ECO 181 Lecture 04

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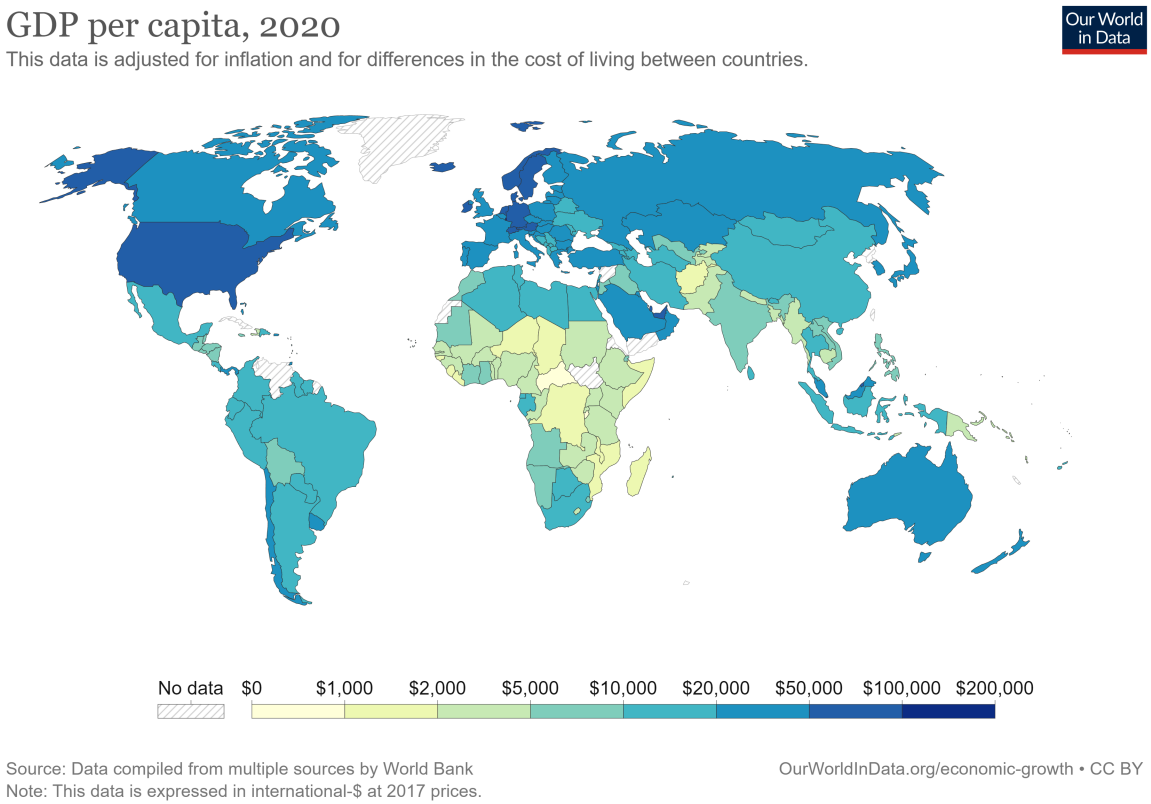
Real GDP per Capita

$$\text{real GDP per capita} = \frac{\text{real GDP}}{\text{population size}}$$

- real GDP per capita (real world data)



Growth Rate

- **The Rule of 70**: a mathematical formula that tells us how long it takes real GDP per capita, or any other variable that grows gradually over time, to double.(Note that the Rule of 70 can only be applied to a positive growth rate.)

$$\text{Number of years for variable to double} = \frac{70}{\text{Annual growth rate of variable}}$$

- At a 3% growth rate, a portfolio will double in 23.33 years because 70/3=23.33

Long-Run Growth

- Long-run economic growth depends almost entirely on one ingredient: rising **productivity**.
- **Labor productivity**, often referred to simply as **productivity**, is output per worker.
- How Productivity Is Determined?

  Physical capital consists of human-made resources such as buildings and machines.
  Human capital is the improvement in labor created by the education and knowledge embodied in the workforce.
  Technological progress is an advance in the technical means of the production of goods and services.

The Aggregate Production Function

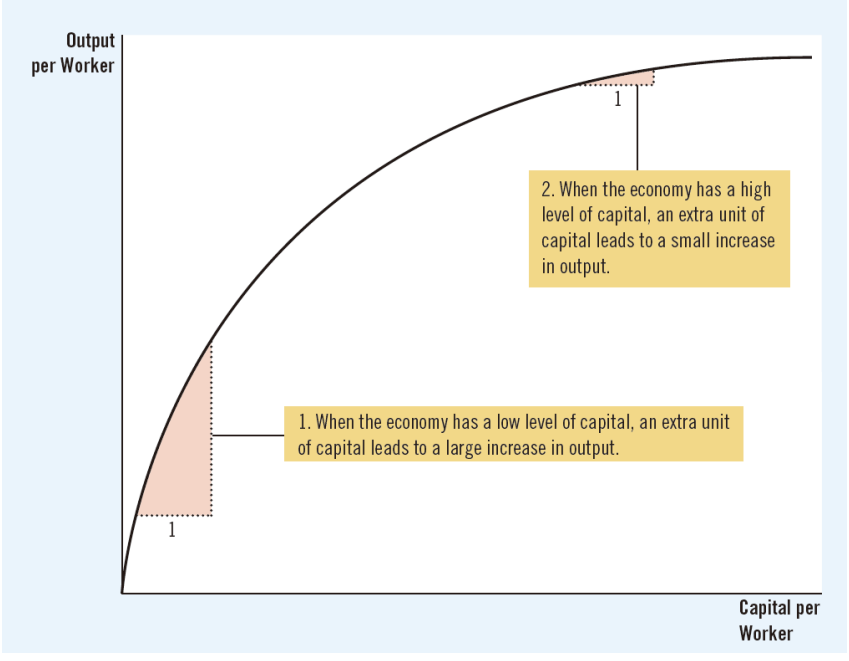
- **The aggregate production function** is a hypothetical function that shows how productivity (real GDP per worker) depends on the quantities of physical capital per worker and human capital per worker as well as the state of technology.

$$\text{GDP per worker} = T \times (\text{Physical capital per worker})^{\alpha} \times (\text{Human capital per worker})^{\beta}$$

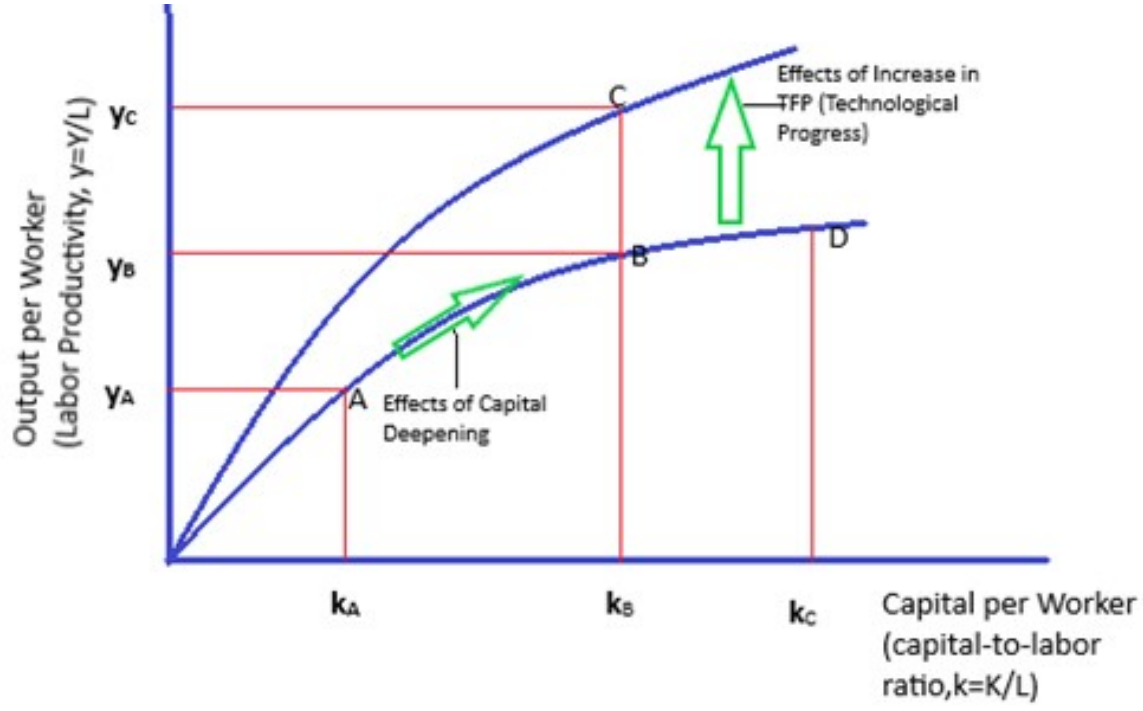
- $\beta + \alpha = 1$

The Aggregate Production Function

- **An aggregate production function** exhibits **diminishing returns to physical capital** when, holding the amount of human capital per worker and the state of technology fixed, each successive increase in the amount of physical capital per worker leads to a smaller increase in productivity.



The Aggregate Production Function



Why Growth Rates Differ

- Savings and Investment Spending
- Education
- Research and Development (Research and development, or R&D, is spending to create and implement new technologies.)

The Role of Government in Promoting Economic Growth

- Government Policies Government policies can increase the economy's growth rate through four main channels.
  1. Government subsidies to infrastructure.
  2. Government subsidies to education.
  3. Government subsidies to R&D
  4. Maintaining a well-functioning financial system

Financial system

- **Income**: money earned for doing work or received from personal investment.
- **Wealth**: value of accumulated assets
- **Assets**: any item of economic value that can be converted into cash. (house, car, jewelry)
- **Liability**: a requirement to pay income in the future (e.g. student loan, car loan)

Financial system

- **Financial system** the group of institutions in the economy that help to match one person's saving with another person's investment

Financial system

- Three Tasks of a Financial System
  - Task 1: Reducing Transaction Costs

    Transaction costs are the expenses of negotiating and executing a deal.
  - Task 2: Reducing Risk

    Financial risk is uncertainty about future outcomes that involve financial losses or gains.
  - Task 3: Providing Liquidity

Financial system

- Two Types of financial Systems
  - **Financial Markets**: Households invest their current savings and their accumulated savings, or wealth, by purchasing financial assets. Institutions through which savers can directly.
  - **Financial Intermediaries**: An institution that transforms funds gathered from many individuals into financial assets. provide the funds to borrowers.

Financial Markets

- **Financial markets** are where households invest their current savings and their accumulated savings, or wealth, by purchasing financial assets.
  - A household's **wealth** is the value of its accumulated savings.
  - **A financial asset** is a paper claim that entitles the buyer to future income from the seller.
- A household can also invest its current savings or wealth by purchasing a **physical asset**, a tangible object that can be used to generate future income such as a preexisting house or preexisting piece of equipment.

Financial Assets

- Types of Financial Assets
  - **Loans**: a lending agreement between an individual lender and an individual borrower.
  - **Bonds**: a bond is an IOU issued by the borrower (government or business), with a promise to pay by a certain date.
  - **Stocks**: a share in the ownership of a company. (partial owner)
  - **Bank deposits**: a saving product that customers can use to hold an amount of money at a bank for a specified length of time

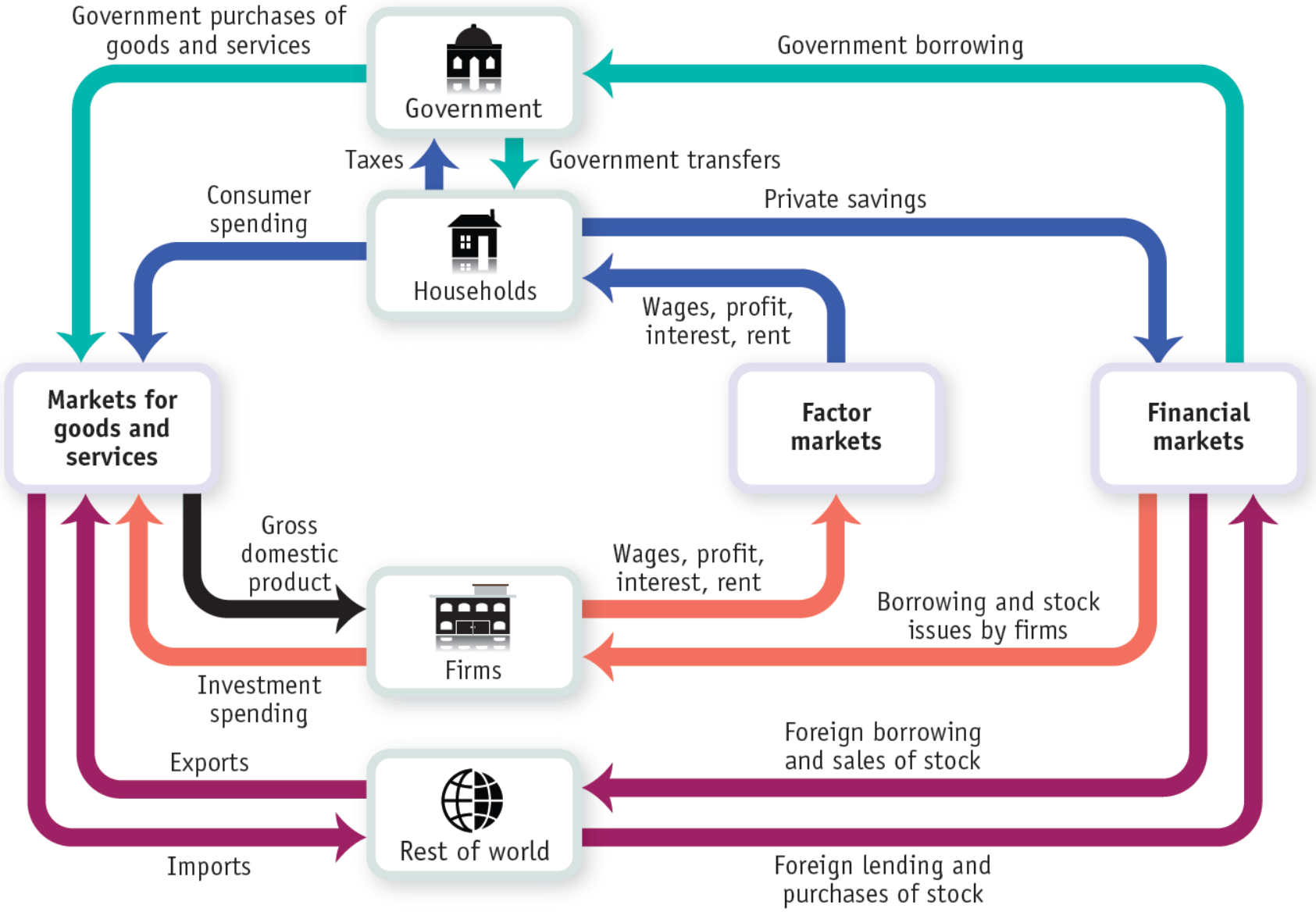
Financial Intermediaries

- The most important types of financial intermediaries are mutual funds, pension funds, life insurance companies, and banks.
  - **Mutual Funds:** a financial intermediary that creates a stock portfolio by buying and holding shares in companies and then selling shares of the stock portfolio to individual investors (small amount of money).
    - **A diversified portfolio** is a collection of different investments that combine to reduce an investor's overall risk profile.
    - Achieving diversification without high transaction costs.
  - **Pension Funds:** a type of mutual fund that holds assets in order to provide retirement income to its members.

Financial Intermediaries

- **A life insurance company**: sells policies that guarantee a payment to a policyholder's beneficiaries when the policyholder dies.
- **Bank**: an institution that helps resolve the conflict between lenders' needs for liquidity and the financing needs of borrowers who don't want to use the stock or bond markets.
  - Federal Deposit Insurance Corporation (FDIC): Since 2010, the FDIC insures deposits in member banks up to US$250,000 per ownership category.
  - FDIC insurance is backed by the full faith and credit of the government of the United States of America, and since its start in 1933 no depositor has ever lost a penny of FDIC-insured funds.

Circular Flow Model



Saving and Investment in the National Income Accounts

- **The Savings–Investment Spending Identity**: savings and investment spending are always equal for the economy as a whole.

  The Savings–Investment Spending Identity in a Closed Economy

Saving and Investment in the National Income Accounts

The Savings–Investment Spending Identity in a Closed Economy

Saving and Investment in the National Income Accounts

The Savings–Investment Spending Identity in an Open Economy

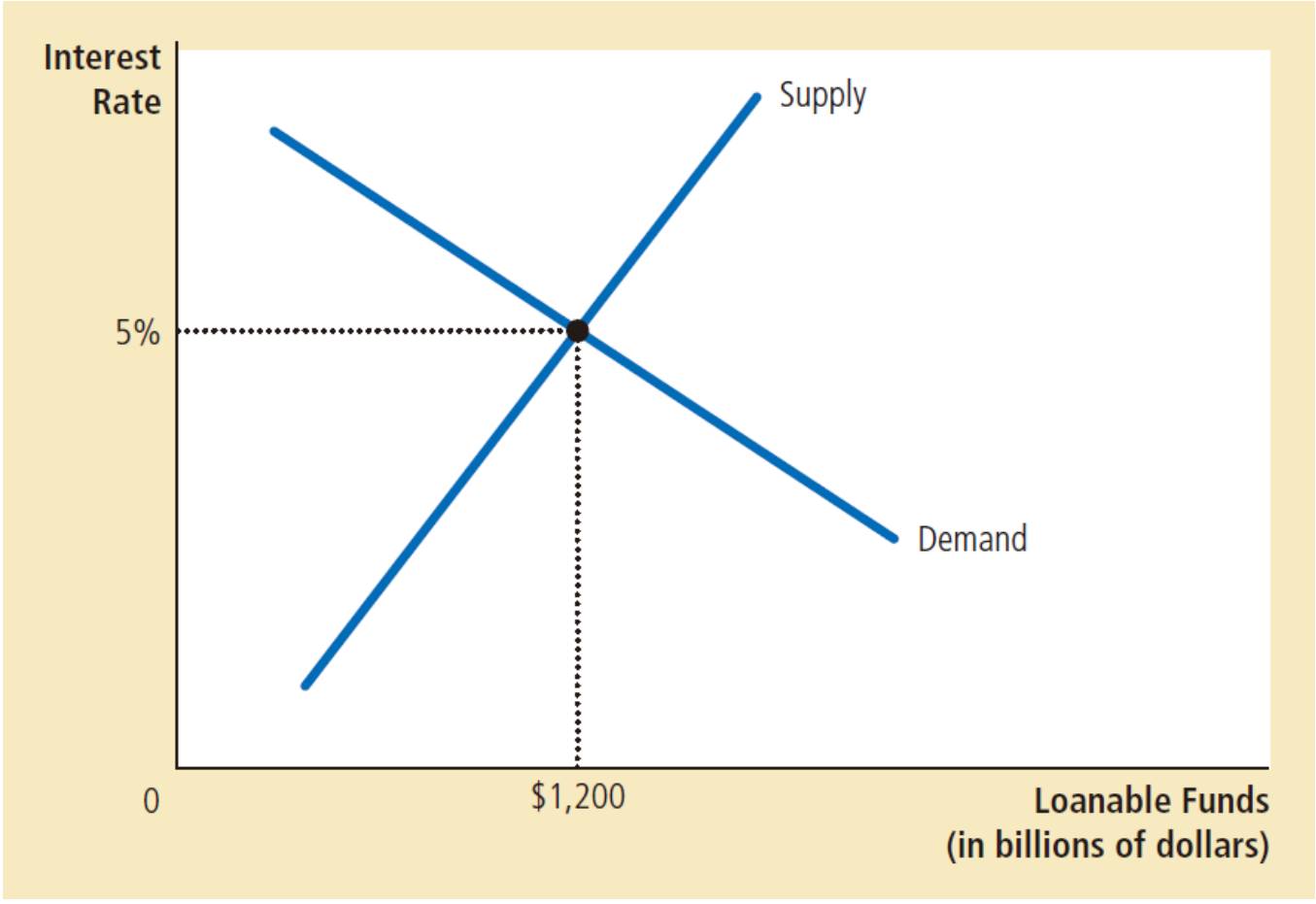
Saving and Investment in the National Income Accounts

The Savings–Investment Spending Identity in an Open Economy

The Market for Loanable Funds

- **The loanable funds market** is a hypothetical market that illustrates the market outcome of the demand for funds generated by borrowers and the supply of funds provided by lenders.
  - Saving is the source of the supply of loanable funds.
  - Investment is the source of the demand for loanable funds.

Supply and Demand for Loanable Funds



- The interest rate in the economy adjusts to balance the supply and demand for loanable funds.

Shifts of the Demand for Loanable Funds

1. Changes in perceived business opportunities.

   e.g. During the 1990s there was great excitement over the business possibilities created by the internet, which had just begun to be widely used.

Shifts of the Demand for Loanable Funds

2. Changes in government borrowing.

    e.g. A government runs a budget deficit.

Crowding out

- **Crowding out** occurs when a government budget deficit drives up the interest rate and leads to reduced investment spending.

Shifts of the Supply of Loanable Funds

1. Changes in private savings behavior.

   e.g. Between 2000 and 2006 rising home prices in the United States made many homeowners feel richer, making them willing to spend more and save less.

Shifts of the Supply of Loanable Funds

2. Changes in net capital inflows.

   e.g. In the mid-2000s, the United States received large net capital inflows, with much of the money coming from China and the Middle East.