

Economic Growth

ECO 120: Global Macroeconomics

Goals

1 / 27

- Specific goals:
 - Appreciate the significance for economic growth.
 - Compare patterns of economic growth across countries.
 - Learn what factors affect economic growth.
- Learning objectives:
 - LO5: Compare and explain international differences in macroeconomic outcomes of production, prices, inflation, and employment.
 - LO11: Describe factors that may influence economic growth and use these to explain international difference in growth and development.*

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Reading and Exercises

2 / 27

- Module 20 describes differences in international growth rates
- Module 21 describes the productivity curve model
- Module 22 describes government policies that can promote economic growth
- **Canvas Quiz due Wednesday 11:59 PM.**
Multiple-choice, 10 questions, unlimited attempts allowed, only best score counts
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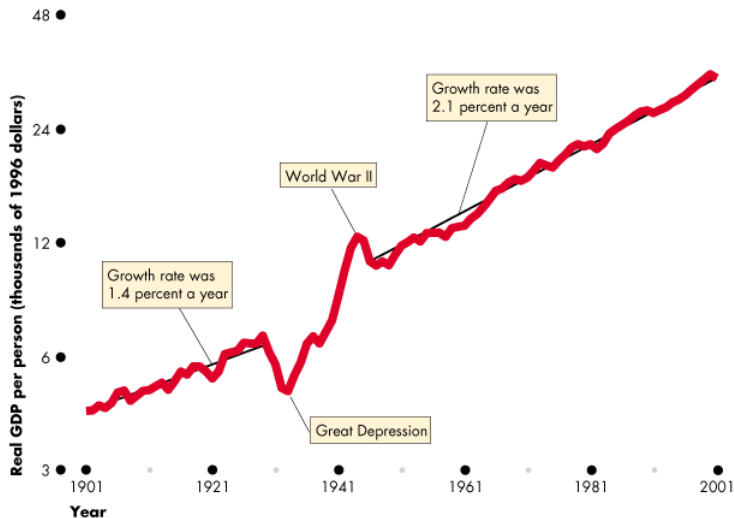
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U.S. Trend

3 / 27



Long-Term Real GDP Growth

4 / 27

- Before the great depression, average growth rate was 1.4%
- After the great depression, average growth rate was 2.1%
- Real GDP per person in 1900 was approximately \$6,000 (using base year 2009)
- Real GDP per person in 2013 was approximately \$49,800 (base year 2009)
- Can you compute what GDP would be in 2013 if the average growth rate was always 1.4%?
 - Answer: $\$6,000(1 + 0.014)^{113} = \$28,869.56$.
- What if the average growth rate was always 2.1%?
 - Answer: $\$6,000(1 + 0.021)^{113} = \$62,814.53$.
- **Small differences in growth adds up to a lot!**

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Economic Growth Facts Across Countries

5 / 27

- Before the industrial revolution, standards of living were similar across much of the world.
- Differences in per-capita income across countries have grown significantly since the industrial revolution.
- Rich countries today are similar in terms of per-capita income growth.
- Lesser-developed countries today are less alike in terms of per-capita income growth.

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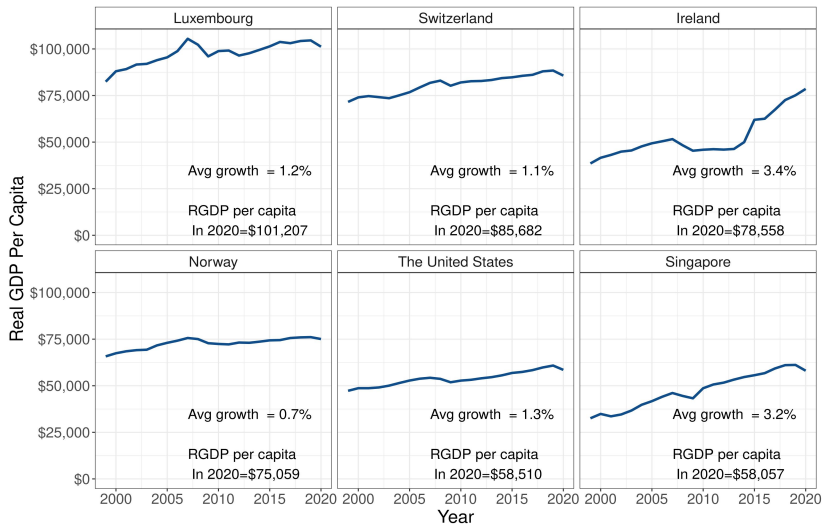
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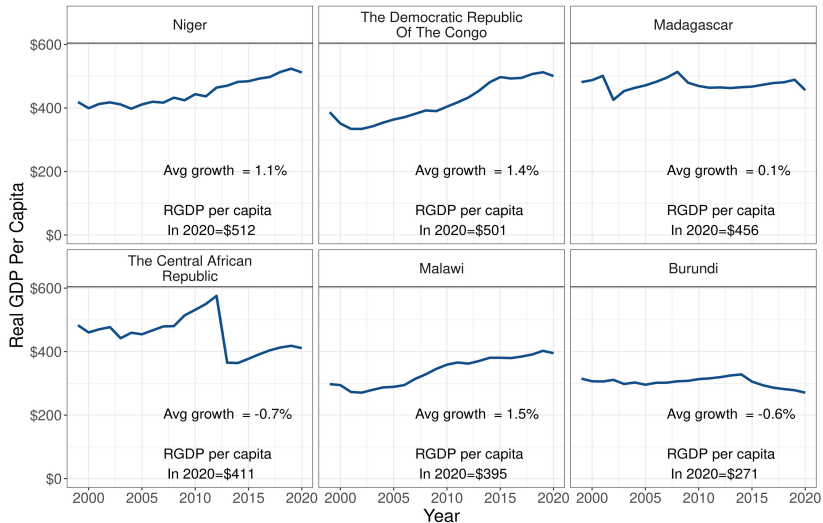
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Richest Economies (Real GDP Per Capita in 2020)

6 / 27

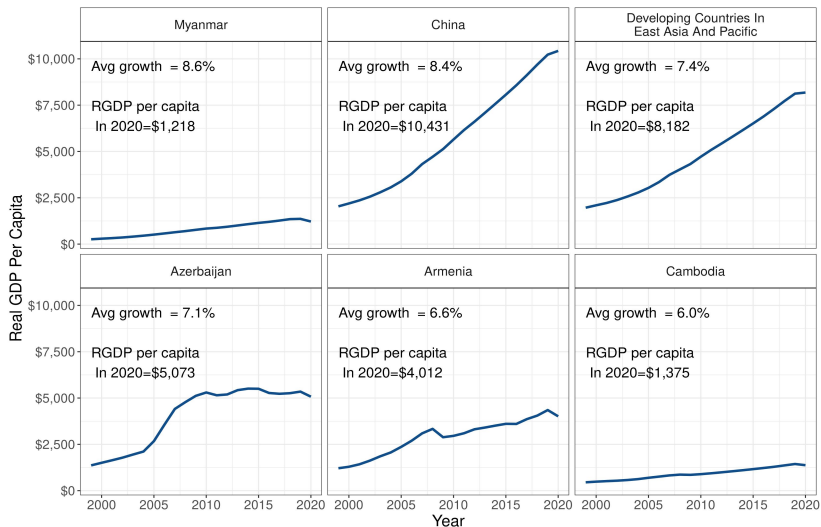


Poorest Economies (Real GDP Per Capita in 2020) 7 / 27

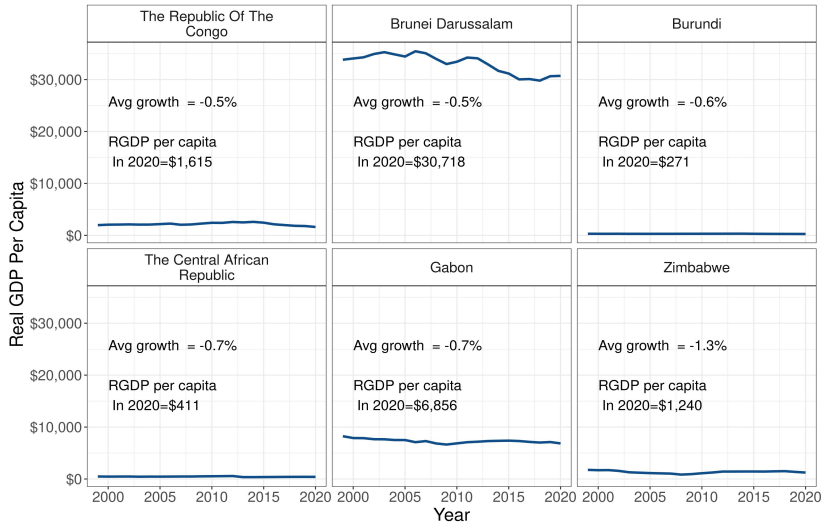


Fastest Growing Economies (1999-2019)

8 / 27



Slowest Growing Economies (1999-2019)



Growth Factors and Incentives

10 / 27

Saving and investment in new capital

- Savings is important for a sufficient equilibrium level of investment.
- What happens if increase savings supply?
- \uparrow eqm investment \rightarrow \uparrow capital stock
- \uparrow capital stock \rightarrow \uparrow production, \rightarrow \uparrow marginal product of labor

Prerequisites

- Markets for buyers and sellers to meet
- Property rights and protection
- Effective monetary exchange

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Investment in Human Capital

11 / 27

- **Human capital:** knowledge and skills of workers that can be used in the production of goods and services
- Improved education increases the marginal product of labor
- Argued that human capital does not exhibit diminishing returns
 - Knowledge accumulation is **non-rivalrous**. One person learning something doesn't diminish or prevent another person from learning something.
 - Knowledgeable workers can have **positive externalities**. Not only is a knowledgeable worker more productive, other co-workers may benefit and be more productive
 - Acquiring and sharing knowledge gets easier as it grows. Example: Calculus, and you're no Isaac Newton.

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Increasing Returns to Human Capital

12 / 27

Being knowledgeable not only improves your own productivity and opportunities, it **also makes it easier for your peers and co-workers to acquire acquire knowledge.**



<https://www.youtube.com/watch?v=U5wfxjmlwtE>

Discovery of new technologies

13 / 27

- Research and development leads to new technologies, more production possibilities
- Technological progress drives economic growth in the long run.
- There needs to be incentives to do research and development.
 - Patents on new products
 - Fund research and development through grants and state universities

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Labor productivity Curve

- **Labor productivity curve:** long-run economic growth model that illustrates how much output per person a country can enjoy with given levels of capital per person.
- Labor productivity is real GDP per hour of labor.

$$\text{Labor productivity} = \frac{\text{Real GDP}}{\text{Aggregate labor hours}}$$

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Labor productivity curve

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- Think of labor productivity curve as a production function, in per-capita terms.
- Real GDP per unit of labor increases as you increase the amount of capital.
- But at a decreasing rate. Due to *diminishing marginal product of capital*.

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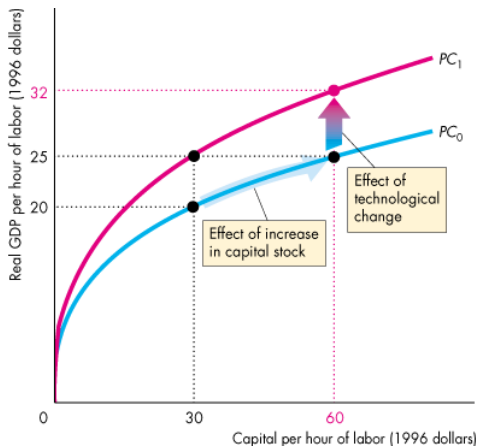
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How labor productivity grows

16 / 27



Labor productivity curve

17 / 27

- For given levels of capital stock per worker, curve shows output per worker.
- Increases in capital correspond to *movements* along the curve.
- Increases in technology or human capital *shift* the curve.

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Catch-Up Theory

18 / 27

- Diminishing returns explains catch-up theory.
 - Lesser-developed countries have low levels of capital → high return to investing in new capital
 - Developed countries (like the U.S.) have high levels of capital → low return to investing in new capital
- Not all countries catch up: preconditions may not be met
 - Poorly developed goods and services markets, financial markets
 - Corruption, violence, war can threaten property rights
 - Hyperinflation

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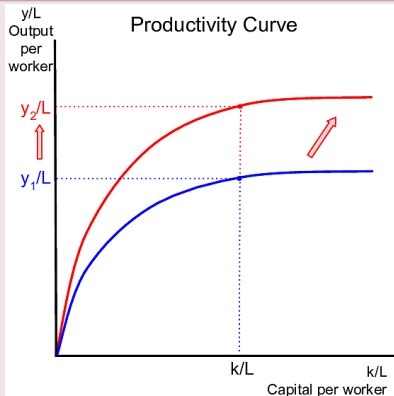
Improvement In Human Capital

19 / 27

Mechanism

- Human capital is defined as the knowledge and skills workers use in production of goods and services
- Improvements in human capital lead to higher productivity
- Higher productivity shifts out the productivity curve
- Even without increases in capital stock, results in higher long-run output per worker

Graphical Demonstration



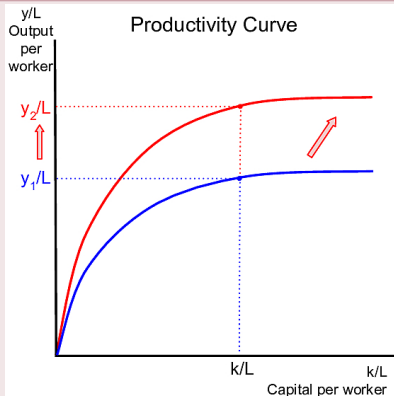
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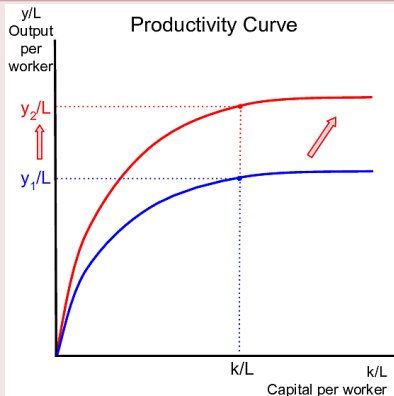
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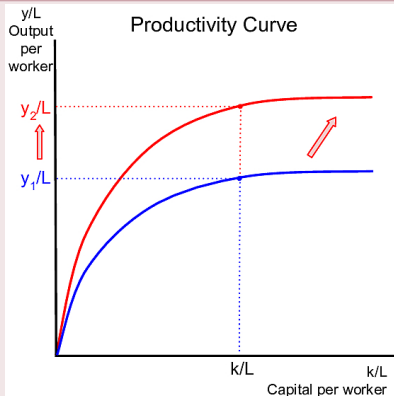
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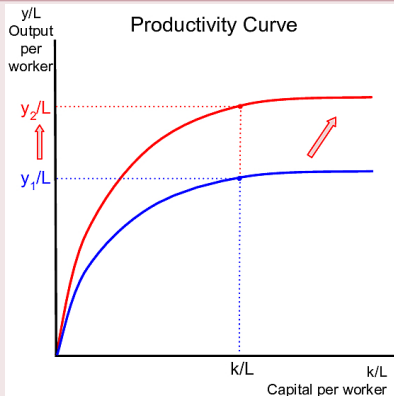
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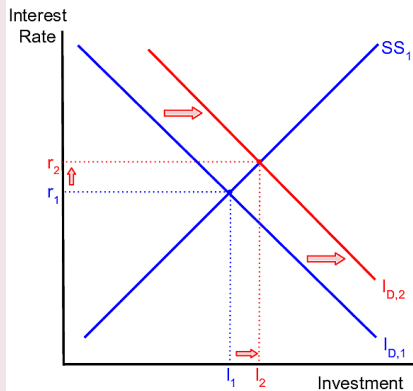


Improvement In Technology

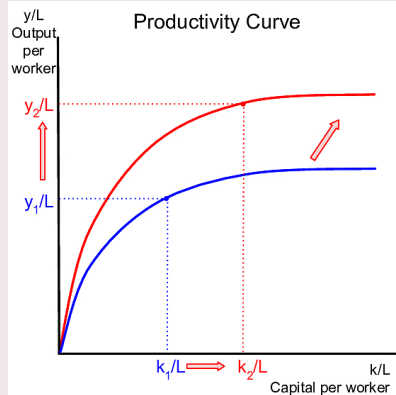
20 / 27

An improvement in technology, increases productivity and increases investment demand

Loanable Funds Market



Productivity Curve



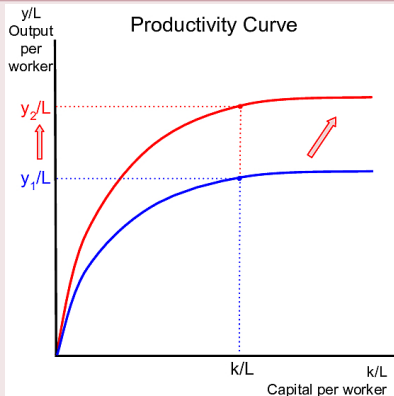
Improvement In Public Health

21 / 27

Mechanism

- Healthier workers have fewer sick days and are more productive
- Higher productivity shifts out the productivity curve
- Even without increases in capital stock, results in higher long-run output per worker

Graphical Demonstration



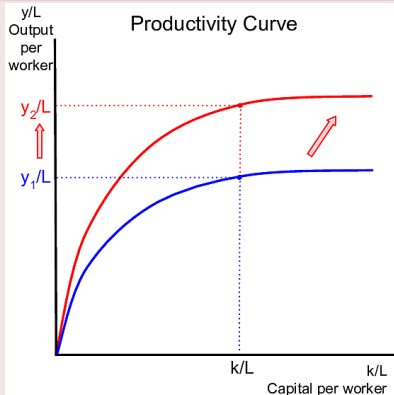
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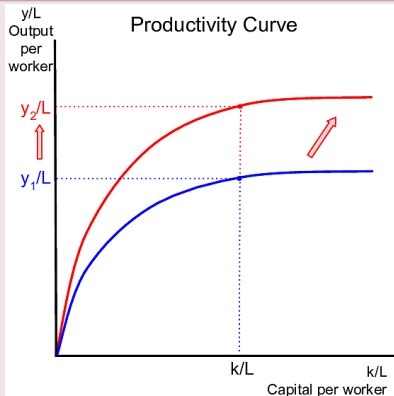
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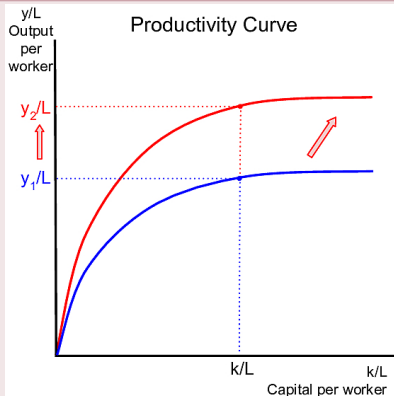
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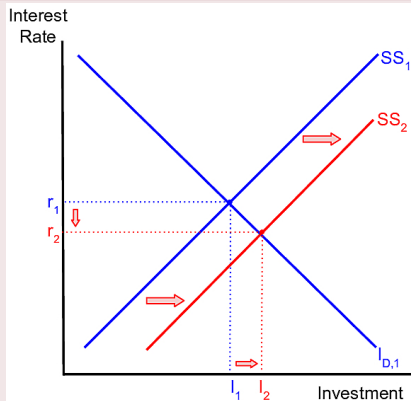


Private Savings

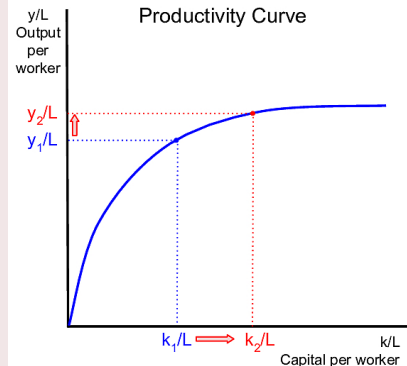
22 / 27

An increase in private saving leads to an increase in saving supply

Loanable Funds Market



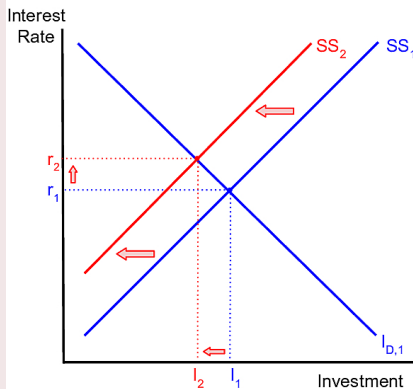
Productivity Curve



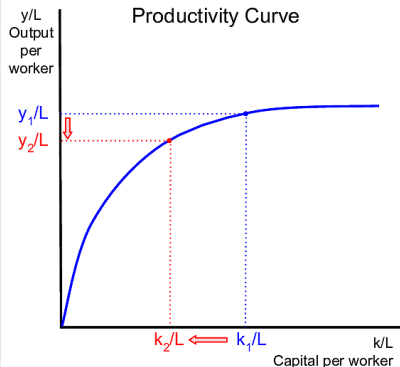
Government Budget Deficits

An increase in government budget deficits leads to a decrease in saving supply

Loanable Funds Market

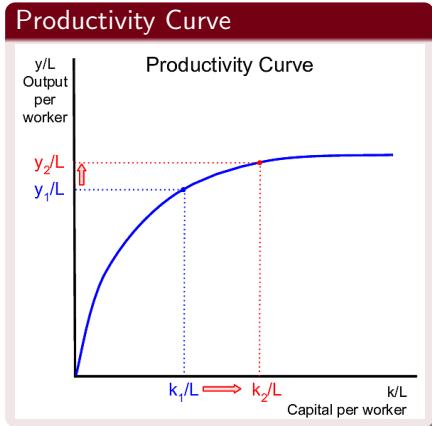
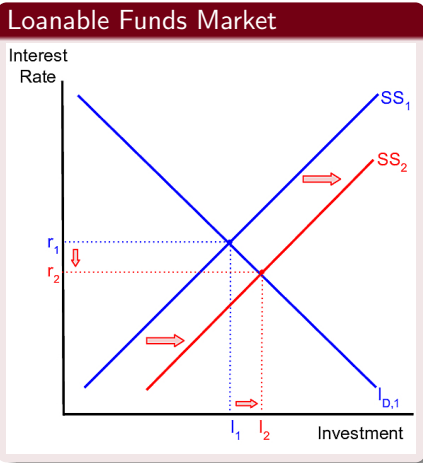


Productivity Curve



Trade Deficits

An increase in trade deficits (M-X) leads to an increase in saving supply

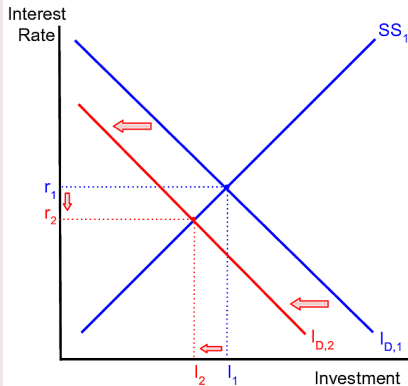


Business Economic Outlook

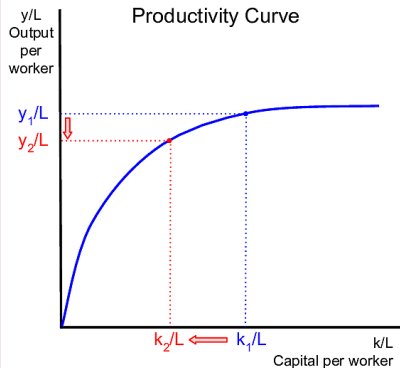
25 / 27

A drop in business confidence leads to a decrease in investment demand

Loanable Funds Market



Productivity Curve



Government Policies Encourage Economic Growth

26 / 27

Stimulate savings

- Tax incentives for retirement accounts
- Sales taxes reduce consumption / increase saving

Foreign Direct Investment

Global companies create operations in new countries, invest in capital

Stimulate research and development

- R & D is an inherently risky expense
- Protect return on R & D with patents
- Encourage R&D with subsidies and research grants

Improve human capital

- Improve the quality of education
- Encourage/subsidize education and training

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Reading and Exercises

27 / 27

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- Module 21 describes the productivity curve model
- Module 22 describes government policies that can promote economic growth
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Multiple-choice, 10 questions, unlimited attempts allowed, only best score counts
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