UNIT 4

Financial Sector

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AP EXAM WEIGHTING

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4 Financial Sector

M1: Saving, Investment, and the Financial System

I. Financial Institutions in the U.S. Economy

A. Definition of financial system: the group of institutions in the economy that help to match one person's saving with another person's investment.

B. Financial Markets

1. Definition of financial markets: financial institutions through which savers can directly provide funds to borrowers.

2. The Bond Market

a. Definition of bond: a certificate of indebtedness.

b. A bond identifies **the date of maturity** and **the rate of interest** that will be paid periodically until the loan matures.

c. One important characteristic that determines a bond's value is its term. The term is the length of time until the bond matures. All else being equal, long-term bonds pay higher rates of interest than short-term bonds.

d. Another important characteristic of a bond is its credit risk, which is the probability that the borrower will fail to pay some of the interest or principal. All else being equal, the more risky a bond is, the higher its interest rate.

e. A third important characteristic of a bond is its tax treatment. For example, when state and local governments issue bonds (called municipal bonds), the interest income earned by the holders of these bonds is not taxed by the federal government. This makes the bonds more attractive, lowering the interest rate needed to entice people to buy them.

3. The Stock Market

a. Definition of stock: a claim to partial ownership in a firm.

b. The sale of stock to raise money is called **equity finance**; the sale of bonds to raise money is called **debt finance**.

c. Stocks are sold on organized stock exchanges (such as the New York Stock Exchange or NASDAQ) and the prices of stocks are determined by supply and demand.

d. The price of a stock generally reflects the perception of a company's future profitability.

e. A **stock index** is computed as an average of a group of stock prices.

C. Financial Intermediaries

1. Definition of **financial intermediaries: financial institutions through which savers can indirectly provide funds to borrowers.**

2. Banks

a. The primary role of banks is to take in deposits from people who want to save and then lend them out to others who want to borrow.

b. Banks pay depositors interest on their deposits and charge borrowers a slightly higher rate of interest to cover the costs of running the bank and provide the bank owners with some amount of profit.

c. Banks also play another important role in the economy by allowing individuals to use checking deposits as a medium of exchange.

3. Mutual Funds

a. Definition of **mutual fund: an institution that sells shares to the public and uses the proceeds to buy a portfolio of stocks and bonds.**

b. The primary advantage of a mutual fund is that it allows individuals with small amounts of money to diversify.

c. Mutual funds called "index funds" buy all of the stocks of a given stock index. These funds have generally performed better than funds with active fund managers. This may be true because they trade stocks less frequently and they do not have to pay the salaries of fund managers.

II. Saving and Investment in the National Income Accounts

A. Some Important Identities

1. Remember that GDP can be divided up into four components: consumption, investment, government purchases, and net exports.

$$Y = C + I + G + NX$$

2. We will assume that we are dealing with a **closed economy** (an economy that does not engage in international trade or international borrowing and lending). This implies that GDP can now be divided into only three components:

$$Y = C + I + G$$

3. To isolate investment, we can subtract C and G from both sides:

$$Y - C - G = I$$

4. The left-hand side of this equation (Y – C – G) is the total income in the economy after paying for consumption and government purchases. This amount is called **national saving**.

5. Definition of national saving (saving): the total income in the economy that remains after paying for consumption and government purchases.

6. Substituting saving (S) into our identity gives us:

$$S = I$$

7. This equation tells us that saving equals investment.

8. Let's go back to our definition of national saving once again:

$$S = Y - C - G$$

9. We can add taxes (T) and subtract taxes (T):

$$S = (Y - C - T) + (T - G)$$

10. The first part of this equation (Y – T – C) is called private saving; the second part (T – G) is called public saving.

   a. Definition of private saving: the income that households have left after paying for taxes and consumption.

   b. Definition of public saving: the tax revenue that the government has left after paying for its spending.

   c. Definition of budget surplus: an excess of tax revenue over government spending.

   d. Definition of budget deficit: a shortfall of tax revenue from government spending.

11. The fact that S = I means that (for the economy as a whole) saving must be equal to investment.

   a. The bond market, the stock market, banks, mutual funds, and other financial markets and institutions stand between the two sides of the S = I equation.

   b. These markets and institutions take in the nation's saving and direct it to the nation's investment.

B. The Meaning of Saving and Investment

1. In macroeconomics, investment refers to the purchase of new capital, such as equipment or buildings.

2. If an individual spends less than he earns and uses the rest to buy stocks or mutual funds, economists call this saving.

III. The Market for Loanable Funds

A. Definition of market for loanable funds: the market in which those who want to save supply funds and those who want to borrow to invest demand funds.

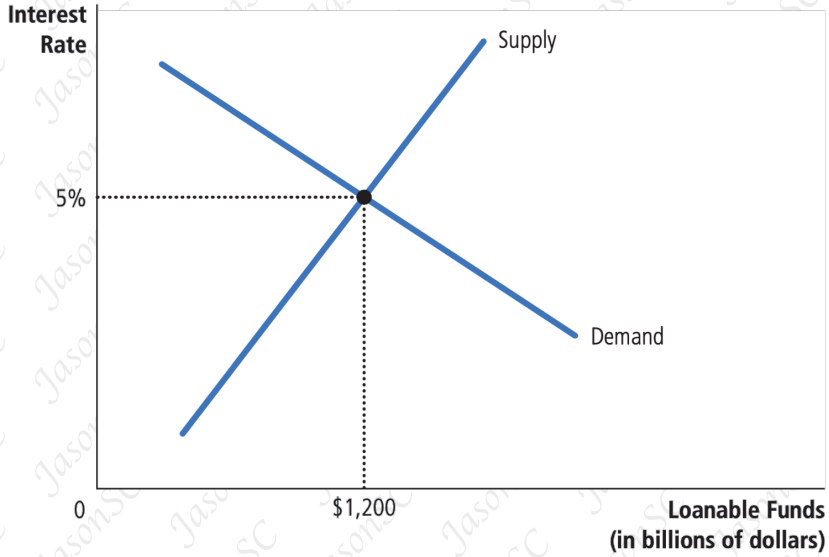
B. Supply and Demand for Loanable Funds

1. The supply of loanable funds comes from those who spend less than they earn. The supply can occur directly through the purchase of some stock or bonds or indirectly through a financial intermediary.

2. The demand for loanable funds comes from households and firms who wish to borrow funds to make investments. Families generally invest in new homes while firms may borrow to purchase new equipment or to build factories.

3. The price of a loan is the interest rate.

Figure 1 The Market for Loanable Funds



a. All else equal, as the interest rate rises, the quantity of loanable funds supplied will increase.

b. All else equal, as the interest rate rises, the quantity of loanable funds demanded will fall.

4. At equilibrium, the quantity of funds demanded is equal to the quantity of funds supplied.

a. If the interest rate in the market is greater than the equilibrium rate, the quantity of funds demanded would be smaller than the quantity of funds supplied. Lenders would compete for borrowers, driving the interest rate down.

b. If the interest rate in the market is less than the equilibrium rate, the quantity of funds demanded would be greater than the quantity of funds supplied. The shortage of loanable funds would encourage lenders to raise the interest rate they charge.

5. The supply and demand for loanable funds depends on the real (rather than nominal) interest rate because the real rate reflects the true return to saving and the true cost of borrowing.

C. Policy 1: Saving Incentives

1. Savings rates in the United States are relatively low when compared with other countries such as Japan and Germany.

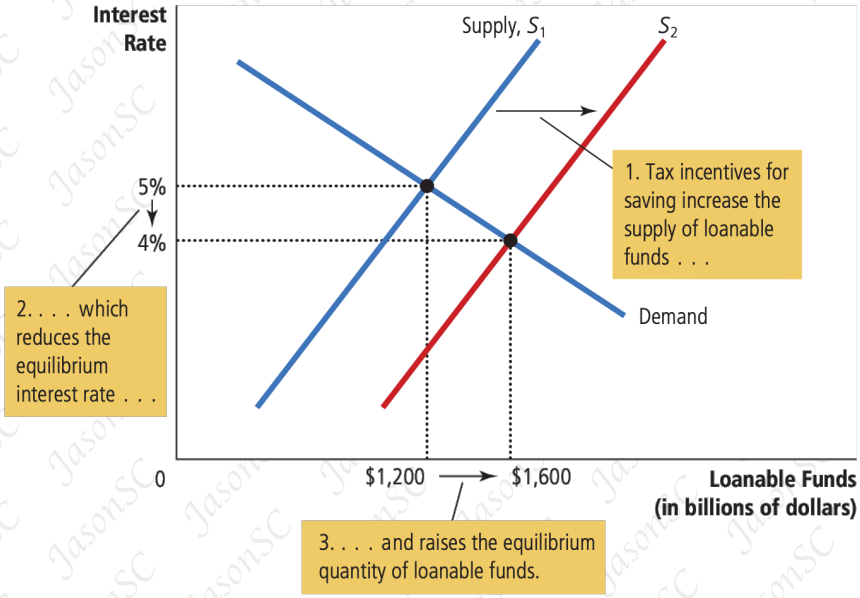
2. Suppose that the government changes the tax code to encourage greater saving.

a. This will cause an increase in saving, shifting the supply of loanable funds to the right.

b. The equilibrium interest rate will fall and the equilibrium quantity of funds will rise.

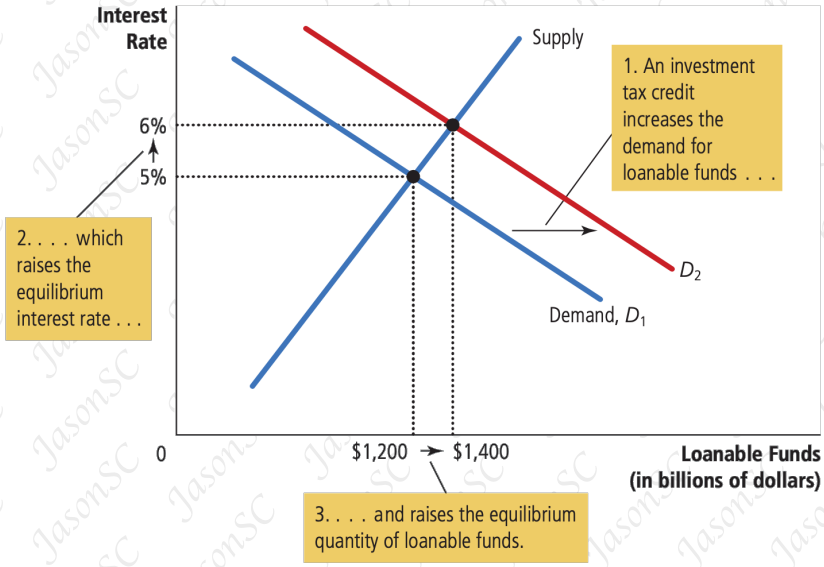
3. Thus, the result of the new tax laws would be a decrease in the equilibrium interest rate and greater saving and investment.

Figure 2 Saving Incentives Increase the Supply of Loanable Funds



D. Policy 2: Investment Incentives

Figure 3 Investment Incentives Increase the Demand for Loanable Funds



1. Suppose instead that the government passed a new law lowering taxes for any firm building a new factory or buying a new piece of equipment (through the use of an investment tax credit).

   a. This will cause an increase in investment, causing the demand for loanable funds to shift to the right.

   b. The equilibrium interest rate will rise, and the equilibrium quantity of funds will increase as well.

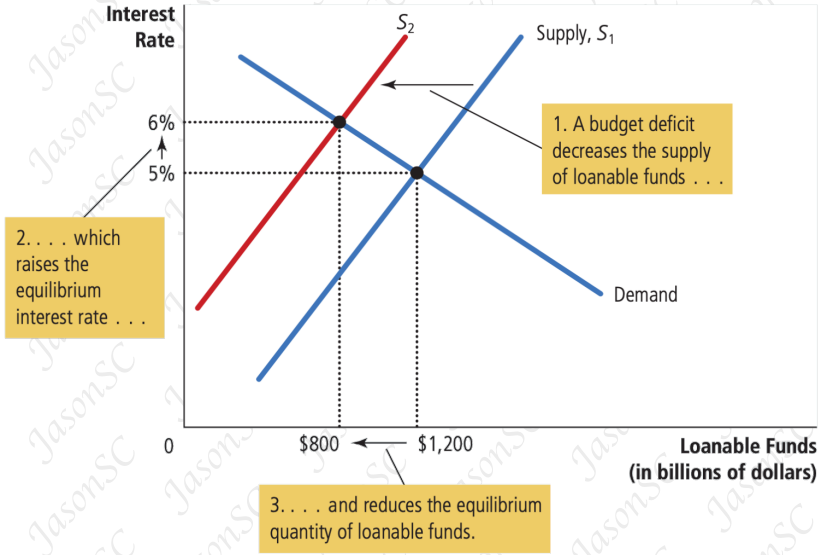
2. Thus, the result of the new tax laws would be an increase in the equilibrium interest rate and greater saving and investment.

E. Policy 3: Government Budget Deficits and Surpluses

1. A budget deficit occurs if the government spends more than it receives in tax revenue.

2. This implies that public saving (T – G) falls, which will lower national saving.

Figure 4 The Effect of a Government Budget Deficit



a. The supply of loanable funds will shift to the left.

b. The equilibrium interest rate will rise, and the equilibrium quantity of funds will decrease.

3. When the interest rate rises, the quantity of funds demanded for investment purposes falls.

4. Definition of crowding out: a decrease in investment that results from government borrowing.

5. When the government reduces national saving by running a budget deficit, the interest rate rises and investment falls.

6. A budget deficit resulting from a tax cut has similar effects. A tax cut reduces public saving. Private saving rises by less than public saving declines. Once again, the budget deficit reduces the supply of loanable funds.

7. Government budget surpluses work in the opposite way. The supply of loanable funds increases, the equilibrium interest rate falls, and investment rises.

M2: The Monetary System

I. The Meaning of Money

A. Definition of money: the set of assets in an economy that people regularly use to buy goods and services from other people.

B. The Functions of Money

1. Money serves three functions in our economy.

   a. Definition of medium of exchange: an item that buyers give to sellers when they want to purchase goods and services.

   b. Definition of unit of account: the yardstick people use to post prices and record debts.

   c. Definition of store of value: an item that people can use to transfer purchasing power from the present to the future.

2. Definition of liquidity: the ease with which an asset can be converted into the economy's medium of exchange.

   a. Money is the most liquid asset available.

   b. Other assets (such as stocks, bonds, and real estate) vary in their liquidity.

   c. When people decide how to allocate their wealth, they must balance the liquidity of each possible asset against the asset's usefulness as a store of value.

C. The Kinds of Money

   1. Definition of commodity money: money that takes the form of a commodity with intrinsic value.

   2. Definition of fiat money: money without intrinsic value that is used as money because of government decree.

D. Money in the U.S. Economy

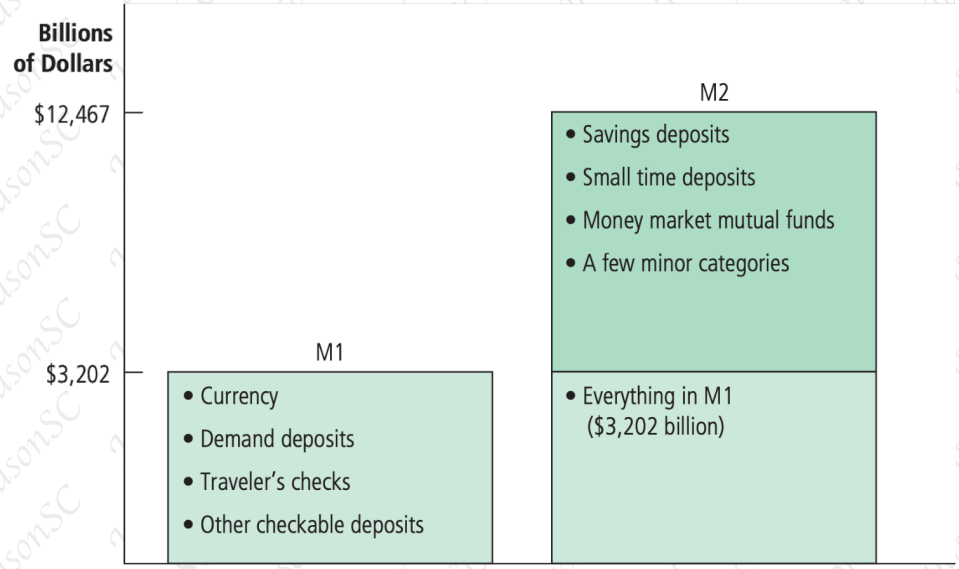
1. The quantity of money circulating in the United States is sometimes called the money stock.

2. Included in the measure of the money supply are currency, demand deposits, and other monetary assets.

   a. Definition of currency: the paper bills and coins in the hands of the public.

   b. Definition of demand deposits: balances in bank accounts that depositors can access on demand by writing a check.

Figure 5 Two Measures of the Money Stock for the U.S. Economy



3. Figure 5 shows the monetary assets included in two important measures of the money supply, M1 and M2.

II. The Federal Reserve System

A. Definition of Federal Reserve (Fed): the central bank of the United States.

B. Definition of central bank: An institution designed to oversee the banking system and regulate the quantity of money in the economy.

C. The Fed's Organization

1. The Fed was created in 1913 after a series of bank failures.

2. The Fed is run by a Board of Governors with 7 members who serve 14-year terms.

   a. The Board of Governors has a chairman who is appointed for a four-year term.

   b. The current chairman is Jerome Powell (2018.2.5).

3. The Federal Reserve System is made up of 12 regional Federal Reserve Banks located in major cities around the country.

4. One job performed by the Fed is the regulation of banks to ensure the health of the nation's banking system.

   a. The Fed monitors each bank's financial condition and facilitates bank transactions by clearing checks.

   b. The Fed also makes loans to banks when they want to borrow.

5. The second job of the Fed is to control the quantity of money available in the economy.

   a. Definition of money supply: the quantity of money available in the economy.

   b. Definition of monetary policy: the setting of the money supply by policymakers in the central bank.

III. Banks and the Money Supply

A. The Simple Case of 100-Percent-Reserve Banking

1. Example: Suppose that currency is the only form of money and the total amount of currency is $100.

2. A bank is created as a safe place to store currency; all deposits are kept in the vault until the depositor withdraws them.

   a. Definition of reserves: **deposits that banks have received but have not loaned out.**

   b. Under the example described above, we have **100-percent-reserve banking**.

3. The financial position of the bank can be described with **a T-account**:

FIRST NATIONAL BANK

Assets		Liabilities	
Reserves	$100.00	Deposits	$100.00

4. The money supply in this economy is unchanged by the creation of a bank.

   a. Before the bank was created, the money supply consisted of $100 worth of currency.

   b. Now, with the bank, the money supply consists of $100 worth of deposits.

5. This means that, **if banks hold all deposits in reserve, banks do not influence the supply of money**.

B. Money Creation with Fractional-Reserve Banking

1. Definition of fractional-reserve banking: **a banking system in which banks hold only a fraction of deposits as reserves.**

2. Definition of reserve ratio: **the fraction of deposits that banks hold as reserves.**

   a. This ratio is influenced by both government regulation and bank policy. The Fed sets a minimum amount of reserves that banks must hold, called **a reserve requirement**.

   b. In addition, banks may hold reserves above the legal minimum, called **excess reserves**, so they can be more confident that they will not run short of cash.

3. Example: Same as before, but First National decides to set its reserve ratio equal to 10% and lend the remainder of the deposits.

4. The bank's T-account would look like this:

FIRST NATIONAL BANK

Assets		Liabilities	
Reserves	$10.00	Deposits	$100.00
Loans	$90.00		

5. When the bank makes these loans, the money supply changes.

   a. Before the bank made any loans, the money supply was equal to the $100 worth of deposits.

   b. Now, after the loans, deposits are still equal to $100, but borrowers now also hold $90 worth of currency from the loans.

   c. Therefore, when banks hold only a fraction of deposits in reserve, banks create money.

6. Note that, while new money has been created, so has debt. There is no new wealth created by this process.

C. The Money Multiplier

1. The creation of money does not stop at this point.

2. Borrowers usually borrow money to purchase something and then the money likely becomes redeposited at a bank.

3. Suppose a person borrowed the $90 to purchase something and the funds then get redeposited in Second National Bank. Here is this bank's T-account (assuming that it also sets its reserve ratio to 10%):

SECOND NATIONAL BANK

Assets		Liabilities	
Reserves	$9.00	Deposits	$90.00
Loans	$81.00		

4. If the $81 in loans becomes redeposited in another bank, this process will go on and on. If this $81 is eventually deposited in Third National Bank, which also has a reserve ratio of 10 percent, this bank keeps $8.10 in reserve and makes $72.90 in loans. Here is the T-account for Third National Bank:

THIRD NATIONAL BANK

Assets		Liabilities	
Reserves	$8.10	Deposits	$81.00
Loans	$72.90		

5. The process goes on and on. Each time that money is deposited and a bank loan is made, more money is created. How much money is eventually created in this economy? Let's add it up:

Original deposit	= $100.00
First National lending	= $ 90.00 (0.9 × $100.00)
Second National lending	= $ 81.00 (0.9 × $90.00)
Third National lending	= $ 72.90 (0.9 × $81.00)
…	…
…	…
…	…
Total money supply	= $1,000.00

6. Definition of **money multiplier**: the amount of money the banking system generates with each dollar of reserves.

$$\text{Money Multiplier} = \frac{1}{\text{Reserve Ratio}}$$

7. In our example, the money supply increased from $100 to $1,000 after the establishment of fractional-reserve banking.

Change in the Money Supply = Money Multiplier × Changes in Bank Reserves

D. Bank Capital, Leverage, and the Financial Crisis of 2008–2009

1. In reality, banks also get funds from issuing debt and equity.

2. Definition of bank capital: the resources a bank's owners have put into the institution.

3. A more realistic balance sheet for a bank:

MORE REALISTIC NATIONAL BANK

Assets		Liabilities and Owners' Equity	
Reserves	$200.00	Deposits	$800.00
Loans	$700.00	Debt	$150.00
Securities	$100.00	Capital (owner's equity)	$50.00

4. Definition of leverage: the use of borrowed money to supplement existing funds for purposes of investment.

5. Definition of leverage ratio: the ratio of assets to bank capital.

a. The leverage ratio is $1,000/$50 = 20.

b. A leverage ratio of 20 means that, for every dollar of capital that has been contributed by the owners, the bank has $20 of assets.

c. Because of leverage, a small change in assets can lead to a large change in owner's equity.

6. Definition of capital requirement: a government regulation specifying a minimum amount of bank capital.

7. In 2008 and 2009, many banks realized they had incurred sizable losses on some of their assets.

IV. The Fed's Tools of Monetary Control

A. How the Fed Influences the Quantity of Reserves

1. Open-Market Operations

a. Definition of open-market operations: the purchase and sale of U.S. government bonds by the Fed.

b. If the Fed wants to increase the supply of money, it creates dollars and uses them to purchase government bonds from the public in the nation's bond markets.

c. If the Fed wants to lower the supply of money, it sells government bonds from its portfolio to the public in the nation's bond markets. Money is then taken out of the hands of the public and the supply of money falls.

d. If the sale or purchase of government bonds affects the amount of deposits in the banking system, the effect will be made larger by the money multiplier.

e. Open market operations are easy for the Fed to conduct and are therefore the tool of monetary policy that the Fed uses most often.

2. Fed Lending to Banks

a. The Fed can also lend reserves to banks.

b. Definition of **discount rate: the interest rate on the loans that the Fed makes to banks.**

c. A higher discount rate discourages banks from borrowing from the Fed and likely encourages banks to hold onto larger amounts of reserves. This in turn lowers the money supply.

d. A lower discount rate encourages banks to lend their reserves (and borrow from the Fed). This will increase the money supply.

e. In recent years, the Fed has set up new mechanisms for banks to borrow from the Fed.

B. How the Fed Influences the Reserve Ratio

1. Reserve Requirements

a. Definition of **reserve requirements: regulations on the minimum amount of reserves that banks must hold against deposits.**

b. This can affect the size of the money supply through changes in the money multiplier.

c. The Fed rarely uses this tool because of the disruptions in the banking industry that would be caused by frequent alterations of reserve requirements. (It is also not effective when banks hold a lot of excess reserves.)

2. Paying Interest on Reserves

a. In October of 2008, the Fed began paying banks interest on reserves.

b. The higher the interest rate, the more reserves a bank will want to hold. This will reduce the money multiplier and the money supply.

C. Problems in Controlling the Money Supply

1. The Fed does not control the amount of money that consumers choose to deposit in banks.

a. The more money that households deposit, the more reserves the banks have, and the more money the banking system can create.

b. The less money that households deposit, the less reserves banks have, and the less money the banking system can create.

2. The Fed does not control the amount that bankers choose to lend.

a. The amount of money created by the banking system depends on loans being made.

b. If banks choose to hold onto a greater level of reserves than required by the Fed (called excess reserves), the money supply will fall.

3. Therefore, in a system of fractional-reserve banking, the amount of money in the economy depends in part on the behavior of depositors and bankers.

4. Because the Fed cannot control or perfectly predict this behavior, it cannot perfectly control the money supply.

E. The Federal Funds Rate

1. Definition of federal funds rate: **the short-term interest rate that banks charge one another for loans.**

2. When the federal funds rate rises or falls, other interest rates often move in the same direction.

3. In recent years, the Fed has set a target for the federal funds rate.

M3: Monetary Policy

I. How Monetary Policy Influences Aggregate Demand

A. Definition of monetary policy: the setting of the money supply by policymakers in the central bank.

B. Definition of theory of liquidity preference: Keynes's theory that the interest rate adjusts to bring money supply and money demand into balance.

C. The Theory of Liquidity Preference

1. This theory is an explanation of the supply and demand for money and how they relate to the interest rate.

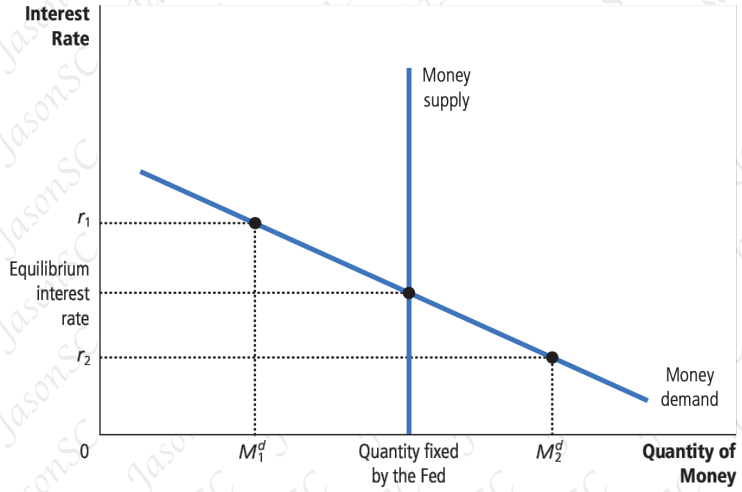
2. Money Supply

a. The money supply in the economy is controlled by the Federal Reserve.

b. The Fed can alter the supply of money using open market operations, changes in the discount rate, and changes in reserve requirements.

c. Because the Fed can control the size of the money supply directly, the quantity of money supplied does not depend on any other economic variables, including the interest rate. Thus, the supply of money is represented by a vertical supply curve.

Figure 6 Equilibrium in the Money Market



3. Money Demand

a. Any asset's liquidity refers to the ease with which that asset can be converted into a medium of exchange. Thus, money is the most liquid asset in the economy.

b. The liquidity of money explains why people choose to hold it instead of other assets that could earn them a higher return.

c. However, the return on other assets (the interest rate) is the opportunity cost of holding money. All else being equal, as the interest rate rises, the quantity of money demanded will fall. Therefore, the demand for money will be downward sloping.

4. Equilibrium in the Money Market

a. The interest rate adjusts to bring money demand and money supply into balance.

b. If the interest rate is higher than the equilibrium interest rate, the quantity of money that people want to hold is less than the quantity that the Fed has supplied. Thus, people will try to buy bonds or deposit funds in an interest-bearing account. This increases the funds available for lending, pushing interest rates down.

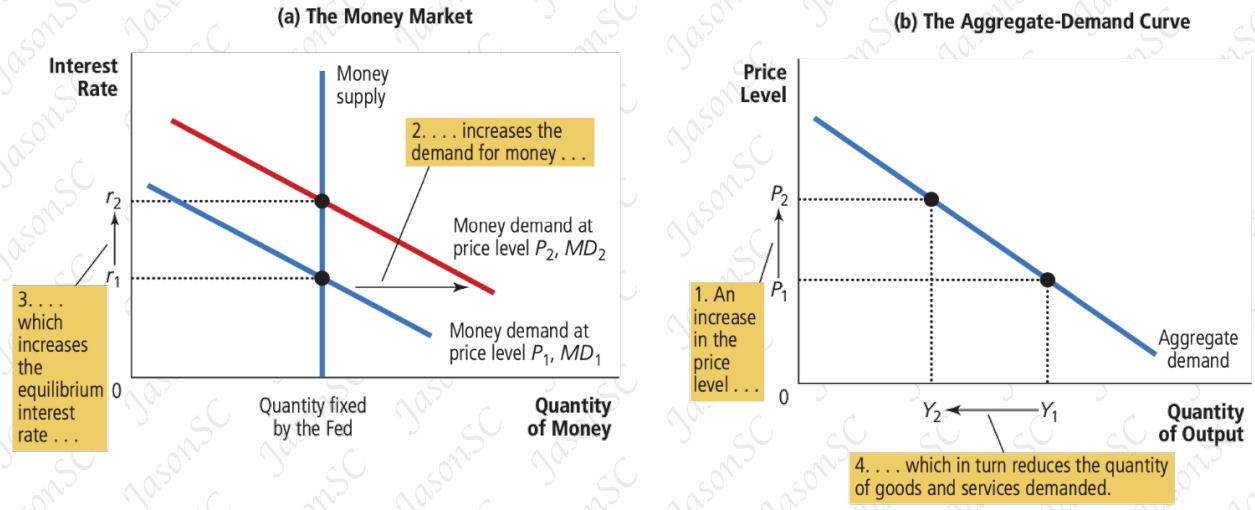
c. If the interest rate is lower than the equilibrium interest rate, the quantity of money that people want to hold is greater than the quantity that the Fed has supplied. Thus, people will try to sell bonds or withdraw funds from an interest-bearing account. This decreases the funds available for lending, pulling interest rates up.

D. The Downward Slope of the Aggregate-Demand Curve

1. When the price level increases, the quantity of money that people need to hold becomes larger. Thus, an increase in the price level leads to an increase in the demand for money, shifting the money demand curve to the right.

2. For a fixed money supply, the interest rate must rise to balance the supply and demand for money.

Figure 7 The Money Market and the Slope of the Aggregate- Demand Curve



3. At a higher interest rate, the cost of borrowing and the return on saving both increase. Thus, consumers will choose to spend less and will be less likely to invest in new housing. Firms will be less likely to borrow funds for new equipment or structures. In short, the quantity of goods and services purchased in the economy will fall.

4. As the price level increases, the quantity of goods and services demanded falls. This is Keynes's interest-rate effect.

E. Changes in the Money Supply

1. Example: The Fed buys government bonds in open-market operations.

2. This will increase the supply of money, shifting the money supply curve to the right. The equilibrium interest rate will fall.

3. The lower interest rate reduces the cost of borrowing and the return to saving. This encourages households to increase their consumption and desire to invest in new housing. Firms will also increase investment, building new factories and purchasing new equipment.

4. The quantity of goods and services demanded will rise at every price level, shifting the aggregate-demand curve to the right.

5. Thus, a monetary injection by the Fed increases the money supply, leading to a lower interest rate, and a larger quantity of goods and services demanded.

Figure 8 A Monetary Injection