Econ 201 AB (Spring 2017)
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Week 5 Review Sheet

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Chapter 10. Savings, Investment Spending, and the Financial System

1. The savings-investment spending identity: Savings and investment spending are always (1) _____ for the economy as a whole.

Answer: (1) equal.

Three different economies:

- A simplified economy: G = 0, NX = 0, so Y = C + I.
- A closed economy: NX = 0, so Y = C + I + G.
- An open economy: Y = C + I + G + NX.

These are the national income account identities under different economies. As I mentioned in Week 3, we sometimes use NX to denote (X – M), which is the "net exports" (exports minus imports). Now let's discuss the savings-investment spending identity under these three different cases.

In a simplified economy, for a household, the income can only be spent on consumption or saved, and thus Y = C + S. Then, we have C + I = C + S, so by canceling the C on both sides of the equation, we get S = I. You can see this clearly from the expanded circular-flow diagram.

In a closed economy, the income can be spent on consumer's consumption (C), government purchases (G), or saved (S). Then, we have C + I + G = C + G + S, so by canceling (C + G) on both sides of the equation, we still get S = I.

Let's decompose this identity a little bit further. **National savings** (S) equal private savings (S1) less government borrowing (– S2), which is the opposite of public savings (S2). Thus, I = S = S1 + S2.

From the expanded circular-flow diagram, we know that S1 = Y + TR – C – T, and S2 = T – G – TR. These two formulae tell us, households earn income Y and get transfer TR, pay the tax T, spend C, and then save the rest of their income as S1; the government gets the tax revenue T, so as to spend G and transfer TR, and then borrow "– S2" if there is a **budget deficit** (when S2 < 0) or save money if there is a **budget surplus** (when S2 > 0). We call public savings S2 the **budget balance**.[1]

As you can find from the above discussion, I = (Y + TR – C – T) + (T – G – TR) = Y – C – G, so we can get the national income account identity Y = C + I + G under this case (NX = 0).

[1] Please refer to the textbook for formal definitions.

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In an open economy, we further introduce **net capital inflow** (NCI), which is equal to the opposite value of net export (NX). We have NCI = – NX, which is clearly depicted in the expanded circular-flow diagram. Again, the income can be spent on consumer's consumption (C), government purchases (G), or saved (S). Thus, we have C + I + G + NX = C + G + S. By canceling (C + G) on both sides of the equation, and plug NX = – NCI into the equation, we can get I = S + NCI. Here, the right-hand side is the new savings, and is equal to national savings (S) plus capital net inflow.

- If NCI > 0 (i.e., NX < 0), then some investment spending is funded by the savings of foreigners.
- If NCI < 0 (i.e., NX > 0), then some portion of national savings is funding investment spending in other countries.

2. The loanable funds market: A hypothetical market that illustrates the market outcome of the demand for (1) _____ generated by (2) _____ and the supply of funds provided by (3) _____.

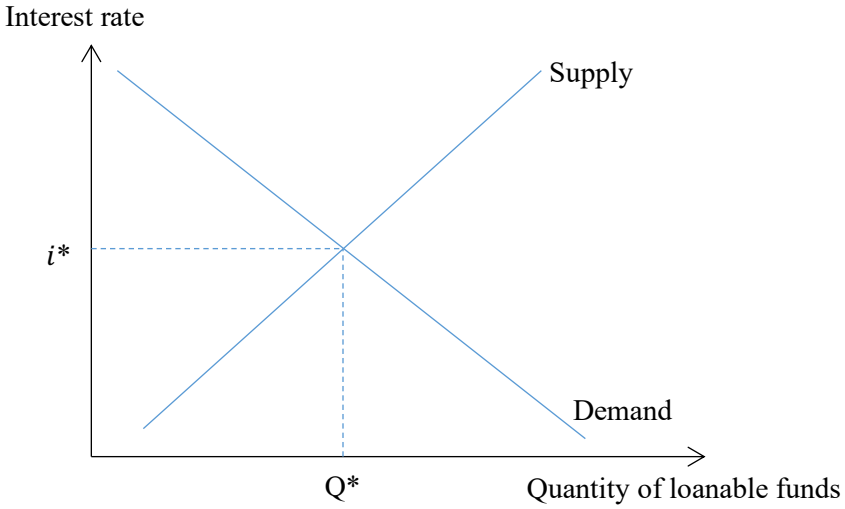
Answer: (1) funds; (2) borrowers; (3) lenders.

What is the interest rate? Answer: It is the price of loanable funds as a percentage of the amount borrowed.

What is the rate of return? Answer: It is the profit earned on a project as a percentage of its cost.

- Rate of return = $\frac{\text{Return from the project} - \text{Cost of the project}}{\text{Cost of the project}} \times 100\%$
- If a project's rate of return > interest rate, then you can invest in the project. Otherwise, you don't want to invest in the project.

Let's depict the loanable funds market.



Why is the demand curve for loanable funds downward sloping? Answer: If the interest rate is lower, more projects have a rate of return higher than the interest rate and more borrowers want loanable funds.

Why is the supply curve for loanable funds upward sloping? Answer: When the interest rate is higher, lenders can earn more by lending so are more willing to forgo current consumption.

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What are some factors that can shift the demand curve?

- Change in perceived business opportunity
- Change in government's budget balance

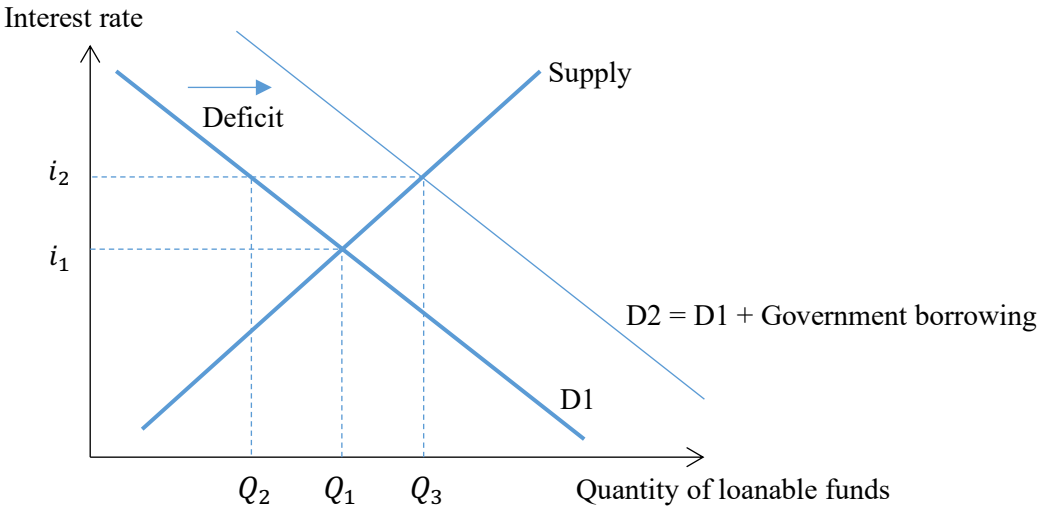
What are some factors that can shift the supply curve?

- Change in private/public savings behavior
- Change in net capital inflows

Let's see some examples below!

(1) Government's budget deficit

The crowding-out effect: A government's budget deficit drives up the interest rate and leads to reduced investment spending.



When there is a government's budget deficit, government need to borrow money from the financial market, so the demand curve shifts from D1 to D2. Then, the interest rate goes up from i_1 to i_2. Note that, the new demand curve D2 includes both the demand of firms (D1) and the demand of the government. The private investment decreases from Q_1 to Q_2 (along D1), while private savings increase from Q_1 to Q_3 (along the supply curve). The difference between Q_3 and Q_2 is the magnitude of the budget deficit (i.e., government borrowing).

(2) A decrease in government's budget deficit

Assume that the existing budget deficit decreases, then the demand curve shifts from D2 to D3. The interest rate falls from i_2 to i_3. As a result, the investment of firms increases from Q_2 to Q_4, while private savings decreases from Q_3 to Q_5. The gap between quantity supplied and quantity demanded of loanable funds has decreased, which indicates a decrease in government's budget deficit (See the graph in the next page).

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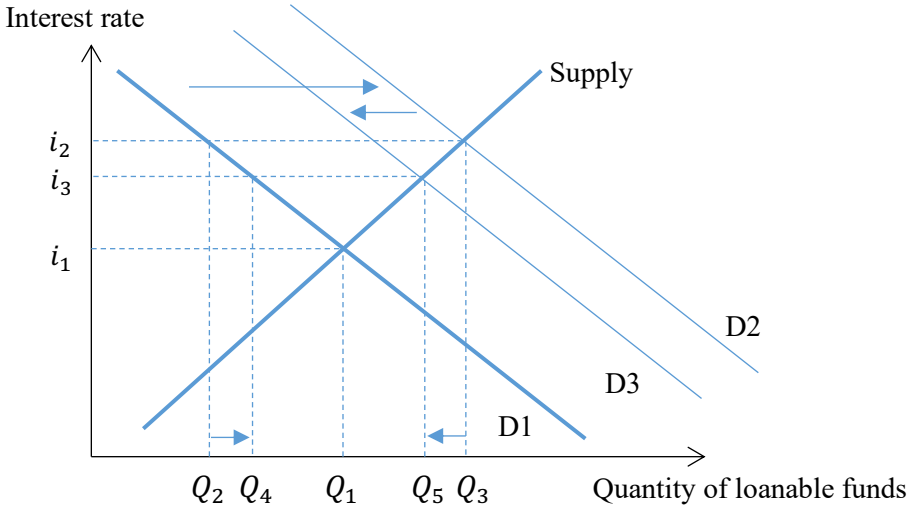
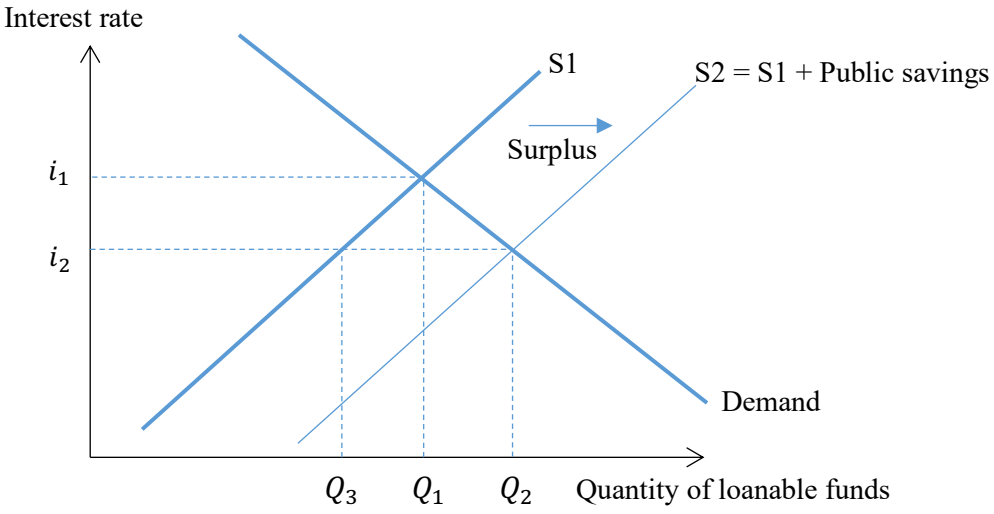


(3) Government's budget surplus

Imagine instead that there is a government's budget surplus, so that there are public savings. The supply curve shifts from S1 to S2. Then, the interest rate goes down from i_1 to i_2. Note that, the new supply curve S2 includes both the supply of households (S1) and that of the government. The private investment increases from Q_1 to Q_2 (along the demand curve), whereas private savings decrease from Q_1 to Q_3 (along S1). The difference between Q_2 and Q_3 is the magnitude of the budget surplus (i.e., public savings).



(4) A negative net export (= a positive net capital inflow)

Now, let's assume that NX < 0 or NCI > 0. Since the economy is running a trade deficit, you need to finance the net purchase of goods and services by selling assets abroad. Then, in the financial market, the supply curve shifts to the right (from S1 to S2). Note that, S2 is the sum of domestic savings (S1) and net capital inflow (NCI). Thus, the interest rate falls from i_1 to i_2, and the investment and total savings increase from Q_1 to Q_2, while domestic savings decrease from Q_1 to Q_3 (see the graph in next page).

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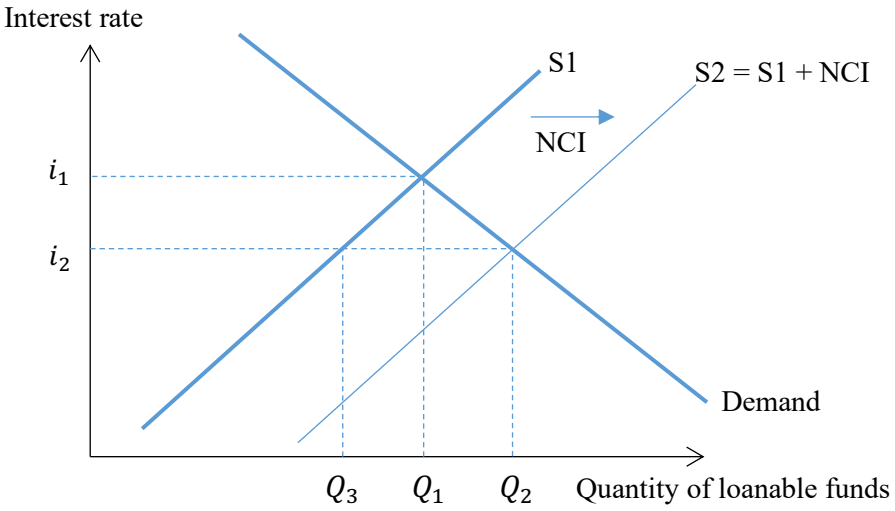
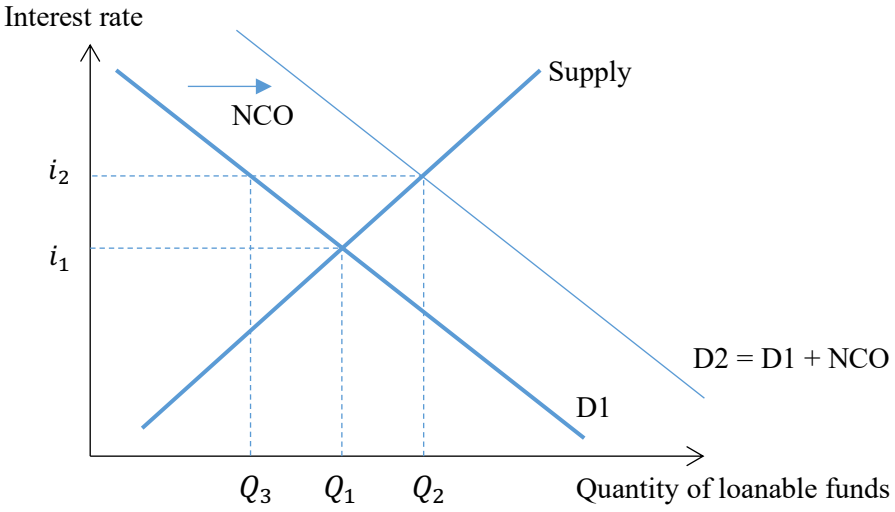


* Note also that, the horizontal difference between S1 and S2 is the magnitude of NCI.

(5) A positive net export (= a negative net capital inflow, or a positive net capital outflow)

Assume instead that NX > 0 or NCI < 0. Since the economy is running a trade surplus, the excess in foreign currency is going to be used to buy assets. You may imagine that firms that earn foreign currency want to buy (exchange) the US dollars from the financial market. Then, the demand curve shifts to the right (from D1 to D2). Note that, the new demand curve D2 includes both the domestic demand (D1) and the net capital outflow. The interest rate rises from i_1 to i_2, domestic savings rise from Q_1 to Q_2 (along the supply curve), and the (domestic) investment drops from Q_1 to Q_3 (along D1).



* Note also that, the horizontal difference between D1 and D2 is the magnitude of NCO.

(6) A rise in expected future inflation

The Fisher effect: an increase in expected future inflation drives up the (1) _____, leaving the expected real interest rate (2) _____.

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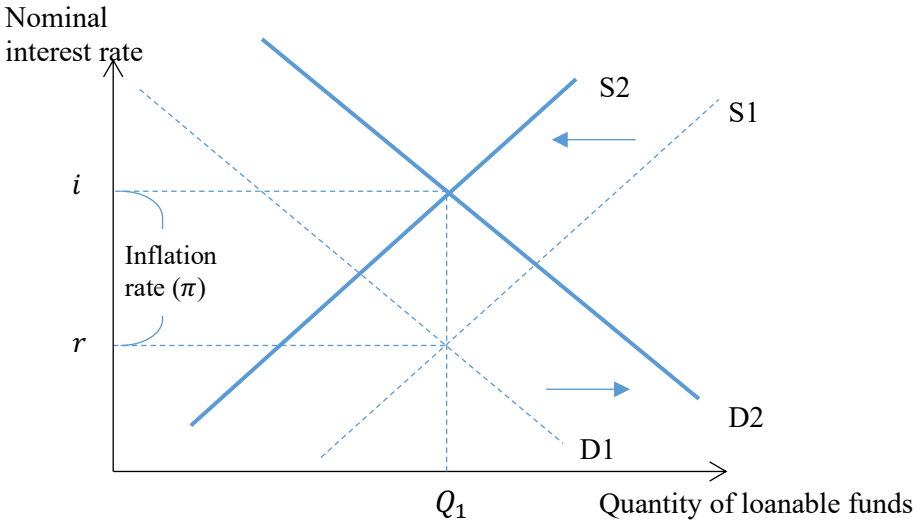
Answer: (1) nominal interest rate; (2) unchanged.



Due to a rise in expected inflation (assume it is from 0% to π), the demand curve shifts outward from D1 to D2 (i.e., borrowers are now willing to borrow at a higher nominal interest rate), while the supply curve shifts inward from S1 to S2 (i.e., lenders now require a higher nominal interest rate). The interest rate rises from r (the real interest rate) to i (the nominal interest rate) by the inflation rate π. The equilibrium quantity of loanable funds does not change, and we get the **Fisher equation**: $i \approx r + \pi$.[2]

3. The financial system

A household's wealth: The value of its accumulated savings.

A financial asset: A paper claim (e.g., bond, stock) that entitles the buyer to (1) _____ from the seller.

Answer: (1) future income.

A liability: A requirement to pay in the future. Note that, a liability to borrower is an asset to lender.

A physical asset: A tangible object (e.g., rental property) that can be used to generate future income.

There are <u>three primary tasks</u> of financial system:

- Reducing the **transaction costs** (the expenses of negotiating and executing a deal).
- Reducing the **financial risk** (uncertainty about future outcomes that involve financial losses and gains).
- Providing the liquidity. An asset is **liquid** if it can be quickly converted into cash with relatively little loss of value; otherwise, it is **illiquid**.

[2] Note that, it is an approximation. The exact formula should be $1 + i = (1 + r)(1 + \pi) = 1 + r + \pi + r\pi$. Since $r\pi$ is usually a very small number, we can ignore it, so $1 + i \approx 1 + r + \pi$, and thus $i \approx r + \pi$.

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You should also learn about different types of financial assets. Besides stocks and bank deposits (you will see the definition later), you should know about loans and bonds. A **loan** is a lending agreement between a particular lender and a particular borrower, and a **loan-backed securities** is an asset created by pooling individual loans and selling shares in that pool. **Default** means that a borrower fails to make payments as specified by the loan or bond contract.

Financial intermediaries: Institutions that transforms the funds they gathers from many individuals into (1) _____.

Answer: (1) financial assets.

There are at least four types of financial intermediaries:

- A **mutual fund** is a financial intermediary that creates a stock portfolio and then resells shares of this portfolio to individual investors.
- A **pension fund** is a type of mutual fund that holds assets in order to provide retirement income to its members.
- A **life insurance company** sells policies that guarantee a payment to a policyholder's beneficiaries when the policyholder dies.
- A **bank** is a financial intermediary that provides liquid assets in the form of bank deposits to lenders and uses those funds to finance the illiquid investments or investment spending needs of borrowers. Note that, a **bank deposit** is a claim on a bank that obliges the bank to give the depositor his or her cash when demanded.

4. Financial fluctuations

Stock prices are determined by:

- supply and demand for stocks;
- desirability of competing assets such as bonds;
- expectations regarding future stock price.

The efficient market hypothesis: Asset prices embody all (1) _____ information. We can also say that, beliefs about future prices are "built" into current prices.

Answer: (1) publicly available.

The hypothesis implies that fluctuations are inherently unpredictable, i.e., they follow a random walk. But financial markets are not as rational as the efficient market hypothesis claims, e.g., stock price fluctuations are too great to be driven by fundamentals (i.e., the underlying determinants of the company's future profits) alone.

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Practice Exam Questions (15-20 minutes)

1. Explain, using graphs as appropriate, the efficient markets hypothesis. (5 points)
Hint: Give the definition (3 points), and then draw a graph (2 points) to show that "if you believe that prices will go up tomorrow, this belief will cause prices to rise today."

2. Explain the role financial intermediaries play in financial system. (5 points)
Hint: Recall the three primary tasks of financial system.

3. Suppose the market for loanable funds is currently in equilibrium, with no (zero) capital inflows or capital outflows and no (zero) budget deficit.
(a) Using a supply and demand diagram, depict this situation. (5 points)

(b) Suppose that there is a change in government spending, so that the government is now running a budget deficit. Explain and depict graphically the effect this will have on the market for loanable funds. (5 points)

4. For each of the following, explain and depict graphically their effect on the market for loanable funds. (3 points each)
(a) Consumers decide to save money of their income each year, due to their fears about future growth.
(b) There is an increase in capital inflows.
(c) There is a decrease in the budget deficit.
(d) There is a decrease in the trade deficit.
(e) Firms decide there are more profitable projects than previously.