

AP MACRO ECONOMICS

MR. LIPMAN

UNIT 4

THE FINANCIAL SECTOR

MODULES 22-29



Module 22- Saving, Investment, & the Financial System

- For the economy as a whole savings and investment spending are always equal ($S = I$)

If we assume a simple economy then

- Total Income = Consumption + Savings
(or investment)

KEY TERMS TO KNOW

- Budget Surplus
- Budget Deficit and Budget Debt
- Budget Balance
- National Savings v. Private Savings
- Capital inflow

Four Traditional Types of Financial Assets

- **Loans** = agreement between lender & borrower
- **Bonds** = IOU to repay principal and interest
- **Bank Deposits**
- **Stocks** = A share in ownership of a company

New form of Assets are Loan-Backed Securities
(a “pooling” of debt instruments)

The Equity Markets: Stocks and Bonds





Bonds vs. Stocks

Pretend you are going to start a lemonade stand. You need some money to get your stand started. **What do you do?**

- You ask your grandmother to lend you \$100 and write down on a paper: "I owe you (IOU) \$100, and I will pay you back in a year plus 5% interest."
- Your grandmother just bought a **bond**.

Bonds are loans, or IOUs, that represent debt that the government or a corporation must repay to an investor. The bond holder has NO OWNERSHIP of the company.

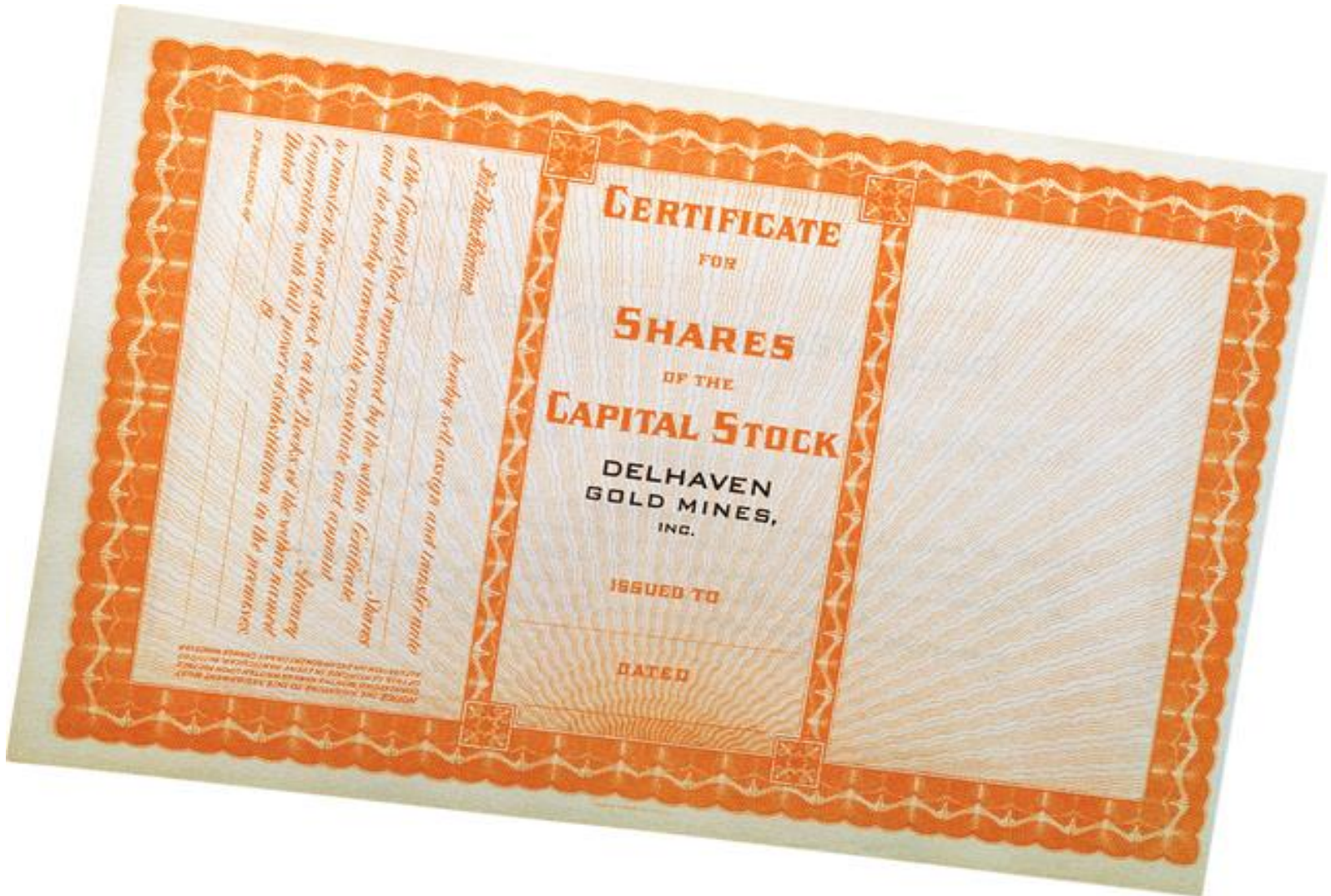
But, now you need more money...

- **To get more money, you sell half of your company for \$50 to your brother Tom.**
- **You put this transaction in writing: "Lemo will issue 100 shares of stock. Tom will buy 50 shares for \$50."**
- **Tom has just bought 50% of the business. He is allowed to make decisions and is entitled to a percent of the profits.**

Stockowners can earn a profit in two ways:

1. **Dividends**, which are portions of a corporation's profits, are paid out to stockholders.
2. A **capital gain** is earned when a stockholder sells stock for more than he or she paid for it.
A stockholder that sells stock at a lower price than the purchase price suffers a **capital loss**.

Stock Certificates indicate Ownership



Three Problems Facing Borrowers & Lenders

Transaction Costs: What is involved in the loaning of money

Risk: What the lender and the borrower must consider before agreeing to the loan. This will dictate the amount of interest to be charged and the length of the loan to be given.

Desire for Liquidity: The ease with which the physical asset involved can be transformed into cash or revenue.



- The effect of time must always be considered when investments are being discussed

Financial Intermediaries transform funds from many different individuals into financial assets

- Mutual Funds : Largest fund Company is Fidelity
- Pension Funds
- Life Insurance Companies
- Banks
- Bank deposit
- Fractional reserve banking

Credit vs. Debit Cards

Are credit cards money?

A credit card is NOT money. It is a short-term loan (usually with a higher than normal interest rate).

Ex: You buy a shirt with a credit card, VISA pays the store, you pay VISA the price of the shirt plus interest and fees.

Total credit cards in circulation in U.S: 576.4 million
Average number of credit cards per cardholders: 3.5
Average credit card debt per household : \$15,788

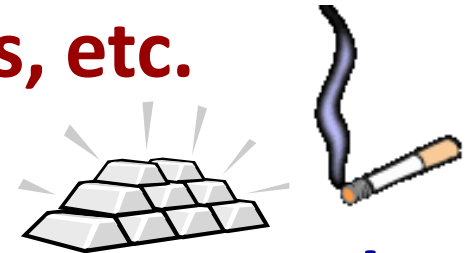


Module 23: What is Money?

Money is anything that is generally accepted in payment for goods and services

Commodity Money- Something that performs the function of money and has alternative uses.

– **Examples: Gold, silver, cigarettes, etc.**



Fiat Money- Something that serves as money but has no other important uses.

– **Examples: Paper Money, Coins**



- In our current financial system, we use **fiat money**, which means it has no intrinsic value, but is recognized as legal tender.
- In a **barter** system, goods and services are traded directly and no money is exchanged.
 - This arrangement requires a double coincidence of wants.



How Well Do You Know Your Money?

Who is on the...

- | | |
|--------------------|--------------|
| 1. \$100 Bill | 1. Franklin |
| 2. \$50 Bill | 2. Grant |
| 3. \$20 Bill | 3. Jackson |
| 4. \$10 Bill | 4. Hamilton |
| 5. \$5 Bill | 5. Lincoln |
| 6. \$2 Bill | 6. Jefferson |
| 7. 50 Cent | 7. JFK |
| 8. Dime | 8. FDR |
| 9. \$1000 Bill | 9. Cleveland |
| 10. \$100,000 Bill | 10. Wilson |

Bonus:

“E Pluribus Unum”
means....

“Out of Many, One”

What would happen if we didn't have money?

Problems:

1. Before trade could occur, each trader had to have something the other wanted.
2. Some goods cannot be split. If 1 goat is worth five chickens, how do you make an exchange if you only want 1 chicken?

Example: A heart surgeon might accept only certain goods but not others because he doesn't like them (ex: broccoli) To get the surgery, a pineapple grower must find a broccoli farmer that likes pineapples.

3 Functions of Money

1. A Medium of Exchange

- Money can easily be used to buy goods and services with no complications of barter system.

2. A Unit of Account

- Money measures the value of all goods and services. Money acts as a measurement of value.
- 1 goat = \$50 = 5 chickens OR 1 chicken = \$10

3. A Store of Value

- Money allows you to store purchasing power for the future.
- Money doesn't die or spoil.

Types of Money

Liquidity- ease with which an asset can be accessed and converted into cash (liquidized)

M1 (High Liquidity) - Cash, Traveler's Checks and Checkable Deposits. In general, this is known as the **MONEY SUPPLY**

M2 (Medium Liquidity) - M1 plus other “near money” such as savings accounts (CD's) and mutual funds

M3 (Low Liquidity) – No longer used



Functions of Money

- Money is often used as a store of wealth because it has such a high level of **liquidity**.
 - The liquidity of an asset is determined by how fast, easily, and reliably it can be converted into cash.
 - Money is the most liquid asset because, as the medium of exchange, it requires no conversion.

Answer the Following Question

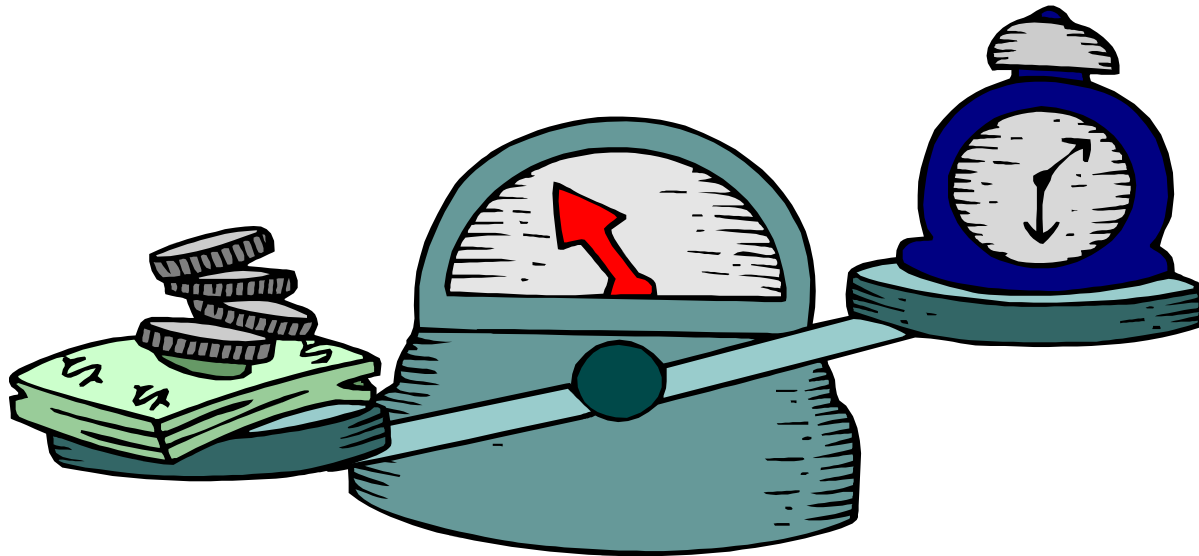
- M1 consists of
 - A) Currency plus savings accounts
 - B) Currency plus excess reserves held by banks
 - C) Currency plus travelers checks plus checkable deposits
 - D) Demand deposits plus savings deposits plus travelers checks

Answer

- M1 consists of
 - A) Currency plus savings accounts
 - B) Currency plus excess reserves held by banks
 - C) Currency plus travelers checks plus checkable deposits. Correct!
 - D) Demand deposits plus savings deposits plus travelers checks

Module 24: The Time Value of Money

- **Present Value** : The use of interest rates to compare the value of a dollar realized today with the value of a dollar realized later.



Defining Present Value

- Let Fv = future value of \$
 Pv = present value of \$
 r = real interest rate
 n = # of years

- The Simple Interest Formula

$$Fv = Pv (1 + r)^x$$

$$Pv = Fv / (1 + r)$$

Application of the formula

- Using the formula $fv = (1 + r) * pv$ in a one year example with \$100 at 10%
- $FV = \$100(1.10) = \110
- So, one year in the future, \$100 in the present will be worth \$110.
- Now let's lend the money for a period of 2 years:
- Repayment in two years = $\$100(1.10) \times (1.10) = \121
- $FV = PV(1+r) \times (1+r) = PV(1+r)^2$
- Money today has more value than same amount in the future.
- Interest paid on savings and interest charged on borrowing is designed to equate the value of dollars today with the value of future dollars.



- Remember what we learned in module 22. The effect of time must always be considered when investments are being discussed

Module 25: What Banks Do

Financial Intermediary: use deposits to finance loans

- Bank Reserves: \$ held in vault or by Fed
- T – Account

Assets		Liabilities	
Loans	\$1,000,000	Deposits	\$1,000,000
Reserves	\$100,000		

- Reserve Ratio: the % of deposits held in reserve
- Required Reserve Ratio: the minimum that must be held in reserve by the bank

Issues of Bank Runs



To Protect Against Bank Runs the Following Regulations are in effect

- **FDIC** : Insured to \$250K
- **Capital Requirements**: Owners of the bank must hold more assets than the value of the deposits (usually at least 7% more)
- **Reserve Requirements**: Reserve ratio is presently 10% of all checkable deposits
- **Discount Window**: Ability to borrow from the Fed to avoid having to sell assets at below market prices

table 25.1

How Banks Create Money

	Currency in circulation	Checkable bank deposits	Money supply
<p>First stage: Silas keeps his cash under his bed.</p>	\$1,000	\$0	\$1,000
<p>Second stage: Silas deposits cash in First Street Bank, which lends out \$900 to Mary, who then pays it to Anne Acme.</p>	900	1,000	1,900
<p>Third stage: Anne Acme deposits \$900 in Second Street Bank, which lends out \$810 to another borrower.</p>	810	1,900	2,710

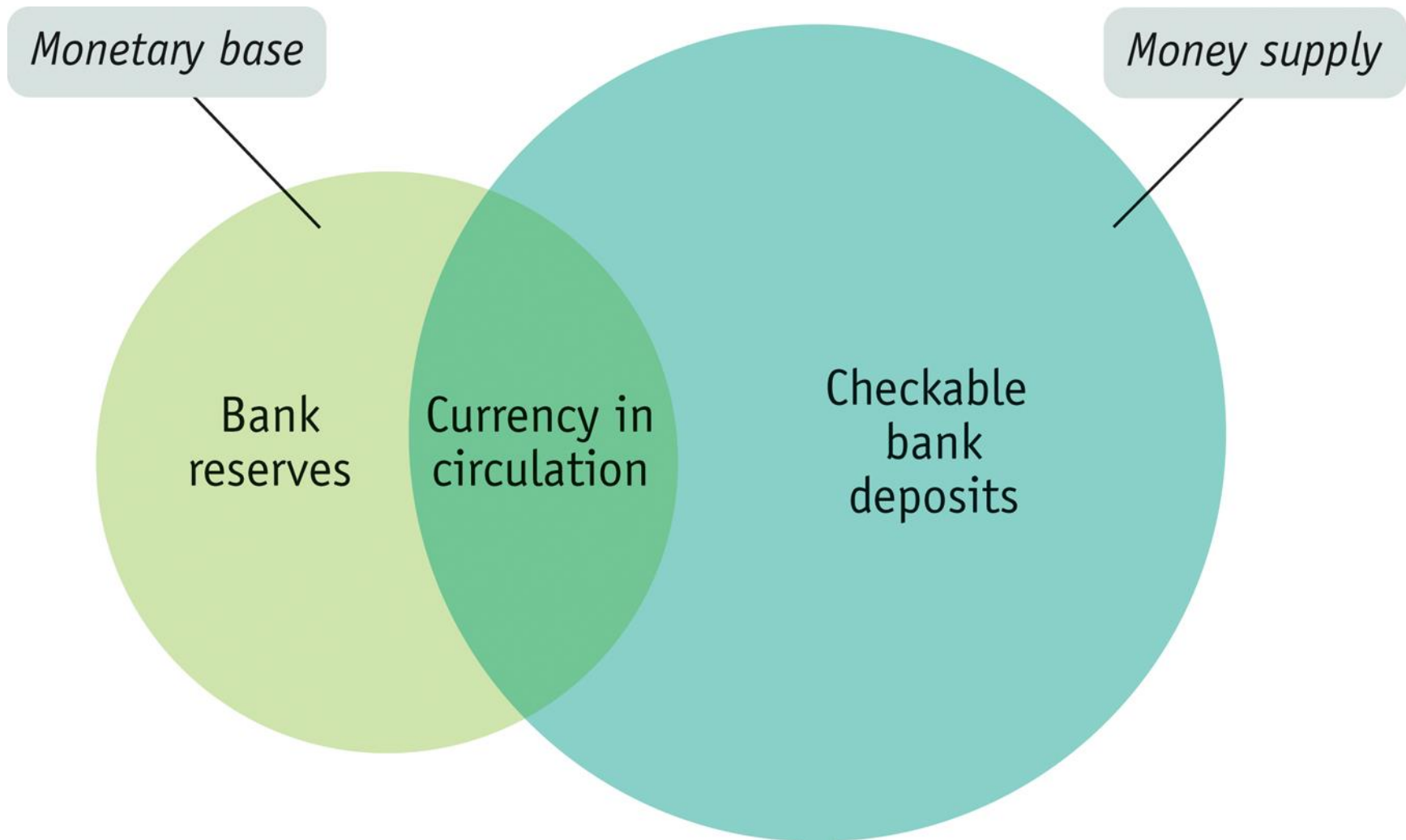
Money Creation is similar to the Multiplier Effect of Fiscal Policy

The **money multiplier** is the maximum amount the money supply can increase when new deposits enter the system but some money will “leak out” of the banking system and reduce the multiplier

- The money multiplier is defined as:

$$\text{Money Multiplier} = 1/\text{Reserve Requirement}$$

So if Fed adds \$100 to monetary base (increased reserves) the money supply will increase by \$1000.
 $1/.01=10$ and $10 \times 100 = 1000$



FED controls Monetary Base (reserves and currency in circulation) but Money Supply is different because bank reserves ARE NOT part of the Money Supply and Checkable Deposits are not part of the Monetary Base

Modules 26 & 27

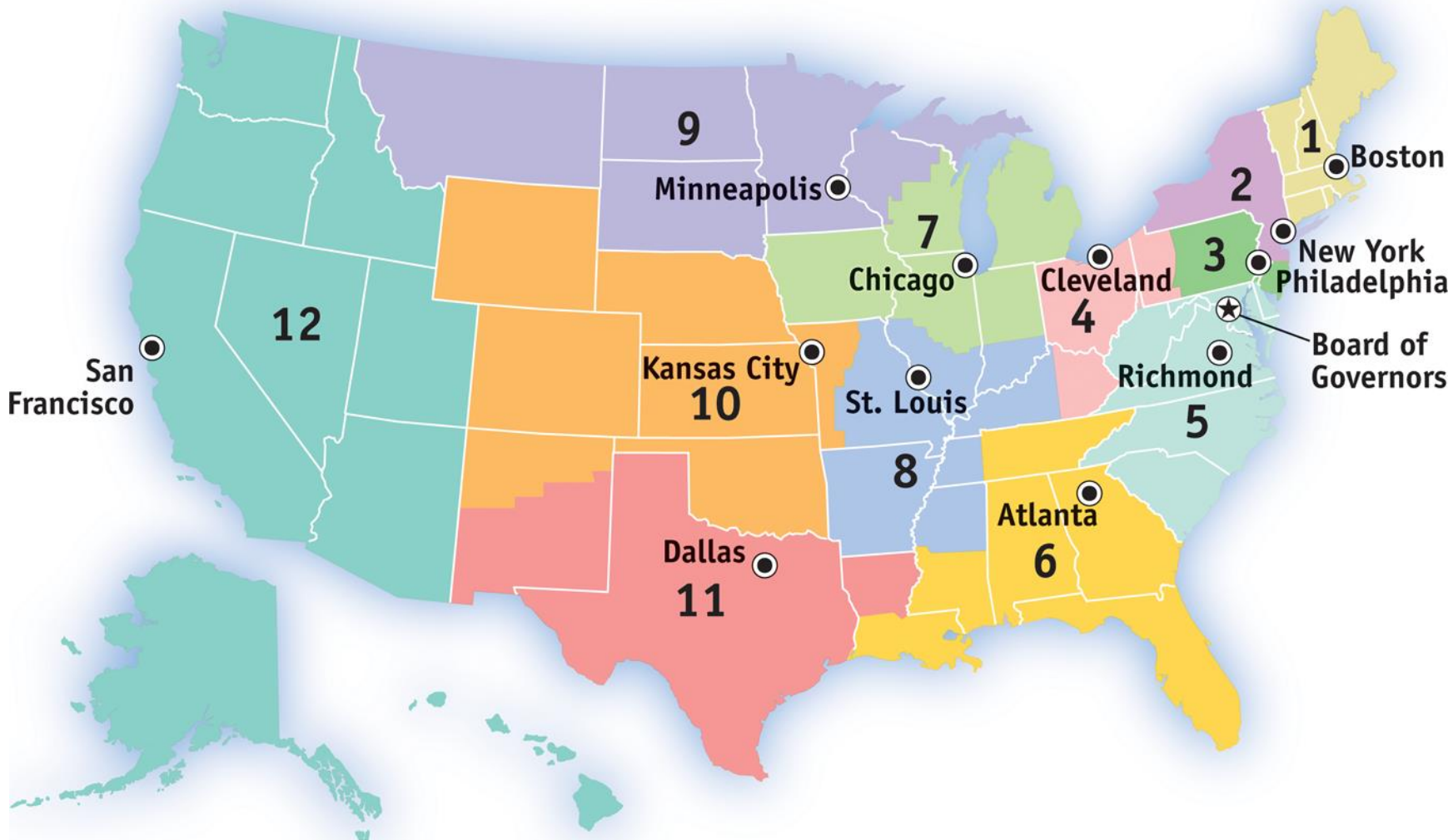
The Federal Reserve System





History of the Fed

- Prior to 1913 many boom and bust periods following the Civil War. Currency printed by government but supplied by national banks
- Panic of 1907 (Knickerbocker Trust & J.P.)
- Fed System enacted 1913. Both private (12 regional banks) and government agency (Federal Reserve Board appointed by President and approved by Senate)
- 14 year terms except for chairman = 4 years



Alaska and Hawaii are part of the San Francisco District

Note that most of the reserve banks are all located in the East. Remember that the system was enacted in 1912

TABLE 1 **Federal Reserve Regional Banks**

Number	Bank	Letter
1	Boston	A
2	New York	B
3	Philadelphia	C
4	Cleveland	D
5	Richmond	E
6	Atlanta	F
7	Chicago	G
8	St. Louis	H
9	Minneapolis	I
10	Kansas City	J
11	Dallas	K
12	San Francisco	L

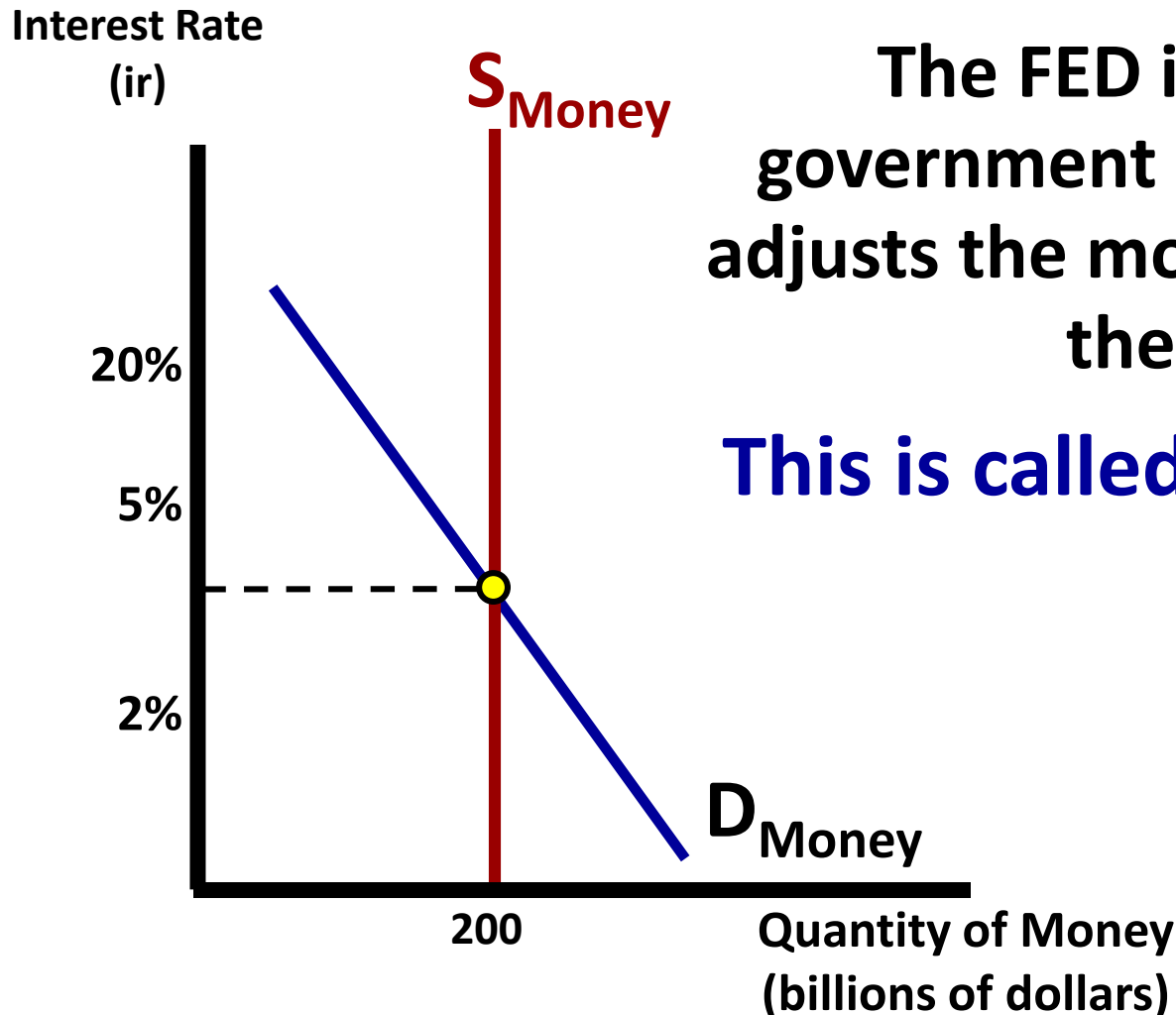


The Letter and Number on the bills will indicate where they were circulated from but remember the treasury department actually prints the bills themselves at the Mints

- Most important Reserve Bank is the NY Fed which is in charge of “open market operations”.
- Depression saw a number of reforms to banking system including Glass-Steagall Act and the FDIC.
- Savings and Loans (S&L’s aka Thrifts) were less regulated than banks because main purpose was to provide home mortgages from deposits.
- Distinction between commercial and investment banks has been reduced recently

The Supply for Money

The U.S. Money Supply is set by the Board of Governors of the Federal Reserve System (FED)



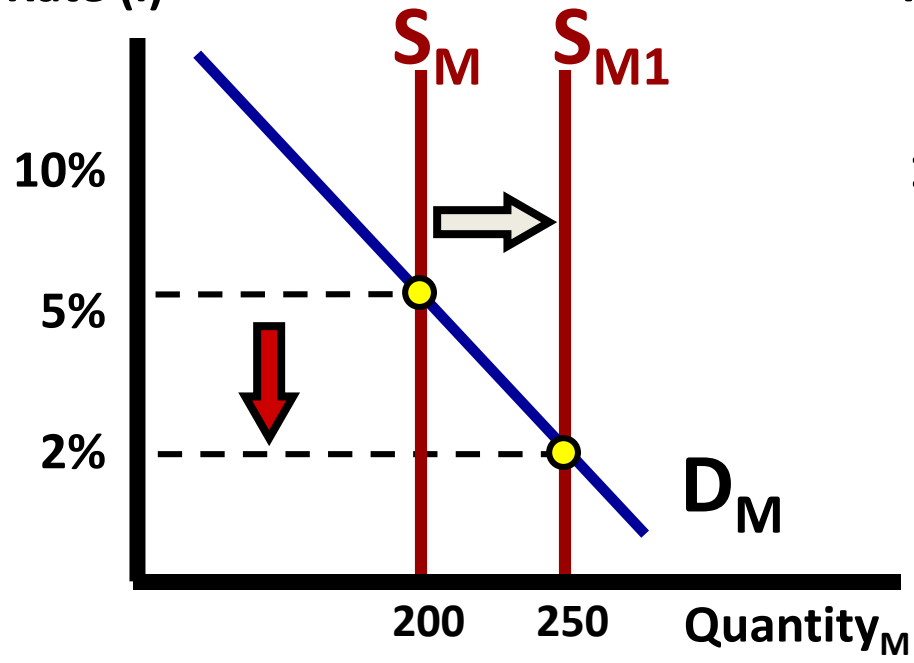
The FED is a nonpartisan government office that sets and adjusts the money supply to adjust the economy

This is called Monetary Policy.



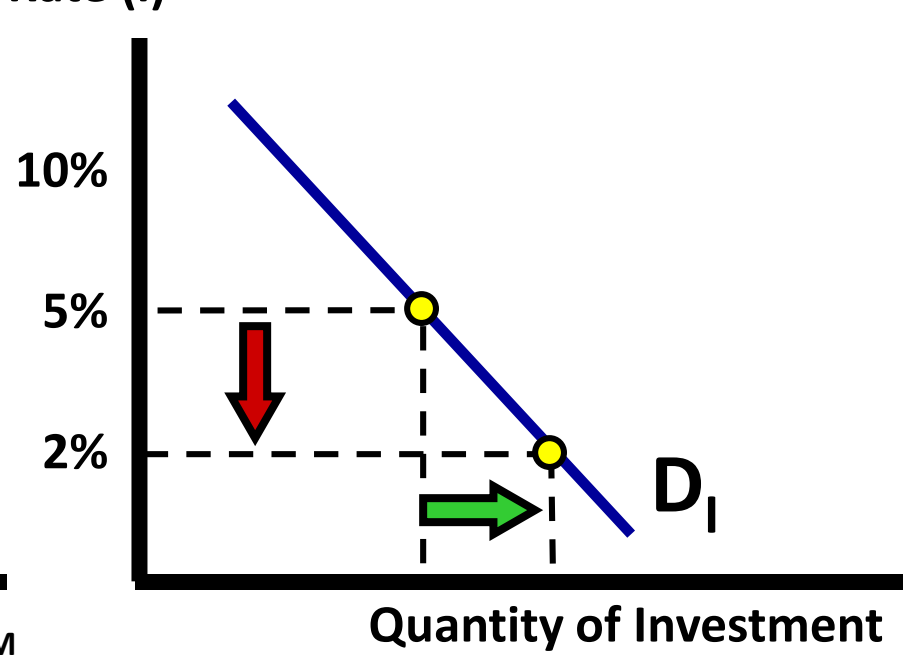
Interest Rate (i)

S&D of Money



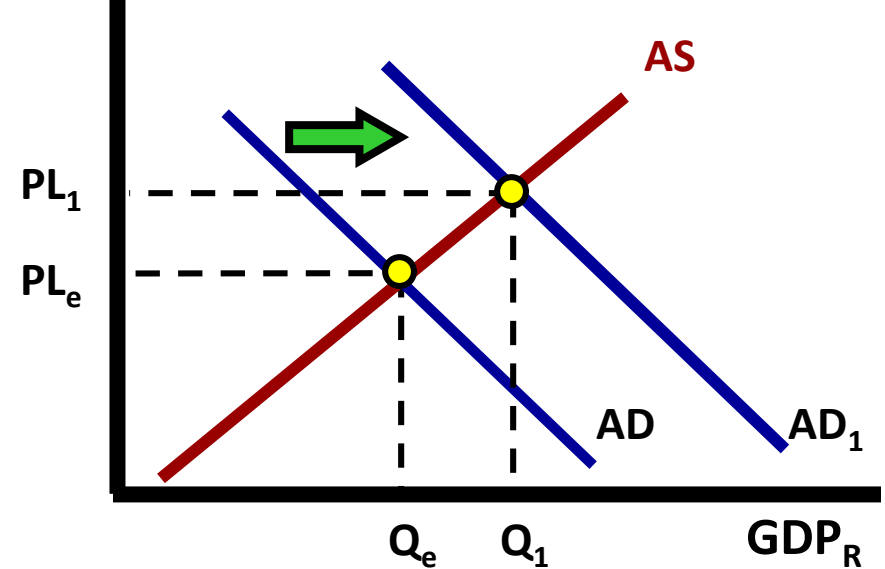
Interest Rate (i)

Investment Demand



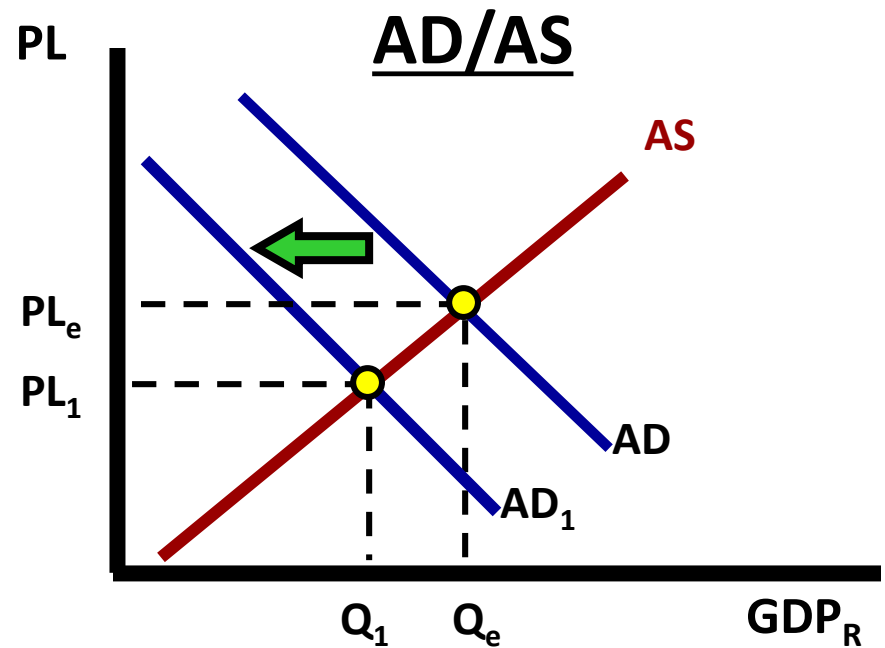
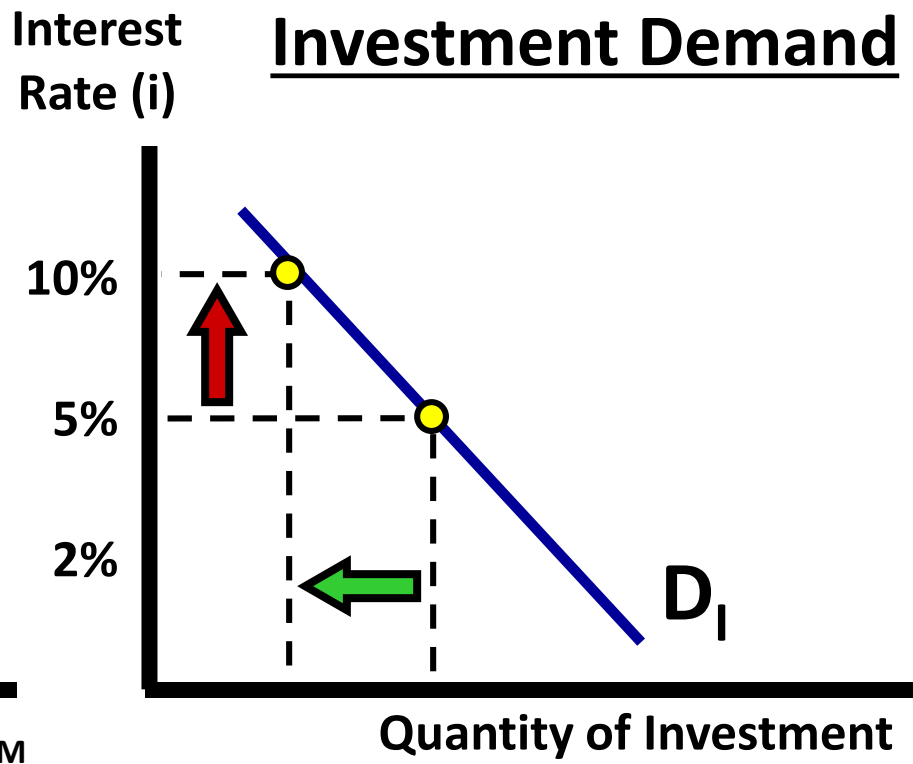
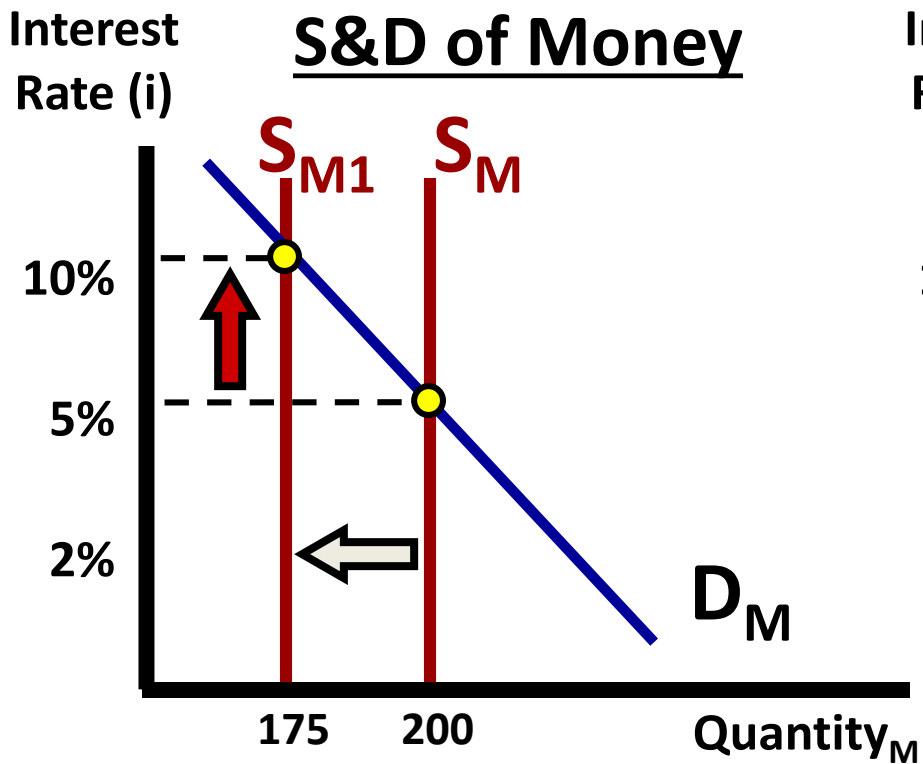
PL

AD/AS



The FED increases the money supply to stimulate the economy...

1. Interest Rates Decreases
2. Investment Increases
3. AD, GDP and PL Increases

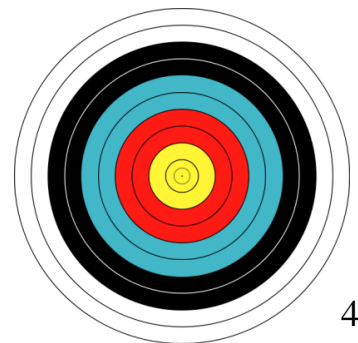


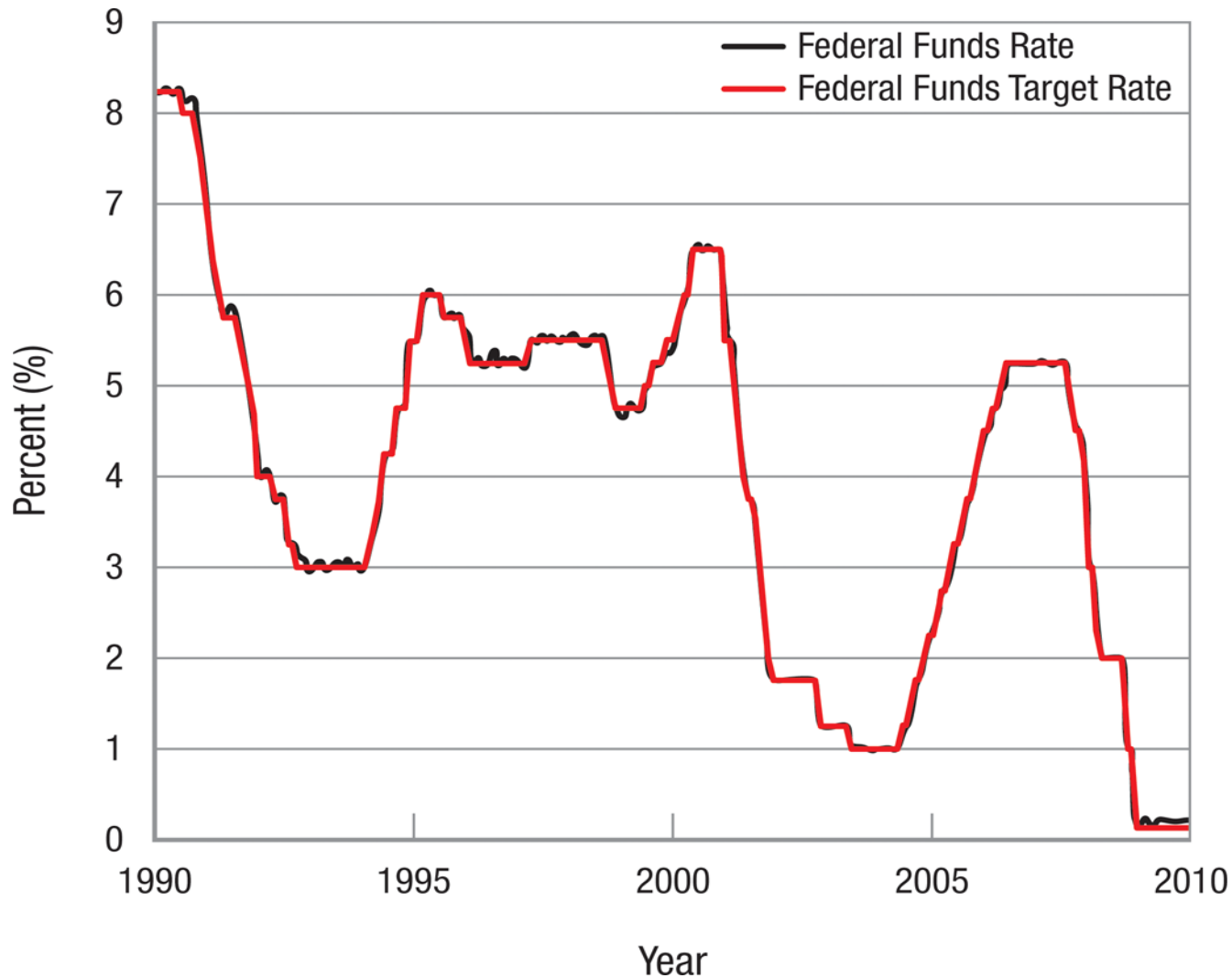
The FED decreases the money supply to slow down the economy...

1. Interest Rates increase
2. Investment decreases
3. AD, GDP and PL decrease

The federal funds rate is the interest rate that banks charge one another for one-day loans necessary to meet their reserve requirements.

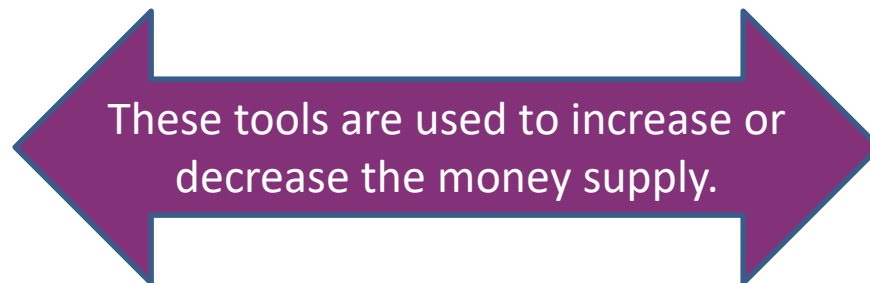
The FED influences the banks by setting a target rate & using bond transactions to hit the target. The federal funds rate fluctuates due to market conditions & banks are NOT obligated to lend at that rate.



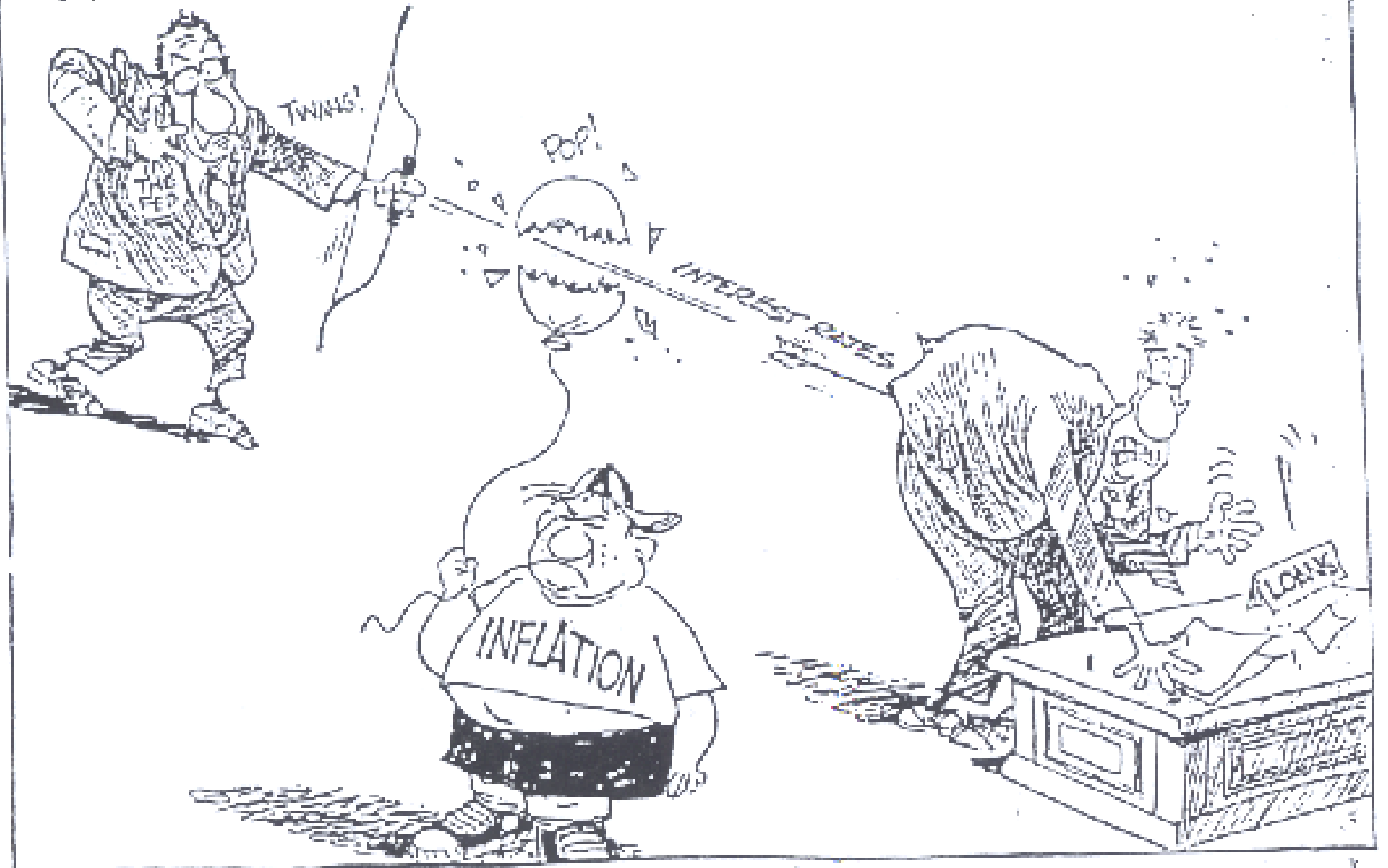


Note how rate is lowered in 2007 as recession and crisis starts

- The Federal Reserve uses three primary tools in the pursuit of monetary policy:
 - Reserve Requirements
 - The Discount Rate
 - Open Market Operations



SUMMER SPECIAL THE WALL STREET JOURNAL



#1. The Reserve Requirement

Only a small percent of your bank deposit is in the safe. The rest of your money has been loaned out. This is called “Fractional Reserve Banking”

The FED sets the amount that banks must hold

The reserve requirement (reserve ratio) is the % of deposits that banks must hold in reserve and NOT loan out)

- When the FED increases the money supply it increases the amount of money held in bank deposits.

1. If there is a recession, what should the FED do to the reserve requirement? (Explain the steps.)

Decrease the Reserve Ratio

1. Banks hold less money and have more excess reserves
2. Banks create more money by loaning out excess
3. Money supply increases, interest rates fall, AD goes up

2. If there is inflation, what should the FED do to the reserve requirement? (Explain the steps.)

Increase the Reserve Ratio

1. Banks hold more money and have less excess reserves
2. Banks create less money
3. Money supply decreases, interest rates up, AD down

The Money Multiplier

Example: Assume the reserve ratio in the US is 10%

You deposit \$1000 in the bank

The bank must hold \$100 (required reserves)

The bank lends \$900 out to Bob (excess reserves)

Bob deposits the \$900 in his bank

Bob's bank must hold \$90. It loans out \$810 to Jill

Jill deposits \$810 in her bank

SO FAR, the initial deposit of \$1000 caused the CREATION of another \$1710 (Bob's \$900 + Jill's \$810)

$$\text{Money Multiplier} = \frac{1}{\text{Reserve Requirement (ratio)}}$$

#2. The Discount Rate

The Discount Rate is the interest rate that the FED charges commercial banks.

Example:

- If Banks of America needs \$10 million, they borrow it from the U.S. Treasury (which the FED controls) but they must pay it back with interest.

To increase the Money supply, the FED should **DECREASE** the Discount Rate (**Easy Money Policy**).

To decrease the Money supply, the FED should **INCREASE** the Discount Rate (**Tight Money Policy**).

#3. Open Market Operations

- The FED buys / sells government bonds (securities).
- This is the most important and widely used monetary policy

To increase the Money supply, the FED should BUY government securities.

To decrease the Money supply, the FED should SELL government securities.

How are you going to remember?

Buying bonds means *Bigger* money supply

Selling bonds means *Smaller* money supply

Practice

Don't forget the Monetary Multiplier!!!!

- 1. If the reserve requirement is .5 and the FED sells \$10 million of bonds, what will happen to the money supply?**
- 2. If the reserve requirement is .1 and the FED buys \$10 million bonds, what will happen to the money supply?**
- 3. If the FED decreases the reserve requirement from .50 to .20 what will happen to the money multiplier?**

Assets

Liabilities

Government debt
(Treasury bills)

Monetary base
(Currency in circulation
+ bank reserves)

Just like ordinary banks The FED uses a simple “T” to determine its balance sheet between assets and liabilities

- When the Fed buys U.S. Treasury bills from a commercial bank, it pays by crediting the bank's reserve account by an equal amount.
 - This increases the monetary base because it increases bank reserves
- When the Fed sells U.S. Treasury bills to commercial banks, it debits the banks' accounts
 - This reduces reserves and the monetary base
- The change in bank reserves caused by open - market operations doesn't directly affect the money supply. Instead, it starts the money multiplier in motion.

- If the Fed buys \$100 million in T-bills from commercial banks, they would lend out their additional reserves, immediately increasing the money supply by \$100 million.
- Some of those loans would be deposited back into the banking system, increasing reserves again and permitting a further round of loans, leading to a rise in the money supply.
- A sale of T-Bills has the reverse effect: bank reserves fall, requiring banks to reduce their loans, leading to a fall in the money supply.

Module 28: The Money Market

(Supply and Demand for Money)



Demand for money has an inverse relationship between nominal interest rates and the quantity of money demanded

1. What happens to the quantity demanded of money when interest rates increase?

Quantity demanded falls because individuals would prefer to have interest earning assets instead of borrowed liabilities

2. What happens to the quantity demanded when interest rates decrease?

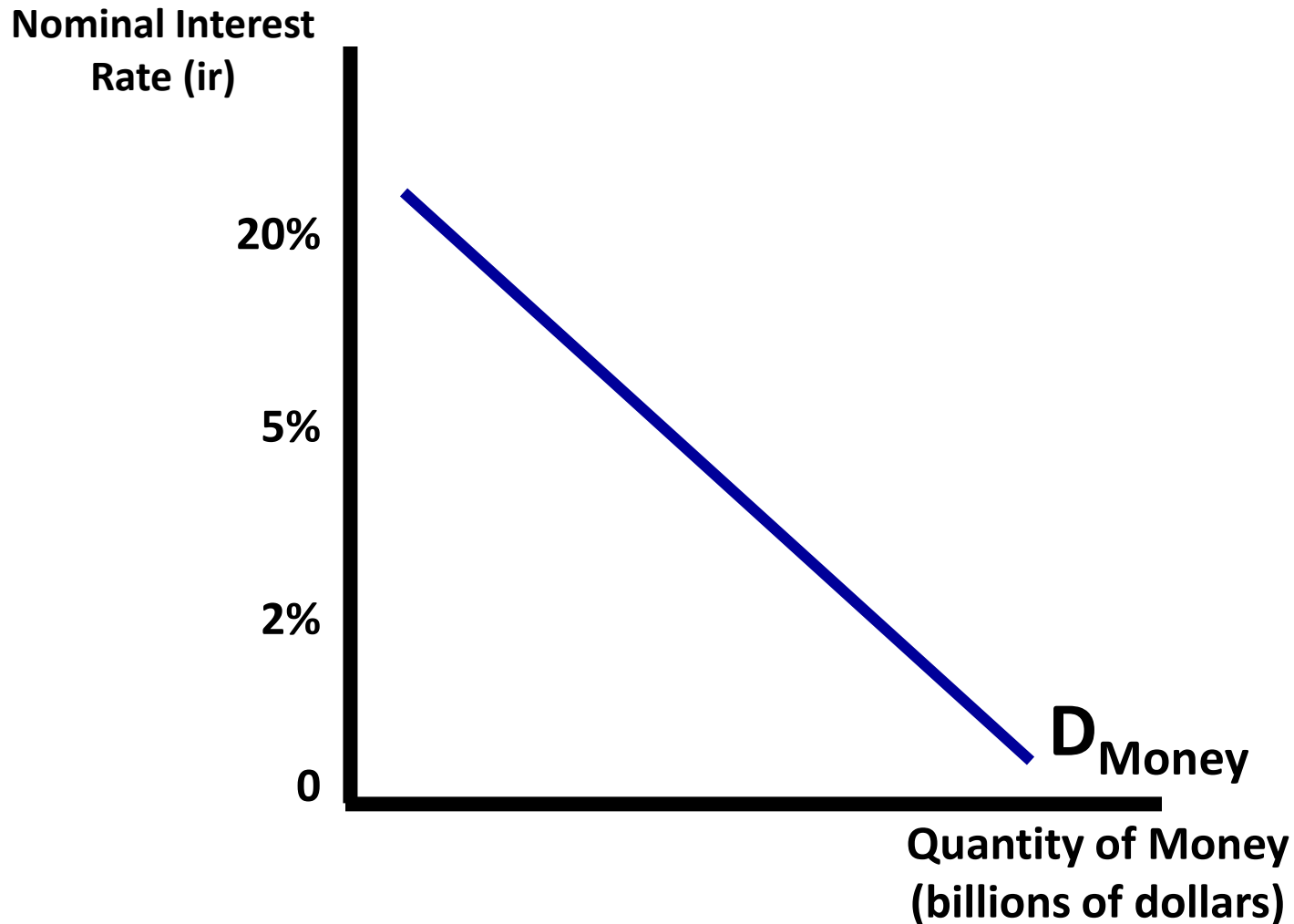
Quantity demanded increases. There is no incentive to convert cash into interest earning assets



The role of the Fed is to “take away the punch bowl just as the party gets going”

The Demand for Money

Inverse relationship between interest rates and the quantity of money demanded

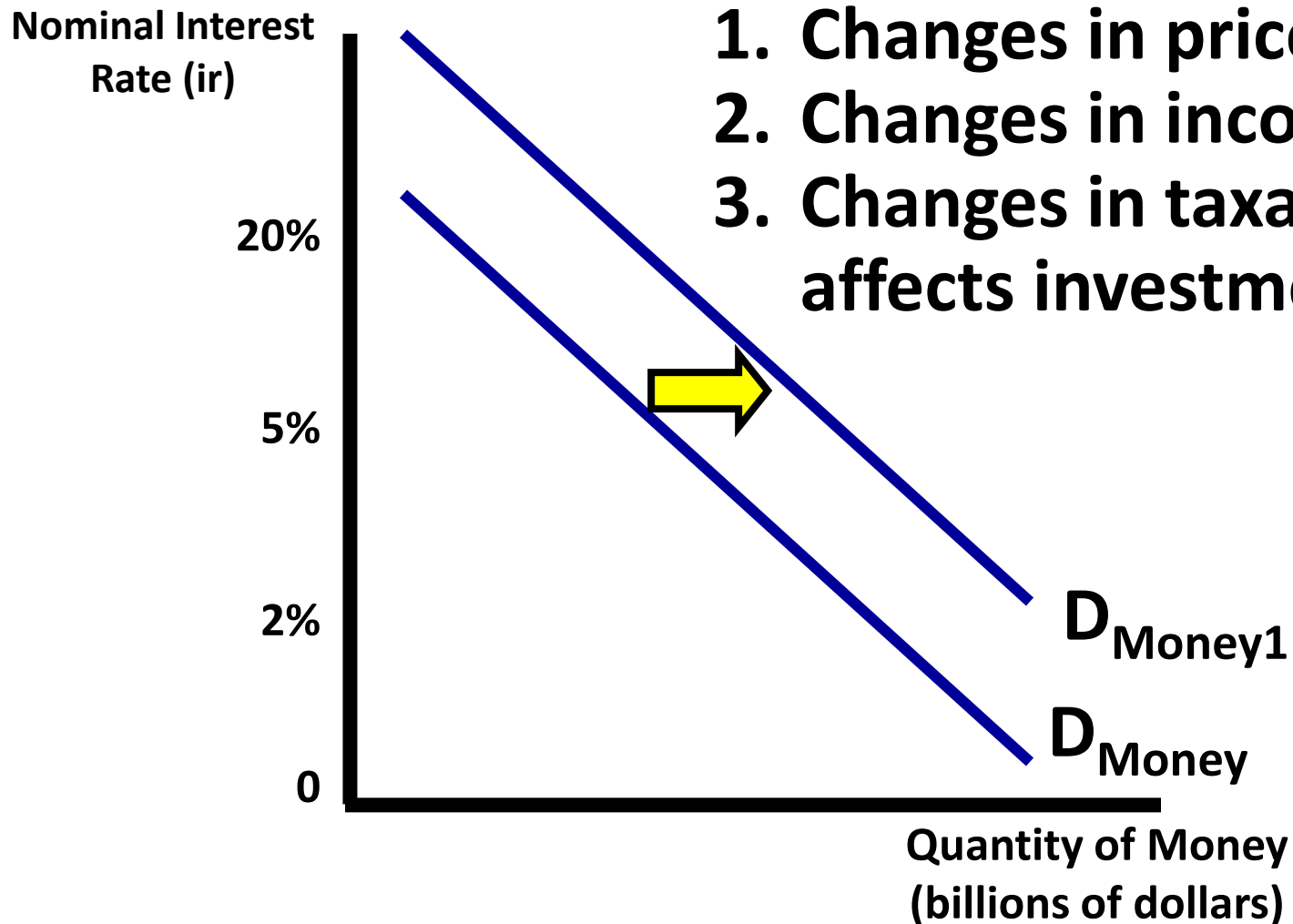


The Demand for Money

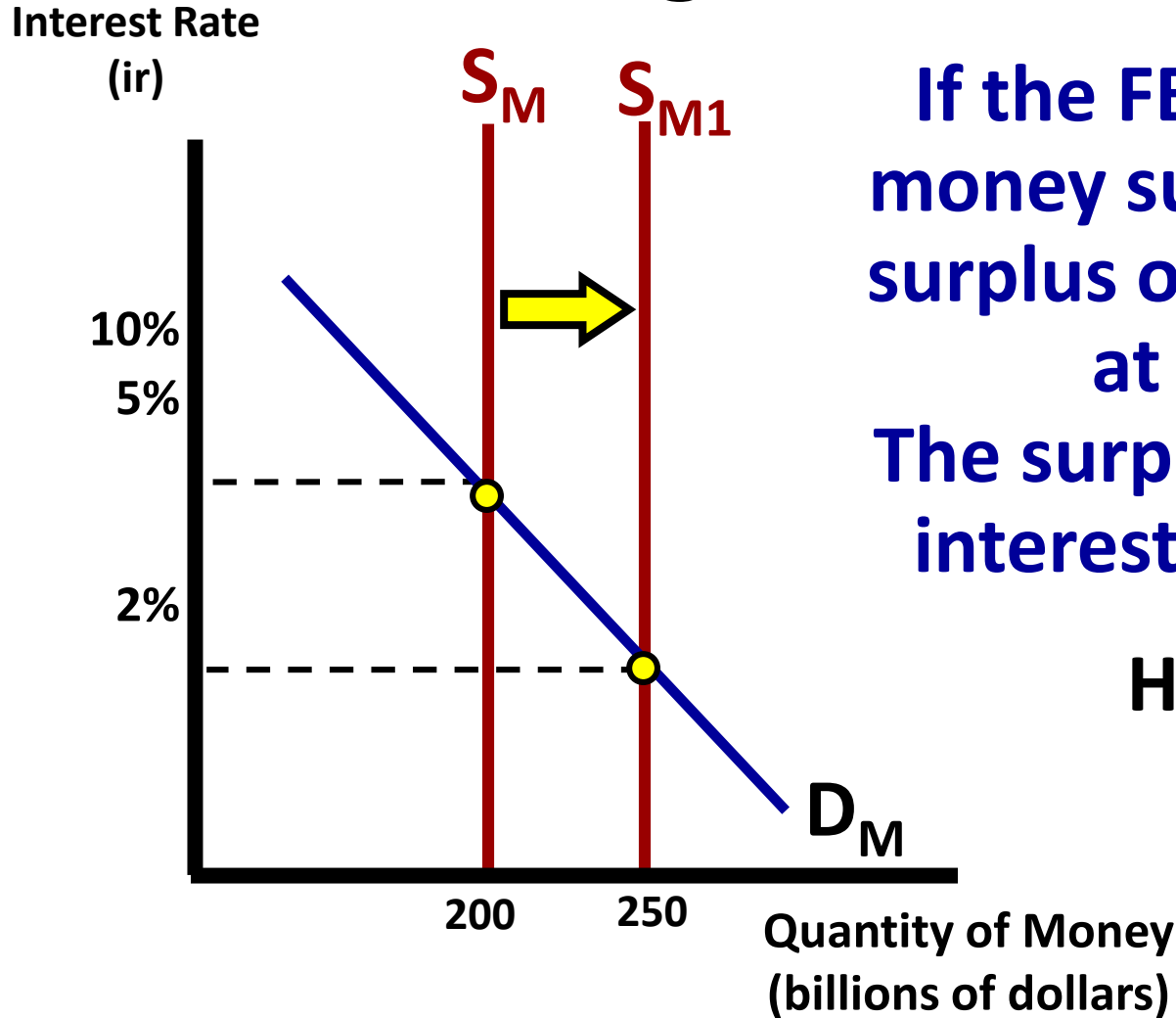
What happens if price level increase?

Money Demand Shifters

1. Changes in price level
2. Changes in income
3. Changes in taxation that affects investment



Increasing the Money Supply



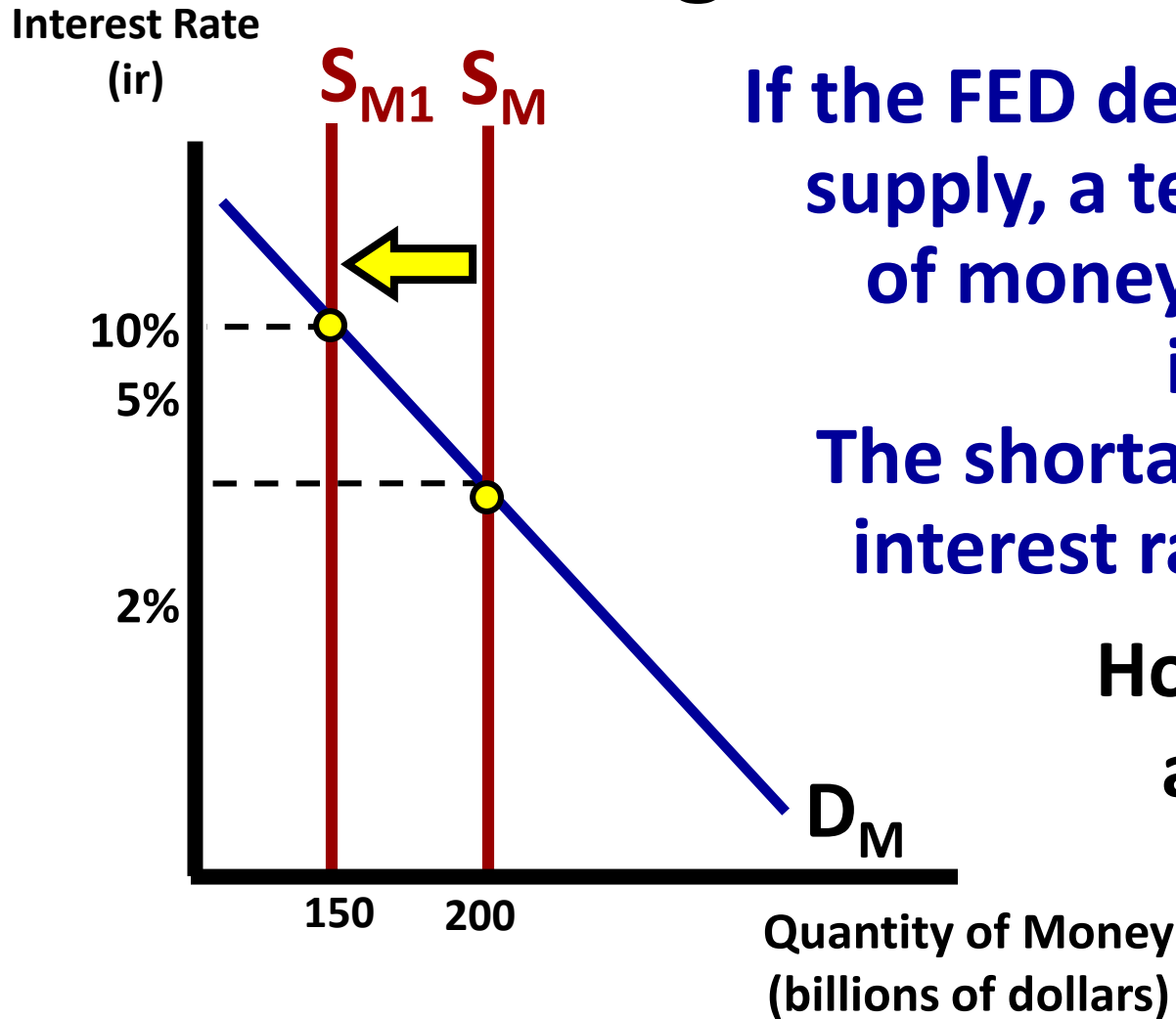
If the FED increases the money supply, a temporary surplus of money will occur at 5% interest.

The surplus will cause the interest rate to fall to 2%

How does this affect AD?

Increase money supply → Decreases interest rate → Increases investment → Increases AD

Decreasing the Money Supply



If the FED decreases the money supply, a temporary shortage of money will occur at 5% interest.

The shortage will cause the interest rate to rise to 10%

How does this affect AD?

Decrease money supply → Increase interest rate → Decrease investment → Decrease AD

Factors that can cause the MD Curve to shift

- Changes in Aggregate Prices
- Changes in Real GDP
- Changes in banking technology (ex: ATM's)
- Changes in Banking Institution Regulations

Interest
rate, r

A fall in money demand
shifts the money demand
curve to the left.

A rise in money demand
shifts the money demand
curve to the right.

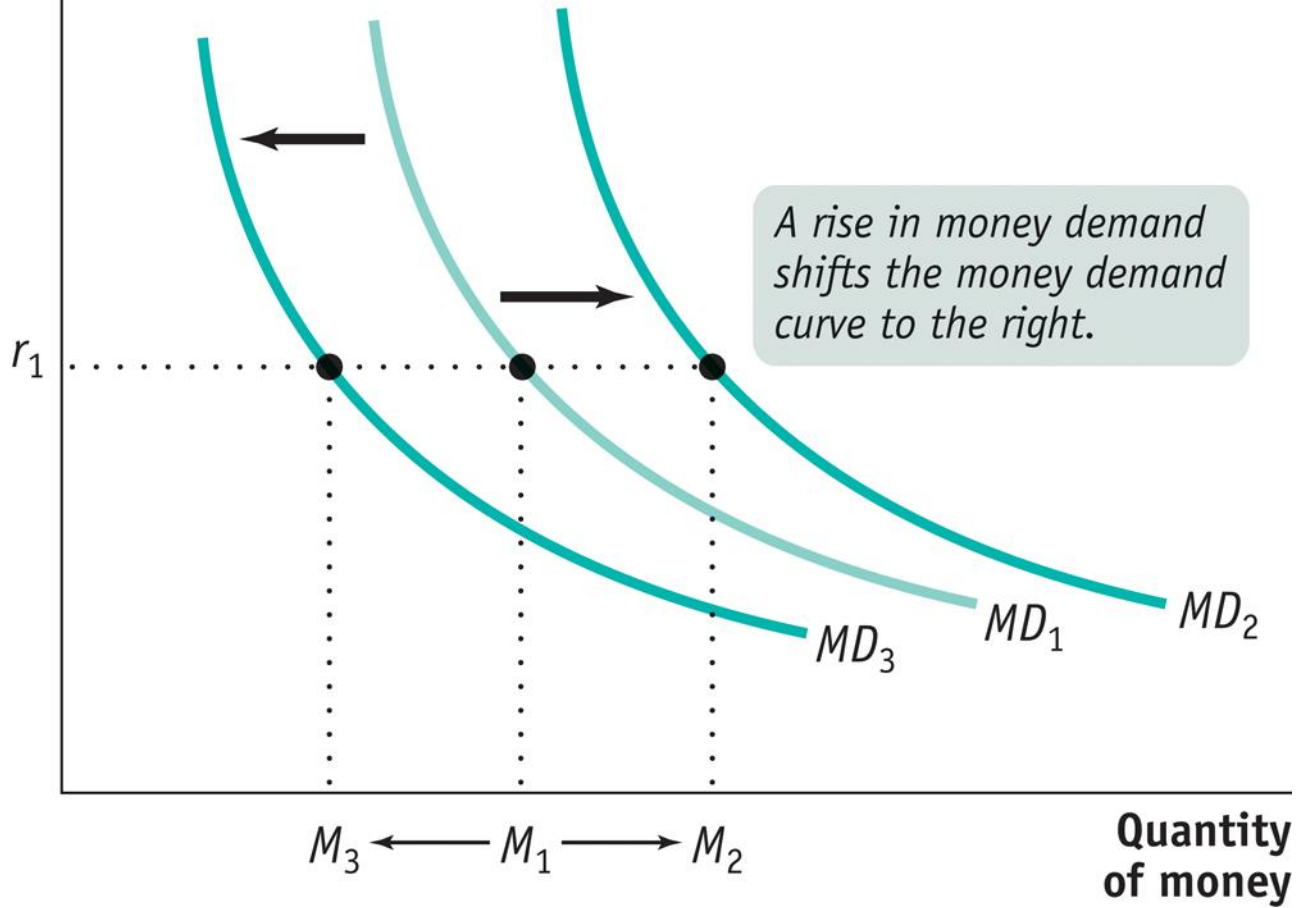


table 28.2**Interest Rates and the Opportunity Cost of Holding Money**

	June 2007	June 2008
Federal funds rate	5.25%	2.00%
One-month certificates of deposit (CD)	5.30	2.50
Interest-bearing demand deposits	2.773	1.353
Currency	0	0
CDs minus interest-bearing demand deposits	2.527	1.147
CDs minus currency	5.30	2.50

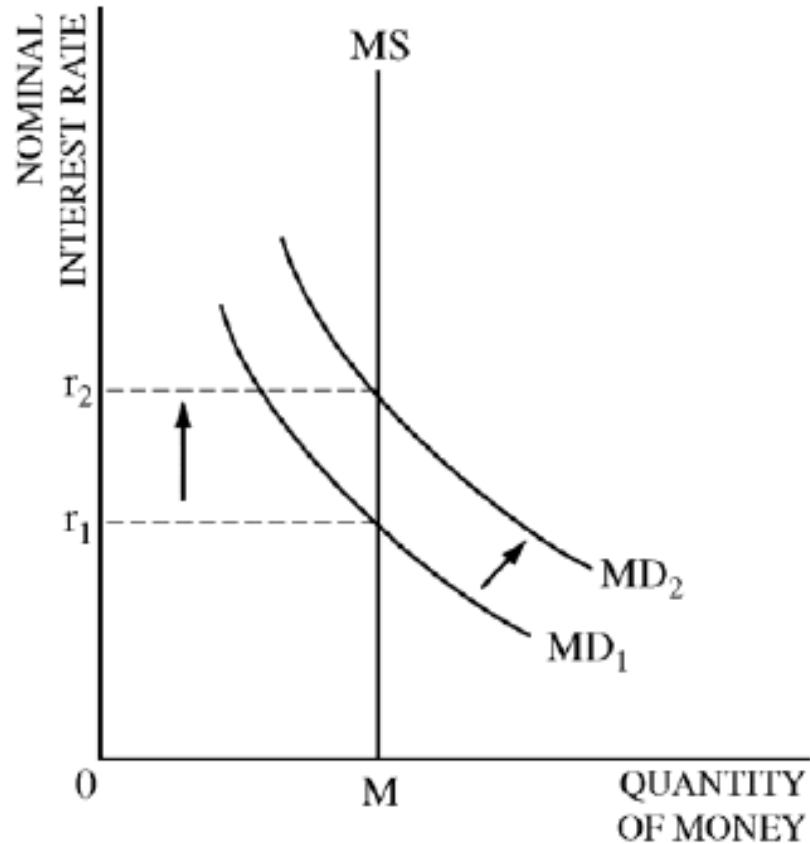
Source: Federal Reserve Bank of St. Louis.

AS the Credit Crisis got worse between 2007 and 2008 the Fed lowered interest rates hoping to increase liquidity in the market place and help pull the nation out of a recession. This is reflected in the lower interest rates banks were willing to pay on deposits.

2007B Practice FRQ: Just Do the Graph for (b)

1. Assume that Australia and New Zealand are trading partners. Australia's economy is currently in recession.
 - (a) Now assume that Australia begins to recover from its recession. Using a correctly labeled graph of aggregate demand and aggregate supply for New Zealand, show the impact of Australia's rising income on each of the following in the short run.
 - (i) Aggregate demand in New Zealand. Explain.
 - (ii) Output in New Zealand
 - (b) Using a correctly labeled graph of the money market for New Zealand, show the effect of the output change in part (a)(ii) on the following.
 - (i) Demand for money. Explain.
 - (ii) The nominal interest rate
 - (c) Assume that the price level in New Zealand rises. Given your answer to part (b)(ii), explain what will happen to real interest rates.
 - (d) Although recovering, Australia remains in recession and its government takes no action. Indicate whether each of the following curves will shift to the left, shift to the right, or remain unchanged in the long run in Australia.
 - (i) Aggregate supply
-

2007B Practice FRQ



(b) 4 points:

One point is earned for a correctly labeled graph of the money market.

One point is earned for showing a rightward shift of the money demand curve.

One point is earned for the explanation that higher income means more volume of transactions.

One point is earned for concluding that the nominal interest rate increases.

Module 29: Loanable Funds Market



Is an interest rate of 50% good or bad?

Bad for borrowers but good for lenders

The loanable funds market brings together those who wish to borrow with those who want to lend

Demand- Inverse relationship between real interest rate and quantity loans demanded

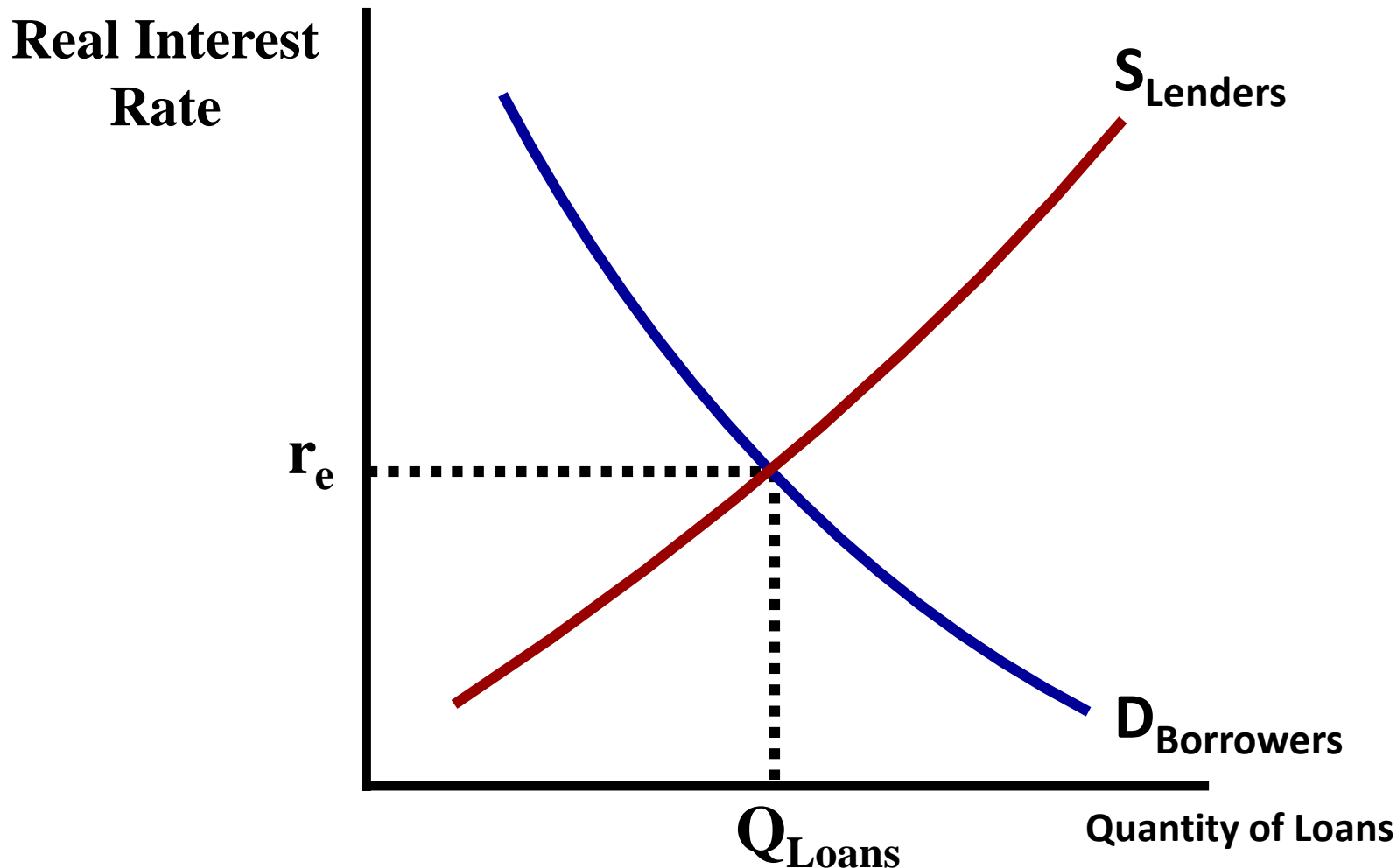
Supply- Direct relationship between real interest rate and quantity loans supplied

This is NOT the same as the money market.

(supply is not vertical)

Loanable Funds Market

At the equilibrium real interest rate the amount borrowers want to borrow equals the amount lenders want to lend.



Loanable Funds Market

Demand Shifters

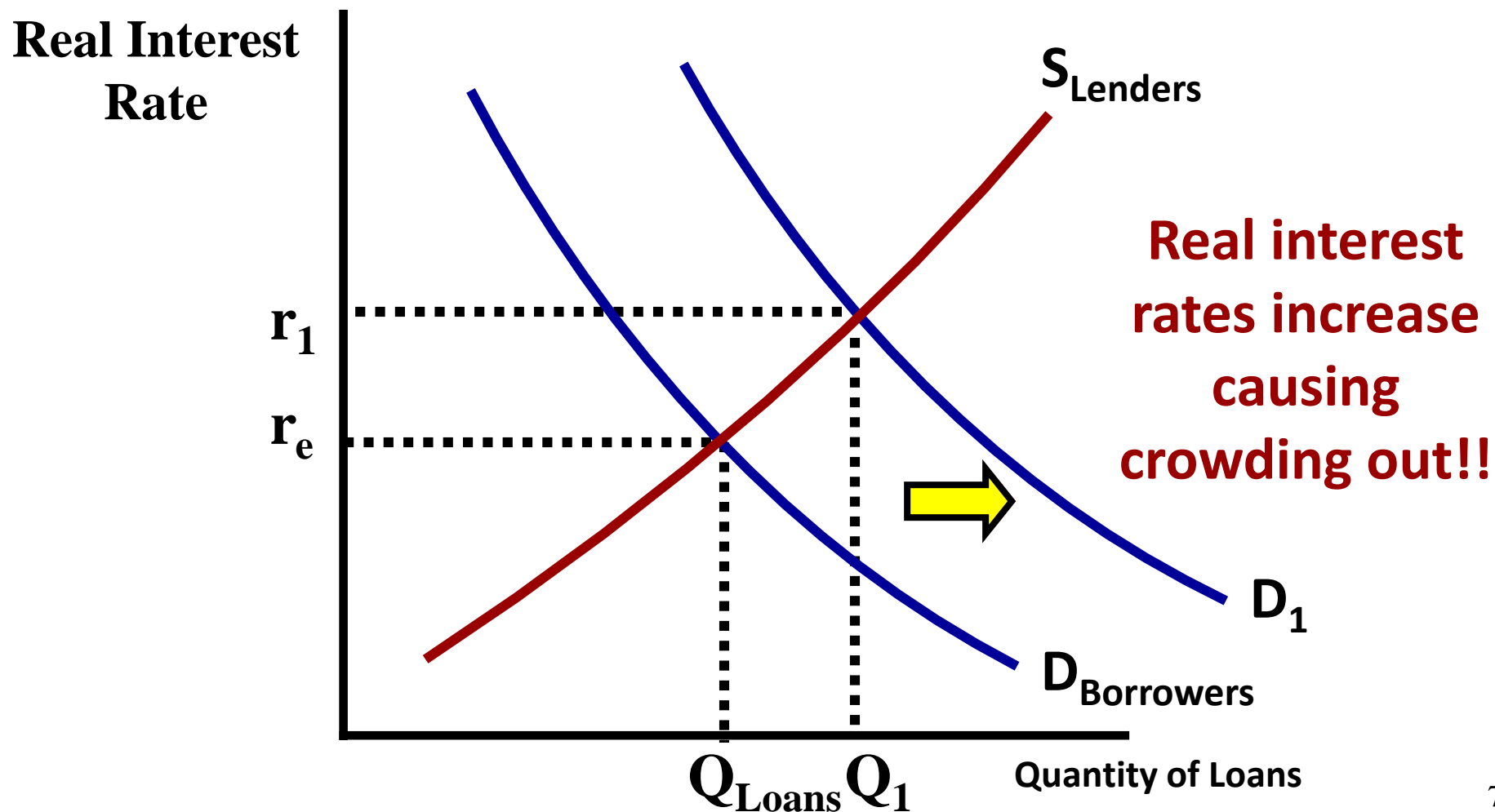
1. Changes in perceived business opportunities
2. Changes in government borrowing
 - **Budget Deficit**
 - **Budget Surplus**

Supply Shifters

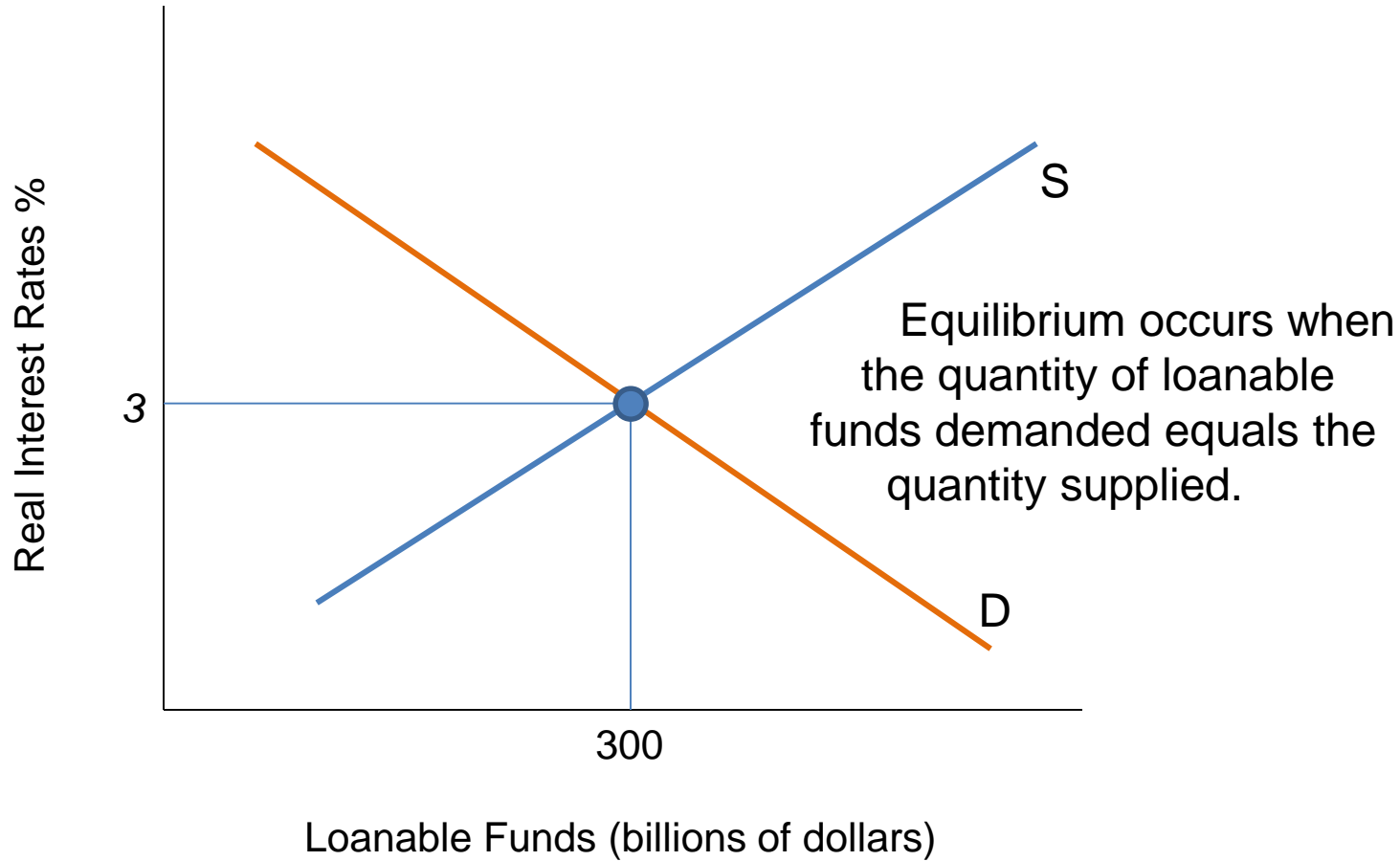
1. Changes in private savings behavior
2. Changes in public savings
3. Changes in foreign investment
4. Changes in expected profitability

Loanable Funds Market

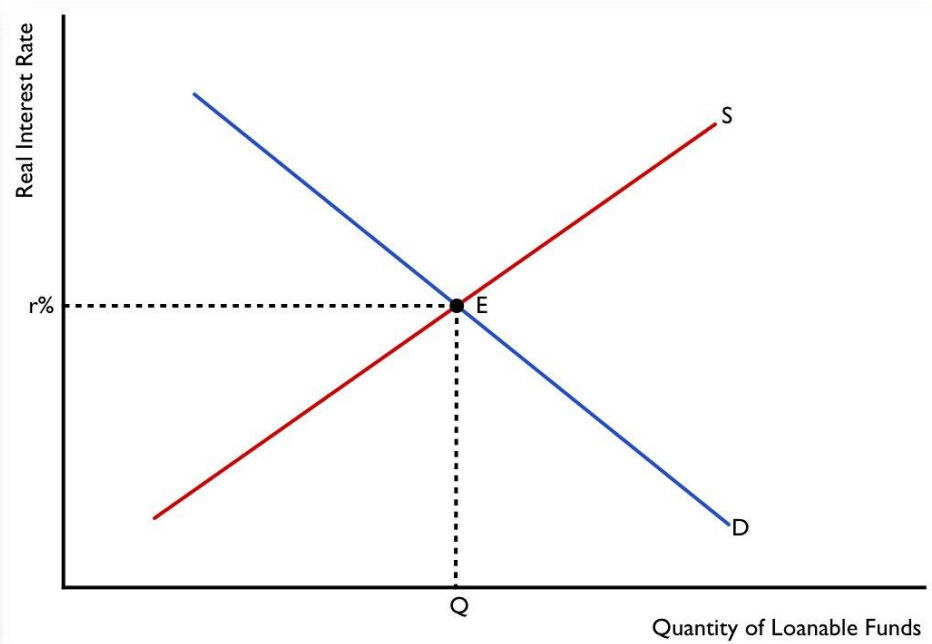
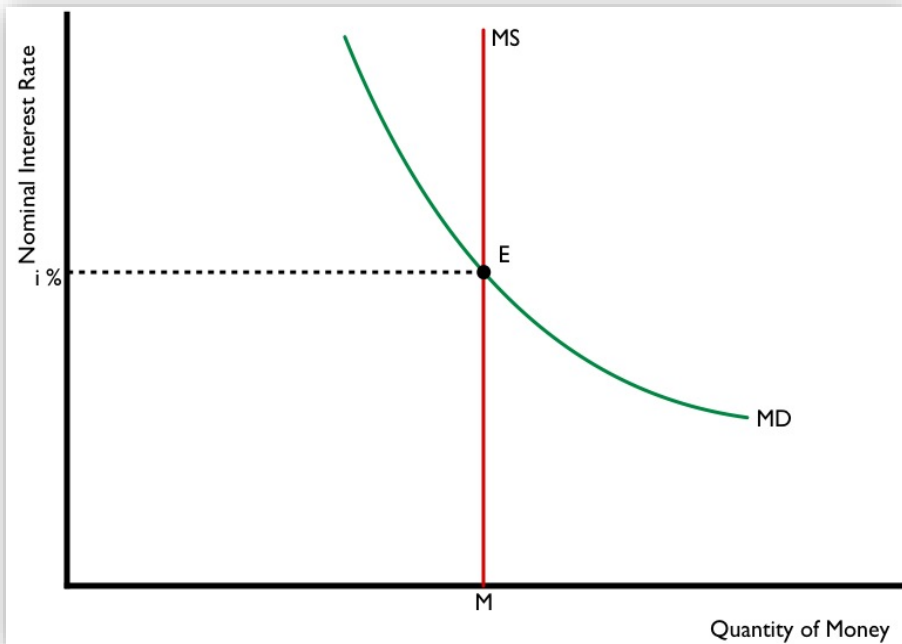
Example: The Gov't increases deficit spending
Government borrows from private sector
Increasing the demand for loans



Loanable Funds



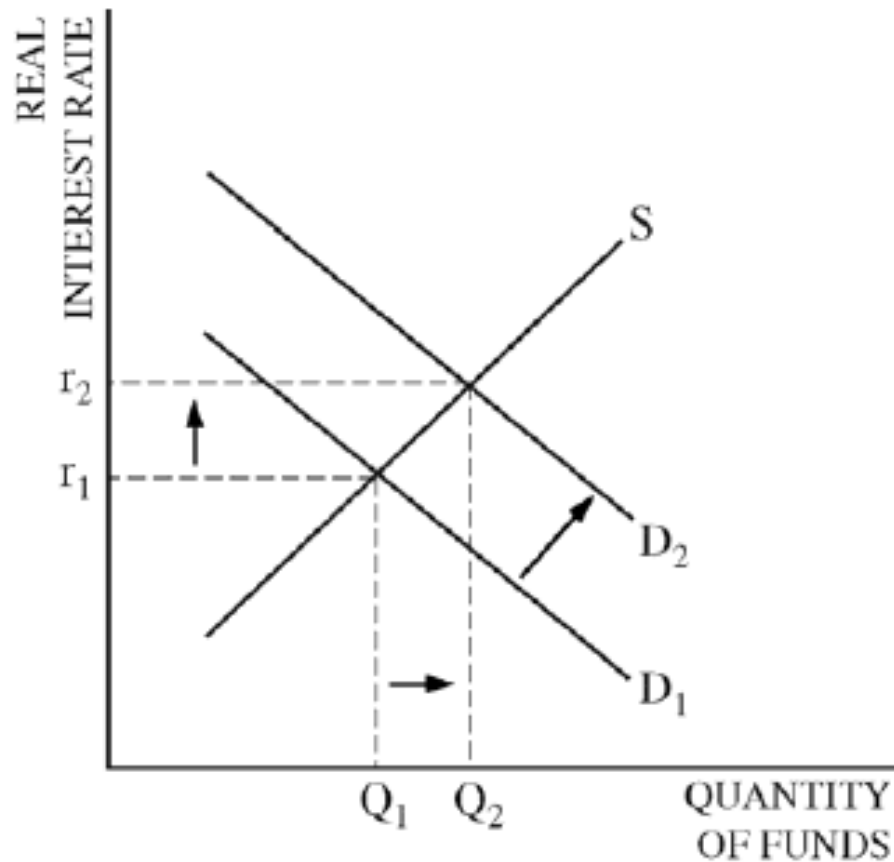
Two Models of the Interest Rate



2007B Practice FRQ (just do parts **a** and **b**)

2. (a) Assume that businesses are granted a tax credit on spending for machinery. Using a correctly labeled graph of the loanable funds market, show the effect of the business sector's response on the real interest rate.
- (b) Now assume instead that the tax rate on interest income from household savings is lowered and there is no change in government budget deficit. Using a second correctly labeled graph of the loanable funds market, show the effect of the households' response on the real interest rate.
- (c) Given your answer to part (b), explain what will happen to the country's production possibilities curve in the long run.

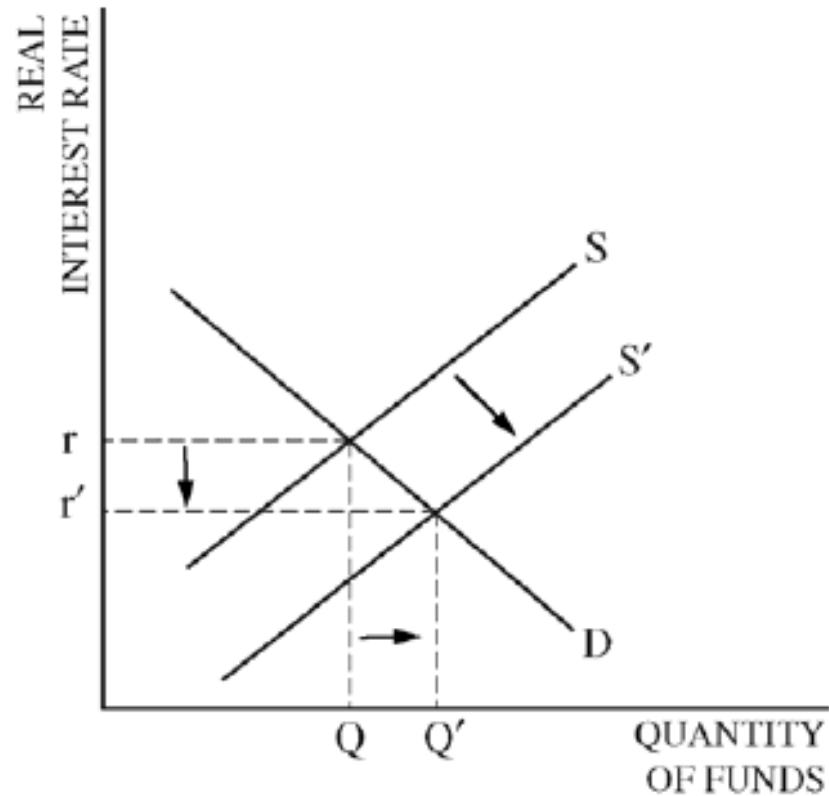
2007B Practice FRQ



(a) 3 points:

- One point is earned for a correctly labeled graph of the loanable funds market.
- One point is earned for shifting the demand for funds curve to the right.
- One point is earned for concluding that the real interest rate rises.

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(b) 2 points:

- One point is earned for shifting the supply of funds curve to the right.
- One point is earned for concluding that the real interest rate falls.

(c) 2 points:

- One point is earned for stating that the production possibilities curve (PPC) will shift to the right.
- One point is earned for the explanation that the country's capital stock increases.