



Money

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The History of Money

- The evolution of money has passed through various stages:
- **Barter Money** - Trade without money, directly exchanging goods for goods, is called **barter**.
- **Commodity Money**
- **Metal Money**
- **Paper Money**
- **Bank Money - deposits**
- **Plastic money – Credit cards !!!!!**



What is Money?

Money is anything that is generally acceptable to sellers in exchange for goods and services.

A **liquid asset** is an asset that can easily (i.e., quickly, cheaply, conveniently) be exchanged for goods and services.

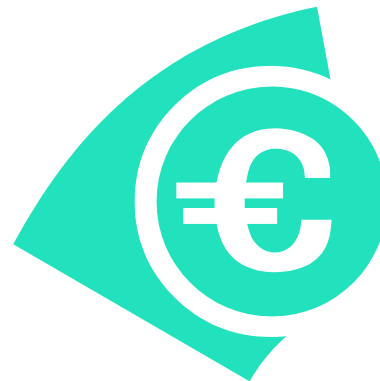


The History of Money

- **Commodity money:** commodities/items used as money that also has internal value in some other use. – animals, cattle olive oil, wine, cigarettes and huge wheels of curve stones.
- **Metallic Money:** copper, iron, gold, silver, diamonds. Nineteenth century it is only silver and gold they have internal vale – use value in themselves. There is no need for government to give guarantee its value. Quantity was regulated by the supply and demand for gold and silver.
- **Paper Money:** The age of metallic money gave way to the age of paper money. Money is not wanted for its own origin but for things it will buy.

What Gives Money its Value?

- Our money has value ***because of its general acceptability.***
- We accept paper dollars because we know that other people will accept dollars later when we try to spend them.
- Money has value to people ***because it is widely accepted in exchange for other goods*** that are valuable.





Functions of Money

- 1) Medium of exchange**
- 2) Unit of account**
- 3) Store of value**
- 4) Standard of Deferred Payment**



Medium of Exchange (1)

- The use of money as a **medium of exchange** (to make transactions) lowers transactions costs.
- Barter requires a **double acceptance of wants** - each party to the exchange has to want what the other has to trade.
 - **Finding someone else who wants what you have to trade and who has what you want is time-consuming and costly.**



Medium of Exchange (2)

- A medium of exchange must be:
 - **Widely accepted for payment**
 - **Portable**: easy to transport and transfer to the seller
 - **Divisible**: measurable in both small and large units



Unit of Account

- **Money acts as a common unit of measurement.**
- **This allows us to compare the values of very dissimilar things.**
- **It makes accounting possible.**
- **As a result of these things, it lowers information costs.**



Store of Value

- Money makes it possible to carry buying power forward into the future.
- Therefore, for money to be a store of value, it must be **durable**.
 - **Durability** is the ability to retain value over time.
 - **Inflation** can reduce the effectiveness of money as a store of value.
 - This can lead to **currency substitution** — the use of foreign money as a substitute for domestic money when the domestic economy has a high rate of inflation.



Standard of Deferred Payment

- Debt is denominated in money terms.
- The standard for repayment is money.
- There is a difference between money and credit:
 - **Money** is what you use to pay for goods and services.
 - **Credit** is available savings that are lent to borrowers to spend.

Money Today consists of:

- **Currency** is the bills and coins that we use.
- **Deposits** are also money because they can be converted into currency and are used to settle debts.



The Motives of Holding Money

- **Transactions Motive** (related to income)
- **Precautionary Motive** (related to income)
- **Speculative Motive** (depends on the risk aversion)
- We have to distinguish between real and nominal quantities of money !!!!!!!!!

Monetary base

- M0 = money in circulation
- M1 = M0 + sight deposits
- M2 = M1 + fixed term time deposits at banks
- M3 = M2 + stocks and securities issued for maximum period of 2 years

Money in December 2000

		Currency	M1	M2	M3
UK	£ bn	27.1	459.8	804.5	926.1
	% GDP	3.0	47.9	85.0	96.7
Euroland	€ bn	347.5	2074.3	4287.2	5080.0
	% GDP	1.2	15.8	25.5	35.3
USA	\$ bn	530.5	1091.3	4945.7	7098.8
	% GDP	2.9	11.0	5.0	71.7



What is Money?—M1

- M1 is the narrowest and most liquid measure of the money supply.
 - It includes financial assets that are immediately available for spending on goods and services.
- M1 includes:
 - **Currency**
 - **Travelers' Checks**
 - **Demand Deposits** (checking accounts)
 - **Other Checkable Deposits** (interest-bearing checking)
- Demand Deposits and Checkable Deposits are called **transactions accounts** — these are checking accounts that can be drawn upon to make payments.

Where the Money Comes From and Where It Goes

- The **balance sheet** of a commercial bank shows how a bank raises and uses money:
 - **Liabilities** are the sources of funds for the bank. The bank is “liable” for returning funds to depositors.
 - **Assets** generate income for the bank. Loans are assets for the bank because a borrower must pay interest to the bank.

Assets	Liabilities
\$100 Reserves \$900 Loans	\$1,000 Deposit



How Banks Create Money

Reserves: Actual and Required

- The **reserve ratio** is the fraction of a bank's total deposits that are held in reserves.
- The **required reserves ratio** is the ratio of reserves to deposits that banks are required, by regulation, to hold. **Required reserves** are those reserves which must be kept on hand or on deposit with the National Reserve in order to comply with the reserve requirements.
- **Excess reserves** are the cash reserves beyond those required, which can be loaned.

The Process of Money Creation

Bank	New Deposits (new reserves)	New Required Reserves	Checkable Deposits Created by Extending New Loans (equal to new excess reserves)
A	\$1,000.00	\$100.00	\$900.00
B	900.00	90.00	810.00
C	810.00	81.00	729.00
D	729.00	72.90	656.10
E	656.10	65.61	590.49
⋮	⋮	⋮	⋮
TOTALS (rounded)	\$10,000	\$1,000	\$9,000

- The increase in the money supply, **M1**, resulting from the increase in the \$1,000 deposit equals $\$10,000 - \$1,000 = \$9,000$.

How the Money Multiplier Works

- The original \$1,000 cash deposit has created checking account balances equal to: \$1,000 + \$900 + \$810 + \$729 + \$656.10 + = **\$10,000**
- The general formula for deposit creation is:

$$\text{increase in checking account balances} = \frac{1}{\text{reserve ratio}} \times \text{initial deposit}$$

$$\text{Increase in checking account balances} = 1/0.1 \times 1000 = 10 \times 1000 = \$10,000$$

- The increase in the money supply, **M1**, resulting from the increase in the \$1,000 deposit equals \$10,000 - \$1,000 = \$9,000.

The **money multiplier** shows the total increase in checking account deposits for any initial cash deposit.

The initial cash deposit triggers additional rounds of deposits and lending by banks, which leads to a multiple expansion of deposits.



Bank Reserves and The Required Reserve Ratio

- Commercial bank's reserves are funds that it has not lent out
 - **But instead keeps in a form that is readily available to its depositors**
 - Bank holds its reserves in two places
 - In its vault
 - In a special reserve account managed by the Central Bank
- Why does the bank hold reserves?
 - **First, on any given day, some of the bank's customers might want to withdraw more cash than other customers are depositing**
 - **Second, banks are required by law to hold reserves**
 - Required reserve ratio, set by the National Reserve
 - Tells banks the fraction of their checking accounts that they must hold as required reserves



The Functions of the National Reserve

- **National Reserve, as overseer of the nation's monetary system, has a variety of important responsibilities**
 - **Supervising and regulating banks**
 - **Acting as a “bank for banks”**
 - **Issuing paper currency**
 - **Check clearing**
 - **Controlling the money supply**



Financial Intermediaries

Financial intermediaries are firms that take deposits from households and firms and make loans to other households and firms.

Four Types of Financial Intermediaries

- 1) Commercial banks**
- 2) Savings and loan associations**
- 3) Savings banks and credit unions**
- 4) Money market mutual funds**



Commercial Banks

- A commercial bank is a private corporation, owned by its stockholders, that provides services to the public
 - **Most important service is to provide checking accounts**
- Banks provide checking account services in order to earn a profit
 - **Bank profits come from lending**
 - **Banks do not lend out every dollar of deposits they receive**
 - They hold some back as reserves



International Banking (1)

- **Financial market or “offshore banking”**: the market for deposits and loans generally denominated in a currency other than the currency in which the transaction occurs.
 - **For example, a czech firm may borrow U.S. dollars from a bank in London.**
 - **Because foreign banks do not operate under czech legal restrictions, they may offer better interest rates on deposits and loans.**
 - **On the other hand, foreign banking laws do apply and may cause other problems.**



Global Money

- An **international** reserve asset is an asset used to settle debts between governments. Today gold is not the most common International Reserve Asset, national currencies serve this function.
- Thus these currencies are referred to as international reserve currencies.
- A **composite currency** is an artificial unit of account that is an average of the values of several national currencies.
 - **SDR: Special Drawing Right**, average of the values of U.S. dollar, the euro, the Japanese Yen, and the U.K. pound. Created by the IMF in 1970 as an int'l reserve asset.
 - **International Monetary Fund and World Bank**



Informal Markets in Developing Countries

- **ROSCAs** — Rotating Savings and Credit Associations
 - Operate like savings clubs
 - **Example:** 12 members contribute every month, and then every 12th month each member receives the full amount contributed by everyone.



The quantity of money we demand depends on:

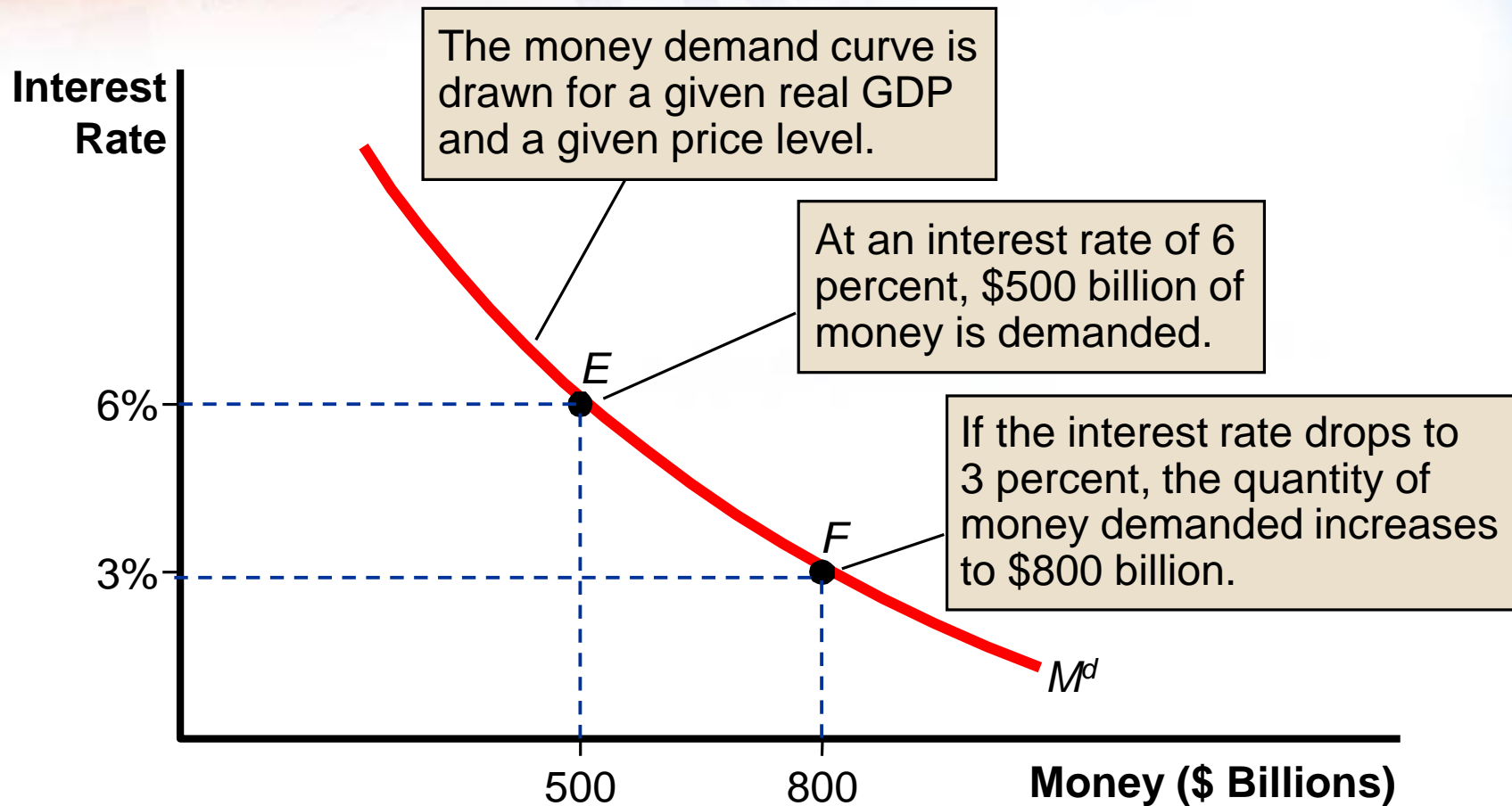
- ***The interest rate***
 - **the cost of holding money.**
- ***Income***
 - **which affects transactions demand**
- ***Wealth***
 - **which affects portfolio demand**



The Money Demand Curve

- This tells us the total quantity of money demanded in the economy at each interest rate
 - **The curve is downward sloping**
 - **As long as the other influences on money demanded don't change, a drop in the interest rate will increase the quantity of money demanded**

The Money Demand Curve

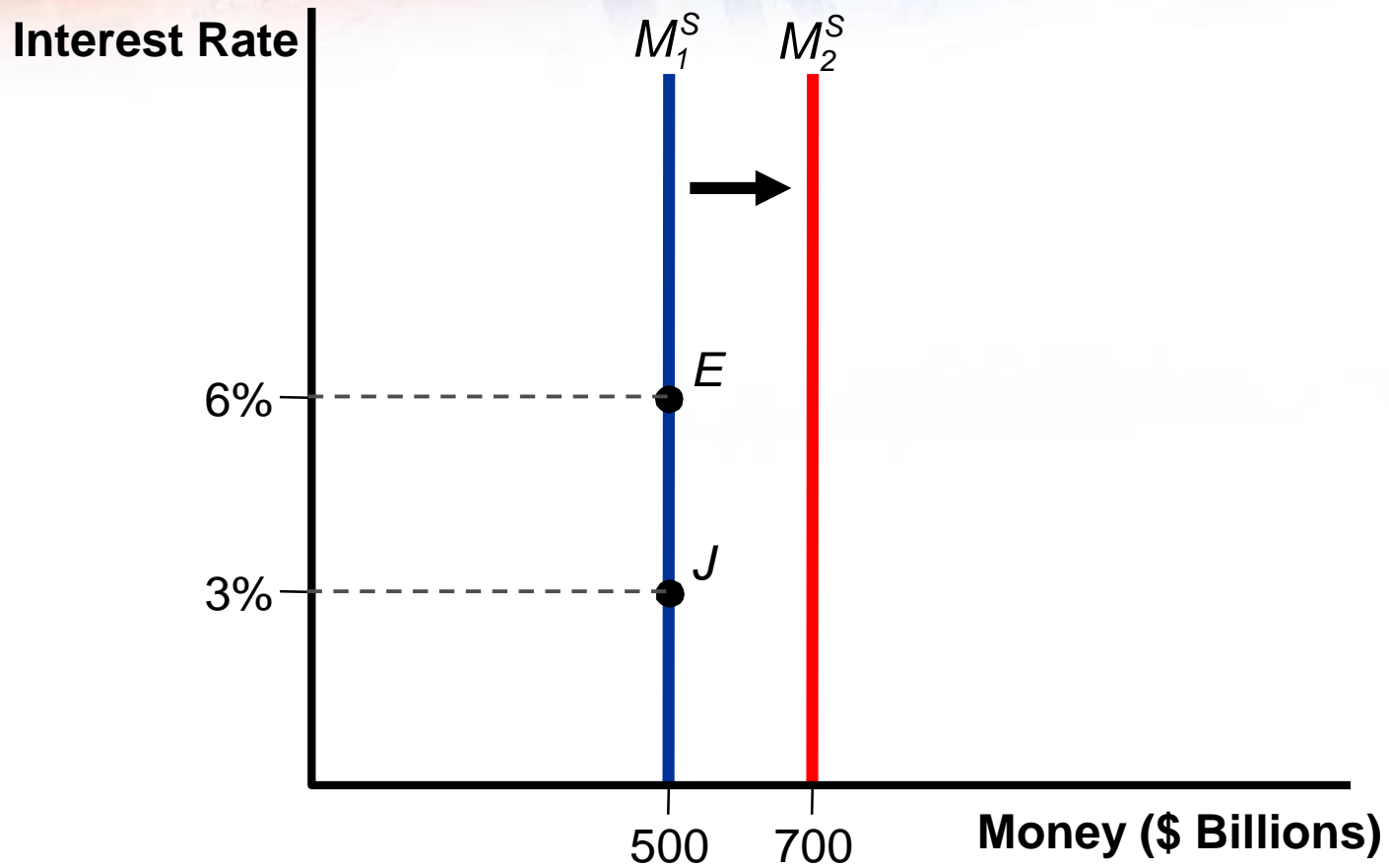




The Supply of Money

- Just as we did for money demand, we would like to draw a curve showing the quantity of money supplied at each interest rate
 - **The interest rate can rise or fall, but the money supply will remain constant unless and until the Central Bank decides to change it**
- Open market purchases of bonds inject reserves into the banking system
 - **Shift the money supply curve rightward by a multiple of the reserve injection**
 - Open market sales have the opposite effect
 - They withdraw reserves from the system and shift the money supply curve leftward by a multiple of the reserve withdrawal

The Supply of Money





The Supply of Money

- To increase the money supply, the Central Bank can:
 - 1- Lower reserve requirements**
 - 2- Reduce the discount rate**
 - 3- Buy bonds**
- **Interest rate charged to banks for borrowing short term funds directly from a central bank**



The Supply of Money

- To reduce the money supply, the Central Bank can:
 - 1- Raise reserve requirements**
 - 2- Increase the discount rate**
 - 3- Sell bonds**



Equilibrium in the Money Market

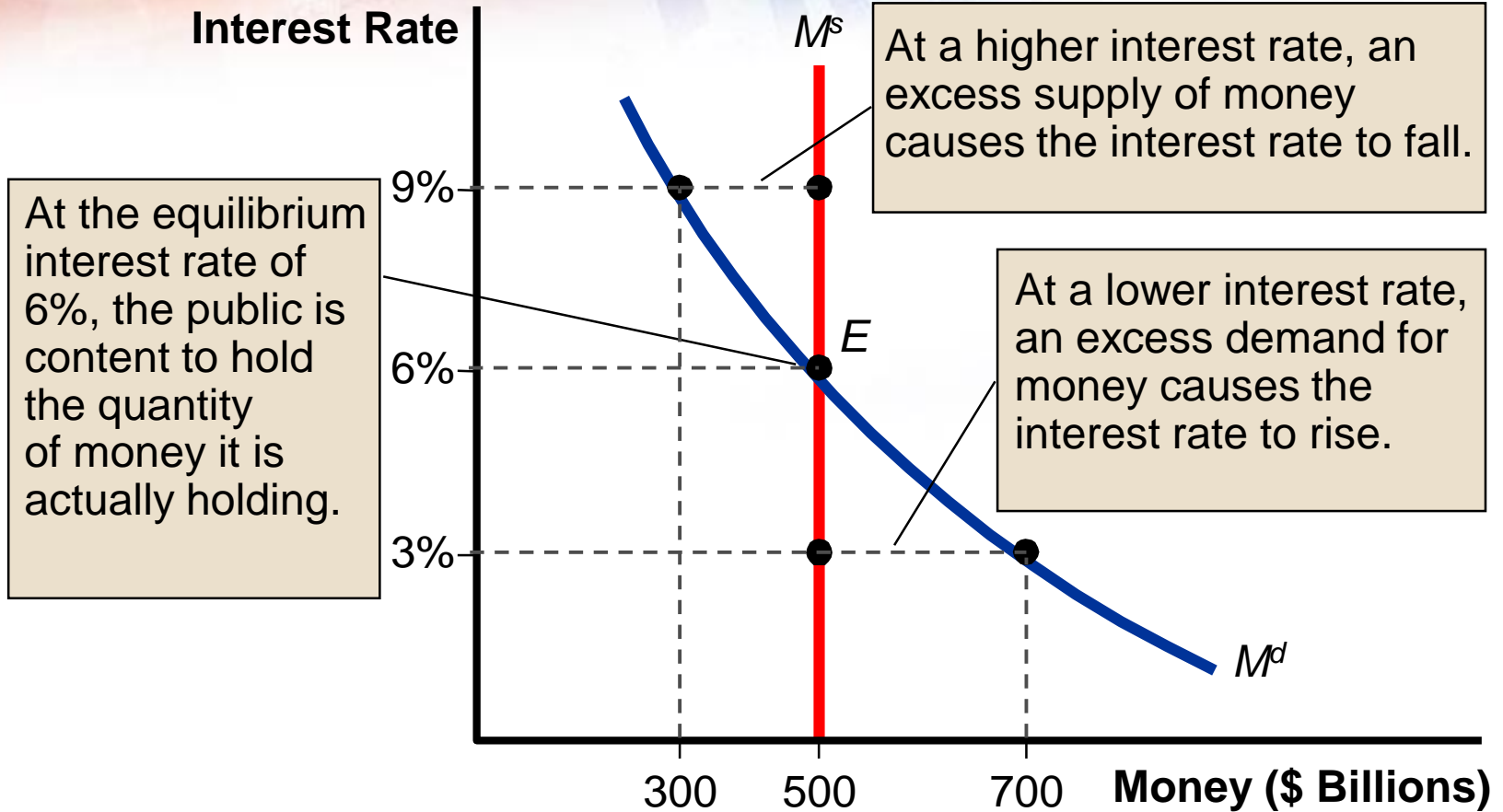
- We want to find the equilibrium interest rate
 - **The rate at which the quantity of money demanded and the quantity of money supplied are equal**
- Equilibrium in the money market occurs
 - **When the quantity of money people are actually holding is equal to the quantity of money they want to hold**



How the Money Market Achieves Equilibrium

- When there is an excess supply of money in the economy, there is also an excess demand for bonds
 - **Excess Supply of Money**
 - The amount of money supplied exceeds the amount demanded at a particular interest rate
 - **Excess Demand for Bonds**
 - The amount of bonds demanded exceeds the amount supplied at a particular interest rate
- When the interest rate is higher than its equilibrium value
 - **The price of bonds will rise**

Money Market Equilibrium



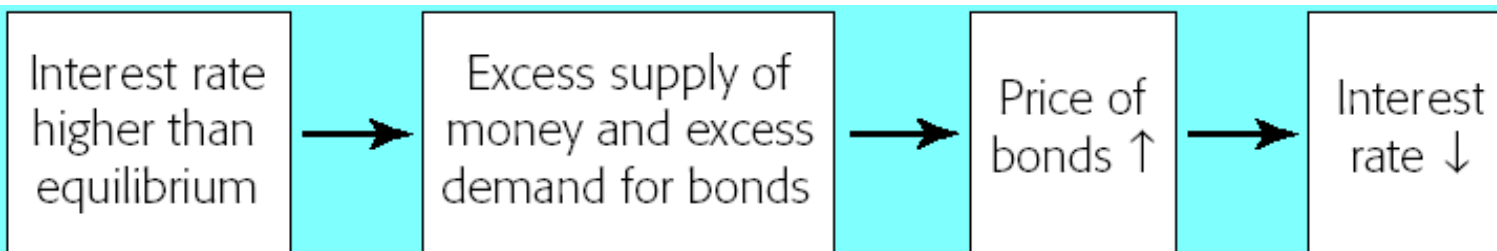


An Important Detour: Bond Prices and Interest Rates

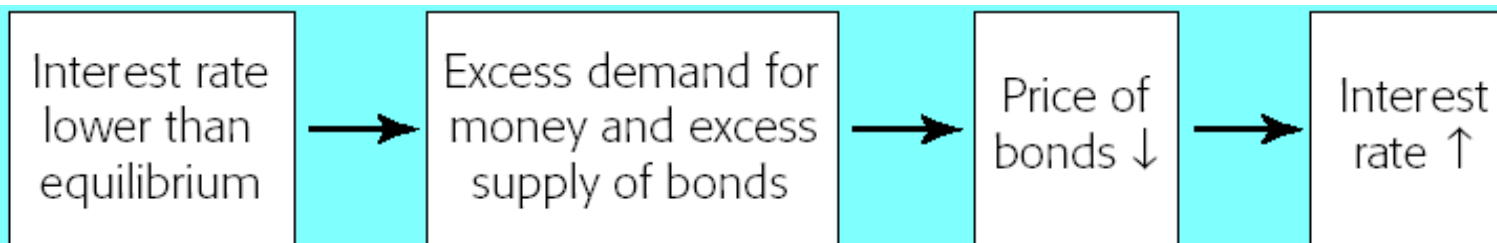
- A bond
 - **A promise to pay back borrowed funds at a certain date or dates in the future**
- The interest rate that you will earn on your bond depends entirely on the price of the bond
 - **The higher the price, the lower the interest rate**
- When the price of bonds rises, the interest rate falls
 - **When the price of bonds falls, the interest rate rises**
- The relationship between bond prices and interest rate helps explain why the government, the press, and the public are so concerned about the bond market
 - **Where bonds issued in previous periods are bought and sold**

Back to the Money Market

- A rise in the price of bonds means a decrease in the interest rate
 - **The complete sequence of events is**

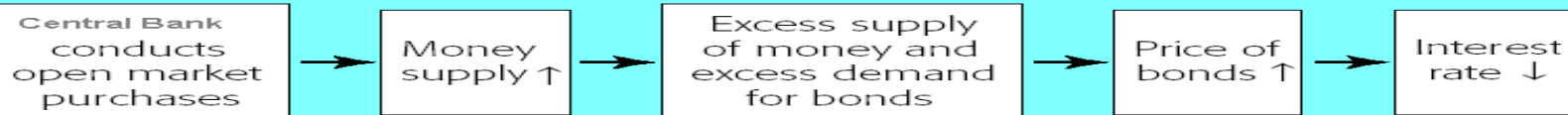


- **In the case of an excess demand for money and an excess supply of bonds**
 - **The following would happen**

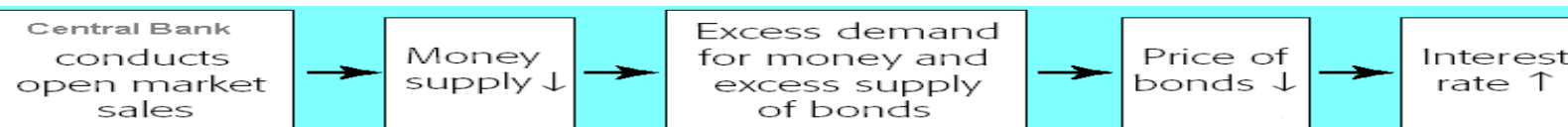


How the Central Bank Changes the Interest Rate

- To change the interest rate, the Central Bank must change the equilibrium interest rate in the money market, and it does this by changing the money supply
 - The process works like this



- Or this

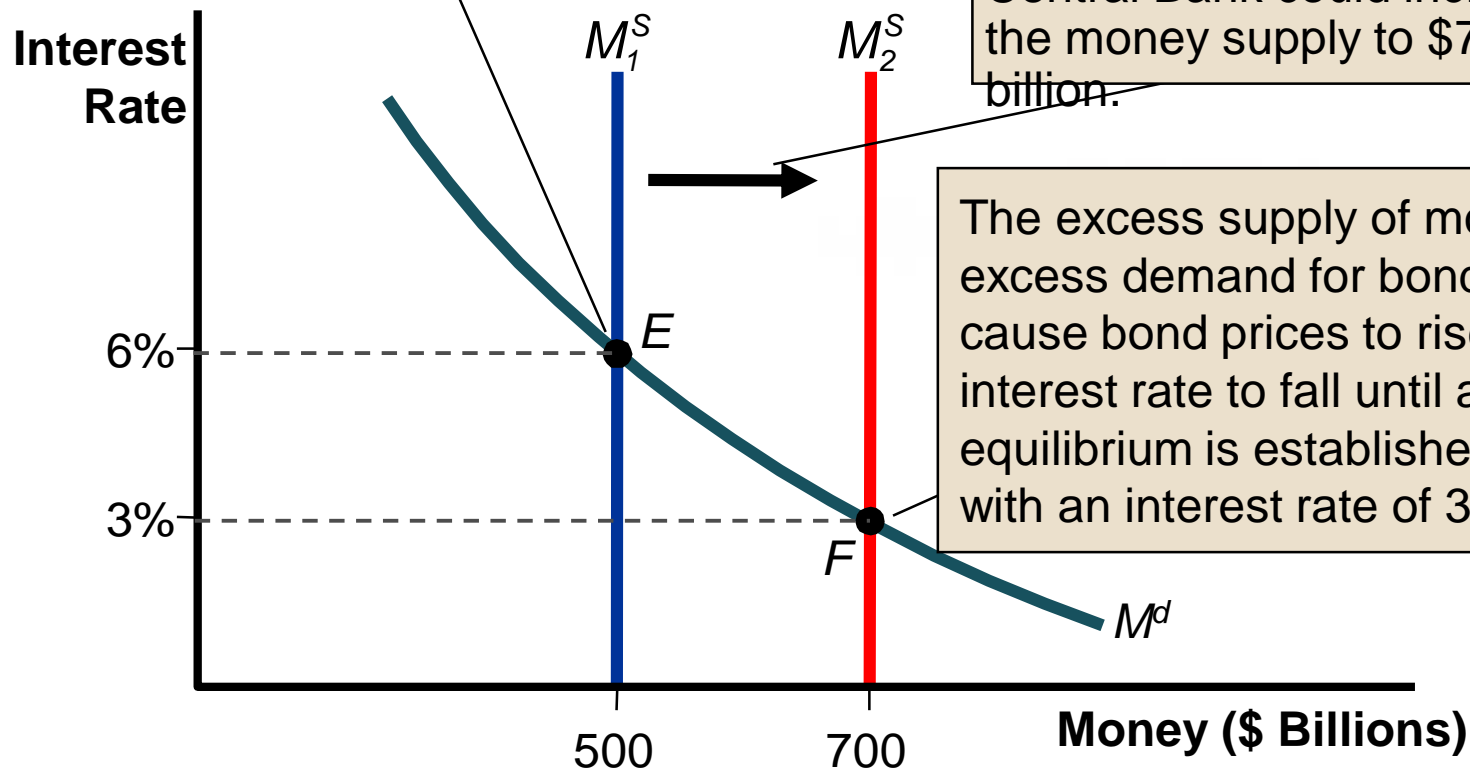


- If the Central Bank increases the money supply by buying government bonds, the interest rate falls
 - If the Central Bank decreases the money supply by selling government bonds, the interest rate rises
 - By controlling the money supply through purchases and sales of bonds, the Central Bank can also control the interest rate

Money Market and equilibrium

At point E , the money market is in equilibrium at an interest rate of 6 percent.

To lower the interest rate, the Central Bank could increase the money supply to \$700 billion.



The excess supply of money (and excess demand for bonds) would cause bond prices to rise, and the interest rate to fall until a new equilibrium is established at point F with an interest rate of 3 percent.

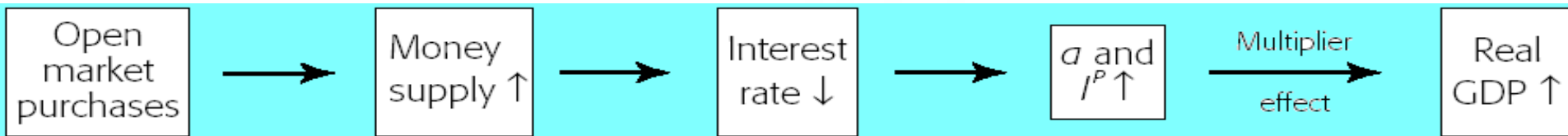


How the Interest Rate Affects Spending

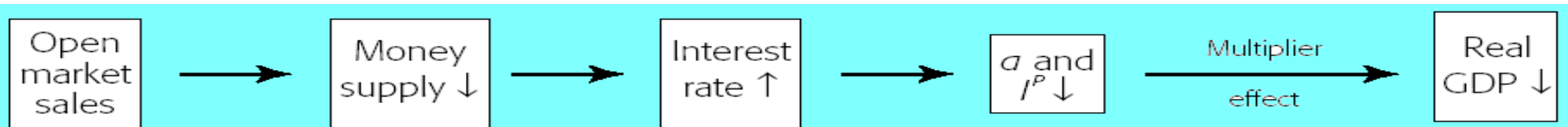
- We can summarize the impact of monetary policy as follows
 - **When the Central Bank increases the money supply, the interest rate falls and spending on three categories of goods increases**
 - Plant and equipment
 - New housing
 - Consumer durables
 - **When the Central Bank decreases the money supply, the interest rate rises and these categories of spending fall**

Monetary Policy and the Economy

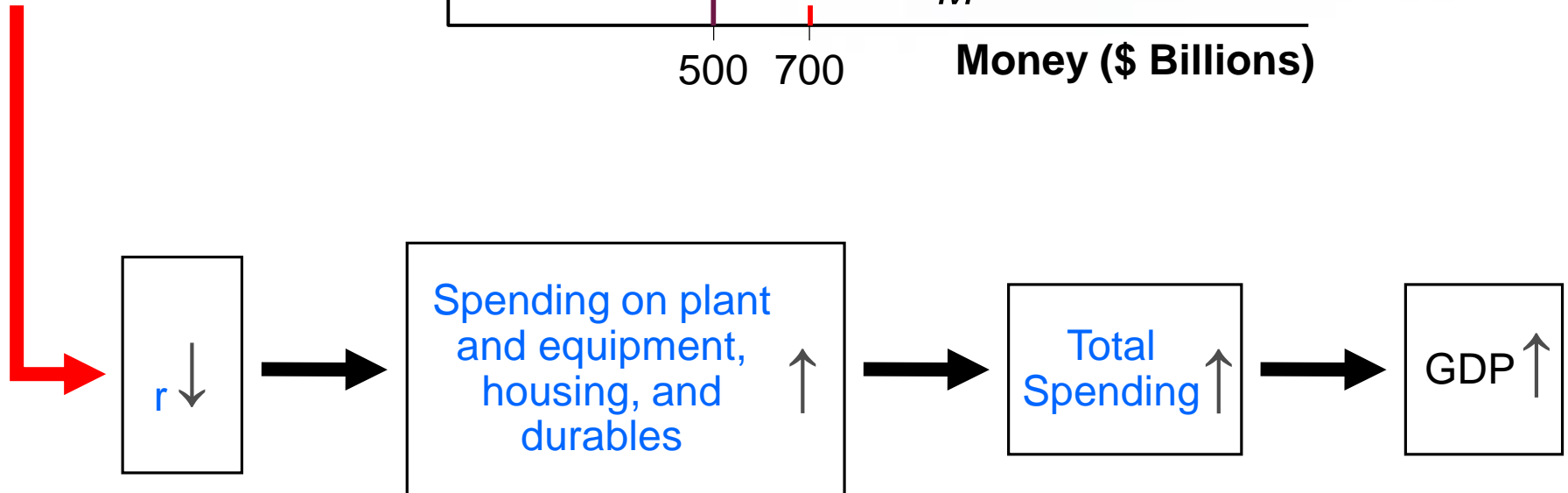
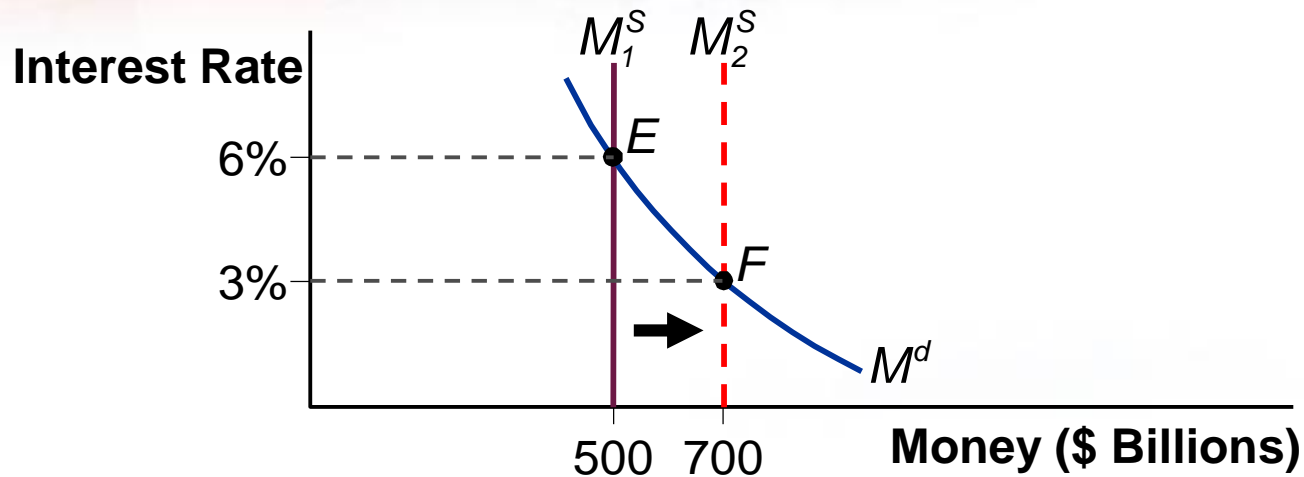
- When the Central Bank controls or manipulates the money supply in order to achieve any macroeconomic goal it is engaging in monetary policy
- This is what happens when the Central Bank conducts open market **purchases** of bonds



- Open market **sales** by the Central Bank have exactly the opposite effects



Monetary Policy and the Economy

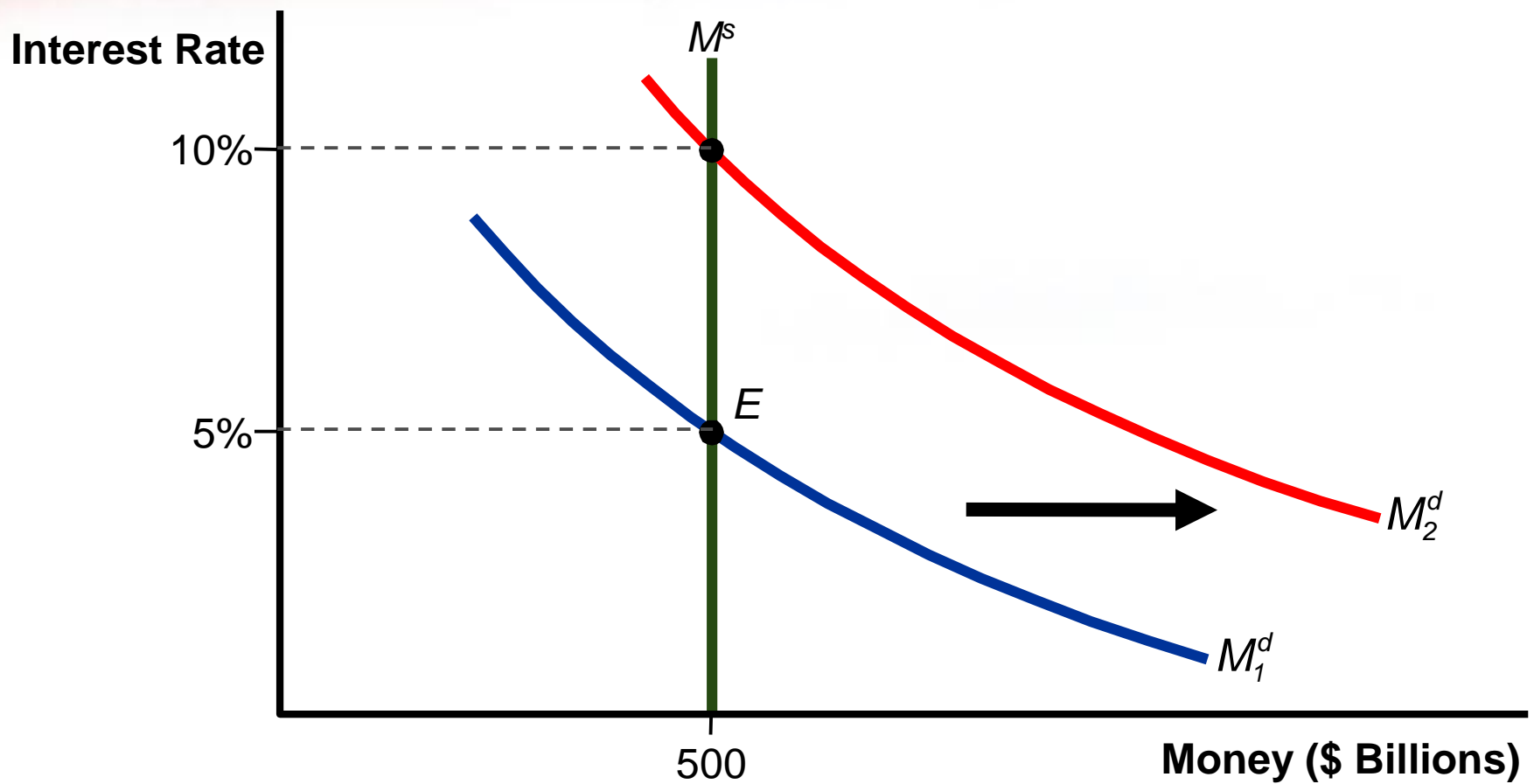




Expectations and Money Demand

- Why should expectations about the future interest rate affect money demand today?
 - **If you expect the interest rate to rise in the future, then you also expect the price of bonds to fall in the future**
- A general expectation that interest rates will rise in the future will cause the money demand curve to shift rightward in the present
- When the public as a whole expects the interest rate to rise in the future
 - **They will drive up the interest rate in the present**
- When the public expects the interest rate to drop in the future
 - **They will drive down the interest rate in the present**

Interest Rate Expectations





Expectations and the Central Bank

- Changes in interest rates due to changes in expectations can have important consequences
 - **Fortunes can be won and lost depending on how people have bet on the future**
- Another consequence of changes in expectations is the effect on the overall economy
 - **When a change in expectations becomes a self-fulfilling prophecy, it causes current interest rates to change**
- The public's ever-changing expectations about future interest rates make the Central Bank's job more difficult



The Fed's Response to Changes in Money Demand

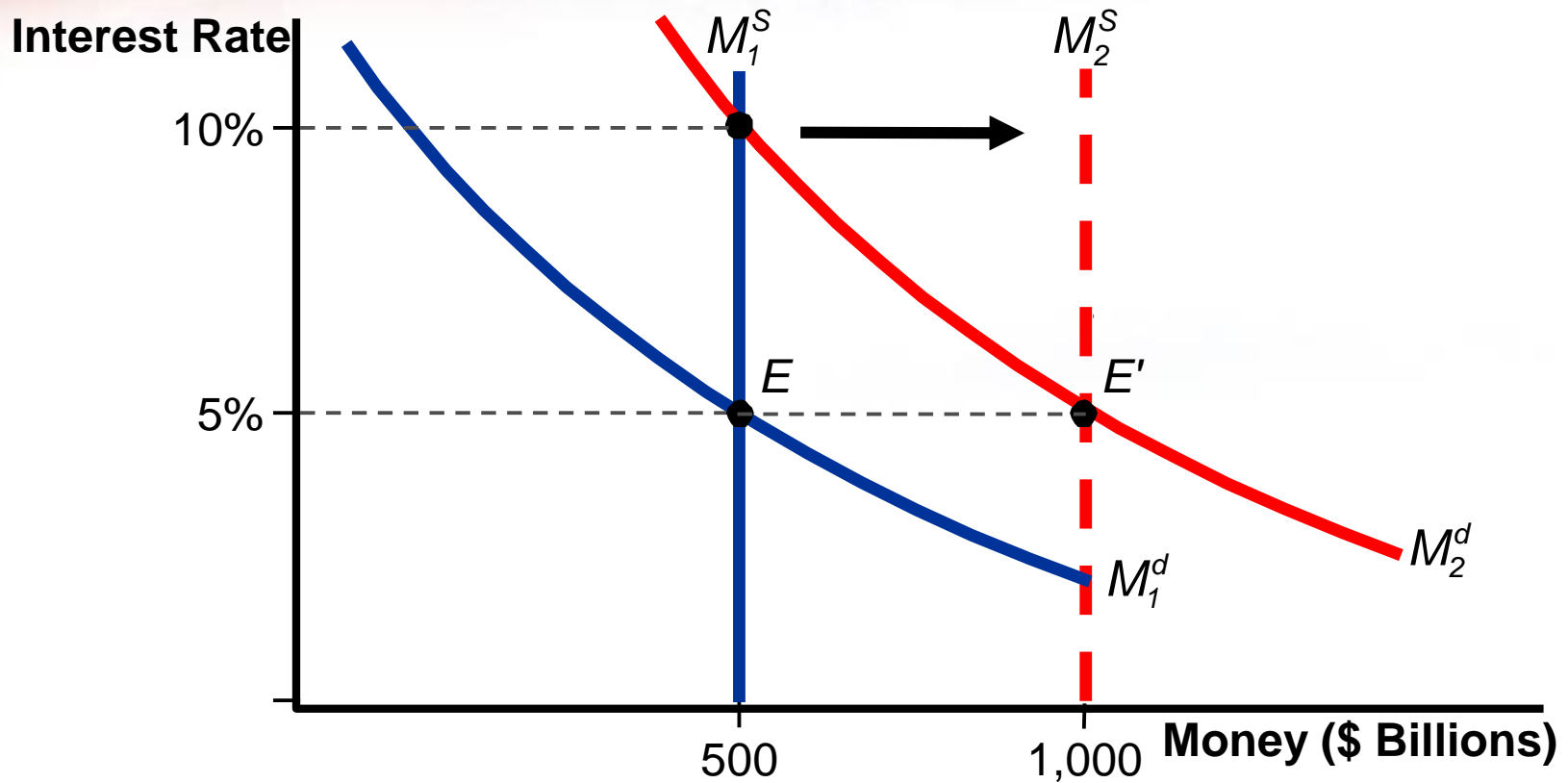
- Changes in the expected future interest rate can shift the money demand curve
 - **Changes in tastes for holding money and other assets, or changes in technology, can also shift the money demand curve**
- Money demand shifts—if ignored—would create problems for the economy
- If the Central Bank's goal is to stabilize real GDP, it cannot sit by while these events occur



The Central Bank's Response to Changes in Money Demand

- To stabilize real GDP when money demand changes on its own (not in response to a spending shock), the Central Bank must change the money supply
 - **Specifically, it must increase the money supply in response to an increase in money demand**
 - And decrease the money supply in response to a decrease in money demand
- To prevent changes in money demand from affecting real GDP, the Central Bank should set a target for the interest rate
 - **And adjust the money supply as necessary to maintain that target**
- Since the Central Bank conducts open market operations each day
 - **It is able to use continuous feedback to keep the interest rate relatively constant**

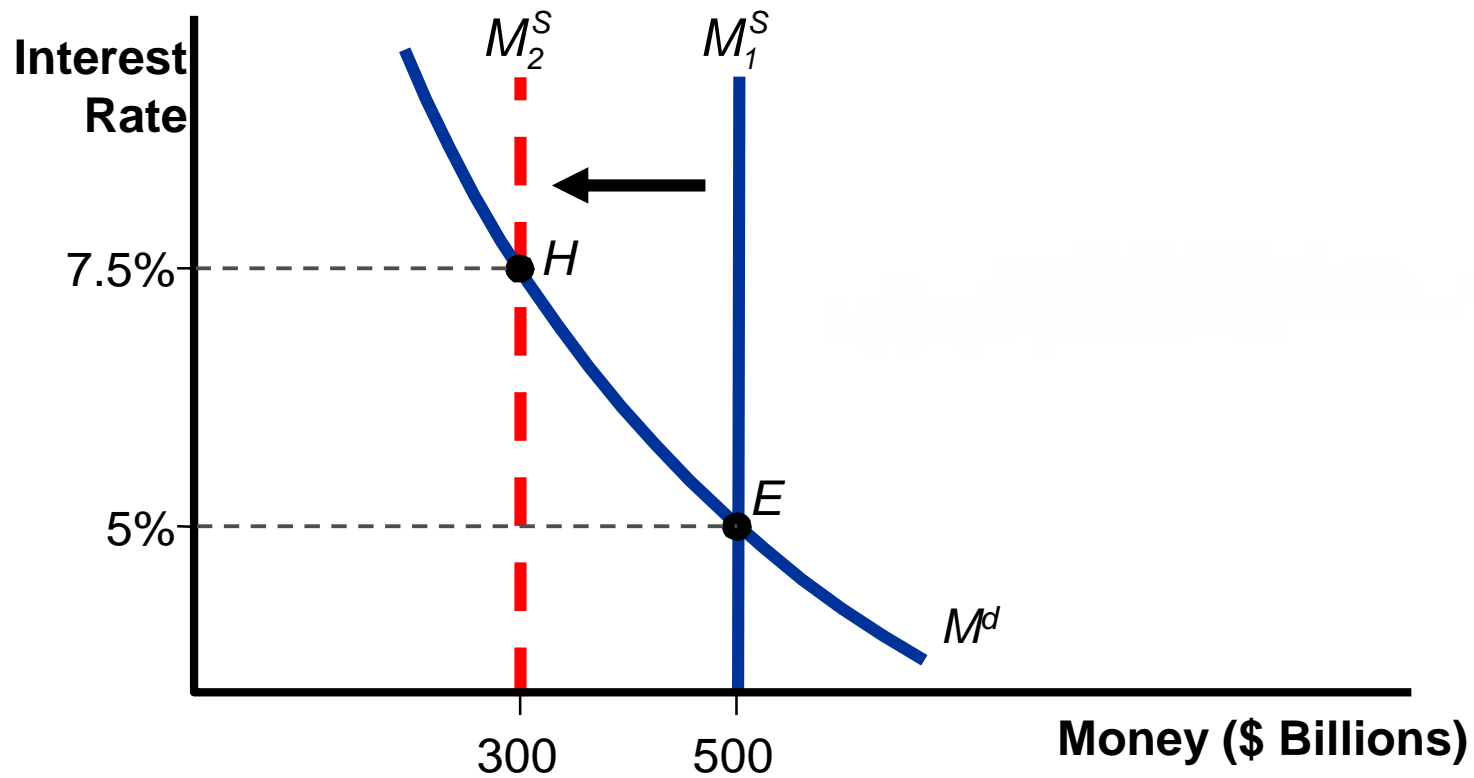
The Central Bank's Response to Changes in Money Demand



The Central Bank's Response to Spending Shocks

- Shifts in total spending—due to changes in autonomous consumption, investment spending, taxes, or government purchases—cause changes in real GDP
 - **How can the Central Bank keep real GDP close to potential output when there are direct spending shocks like these?**
- To stabilize real GDP, the Central Bank must change its interest rate target in response to a spending shock
 - **And change the money supply to hit its new target**
 - It must raise its interest rate target (decrease the money supply) in response to a positive spending shock and lower the interest rate target (increase the money supply) in response to a negative spending shock
- Central Bank's policy of stabilizing real GDP comes at a price
 - **Fluctuations in the interest rate**
- Fluctuations in the interest rate are costly
 - **Fluctuations in real GDP are costly too, and the C.B. has concluded that it is a good idea to adjust its interest rate targets aggressively when necessary to stabilize real GDP**

The Central Bank's Response to Spending Shocks





Thank You for Attention



Literature

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