

Economic Growth

WEEK 2



Standard of Living

❁ standard of living as measured by the amount of goods and services available per person

❁ std of living grows over the long run if:

- increases in the amount and quality of resources, especially labour and capital
- better technology
- improvements in the rules of the game that facilitate production and exchange
- property rights
- patent laws
- legal system

Growth and the PPF


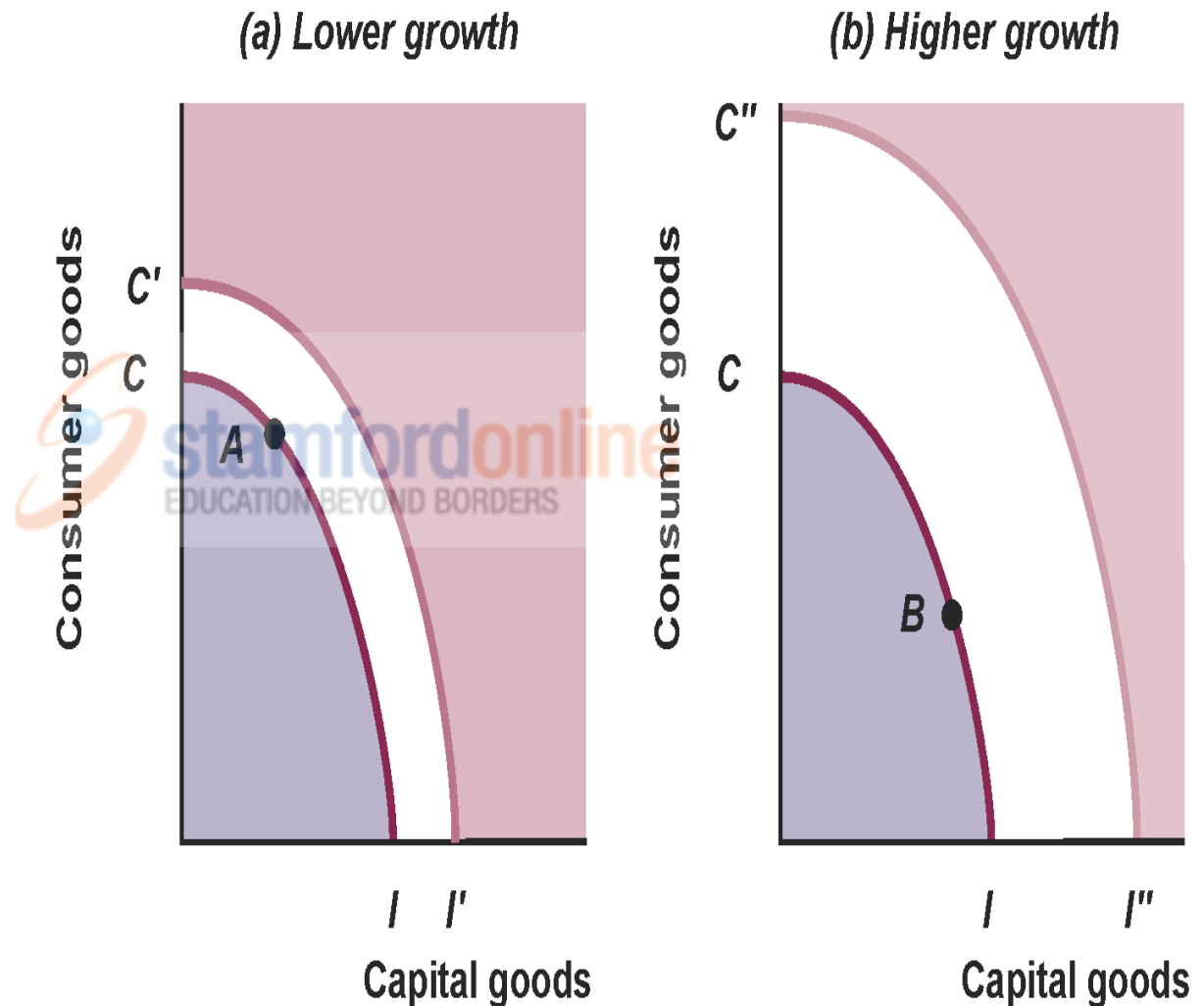
- ❖ the production possibilities frontier (PPF) shows alternative combinations of goods that an economy can produce if available resources are used efficiently
 - ❖ See Exhibit 1 
 - ❖ Quantity of resources in the economy fixed
 - ❖ Level of technology fixed
 - ❖ Rules of the game remain fixed
 - ❖ Two broad categories of goods – consumer goods and capital goods

Exhibit 1: Economic Growth

When resources are employed efficiently, CI in each of the panels shows the possible combinations of consumer goods and capital goods that can be produced in a given year

Points C depict the quantity of consumer goods produced if all resources are used to produce that good

Economic growth is an outward shift of the PPF in each of the two panels



Economic Growth

✿ Causes of economic growth

✿ Increase in the availability of resources

✿ Growth in the labour supply

- Population increases
- Existing population supplies more labour

✿ Growth in the capital stock

- The more capital goods produced this year, the more the economy will grow

✿ Improvement in Technology

- Expand the frontier by making more efficient use of existing resources

✿ Improvements in the Rules of the game

- Improvements that nurture production and exchange will promote growth

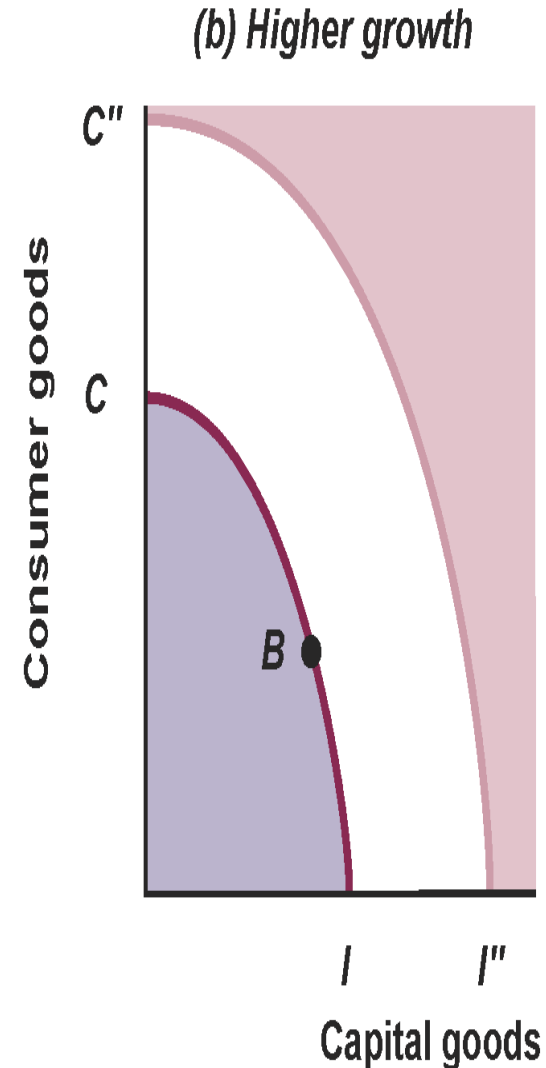
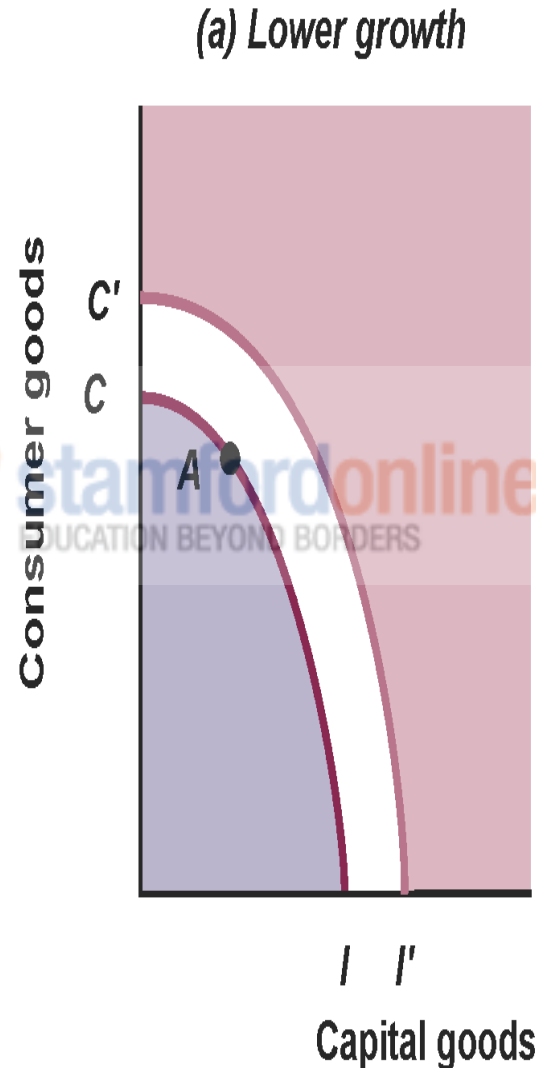
Exhibit 1: Capital Produced and Growth

The amount of capital produced this year will affect the location of the PPF next year

In the left panel, the economy has chosen point *A* which shifts the PPF from *CI* this year to *C'I'* next year

However, if more capital goods are produced this year, as reflected by point *B* in the right panel, the PPF will shift outward farther next year to *C''I''*

Thus, an economy that invests more in capital – gives up more consumer goods – will experience larger economic growth



What is Productivity?

✦ Productivity

- ✦ measures how efficiently resources are employed
- ✦ the higher the productivity, the more goods and services that can be produced from a given amount of resources → the farther out will be the PPF
- ✦ defined as the ratio of total output to a specific measure of input
- ✦ Output per unit of labour and measures total output divided by the hours of labour employed to produce that output

Labour Productivity

- ✿ The resource most responsible for increasing labour productivity is capital
 - ✿ As the economy accumulates more capital per worker, labour productivity increases → standard of living increases
- ✿ Two broad categories of capital
 - ✿ Human Capital
 - Accumulated knowledge, skill, and experience of the labour force
 - As individual workers acquire more human capital, their productivity and income increase
 - ✿ Physical Capital
 - Includes the machines, buildings, roads, airports, communication networks and other manufactured creations used to produce goods and services

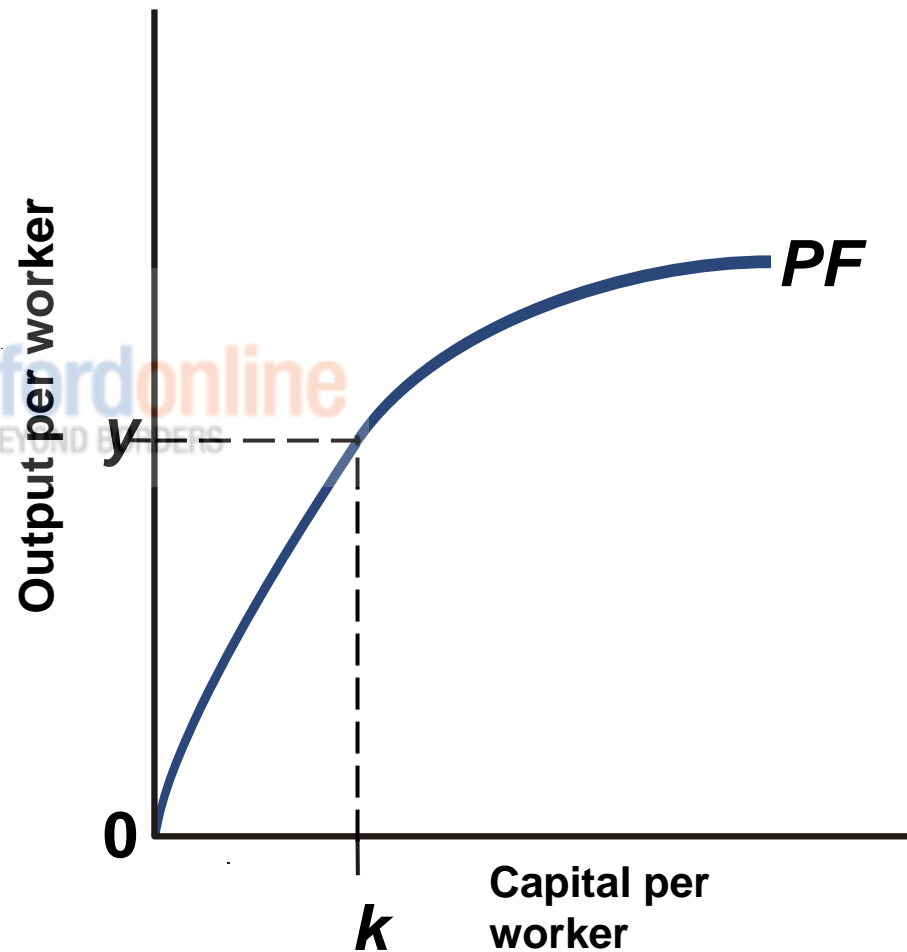
Exhibit 2: Per-Worker Production Function

Expresses the relationship between the amount of capital per worker (horizontal axis) and the output per worker (vertical axis), assume other things constant

When there are k units of capital per worker, average output per worker in the economy is y

Upward slope of the curve occurs because an increase in capital per worker helps each worker produce more output

The shape of the PF reflects the law of diminishing marginal returns: the more capital per worker, the less additional output can be gained by increasing capital stock per worker



Per Worker Production Function

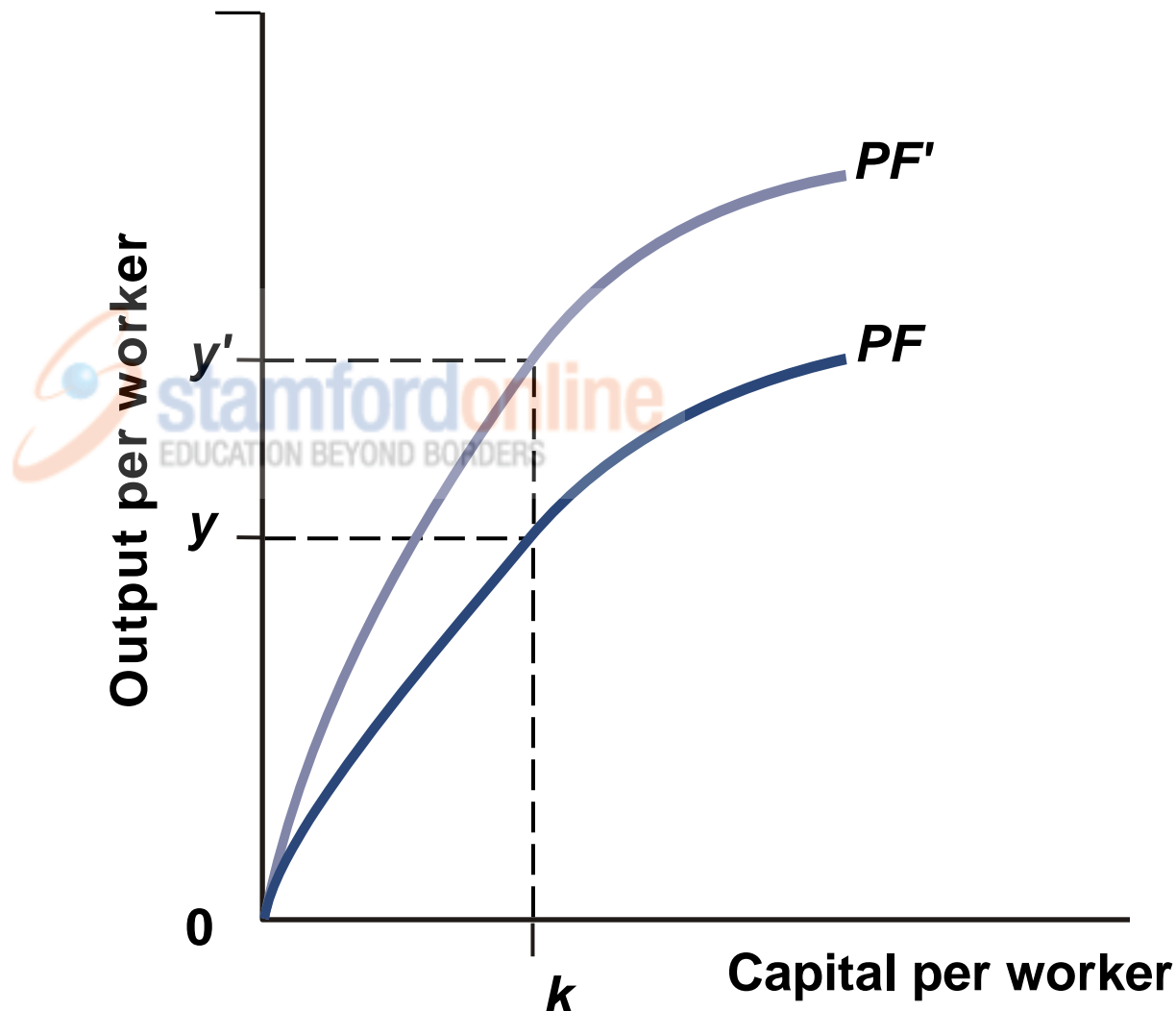
- An increase in the amount of capital per worker is called capital deepening and is one source of rising labour productivity → economic growth



Exhibit 3: Impact of a Technological Breakthrough

Technological change improves the quality of capital and increases productivity,

shown by the upward rotation from PF to PF'
→ more output is produced at each level of capital per worker



Economic Growth

- ❁ Two kinds of changes in capital improve worker productivity
 - ❁ An increase in the quantity of capital per worker
 - is reflected by a movement along the per-worker production function
 - ❁ An improvement in the quality of capital per worker
 - is reflected by technological change that rotates the curve upward
 - As technological breakthroughs become embodied in new capital, resources are combined in more efficient ways

Output Per Capita

- Even if labour productivity did not increase, total output would grow if the quantity of labour increased
- Labour productivity = $\text{real GDP} / \text{quantity of labour}$
 - $\rightarrow \text{real GDP} = \text{labour productivity} \times \text{quantity of labour}$
- Therefore total output can grow as a result of greater labour productivity, more labour, or both

Output Per Capita

- ✪ Output per capita = Real GDP /the population
 - ▣ Best measure of economy's standard of living
 - ▣ Indicates how much an economy produces on average per person

Output will increase if

- labour productivity increases for a given worker-population ratio
- the worker-population ratio increases for given labour productivity
- labour productivity and the worker-population both increase

Technological Change and Unemployment

- ✿ Technological change usually reduces the number of workers needed to produce a given amount of output
- ✿ Therefore, some fear that new technology will lead to higher unemployment
- ✿ However, it is also true that technological change will increase production and employment

Research and Development

- ✿ Since technological change is the fruit of research and development (R&D), investment in R&D reflects the economy's efforts to improve productivity
- ✿ One way to track R&D spending is to measure it relative to GDP

Convergence Theory

Will poor countries eventually catch up with rich ones?

- ❁ Convergence theory argues that developing countries can grow faster than advanced ones
 - ➔ should eventually close the gap
 - ❁ It is easier to copy new technology once it is developed than to develop new technology
- ❁ What's the evidence on convergence?
 - ❁ Some poor countries have begun to catch up with the richer ones
 - Newly industrialized economies of Hong Kong, Singapore, South Korea, and Taiwan: Asian Tigers