to specialize in what it does best and thus consume beyond its production possibilities.

(g) Research and Development

- Knowledge can be considered to be a public good.
- Most governments in developed countries promotes the creation of new technological information by providing research grants and providing tax incentives for firms engaged in research.
- The patent system also encourages research by granting an inventor the exclusive right to produce the product for a specified number of years.

(h) Population Growth

- Stretching Natural Resources

  (i) Thomas Malthus argued that an ever-increasing population meant that the world was doomed to live in poverty forever.

  (ii) However, he failed to understand that new ideas would be developed to increase the production of food and other goods.

- Diluting the Capital Stock

  (i) High population growth reduces GDP per worker because rapid growth in the number of workers forces the capital stock to be spread more thinly.

- Some countries have already instituted measures to reduce population growth rates.

- Policies that foster equal treatment for women should raise economic opportunities for women leading to lower rates of population.

- Promoting Technological Progress

  (i) Some economists have suggested that population growth has driven technological progress and economic prosperity.

  (ii) In a 1993 journal article, economist Michael Kremer provided evidence that increases in population lead to technological progress.

(I) ***The Sachs Solution to the African Problem***

- Jeffrey Sachs points out that four factors can account for Africa's low growth rates (*The Economist*,29 June 1996):
  - ✧ Trade barriers
  - ✧ Excessive tax rates
  - ✧ Low savings rates
  - ✧ Adverse geographic and resource structural conditions (especially the high incidence of inaccessibility to the sea)

III. The desirability and costs of economic growth

(1) Trade-off between current and future consumption

(2) Income distribution

A choice between equity and efficiency

(3) Resources exhaustion, pollution and sustainable development

Sustainability refers to the balance economic growth and environment preservation. In economic terms, it is a balance between current and future economic growth.

(4) GDP and economic well-being: shortcomings of the GDP?

GDP may not be a very good measure of the economic well-being of an individual.

- GDP omits important factors in the quality of life including leisure, the quality of the environment, and the value of goods produced but not sold in formal markets.
- GDP also says nothing about the distribution of income.
- However, a higher GDP does help us achieve a good life. Nations with larger GDP generally have better education and better health care.

IV. International and regional comparison

(1) Catching up or not?

Some newly industrializing countries (NICs), such as Singapore, South Korea, Taiwan and Singapore, recorded spectacular growth.

(2) The East Asia Miracle

Development Strategy of NICs

(a) Import-substituting industrialization (ISI)

The theoretical foundation of import substitution as a measure of industrialization may have first come from the ‘development economists’ in the 1940s and 1950s. Raul Prebisch of the Economic Commission for Latin America (ECLA) under the Economic and Social Council of the United Nations is one of its representatives. These development economists felt that the LDCs were lagging far behind and there was no way for them to compete with the developed countries in trade unless international organizations and major industrial countries took extraordinary measures to help them. The only other way for developing countries was to hide behind a protective tariff and develop their own industry (Gilpin 2001, 308).

(b) Export-oriented industrialization

The adoption of export-oriented industrial policy by the East Asian countries in the 1960s coincided with an explosion of world trade at that time. The GATT, which was established in 1948 to promote free trade, began bearing fruit. So the timing of the shift to EOI by these countries was just right. There are other reasons for these countries adopting the EOI policy. With the exception of South Korea, the other East Asian Dragons, Taiwan, Hong Kong and Singapore, do not have large domestic markets. They have to export. Furthermore, there was great influence from the American advisors as Taiwan and South Korea worked closely with the US on defence as well as other matters. The US encouraged them to export.

(c) Foreign exchange rates

The manipulation of foreign exchange rates alluded to above is also an important policy some governments use to promote economic development. Developing countries are typically short of foreign currencies earned via exchange. They have to use it prudently. It is not uncommon for such countries to have two rates for foreign exchange. One is the official rate set by the government. The other is largely determined by market forces. The Central Bank of Taiwan, to take an example, introduced above, set two rates: one for imports and another for exports. For imports (usually raw materials, equipment, machines needed for productive enterprises), the rate was set higher, so that less foreign exchange would be spent. For exports, it was set lower. This was intended to make Taiwanese products more competitive in the world market.

(d) Foreign direct investment (FDI) and technology transfers

Developing countries lack both capital and technology, and developed countries can provide both.

(e) Export processing zones

In this approach, a government identifies — after considering geography, marketing, transportation, power supply, labour supply and a host of other factors — and constructs export processing zones. All three words in the term ‘export processing zone’ are significant. First, it indicates an identifiable zone with definite boundaries. This zone is not considered to fall within the tariff territory of the national jurisdiction. What the industries do in the zone is to process either raw materials or components into finished or semi-finished products. After this processing is done, the manufacturers must export these products, i.e., not sell them within the tariff territory of the host country.

(f) Research and development (R & D)

The R & D capability of enterprises is extremely important for the quality of their products and for future product development.

(g) Industrial parks

Since R & D is so important, the NICs have emulated the developed countries in setting up industrial parks. As with export processing zones, it’s the government that designs and provides the infrastructure for these industrial parks.

(h) Developmental State

- prioritizes economic growth and production, as opposed to consumption and distribution, as the fundamental goals of state action
- recruits a highly talented, cohesive, and disciplined economic bureaucracy on the basis of merit
- concentrates bureaucratic talent in a guiding agency (for example Japan's MITI) charged with the task of industrial transformation
- institutionalizes close links between bureaucratic and business elites in order to exchange information and promote cooperation on key decisions as a basis for effective policy-making (for example, targeting industrial growth areas)
- insulates policy networks from day-to-day special interest pressures and growth-compromising demands
- implements developmental policies by virtue of a mixture of institutionalized government-industry networks and public control over key resources such as finance (Weiss and Hobson 1995, 149).

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