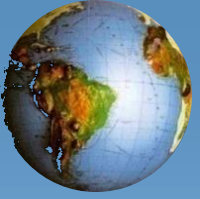
# Growth and Productivity: Long Run Possibilities Part I

Experts can prattle on about money and economic theory all they want, but let's face it, *we* are the economy.

- Paul Clitheroe



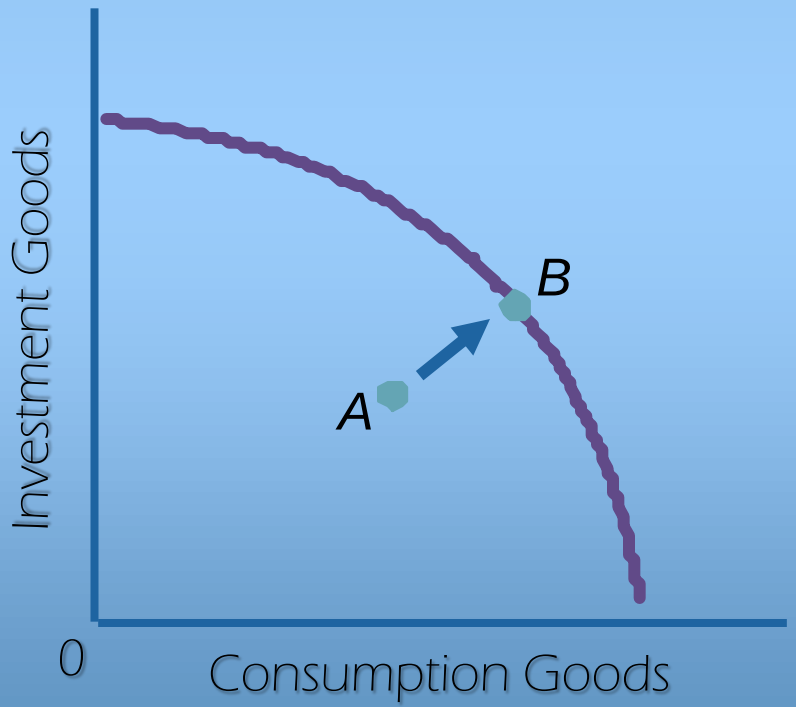
# The Nature of Growth

There are two distinct ways to increase output.

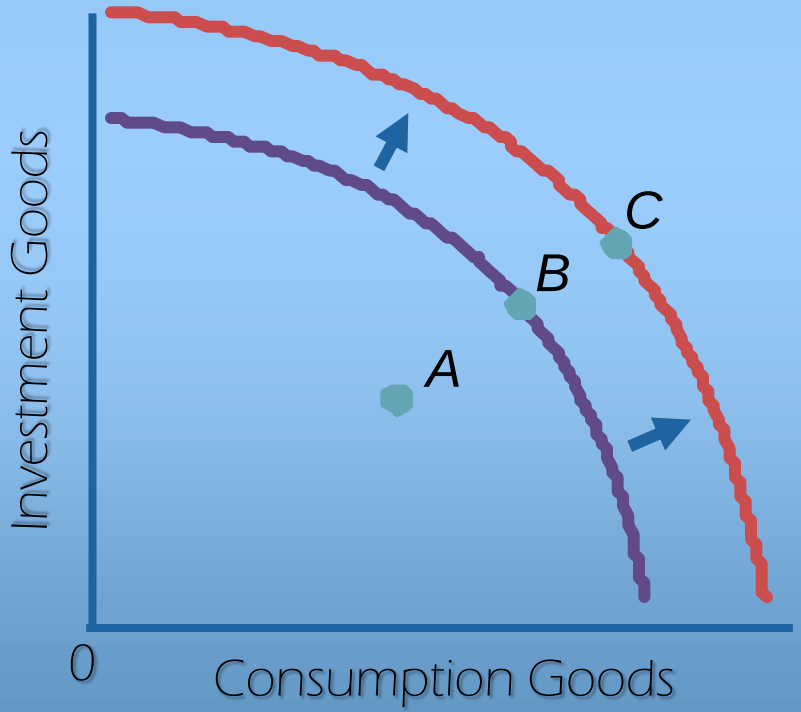
- an increased use of existing productive resources
- an expansion of productive capacity

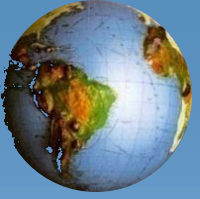
# Charts: Two Types of Growth

**THE SHORT RUN:**
*increased capacity utilization*



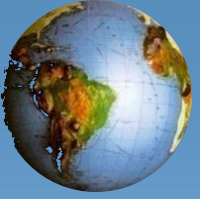

**THE LONG RUN:**
*expanded capacity*





# Short-Run Changes in Capacity Utilization

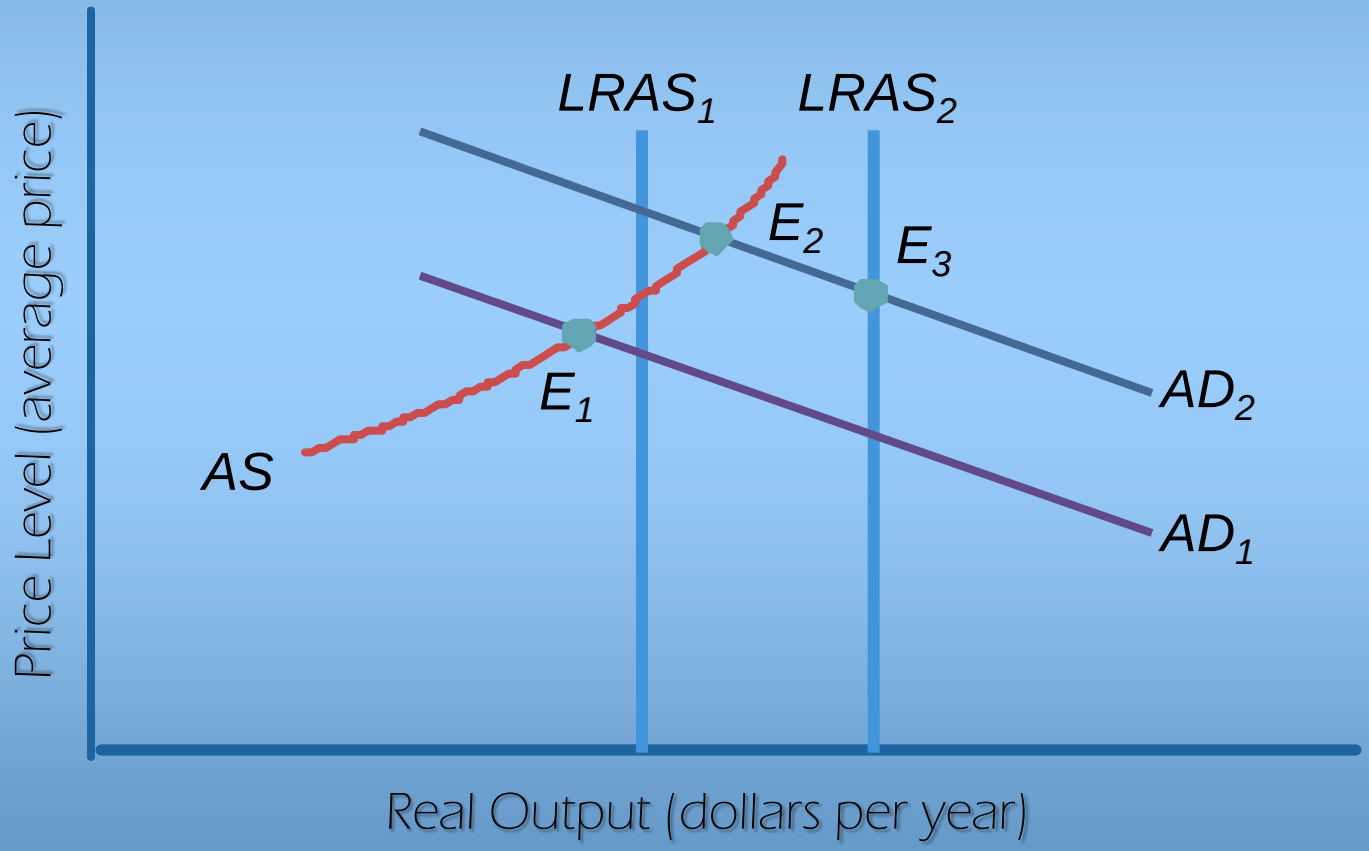
- The easiest kind of growth comes from increased use of our existing productive capabilities.
- An economy moves to a point on the production-possibilities curve where it uses all of its resources.

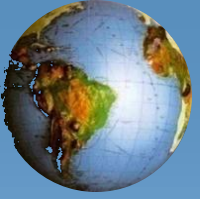


# Long-Run Changes in Capacity

- To achieve large and lasting increases in output, we must push our production-possibilities outward.
- **Economic growth** is an increase in output (real GDP) – an expansion of production possibilities.
- Economic growth implies a rightward shift of the long-run aggregate supply curve.

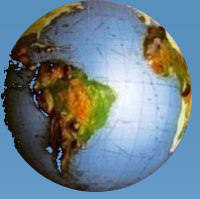
# Chart: Shifts in Long-Run Supply





# Nominal vs. Real GDP

- Economic *growth* is referred to in terms of *real* GDP, not *nominal* GDP.
- **Real GDP** – the value of final output produced in a given period, adjusted for changing prices

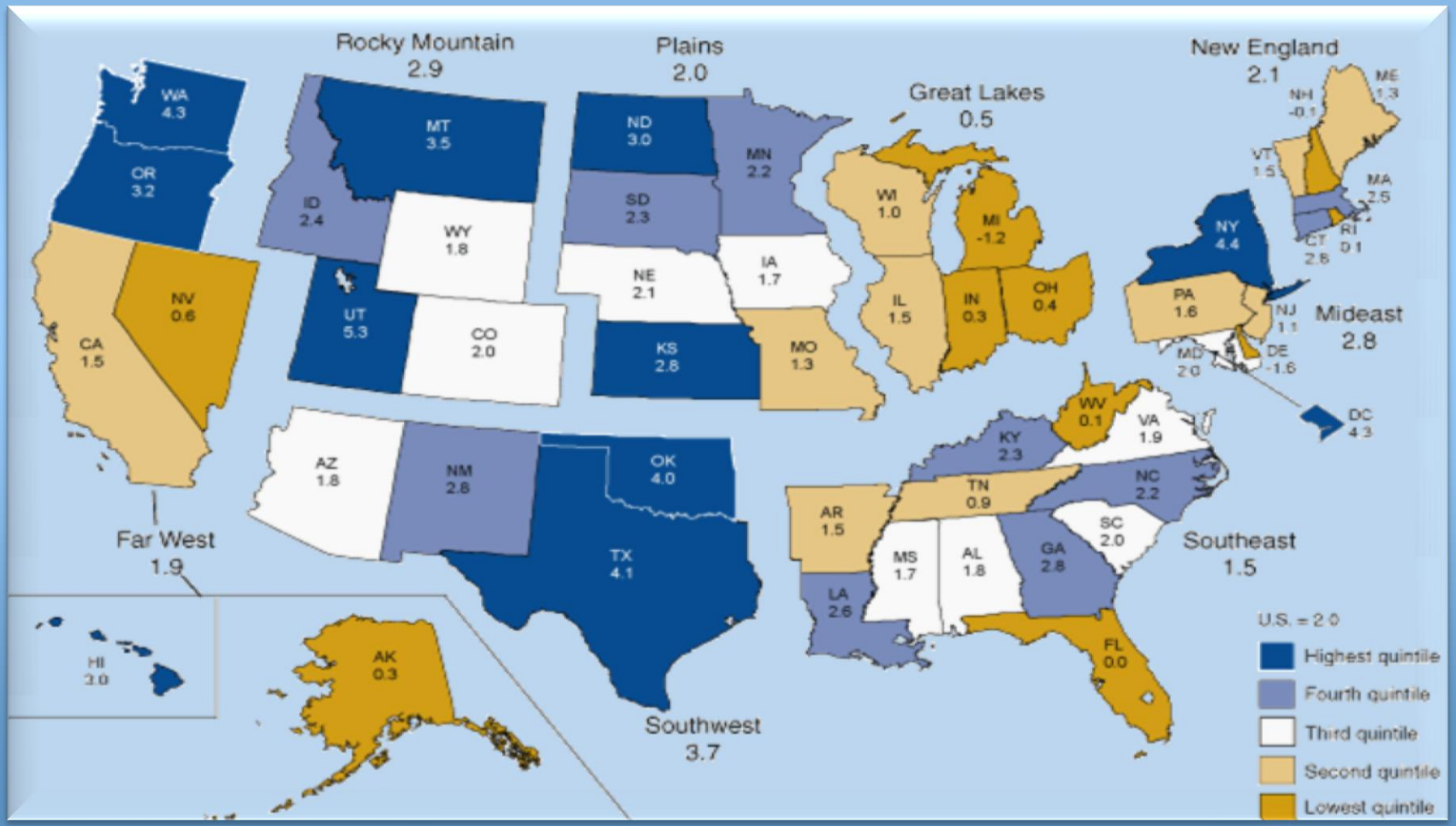


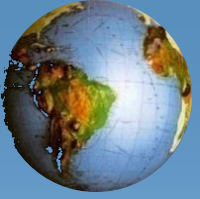
# Nominal vs. Real GDP

- Growth is measured in real goods and services, not inflation distorted dollars.
- **Base Period** – the time period used for comparative analysis; the basis of indexing (e.g., of price changes)

# Graphic: Real Economic Growth

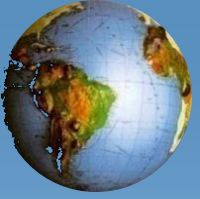
An increase from one period to the next in real GDP





# Measures of Growth

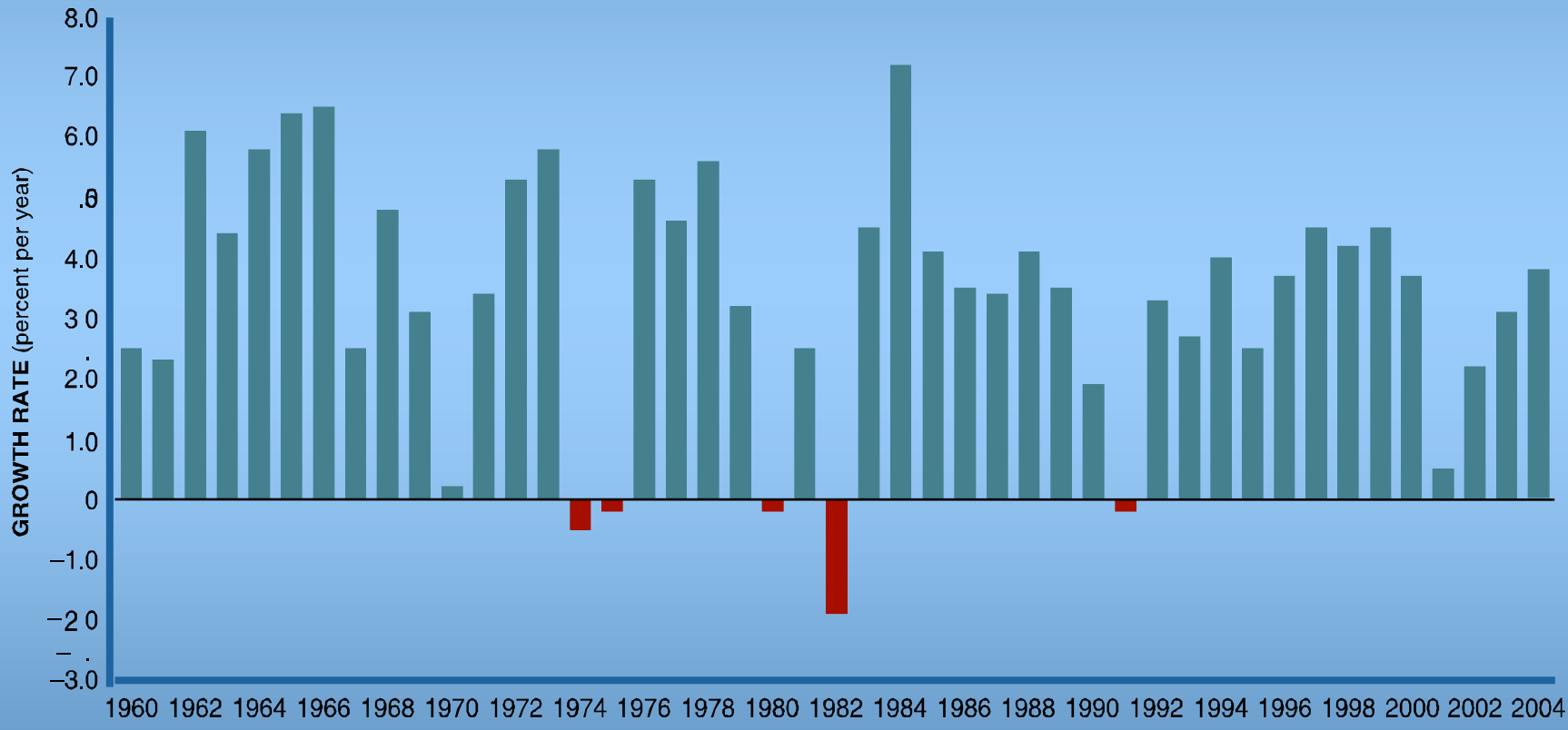
Changes in real GDP are presented in percentage terms as a growth rate.

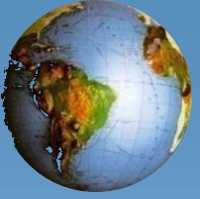


# The Growth Rate

- **Growth rate** is the percentage change in real output from one period to another.
- It is calculated as the *change in real output between two periods divided by the total output in the base year.*

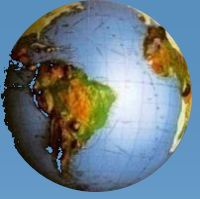
# Chart: Recent US Growth Rates





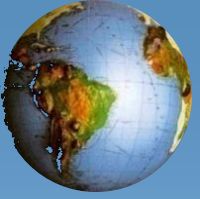
# The Exponential Process

- The growth of the economy is an exponential process.
- Small economic growth compounds from year to year.



# GDP per Capita: A Measure of Living Standards

- Growth in GDP per capita is attained only when the *growth of output exceeds population growth*.
- GDP per capita – total GDP divided by total population … average GDP

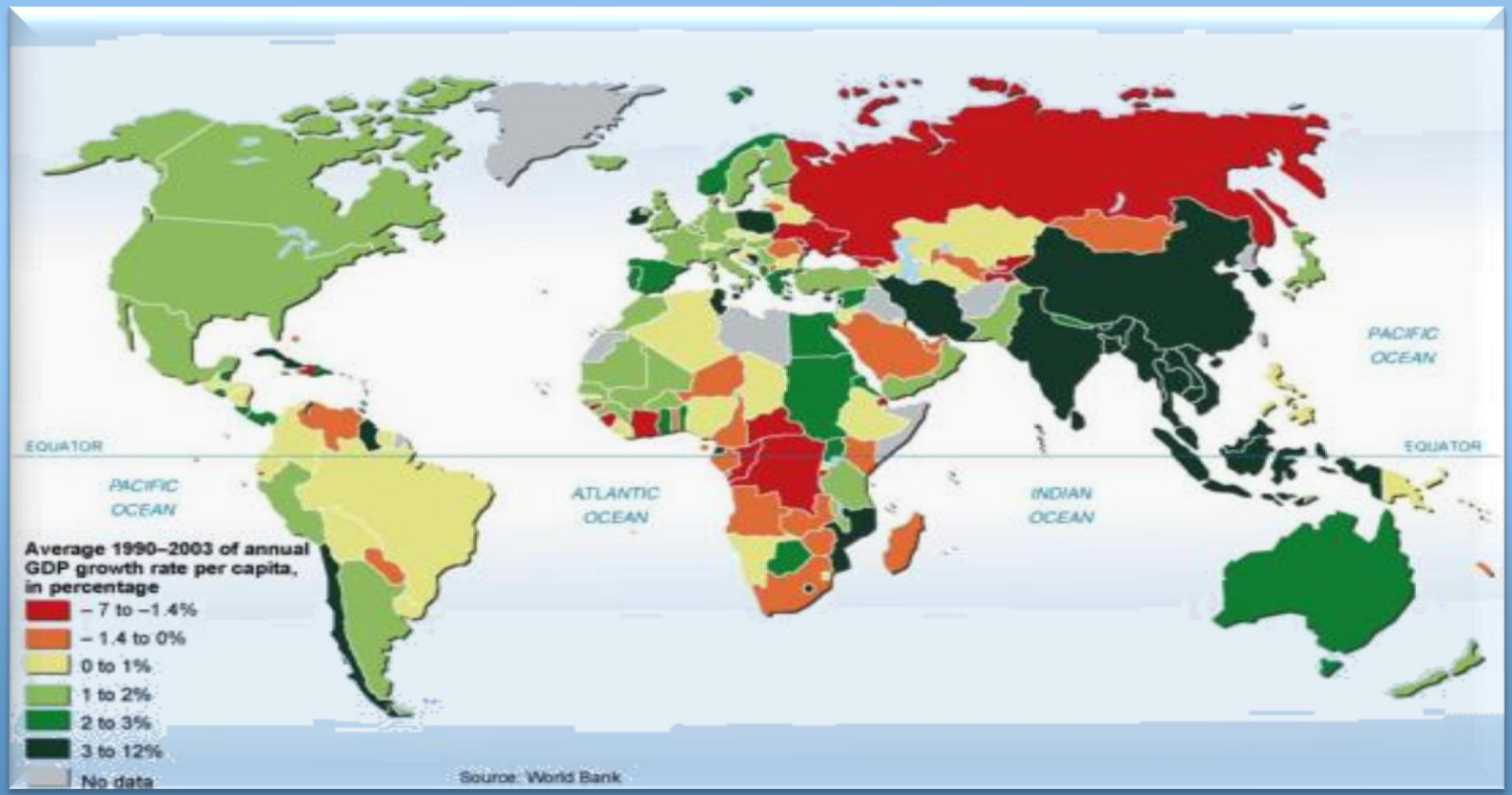


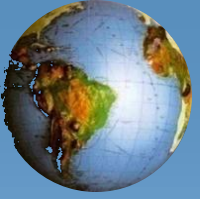
# GDP per Worker: A Measure of Productivity

- GDP per capita rises when *the labor force grows faster than the population*.
- Labor Force – All persons over age 16 who are either working for pay or actively seeking paid employment

# Graphic: Per-Capita Real Economic Growth

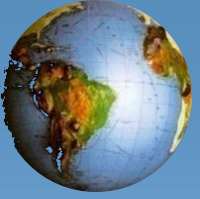
An increase from one period to the next in per-capita real GDP





# GDP per Worker: A Measure of Productivity

- The employment rate cannot rise forever.
- **Employment rate** – the percentage of the adult population that is employed

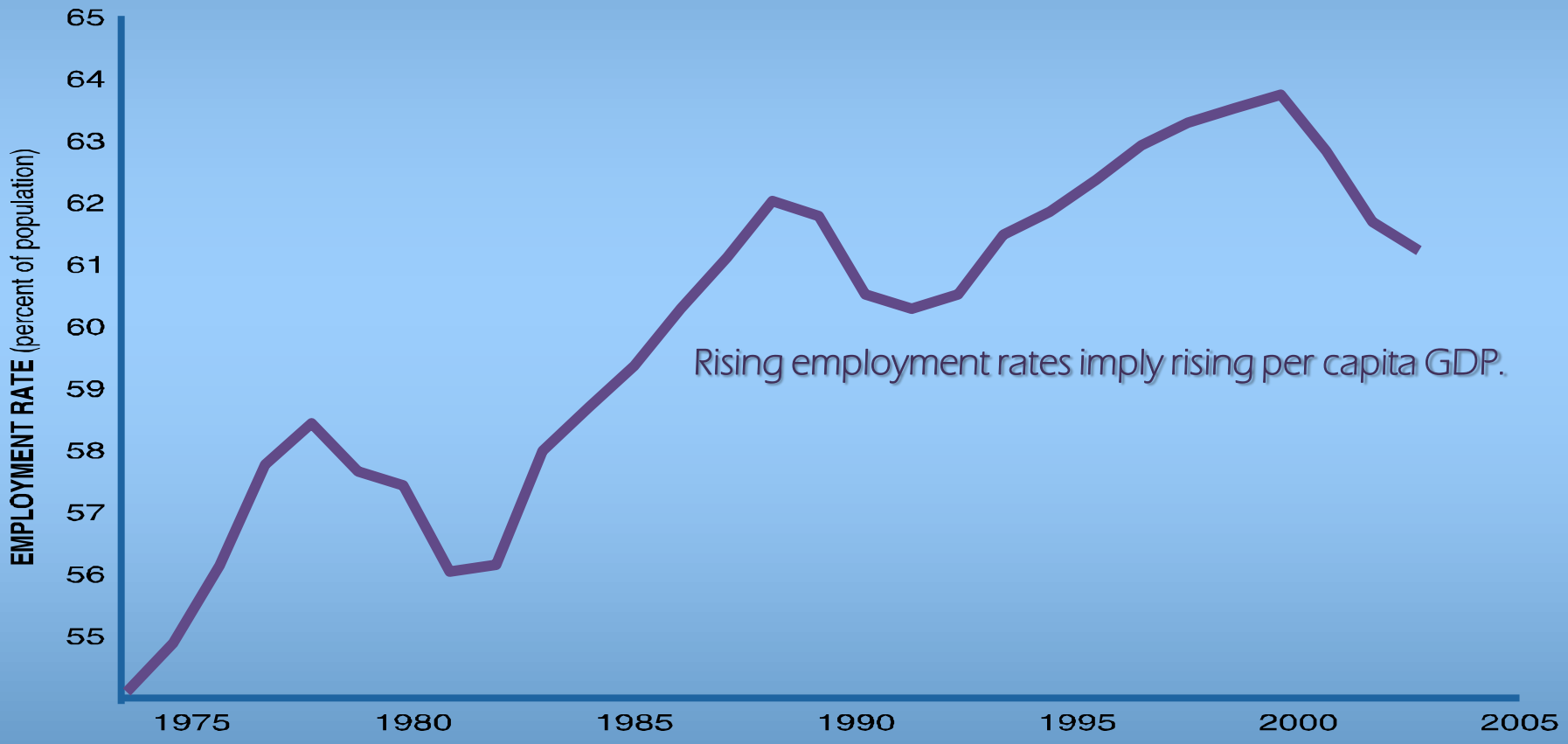


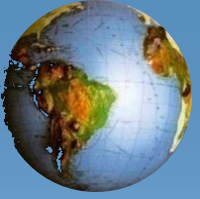
# GDP per Worker: A Measure of Productivity

- Increases in GDP per capita can also come from *increases in output per worker.*
- **Productivity** is measured as output per unit of input, *e.g.*, output per labor-hour.

$$\text{labor productivity} = \frac{\text{total output}}{\text{total labor hours}}$$

# Chart: A Rising Employment Rate

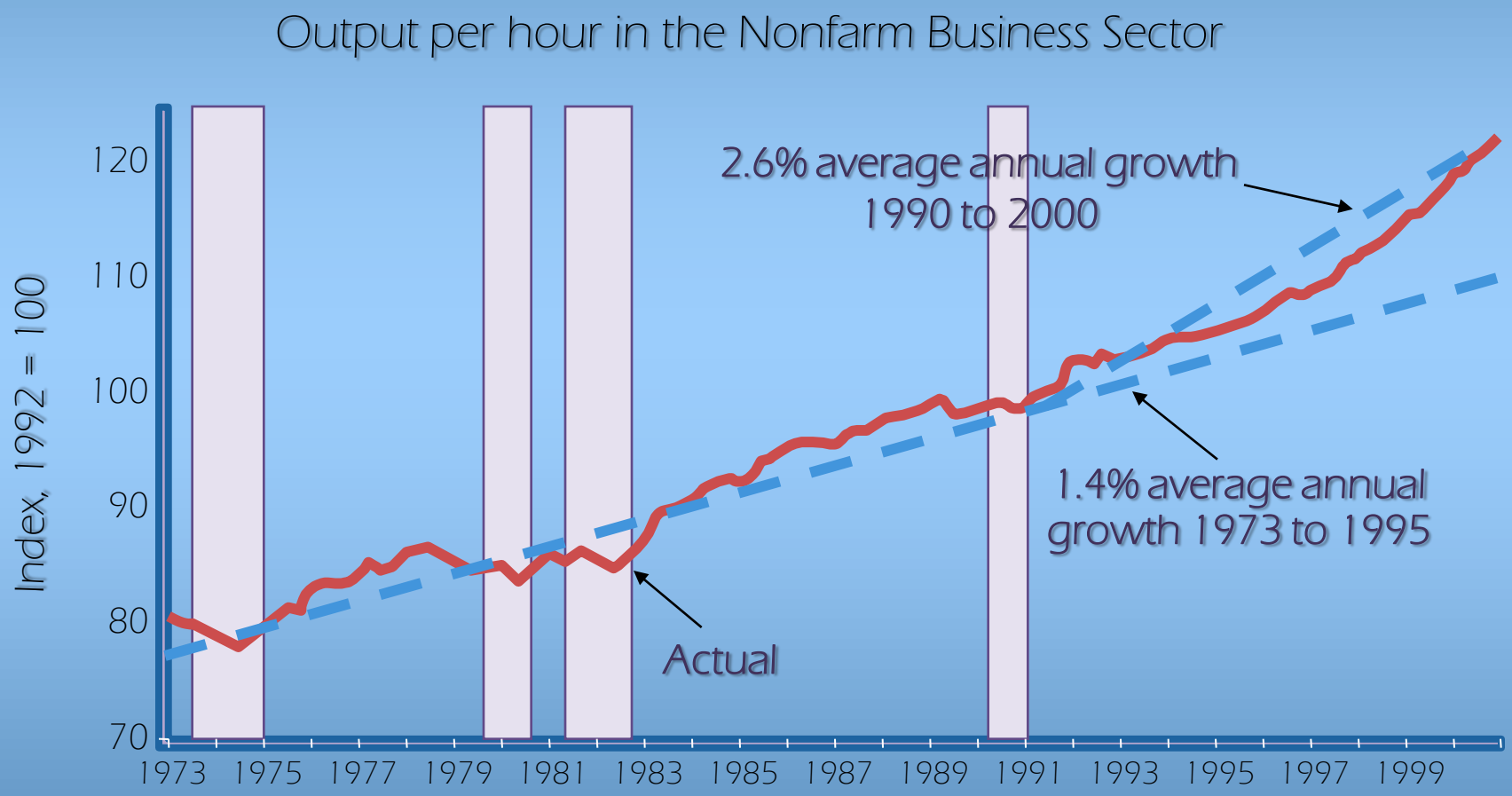


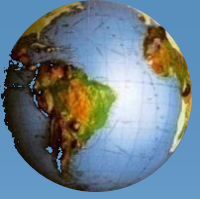


# The Productivity Turnabout

For economic growth to continue, the productivity of the average US worker must rise still further.

# Chart: Productivity Gains



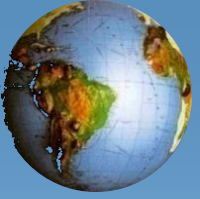


# Source of Growth

Future growth depends on two factors:

- Growth rate of the labor force.
- Growth rate of productivity.

growth rate of total output = growth rate of labor force + growth rate of productivity



# Sources of Productivity Gains

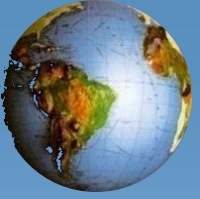
The sources of productivity gains include:

- **Higher skills** – an increase in labor skills, including high investment levels in human capital
- **More capital** – an increase in the ratio of capital to labor
- **Saving and investment rates** – strong incentives to save, invest, and increase productivity (including property rights) … high rates of savings permit high levels of investment
- **Improved management** – better use of available resources in the production process

# Sources of Productivity Gains

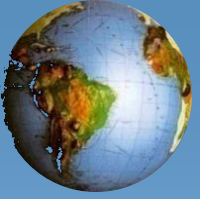
The sources of productivity gains include:

- Technological advances – the development and use of better capital equipment and products
- Research and development
- Other sources include: low Inflation, political stability, free trade, slower rates of population growth, decentralized decision making in most sectors of the economy



# Human Capital Investment

- Education and skills training have greatly increased the quality of US labor.
- The gains in productivity reflect greater human capital investment.
- **Human capital** is the knowledge and skills possessed by the labor force.



# Physical Capital Investment

A primary determinant of labor productivity is the rate of capital investment.

# Table: Comparative Investment and Growth

| Country | Investment as a % of GDP | Growth Rate of GDP |
|---|---|---|
| China | 39 | 10.7 |
| Thailand | 36 | 4.7 |
| Singapore | 35 | 8.0 |
| India | 23 | 6.0 |
| US | 18 | 3.3 |
| Great Britain | 17 | 2.5 |
| South Africa | 15 | 1.9 |

Continued In

*Growth and Productivity: Long-Run Possibilities Part II*