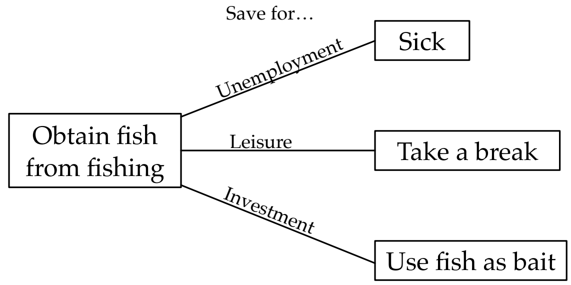
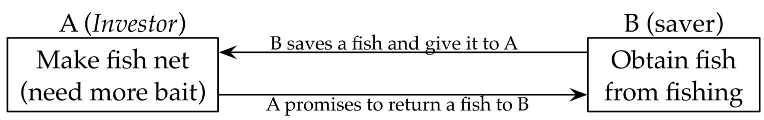
Discussion 4

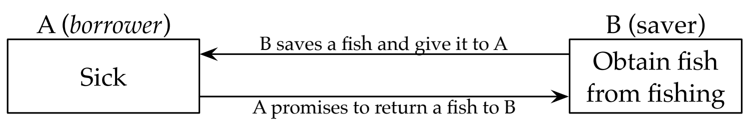
1 The big picture

- Storable goods



- Perishable goods





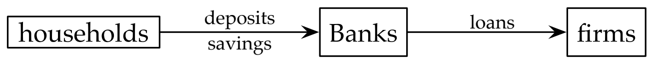
- The matching process
  - A and B talk and make arrangement.
  - Things take place through *market*.
  - Extension: Firms investment are financed by households saving through financial institutions.

2 Financial Institution

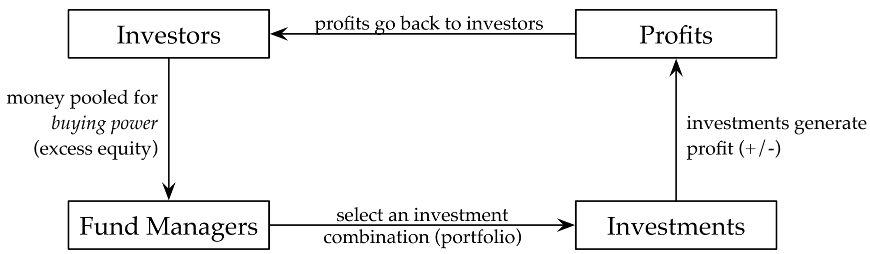
- Financial system: the group of institutions that helps match the saving of one person with the investment of another.
  1. Financial markets: institutions through which savers can ***directly*** provide funds to borrowers.
     - The Bond Market: A bond is a certificate of indebtedness.
       * Date of maturity(**term**): the time when the loan will be paid.
       * **Credit risk** refers to the probability that the borrower will be unable to make interest payments and repay principal.
       * Rate of **interest** that will be paid periodically until the loan matures.
     - The Stock Market: A stock is a claim to partial ownership in a firm.
       * Partial **ownership** by funding the purchase of capital.
       * Declares share of the corporate profits.
       * Riskier than bonds:
         (a) Bond represent a firm's obligation to pay the money back.
         (b) Investors take the risks themselves by purchasing the partial ownership.
         (c) Before a firm goes bankrupt, its remaining assets are used first to pay off the debts.

* Stock Exchange: NY Stock Exchange, American Stock Exchange, and NASDAQ.
* Stock price of a firm depends on firms' *profitability* and people's *perception* for the firms' future.
* Stock Price Indexes: average price of different companies' stock prices.
  · Dow Jones Industrial Average: 30 major US companies.
  · Standard & Poor's 500 Index: 500 major companies.

2. Financial intermediaries: institutions through which savers can ***indirectly*** provide funds to borrowers.
   – Bank arrangements:



   – Manager arrangements (mutual funds):



3 Saving and Investments

Recall the GDP(**national income** or **aggregated income of ALL households**) equation:

$$Y(\text{GDP}) = C(\text{consumption}) + I(\text{investments}) + G(\text{gov. spending}) + X(\text{exports}) - M(\text{imports})$$

under the assumption of the economy is *closed*, i.e. **no trade** (X = M = 0 or NX = 0) with other economies, we have

$$Y = C + I + G$$

Then we can rearrange the terms and derive the following (we use T to denote "Tax"):

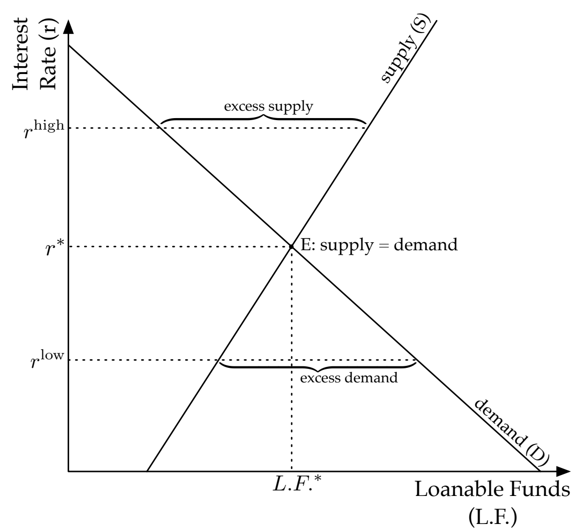
1. Private Saving: $Y - T - C$
   - The portion of households' income that is not used for consumption or paying taxes.
   - It is how much income households have "left over" after they pay their taxes and purchase all the goods they desire.
   - Household uses their savings to buy bonds, equities, shares of mutual fund or accumulate them in bank accounts (bank will then use the money to invest and return interests).

2. Public Saving: $T - G$
   - Tax revenue less government spending.
     – Budget surplus: $T > G$, an excess of tax revenue over government spending
     – Budget deficit: $T < G$, a shortfall of tax revenue from government spending
     – Balanced Budget: $T = G$, government savings is zero.

3. National Saving: $S \equiv (Y - T - C) + (T - G) = \boldsymbol{Y - C - G} \Longrightarrow S = I$
   - **private saving + public saving**
   - The portion of national income that is not used for consumption or government purchases.
4. Investments: the **purchase of new capital** and NOT the purchase of stocks and bonds.
   - build a new factory, purchase new equipment, buy a new house
5. Conclusion: In a closed economy, anything that is not spent is assumed to be invested.

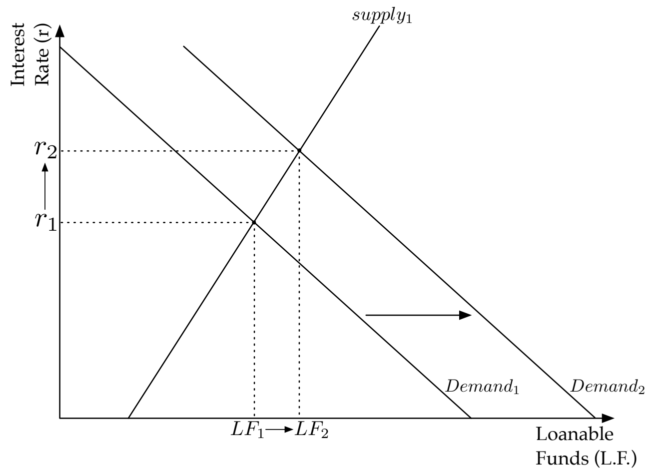
4 The Model

- Introduction
  - Essentially, all models are wrong, but some are useful.
  - We use a **demand-supply model** of the financial system to understand:
    1. How the financial system coordinates saving and investment.
    2. How government policies and other factors affect saving, investment, the interest rate.
- Assumptions:
  1. Only a single financial **market for loanable funds**.
  2. All savers deposit their saving in this market.
  3. All borrowers take out loans from this market.
  4. There is one interest rate, which is both the *return to saving* and the *cost of borrowing*.
- Demand side (funds comes from *investment*):
  - Firms borrow the funds they need to pay for new equipment, factories.
  - Households borrow the funds they need to purchase new houses.
- Supply side (funds comes from *saving*):
  - Households with extra income can loan it out and earn interest.
  - Public saving ($T - G$):
    * Budget surplus, $T > G$(positive): adds to national saving and the supply of loanable funds.
    * Budget deficit, $T < G$(negative): reduces national saving and the supply of loanable funds.
- Graph representation:
  - How to get the line (regression)? How to get an equilibrium?

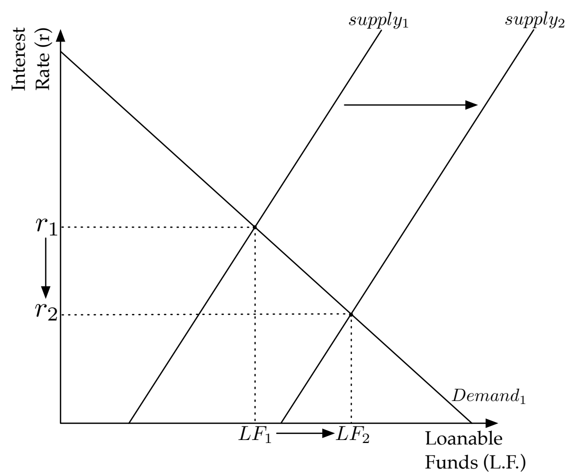


5 Policy Inference

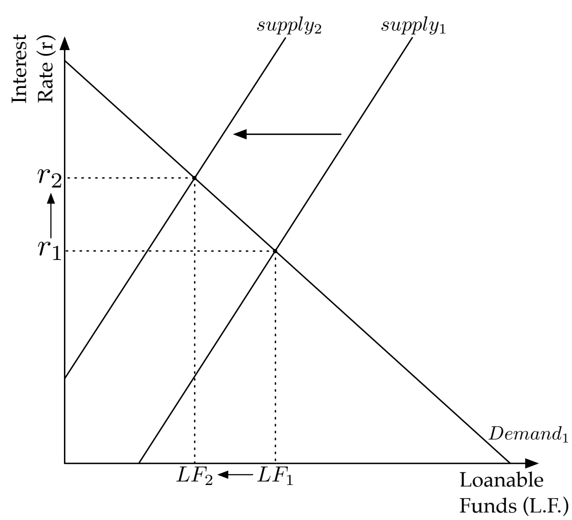
1. A shock that provides *investment* incentives: demand for funds↑ $\Longrightarrow$ Demand shifts out $\Longrightarrow r \uparrow, LF \uparrow$



2. A shock that provides *saving* incentives: more funds (supply) in market $\Longrightarrow$ S shifts out $\Longrightarrow r \downarrow,\ LF \uparrow$



3. Government budget deficits: public saving↓ $\Longrightarrow$ national saving↓ $\Longrightarrow$ fund supply ↓ $\Longrightarrow$ S shifts in $\Longrightarrow r \uparrow,\ LF \downarrow$



5.1 The crowding out effect

- Effects:

  $$\begin{aligned}\text{Government spending, } G \uparrow \text{ or tax cut, } T \downarrow &\Longrightarrow T < G \text{ (budget deficit)}\\ &\Longrightarrow \text{public saving} \downarrow \Big(Y - C - [G \uparrow]\Big)\\ &\Longrightarrow \text{national saving} \downarrow \text{(private sav. + public sav. = national sav.)}\\ &\Longrightarrow \text{government borrow} \uparrow \text{(sell bonds to finance deficit)}\\ &\Longrightarrow \text{total supply of funds} \downarrow\\ &\Longrightarrow \text{S curve shifts in}\\ &\Longrightarrow r \text{ (interest rate)} \uparrow, \text{ quantity of funds} \downarrow\\ &\Longrightarrow \text{demand for funds} \downarrow \text{ (move along the curve)}\\ &\Longrightarrow \text{investment} \downarrow \text{ (no funds to invest)}\end{aligned}$$

- Conclusion: **increase in budget deficit causes fall in investment**.
- Persistent deficits lead to a rising government debt.
- The ratio of government debt to GDP is a useful measure of the government's indebtedness relative to its ability to raise tax revenue.
- Debt-GDP ratio usually rises during wartime and falls during peacetime.

6 Review Exercises for Midterm

1. A financial institution through which savers can lend funds directly to borrowers is a financial:
   (a) system
   (b) intermediary
   (c) market
   (d) financial planner

2. Suppose the government were to create a disincentive for private saving by increasing the tax on income earned from retirement savings. As a result,
   (a) the real interest rate would increase and investment would decrease.
   (b) both the real interest rate and investment would increase.
   (c) the real interest rate would decrease and investment would increase.
   (d) both the real interest rate and investment would decrease.

   Use the following information to answer the next 2 questions. Suppose that the country of Gondor has GDP equal to $800 billion, consumption equal to $550 billion, and government purchases equal $100 billion.

3. If the government of Gondor is running $50 billion deficit, then what is the value of the tax revenues of the government?
   (a) -$150 billion (b) -$50 billion (c) $150 billion (d) $50 billion

4. What is the value of private saving in Gondor?
   (a) -$50 billion (b) $150 billion (c) $0 (d) $ 200 billion

   Use the following information to answer the next 3 questions. Last year you earned $50,000 in income. The CPI last year was 120 and the CPI this year is 150.

5. In percentage terms, how much higher is the average price of consumer goods this year relative to the prices of consumer goods in the base year? (a) 30% (b) 50% (c) 150% (d) 25%.

6. What was the rate of inflation between last year and this year using CPI inflation?
   (a) 80% (b) 25% (c) 30% (d) 125%

7. What is value of the income you earned last year in terms of today's dollars?
   (a) $72,000 (b) $90,000 (c) $62,500 (d) $75,000

8. Which of the following transactions would be included in GDP for the U.S.?

   (a) You rake the leaves in your backyard.
   (b) Your neighbor buys some illegal drugs.
   (c) Rey, a citizen of Italy, buys a new car in Madison, Wisconsin.
   (d) Luke, a U.S. citizen, buys a rice paddle in Miyajima, Japan.

9. We observe that the real interest rate and investment have both increased. Which of the following is best able to explain this?

   (a) The government has increased its expenditures on military equipment without adjusting its tax revenues.
   (b) An increase in wealth has made households more willing to put aside funds for their retirement.
   (c) The government has raised taxes without reducing government expenditures.
   (d) The development of new technology has made borrowers more willing to borrow funds in order to purchase new capital.

10. Obi-Wan receives a Social Security check from the U.S. government and he uses the funds to purchase Kyber crystals and to pay his rent. The transactions in this scenario will be reflected in which component of GDP?

    (a) Government Purchases
    (b) Consumption
    (c) Investment
    (d) Net Exports

11. An increase in the budget deficit:

    (a) may increase, decrease, or not affect investment spending.
    (b) reduces private investment expenditures.
    (c) does not affect investment spending.
    (d) increases private investment expenditures.

12. Which of the following would be considered investment from the perspective of national income accounting?

    (a) You purchase a portfolio of stocks and bonds with the help of a financial planner.
    (b) Your sister works a full-time job and uses part of her income to pay her college tuition.
    (c) AT&T builds a new cellular phone tower.
    (d) Your new employer pays you to attend a new-employee training program.

13. When new goods are introduced into the CPI basket, the computed cost of living

    (a) decreases, so the CPI will tend to overstate the change in the cost of living if the effect of the new good is not accounted for properly.
    (b) decreases, so the CPI will tend to understate the change in the cost of living if the effect of the new good is not accounted for properly.
    (c) increases, so the CPI will tend to overstate the change in the cost of living if the effect of the new good is not accounted for properly.
    (d) increases, so the CPI will tend to understate the change in the cost of living if the effect of the new good is not accounted for properly.

Use the following information to answer the next 5 questions. Consider a small economy in which the residents only consume pizza and cola:

	Pizza		Cola	
year	price	quantity	price	quantity
2010	\$5	5	\$1	10
2011	\$10	5	\$2	10
2012	\$15	10	\$3	20
2013	\$15	20	\$3	40

14. What was nominal GDP in 2012? (a) \$35 (b) \$420 (c) \$210 (d) \$70.
15. Using 2010 as the base year, what was real GDP in 2012? (a) \$35 (b) \$35 (c) \$70 (d) \$140.
16. Using 2010 as the base year, what was the GDP deflator for 2012? (a) 400 (b) 200 (c) 300 (d) 100
17. Using 2010 as the base year, what was the inflation rate between 2011 and 2012 as measured by the percentage change in the GDP deflator? (a) 50% (b) 100% (c) 0% (d) 150%
18. By what percent did the price of the average goods rise between 2010 and 2011? (a) 300% (b) 50% (c) 100% (d) 200%
19. Which of the following represents national saving?
    (a) Y − C − T.
    (b) T − G − C.
    (c) T − G.
    (d) Y − C − G.
20. If the price of domestically produced and sold clothing increases, then
    (a) the consumer price index will increase, and the GDP deflator will be unaffected.
    (b) the consumer price index and the GDP deflator will both increase.
    (c) the consumer price index and the GDP deflator will both be unaffected.
    (d) the consumer price index will be unaffected, and the GDP deflator will increase.
21. You observe that the the real interest rate in the US has increased while the quantity of investment has decreased. Which of the following could best explain why this has happened?
    (a) The US government has increased its tax collections without adjusting its expenditures on goods and services.
    (b) Households in the US have become more willing to save for their retirement so they are consuming less.
    (c) The US government has increased its expenditures on goods without adjusting tax collections.
    (d) The US government has created an investment incentive to encourage busiensses to buy new capital.

Use the following information to answer the next 2 questions. The government of Wakanda in Sub-Saharan Africa has created a new incentive for private investment by reducing taxes for firms that purchase new capital.

22. Other things equal, in the market for loanable funds,
    (a) the supply of loanable funds would shift to the left.
    (b) the supply of loanable funds would shift to the right.
    (c) the demand for loanable funds would shift to the right.

(d) the demand for loanable funds would shift to the left.

23. Other things equal, in the market for loanable funds,
   (a) the equilibrium real interest rate will increase and the quantity of investment will increase.
   (b) the equilibrium real interest rate will increase and the quantity of investment will decrease.
   (c) the equilibrium real interest rate will decrease and the quantity of investment will decrease.
   (d) the equilibrium real interest rate will decrease and the quantity of investment will increase.

24. A restaurant in the US imports $250,000 of Canadian maple syrup into the U.S. and sells the syrup as part of its pancake breakfasts. The revenue received from the sale of pancake breakfasts is $900,000. As a result of these transactions:
   (a) Canadian GDP rises by $250,000 and U.S. GDP is unchanged.
   (b) Canadian GDP is unchanged and U.S. GDP rises by $900,000.
   (c) Canadian GDP rises by $250,000 and U.S. GDP rises by $650,000.
   (d) Canadian GDP is unchanged and U.S. GDP rises by $650,000.

25. Other things equal, if the government of Rohan has has recently decreased the amount of taxes that it collects from its citizens without changing the quantity of goods that it purchases, what will happen in the market for loanable funds?
   (a) the supply of loanable funds would shift to the right.
   (b) the demand for loanable funds would shift to the right.
   (c) the supply of loanable funds would shift to the left.
   (d) the demand for loanable funds would shift to the left.

26. Which of the following represents private saving?
   (a) $T - G - C$.
   (b) $Y - C - G$.
   (c) $T - G$.
   (d) $Y - C - T$.

27. Which of the following are defined as saving?
   Q. Purchase stock in Apple Inc.
   W. Finance with mortgage and use it to build a new house in Madison.
   E. Purchase a certificate of deposit at the bank.
   R. Borrow money to build a new factory for the company.

   (a) QW (b) QE (c) WR (d) ER

28. A mutual fund:
   (a) sells shares to the public and uses the proceeds to purchase a portfolio of stocks and/or bonds.
   (b) is a financial company that makes loans to people in small communities.
   (c) is a financial market.
   (d) is another term for a bank.

29. The knowledge and skills that workers acquire through education, experience and on-the-job training is called:
   (a) technological knowledge
   (b) physical capital
   (c) natural resources
   (d) human capital