

Economic Growth

ECO 120: Global Macroeconomics

Goals

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- 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

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- 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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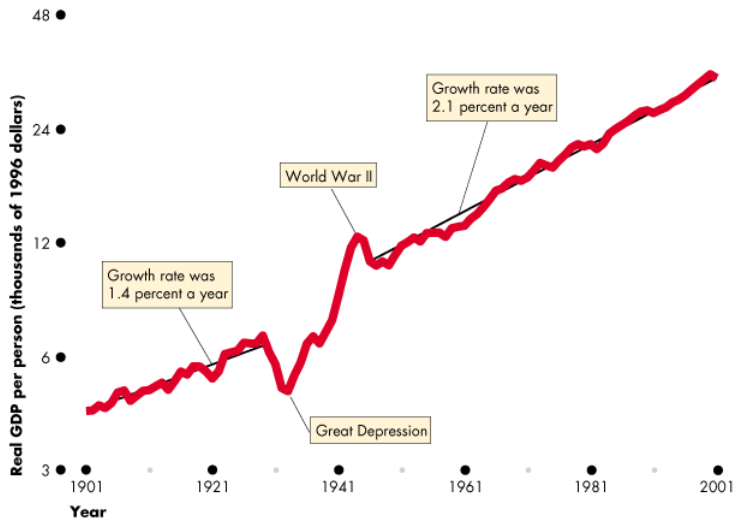
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U.S. Trend



Long-Term Real GDP Growth

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- 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 / 28

- 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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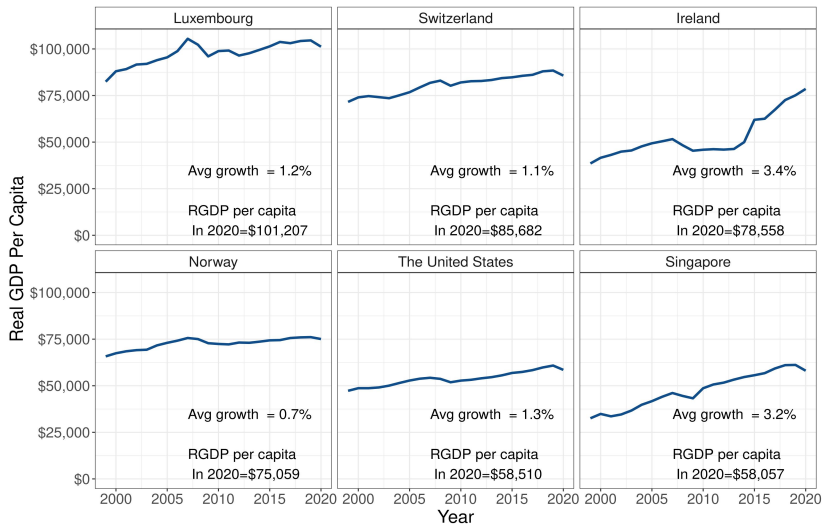
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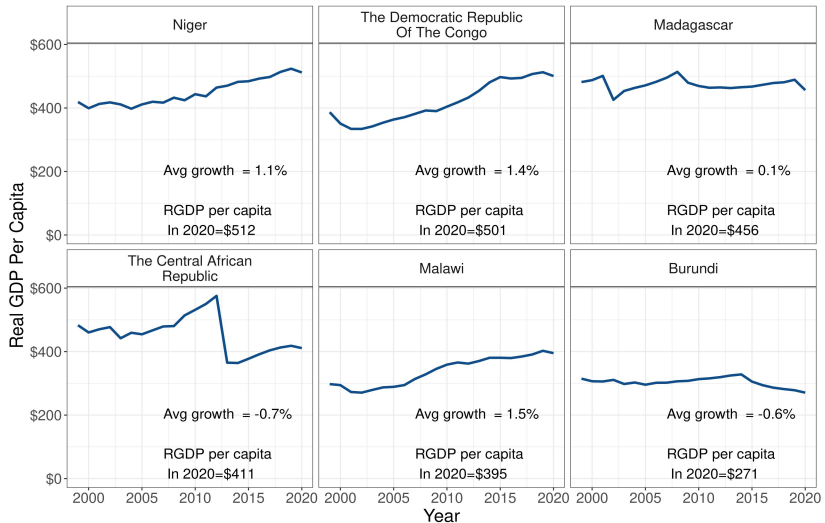
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Richest Economies (Real GDP Per Capita in 2020)

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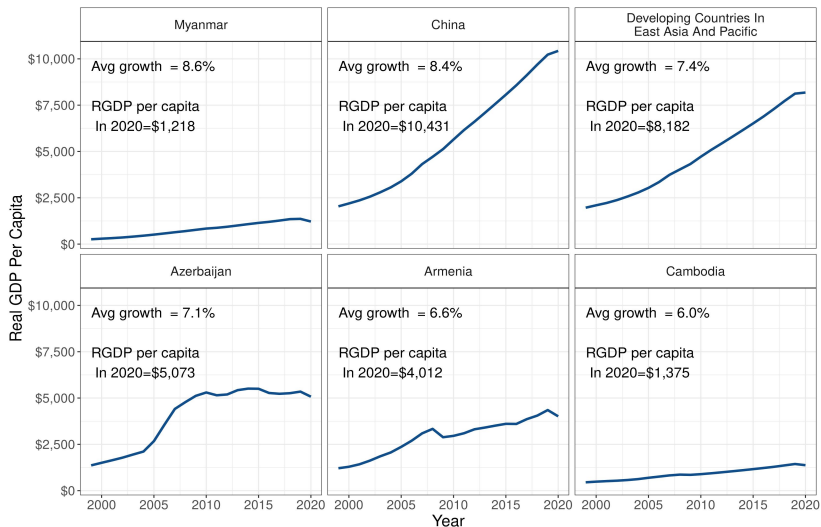


Poorest Economies (Real GDP Per Capita in 2020) 7 / 28

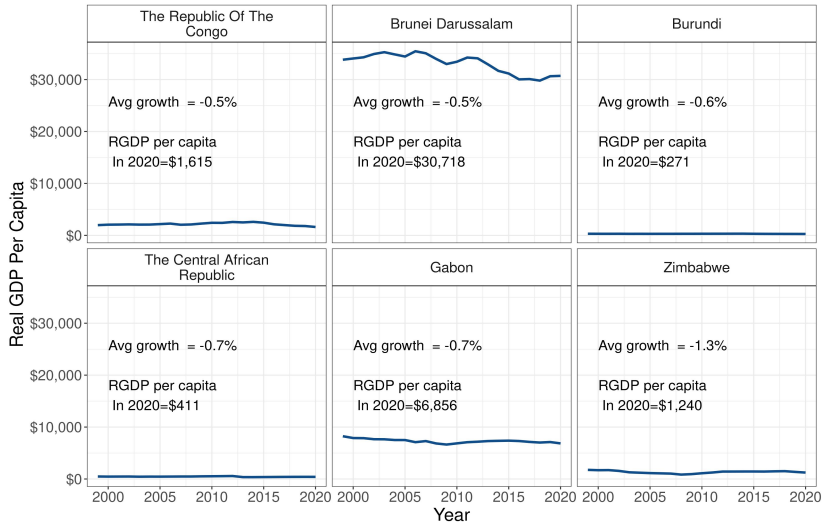


Fastest Growing Economies (1999-2019)

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Slowest Growing Economies (1999-2019)



Growth Factors and Incentives

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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

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- **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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Scholar Spotlight: Stefanie Stantcheva

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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

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- 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

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- 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

- 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*.

Labor Productivity Curve

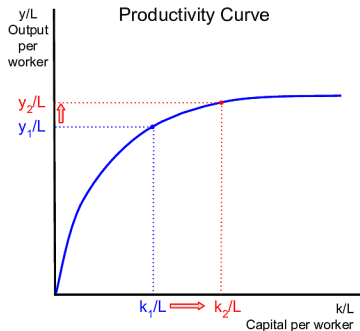
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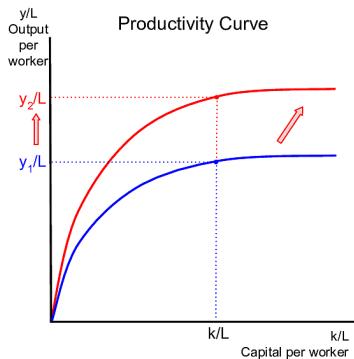
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How Labor Productivity Grows

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Effect of an Increase in
Capital Stock



Effect of *Anything Else*
Increasing Production
Possibilities Per Person

Labor productivity curve

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- 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

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- 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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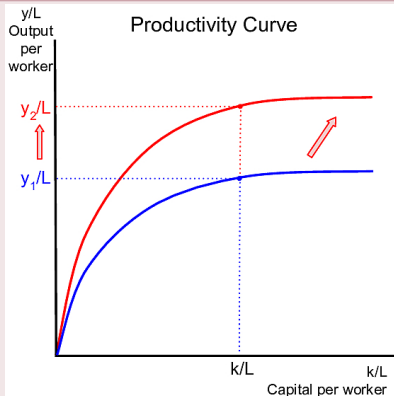
Improvement In Human Capital

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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



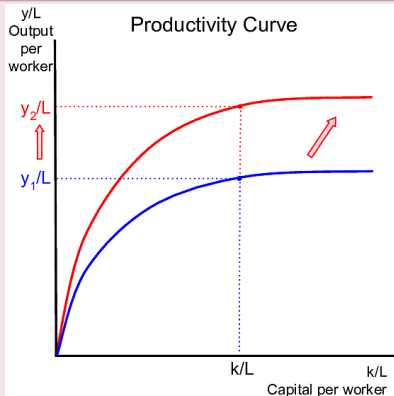
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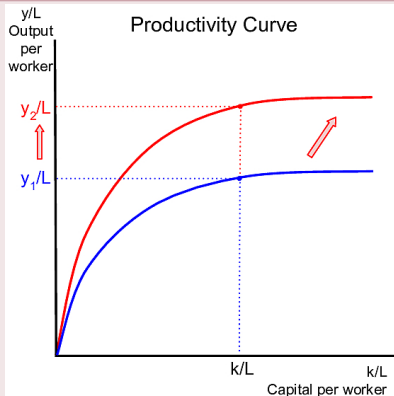
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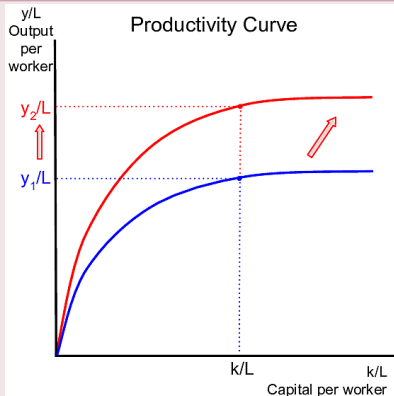
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Graphical Demonstration



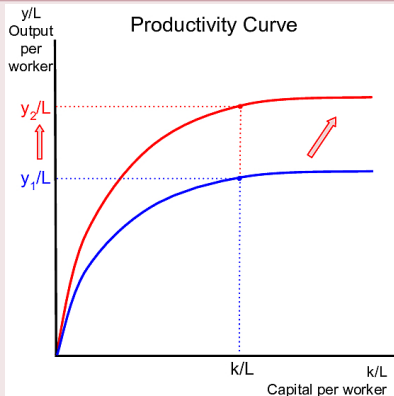
Improvement In Human Capital

19 / 28

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

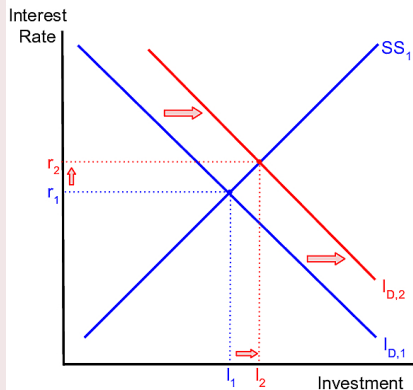


Improvement In Technology

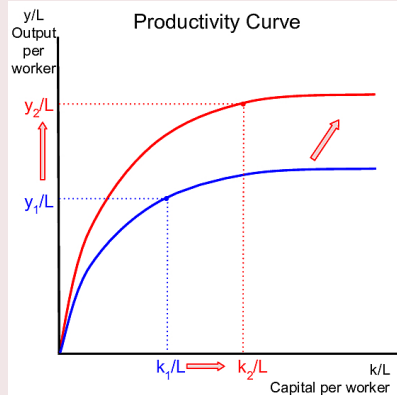
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An improvement in technology, increases productivity and increases investment demand

Loanable Funds Market



Productivity Curve



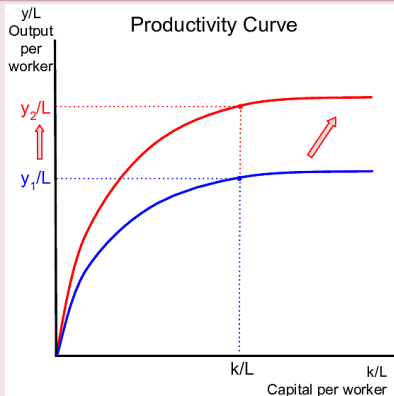
Improvement In Public Health

21 / 28

Mechanism

- Public health: policies and behaviors that lead to better health outcomes for entire populations, including actions that promote healthy lifestyles, adequate nutrition, disease prevention
- 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



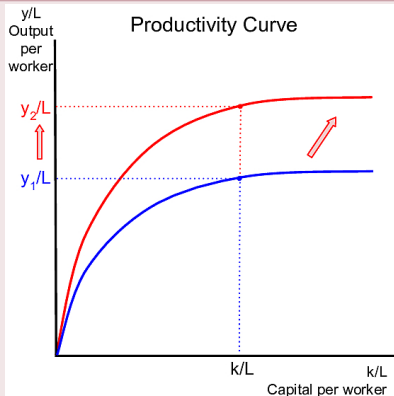
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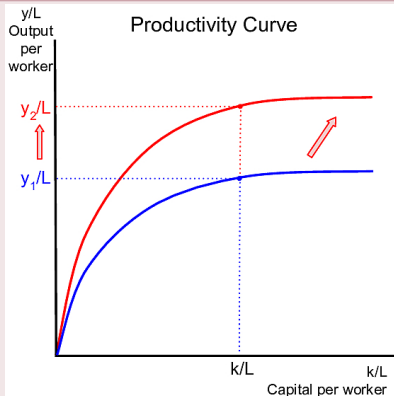
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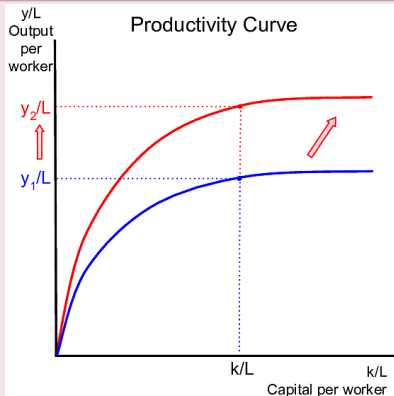
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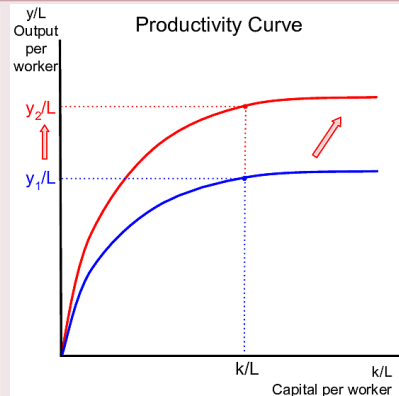
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Graphical Demonstration



Scholar Spotlight: Nabamita Dutta and Haley Maus 22/ 28

Share of Women in Parliament & Health & Educational Outcomes *Journal of Economic Development, 2021*

Better Health and Human Capital

- Data: 70+ countries from 1974-2003
- Health outcomes children under 5 yrs, HIV/AIDS treatment, vaccination rates
- Post-high school education rates
- Controls for real GDP per capita, urbanization, financial development, etc.
- Result: More female representation in parliament leads to better health and education outcomes for men and women



Dr. Nabamita Dutta (left)
Professor, UW-La Crosse

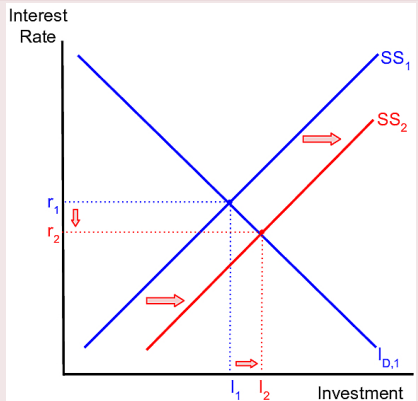


Haley Maus (right)
Graduate of UW-La Crosse

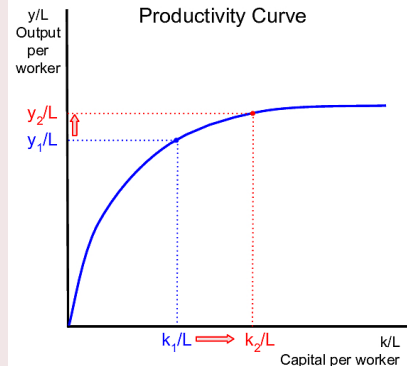
Private Savings

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

Loanable Funds Market



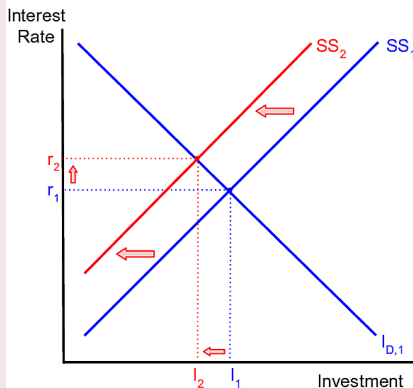
Productivity Curve



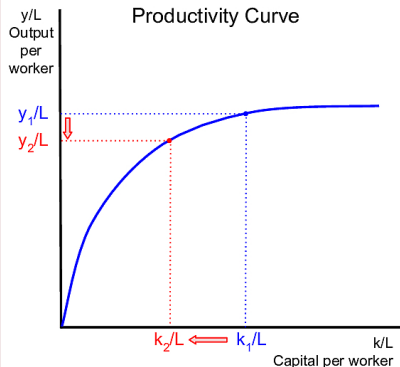
Government Budget Deficits

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

Loanable Funds Market



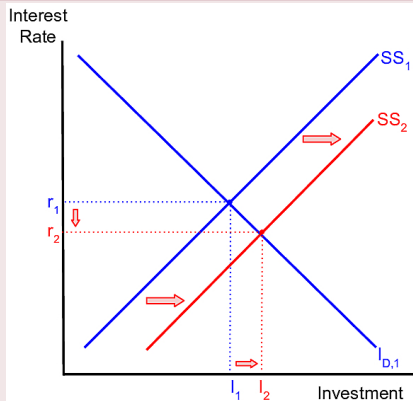
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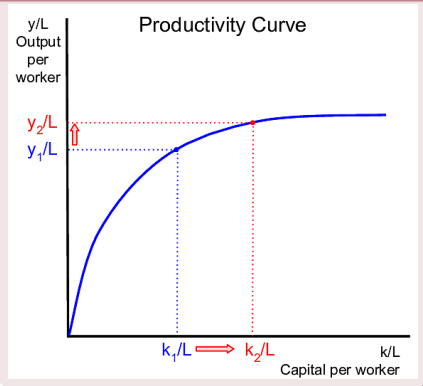
Trade Deficits

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

Loanable Funds Market



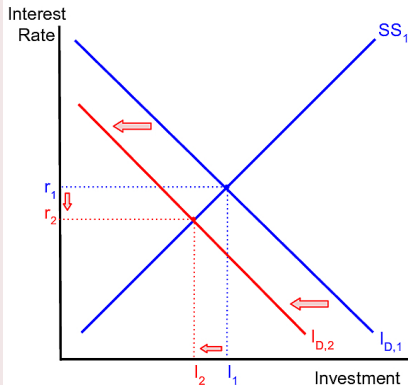
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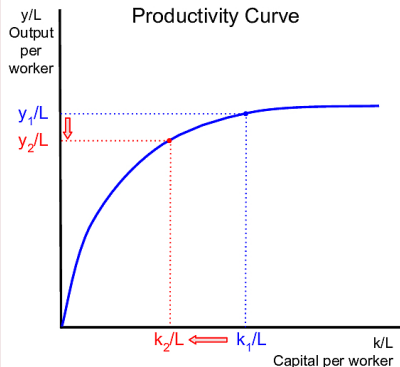
Business Economic Outlook

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

Loanable Funds Market



Productivity Curve



Government Policies Encourage Economic Growth

27 / 28

Improve Human Capital

- Improve the quality of education
- Encourage higher educational attainment
- Encourage/subsidize education and training

Improve Public Health

- Public investment in meeting nutritional needs
- Access and affordability of preventative healthcare

Stimulate Investment and Savings

- Global companies create operations in new countries, invest in capital
- Tax incentives for retirement accounts
- Sales taxes reduce consumption / increase saving

Stimulate research and development

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

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Reading and Exercises

28 / 28

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- 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
- **Homework/In-class Exercise due Friday 11:59 PM.** We will work together in class on Thursday.

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