Economic Growth

ECO 120: Global Macroeconomics

Goals

- 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

- 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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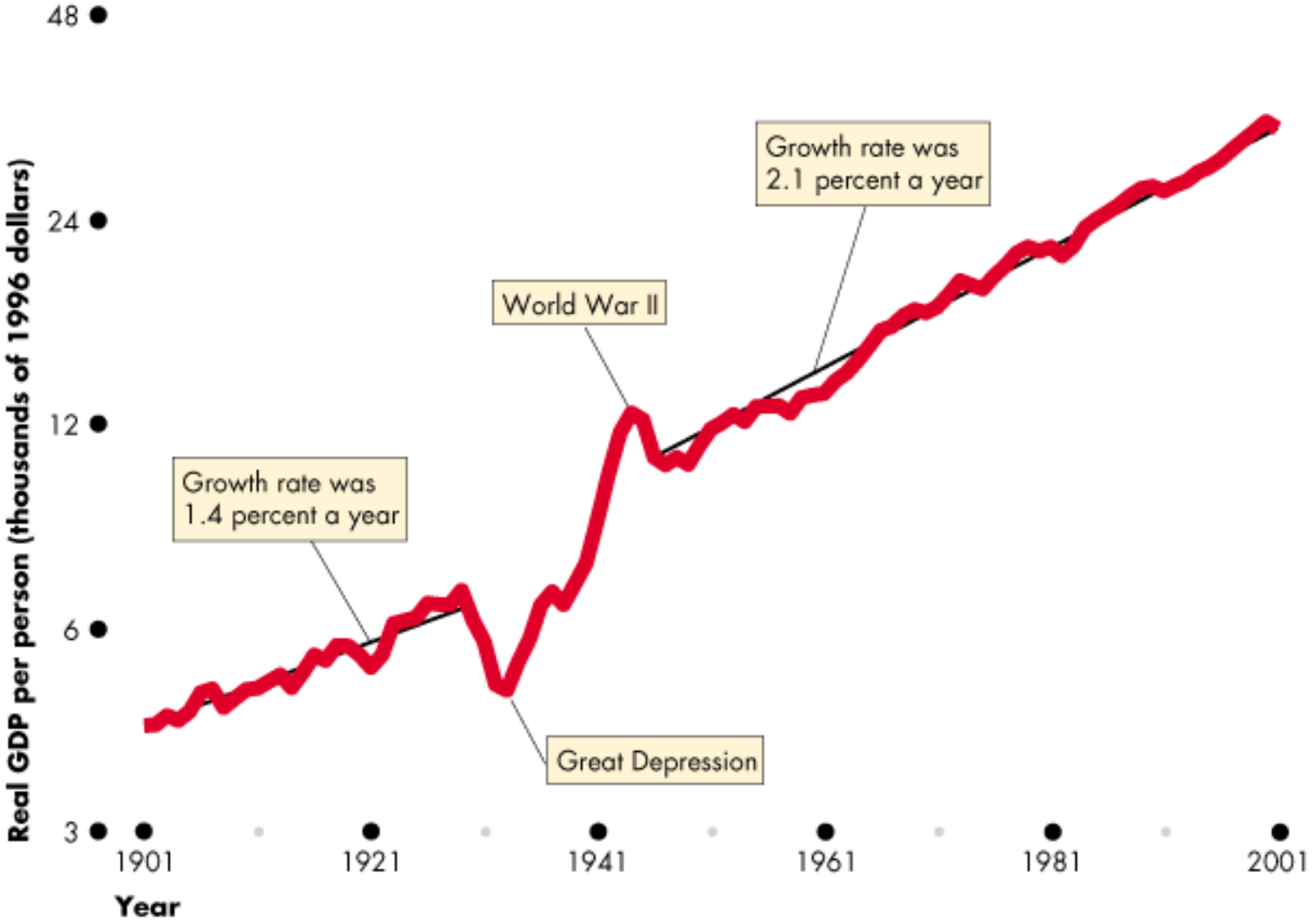
U.S. Trend


48
24
12
6
3
Real GDP per person (thousands of 1996 dollars)
1901
1921
1941
1961
1981
2001
Year
Growth rate was 1.4 percent a year
World War II
Growth rate was 2.1 percent a year
Great Depression

Long-Term Real GDP Growth

- 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

- 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.
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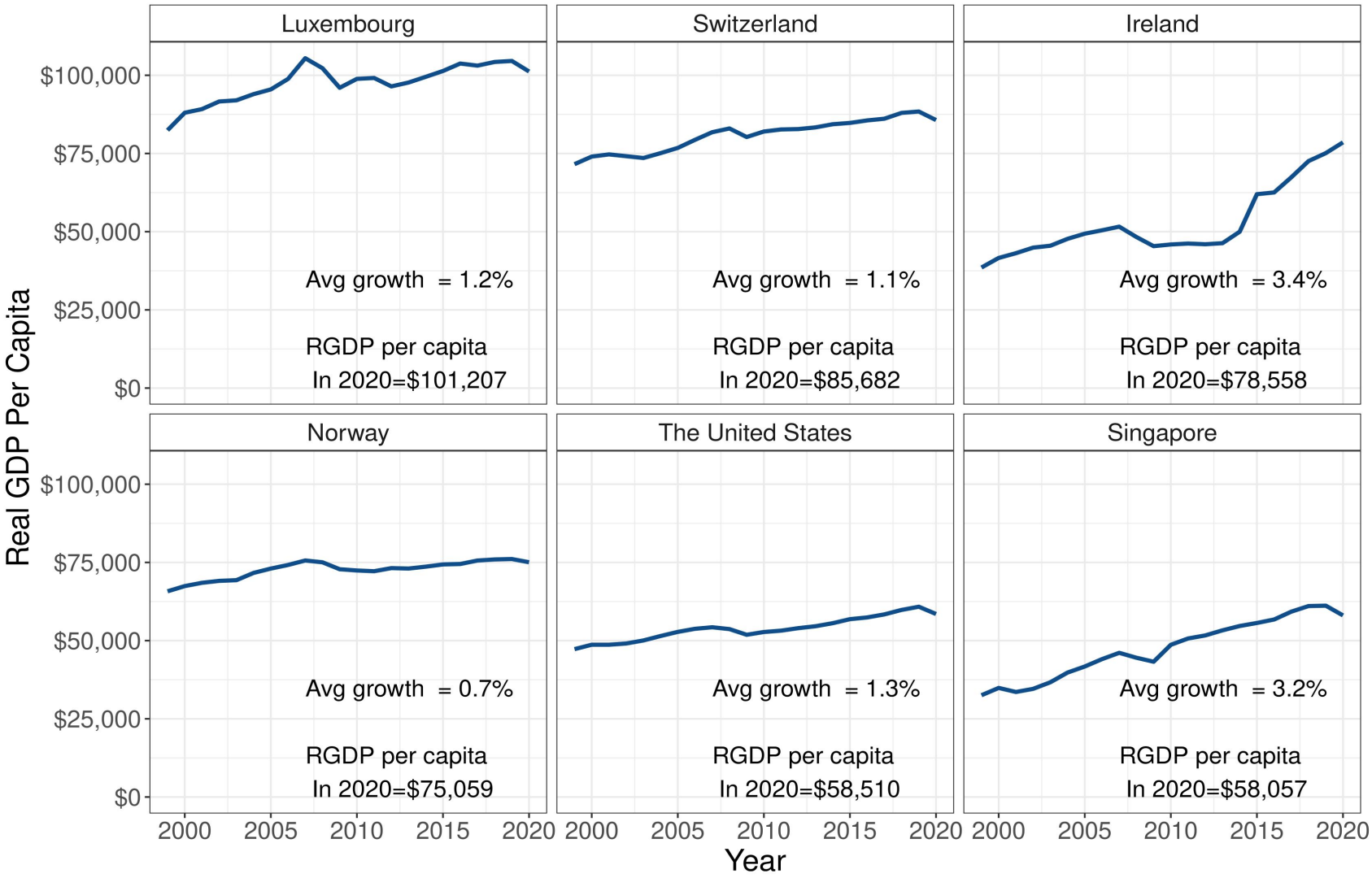
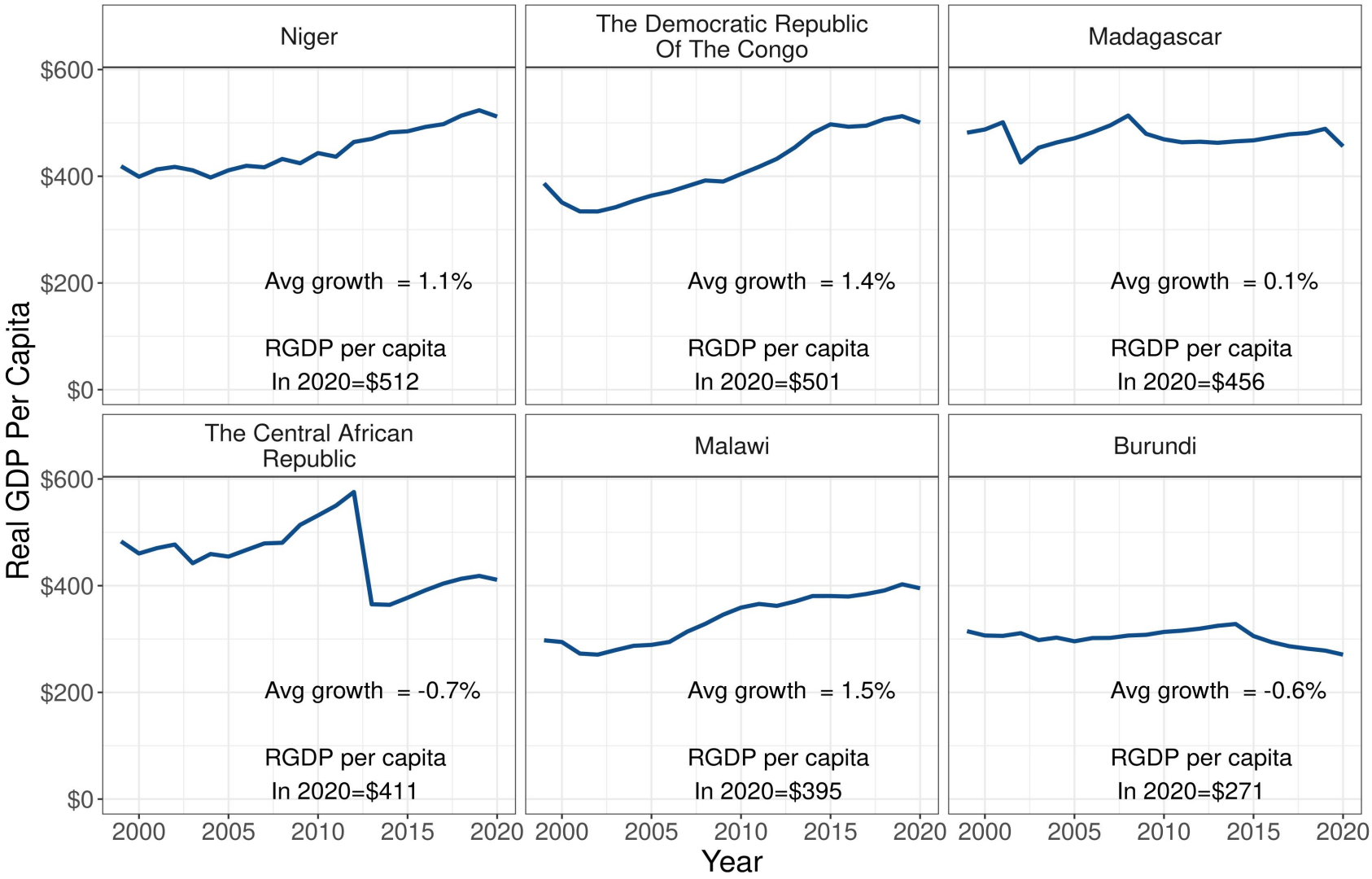
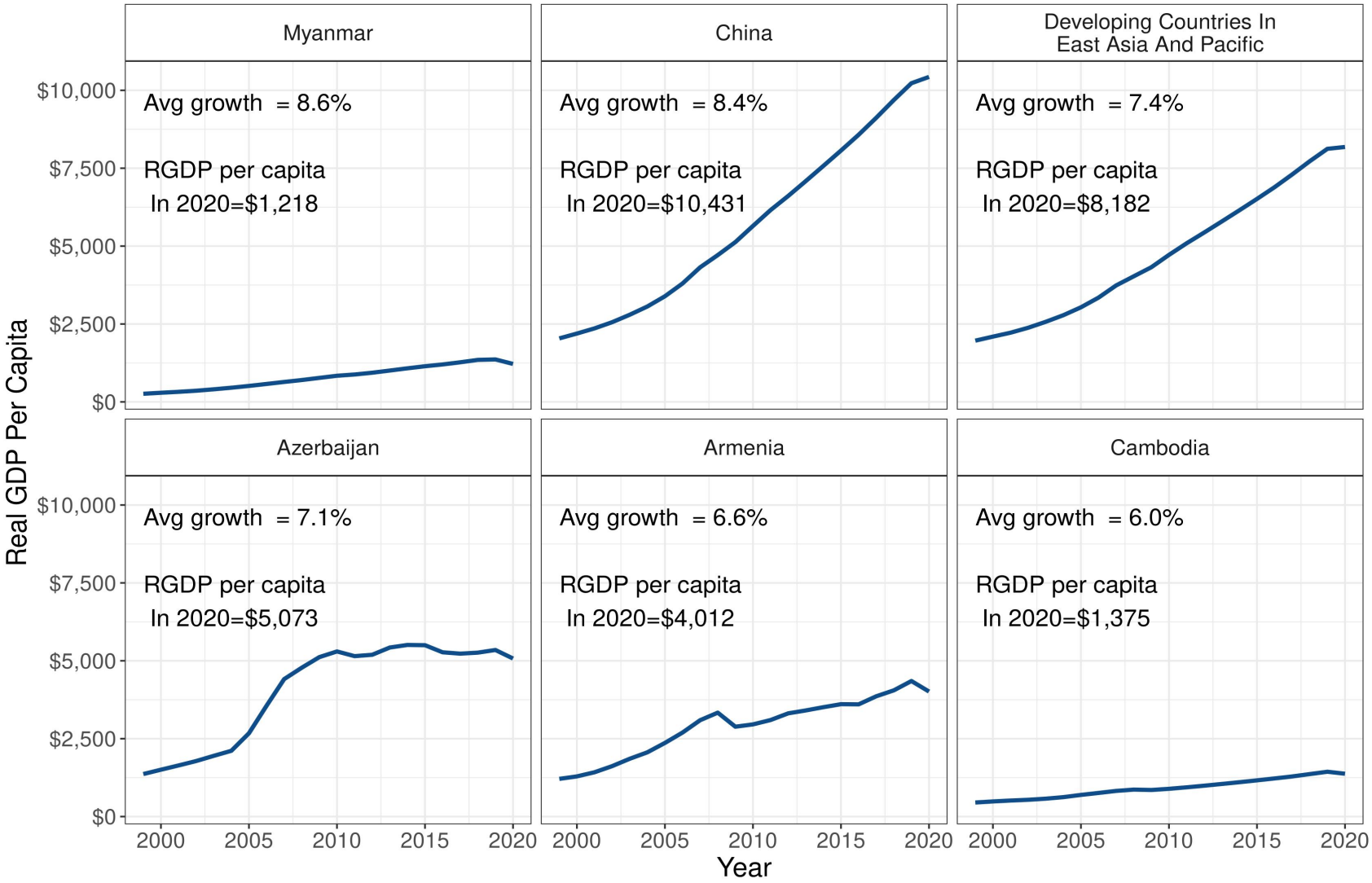
Richest Economies (Real GDP Per Capita in 2020)



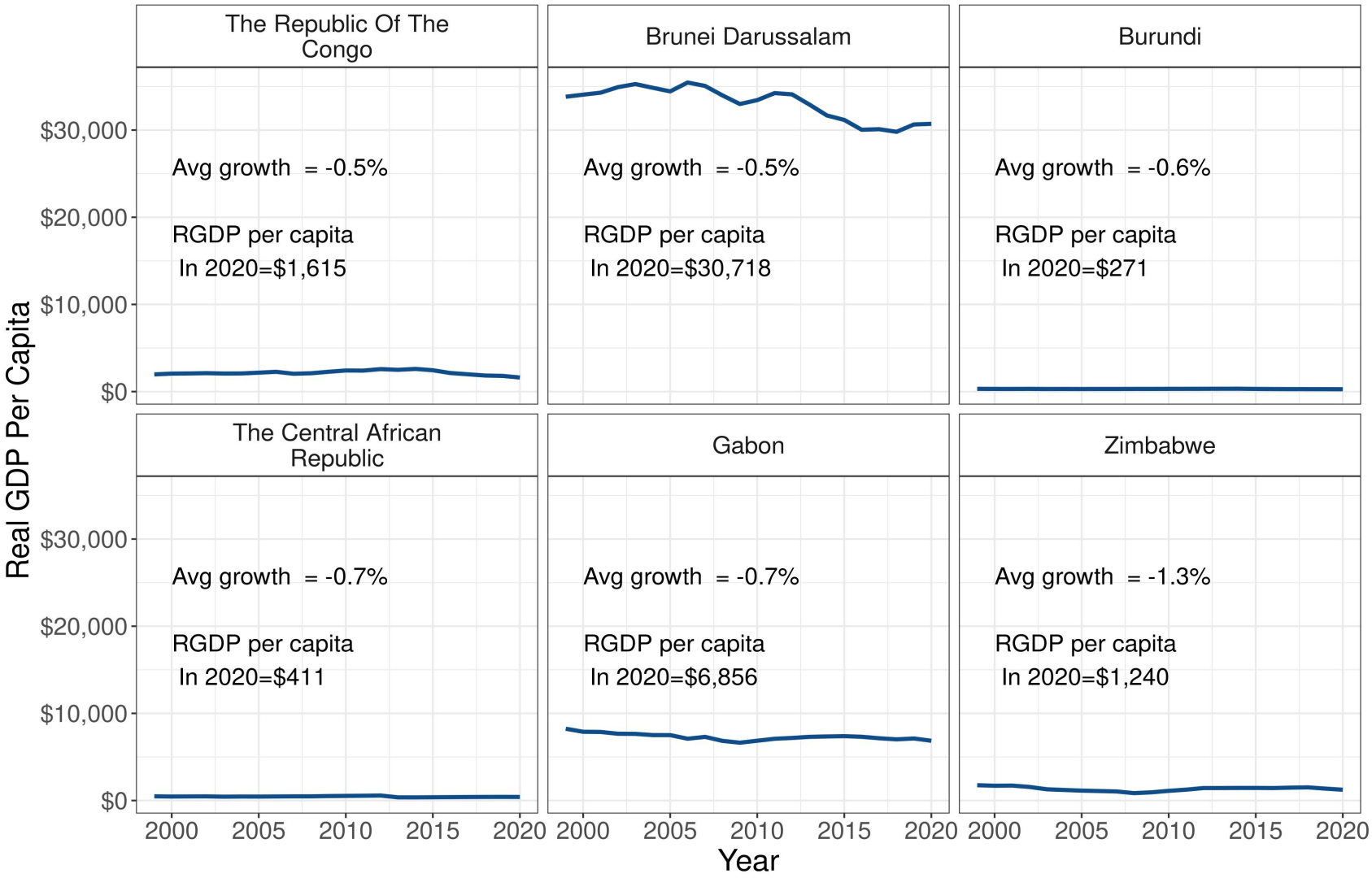
Poorest Economies (Real GDP Per Capita in 2020)



Fastest Growing Economies (1999-2019)



Slowest Growing Economies (1999-2019)



Growth Factors and Incentives

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

- **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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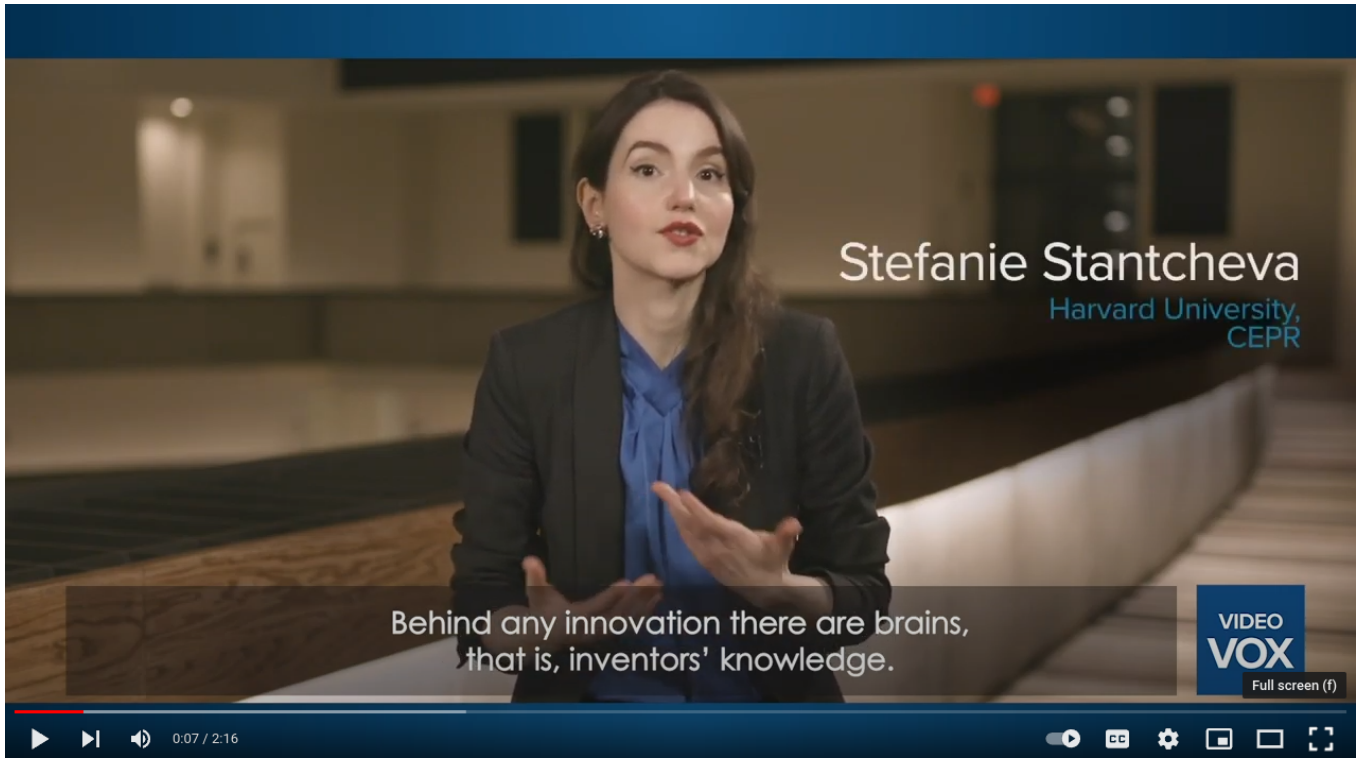
Scholar Spotlight: Stefanie Stantcheva

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=U5wfxjmIwtE

Discovery of new technologies

- 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.

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Labor productivity curve

- Think of labor productivity curve as a production function, in per-capita terms.
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- But at a decreasing rate. Due to *diminishing marginal product of capital*.

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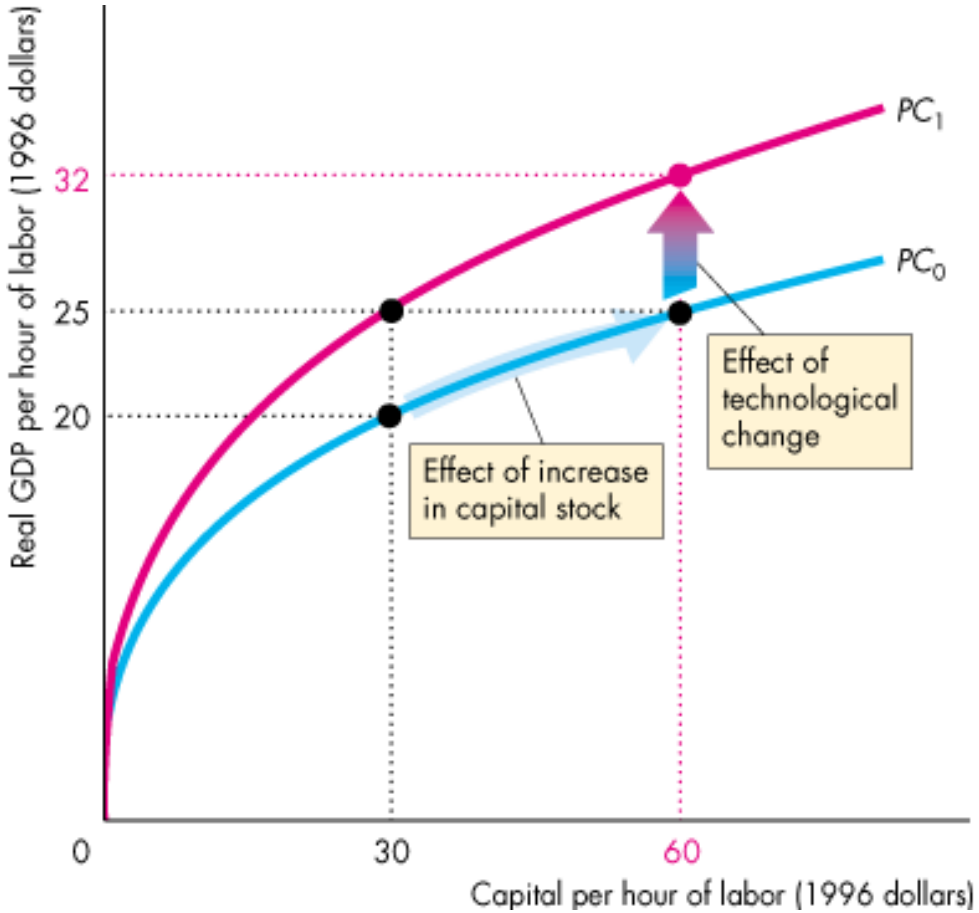
How labor productivity grows



Labor productivity curve

- 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

- Diminishing returns explains catch-up theory.
  - Lesser-developed countries have low levels of capital $\rightarrow$ high return to investing in new capital
  - Developed countries (like the U.S.) have high levels of capital $\rightarrow$ 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

Mechanism

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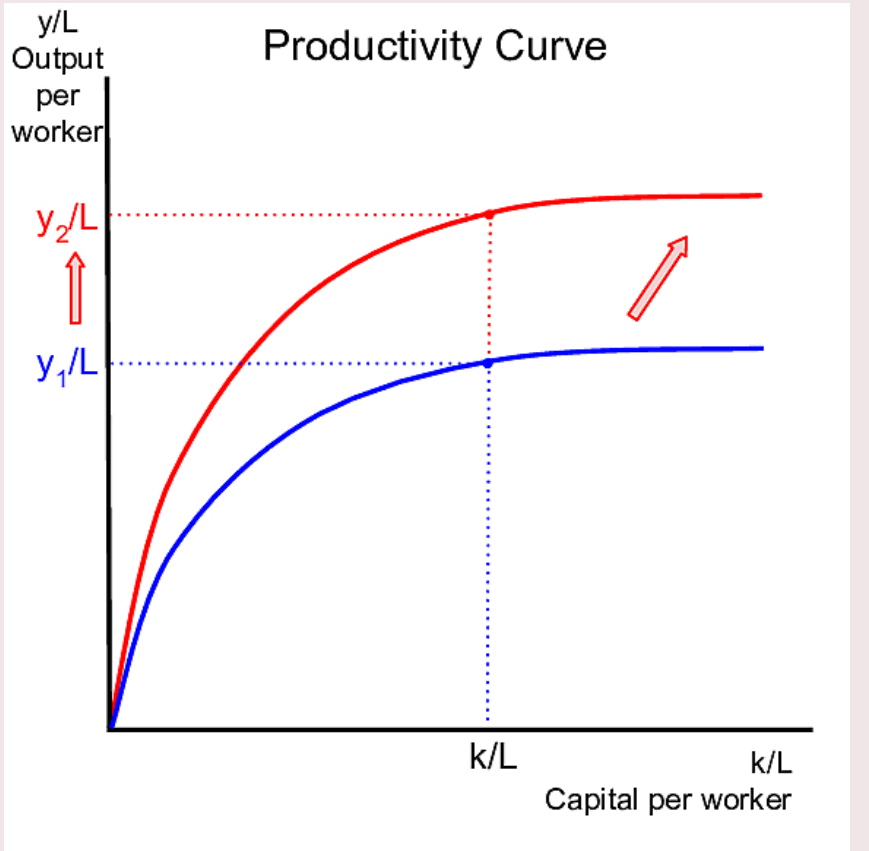
- Improvements in human capital lead to higher productivity
- Higher productivity shifts out the productivity curve
- Even without increases in capital stock, results in higher long-run output per worker

Graphical Demonstration



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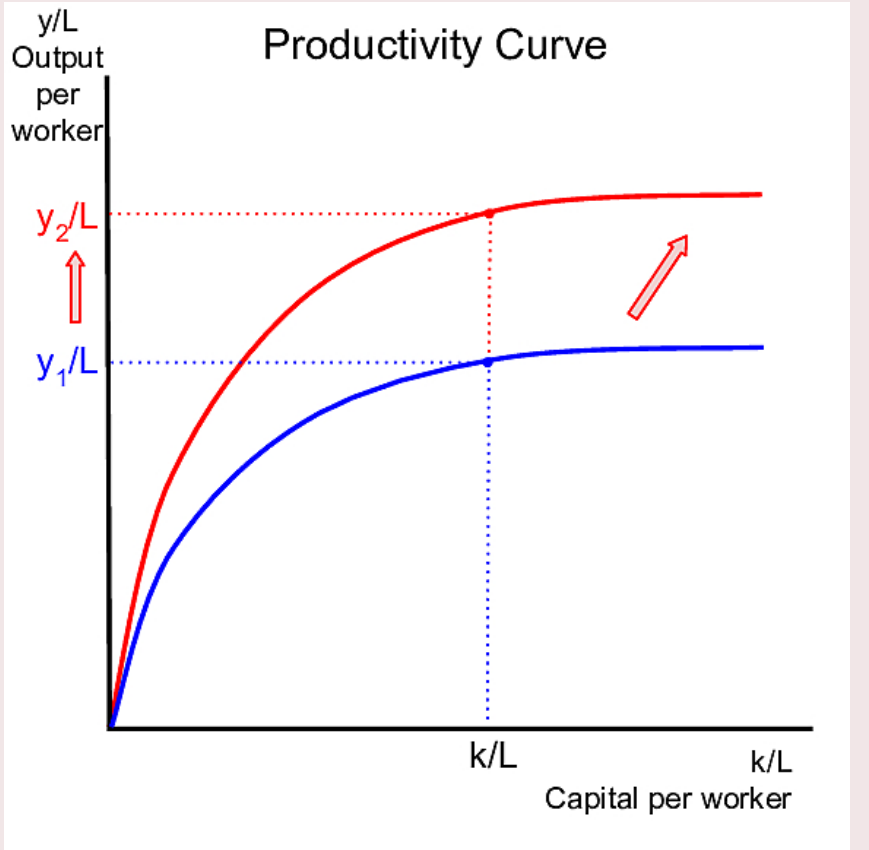

Improvement In Human Capital

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
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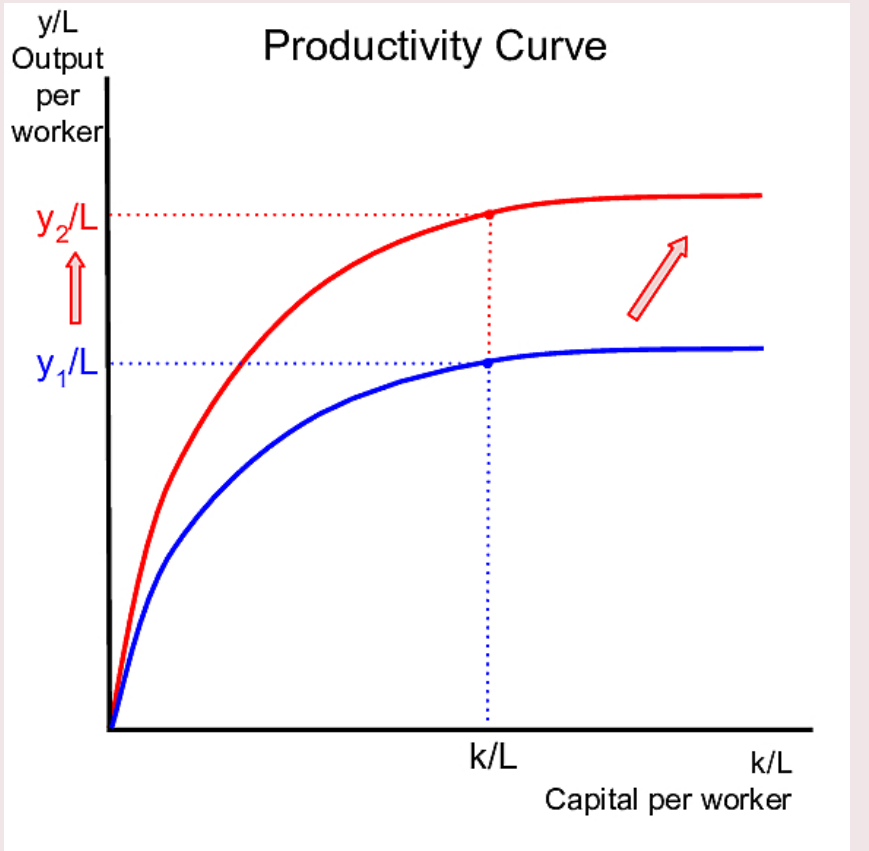

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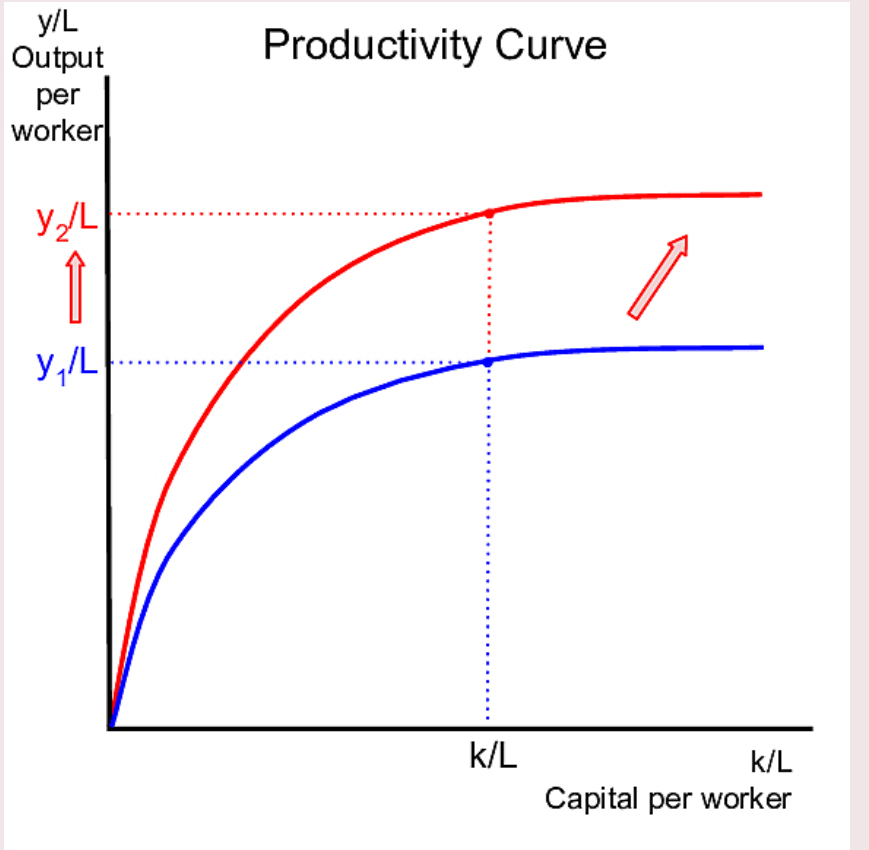

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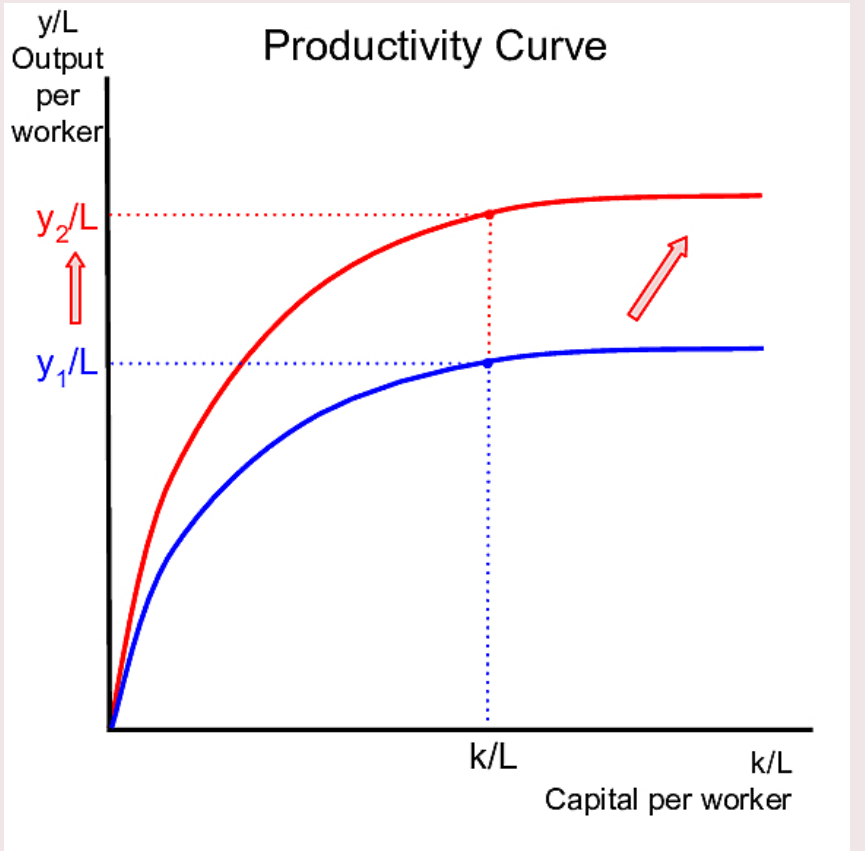
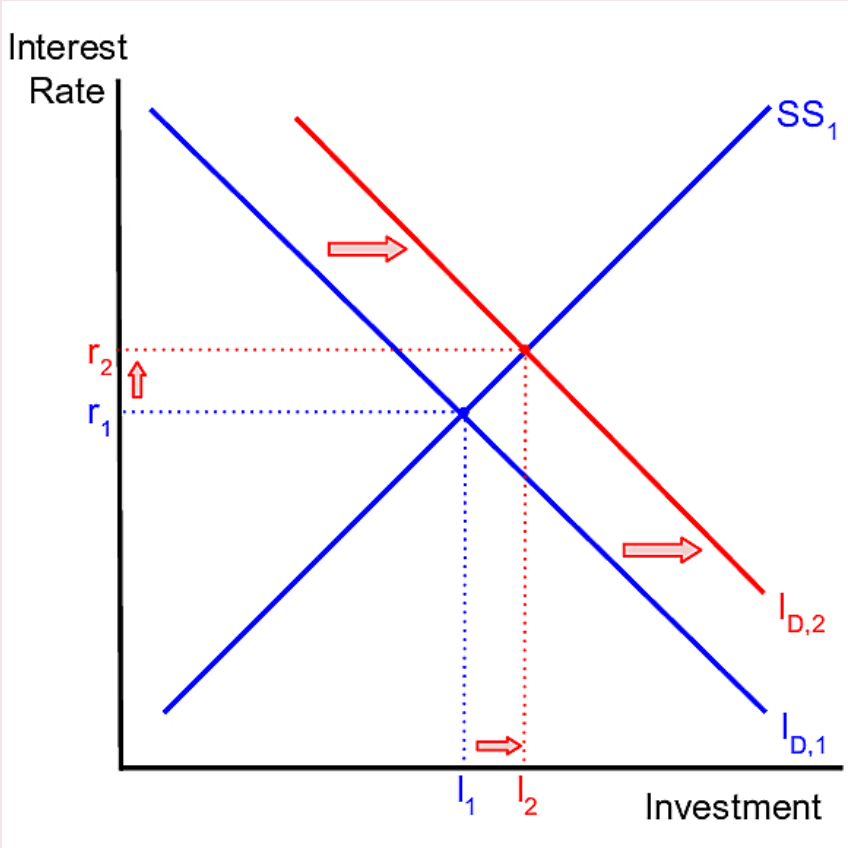


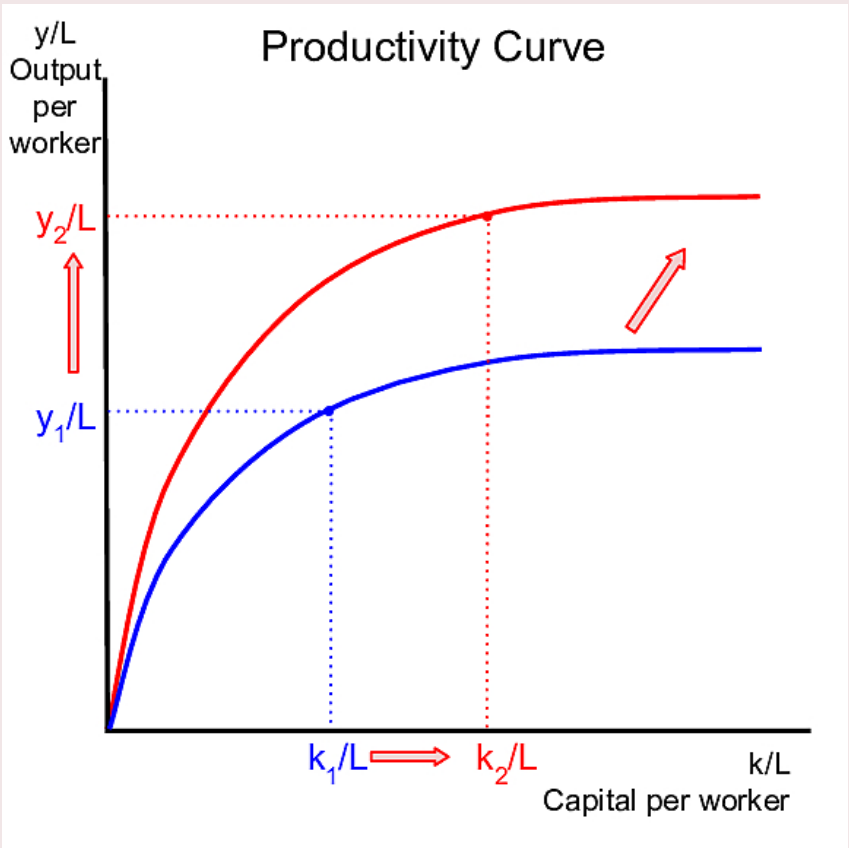
Improvement In Technology

An improvement in technology, increases productivity and increases investment demand

Loanable Funds Market



Productivity Curve

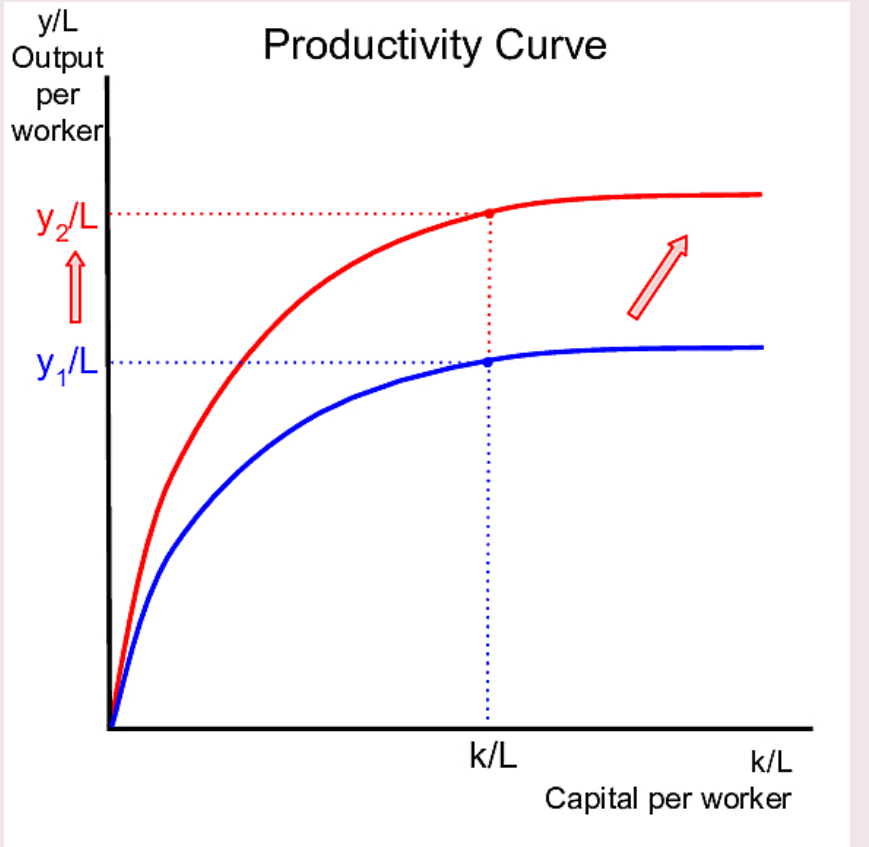


Improvement In Public Health

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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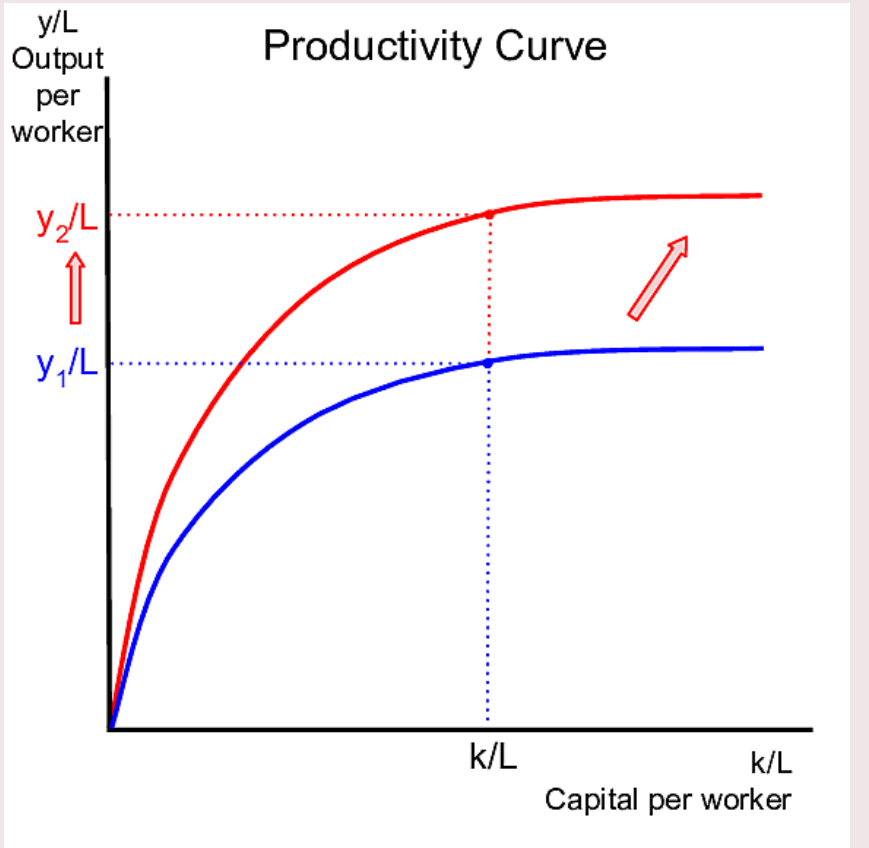

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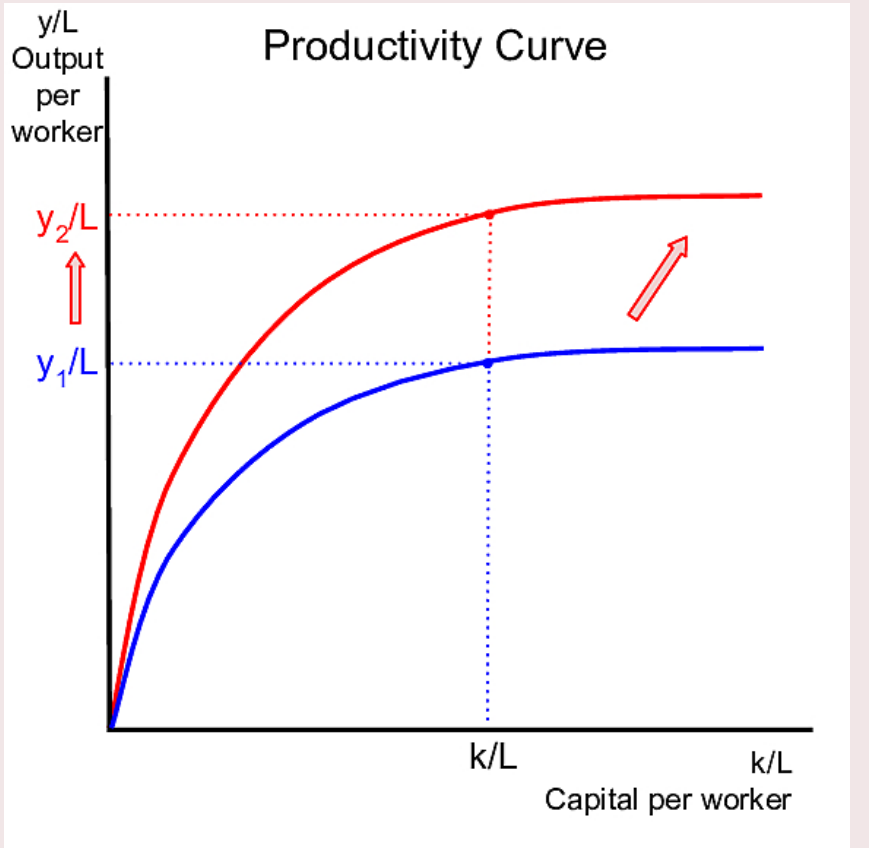

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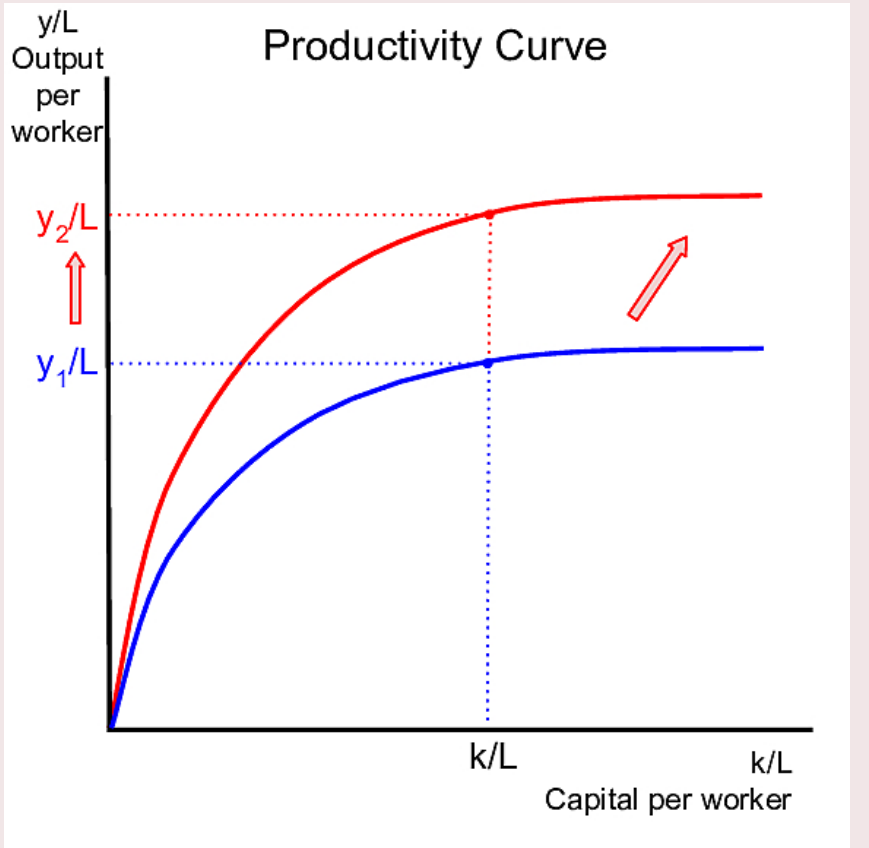
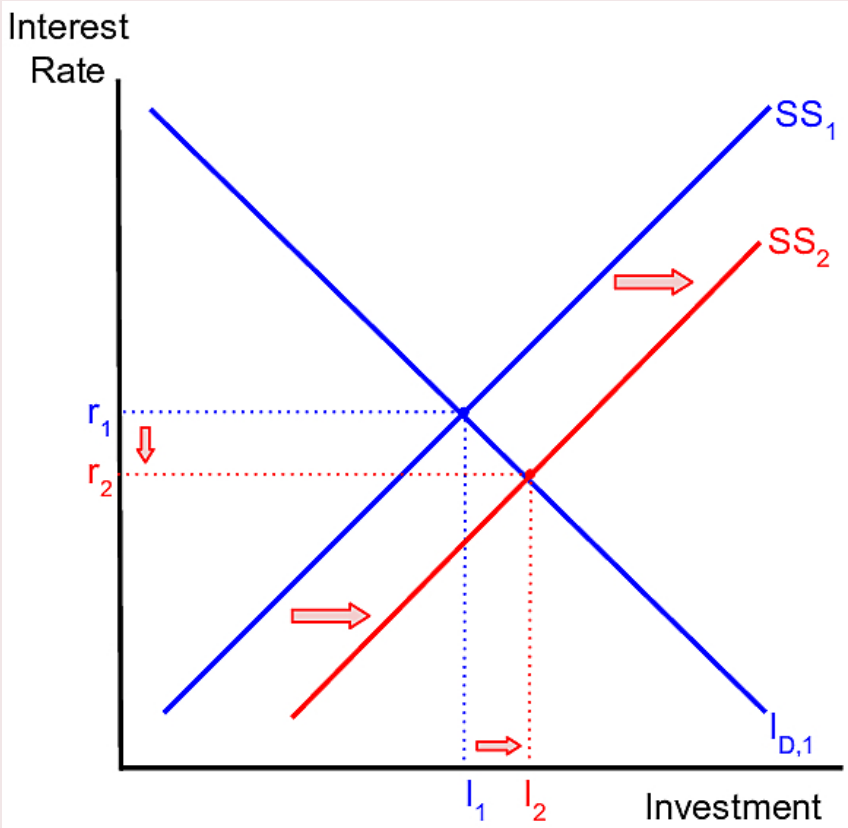


Private Savings

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

Loanable Funds Market



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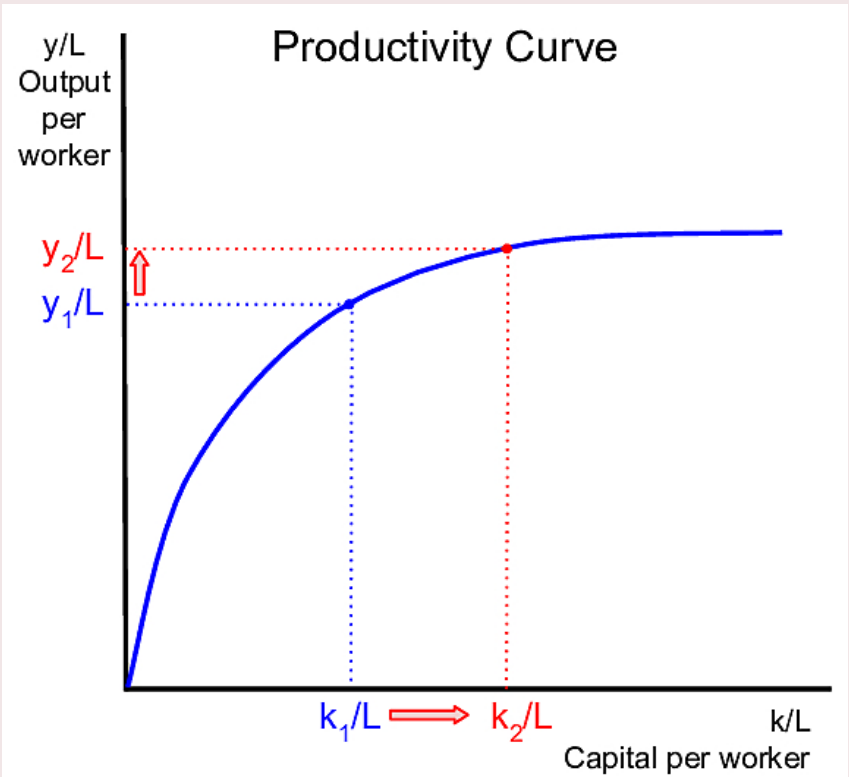
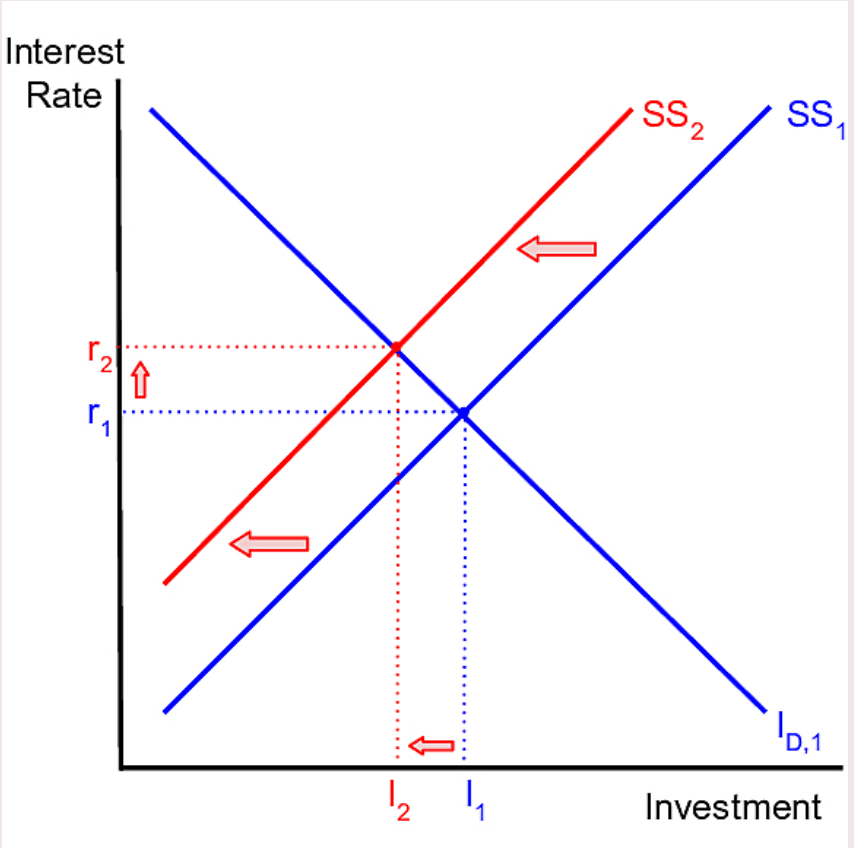


Government Budget Deficits

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

Loanable Funds Market



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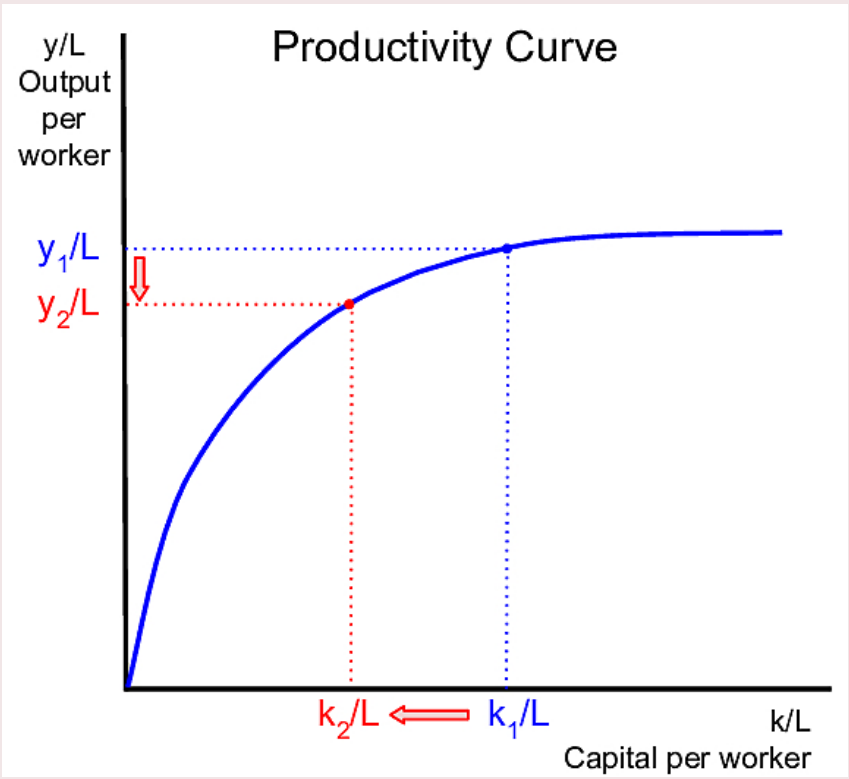

Trade Deficits

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

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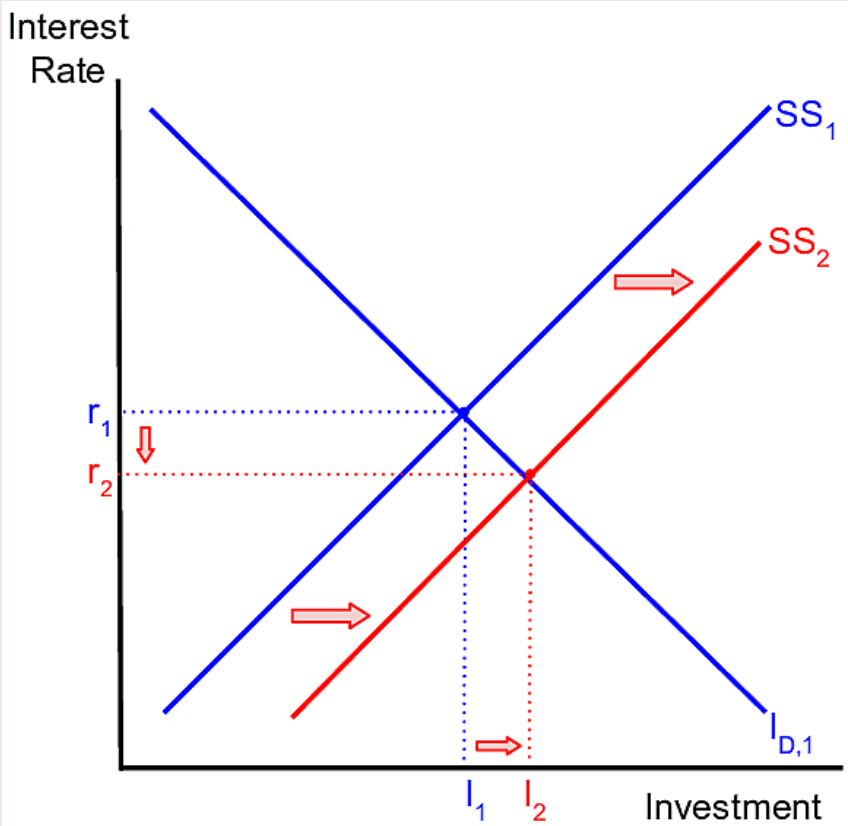

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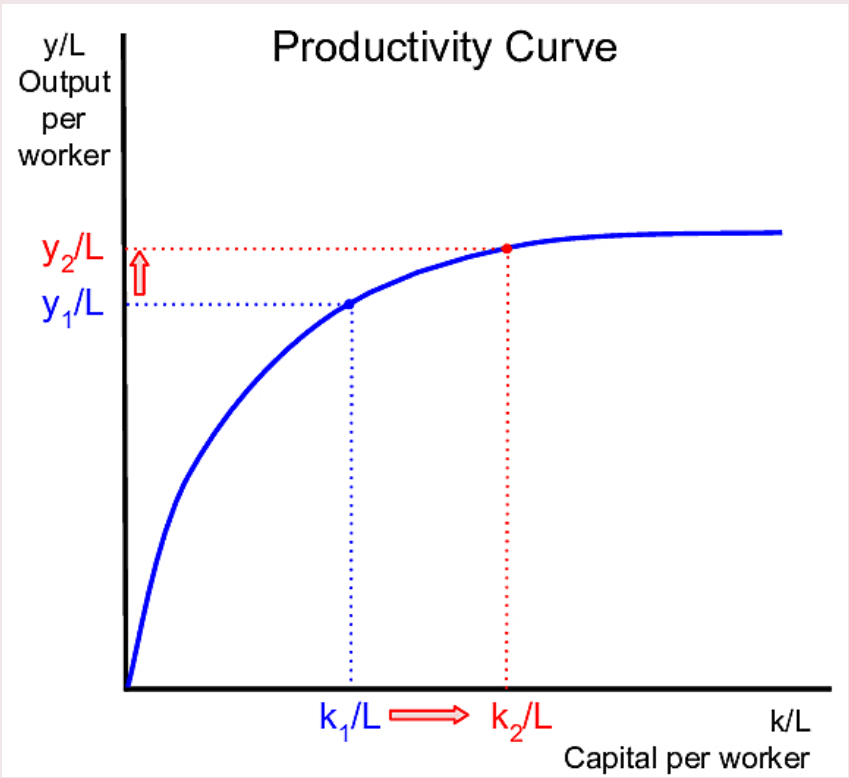

Business Economic Outlook

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

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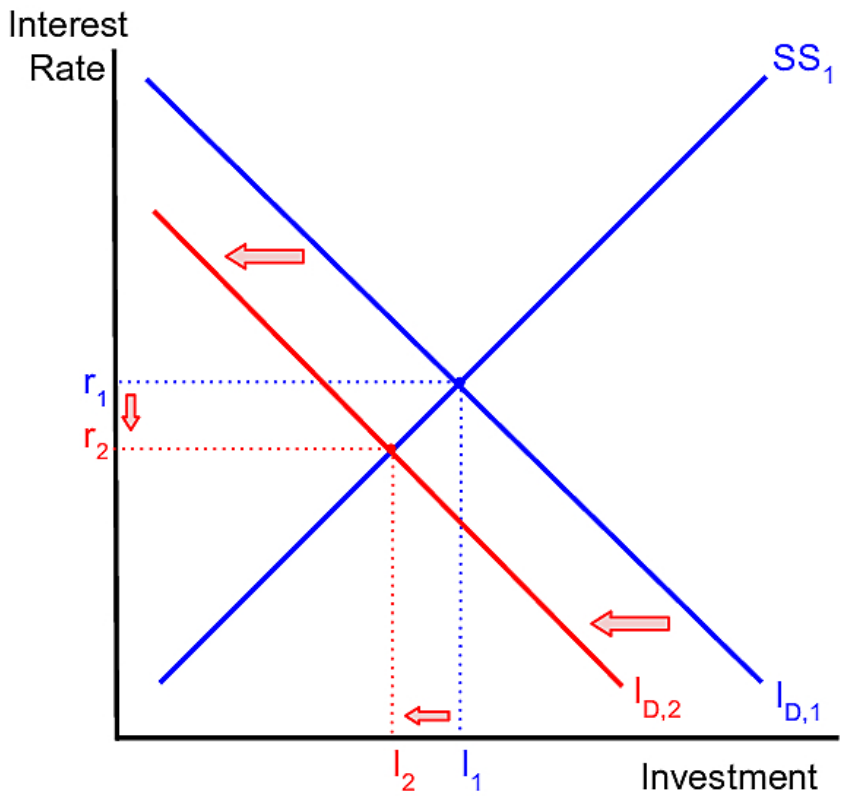

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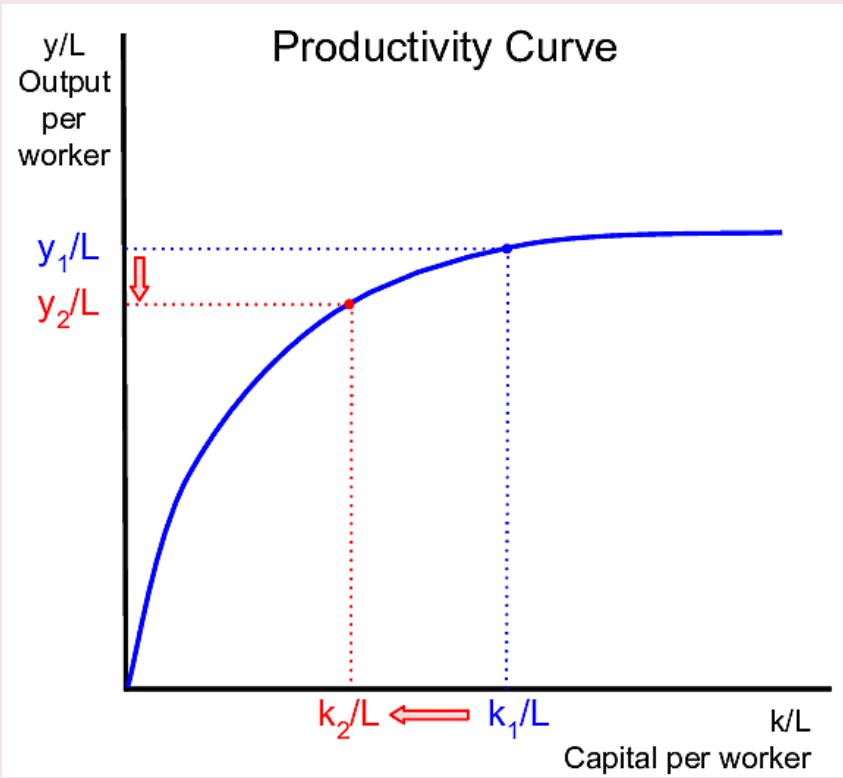

Government Policies Encourage Economic Growth

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
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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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