ECO 181 Lecture 07

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Measuring the Money Supply

- The Federal Reserve calculates the size of two monetary aggregates, overall measures of the money supply.
  - **M1**: M1, the narrowest definition, contains only currency in circulation (also known as cash), traveler's checks, and checkable bank deposits.
  - **M2**: M2 adds several other kinds of assets, often referred to as near-moneys—financial assets that aren't directly usable as a medium of exchange but can be readily converted into cash or checkable bank deposits, such as savings accounts.

Measuring the Money Supply

Measuring the Money Supply

- Are financial assets like stocks and bonds part of the money supply?
  - No, not under any definition because they're not liquid enough. Converting a stock or a bond into cash requires selling the stock or bond—something that usually takes some time and also involves paying a broker's fee. That makes these assets much less liquid than bank deposits. So stocks and bonds, unlike bank deposits, aren't considered money.

The Opportunity Cost of Holding Money

- How much money to hold

  Short-term interest rates are the interest rates on financial assets that mature within less than a year.

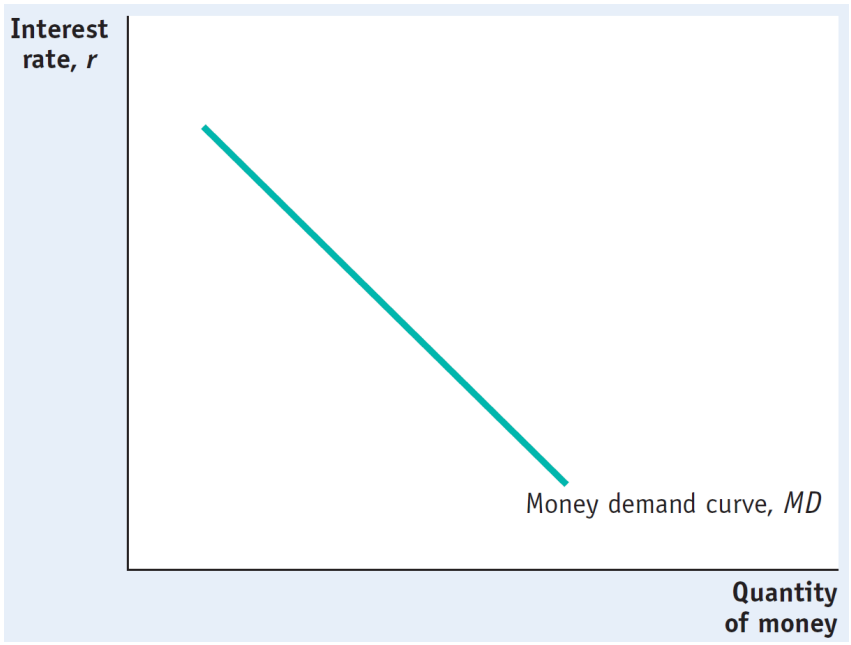
  - The higher the short-term interest rate, the higher the the opportunity cost of holding money; the lower the short-term interest rate, the lower the opportunity cost of holding money.

  Long-term interest rates are interest rates on financial assets that mature a number of years in the future.

The Money Demand Curve

- The **money demand curve** shows the relationship between the interest rate and the quantity of money demanded.

  The **money demand curve** slopes downward because, other things equal, a higher interest rate increases the opportunity cost of holding money, leading the public to reduce the quantity of money it demands.

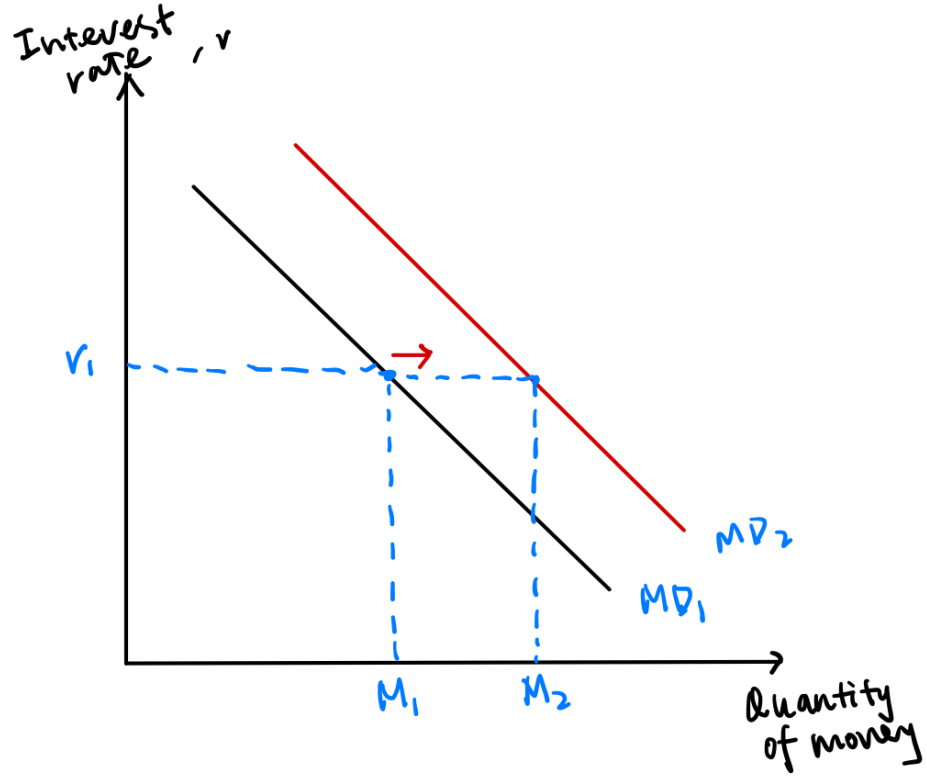


Shifts of the Money Demand Curve

1. **Changes in the Aggregate Price Level**
2. **Changes in Real GDP**
3. **Changes in Credit Markets and Banking Technology**
4. **Changes in Institutions**

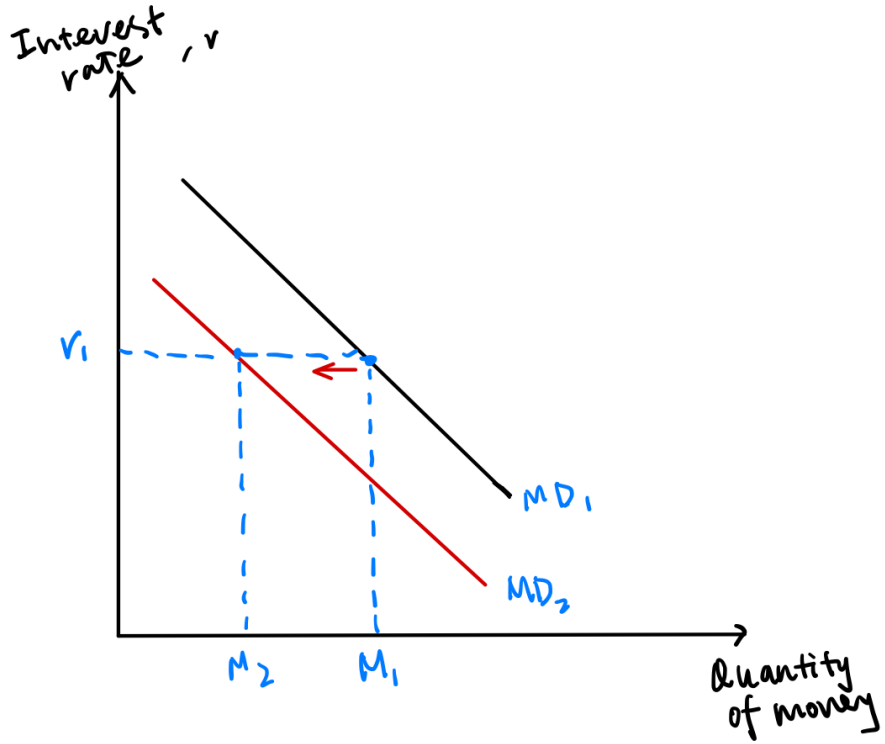
Shifts of the Money Demand Curve

1. **Changes in the Aggregate Price Level**
   - Because if the price of everything rises by 20%, it takes 20% more money to buy the same basket of goods and services.



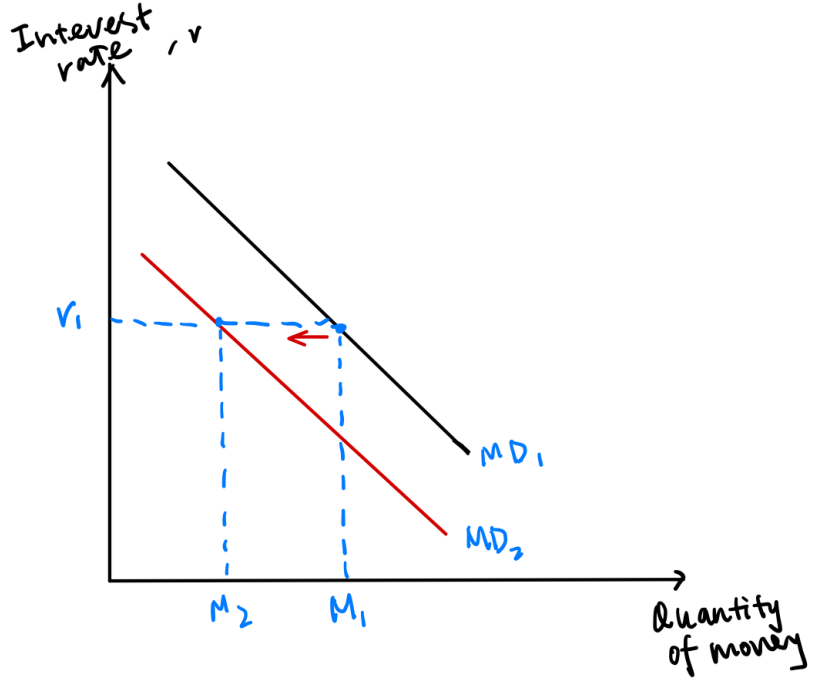
Shifts of the Money Demand Curve

2. **Changes in Real GDP**
   - Decrease in real GDP—the total quantity of goods and services produced and sold in the economy.



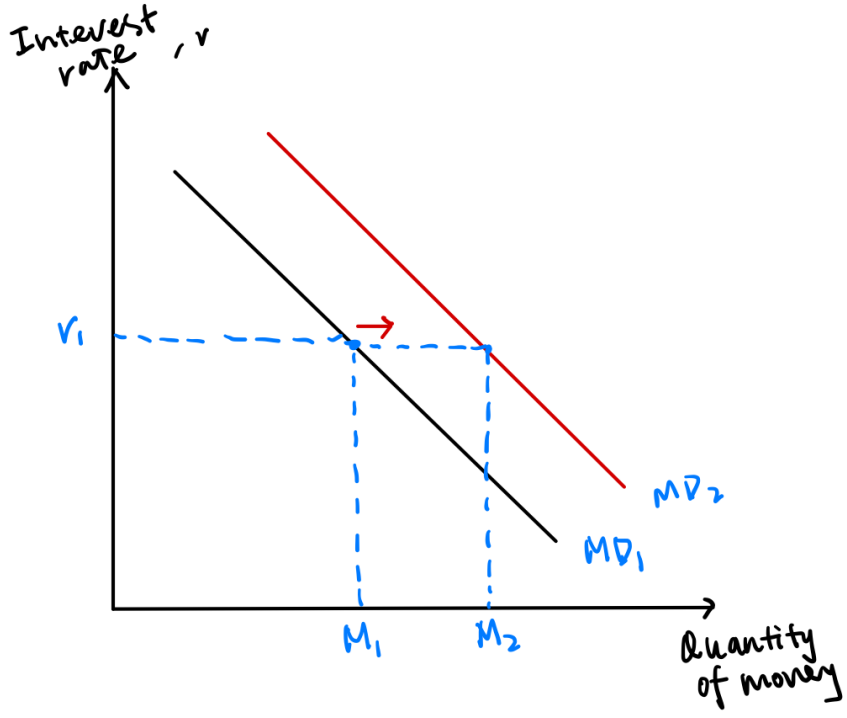
Changes in Credit Markets and Banking Technology

3. **Changes in Credit Markets and Banking Technology**
   - Changes in banking technology that made credit cards widely available and widely accepted.



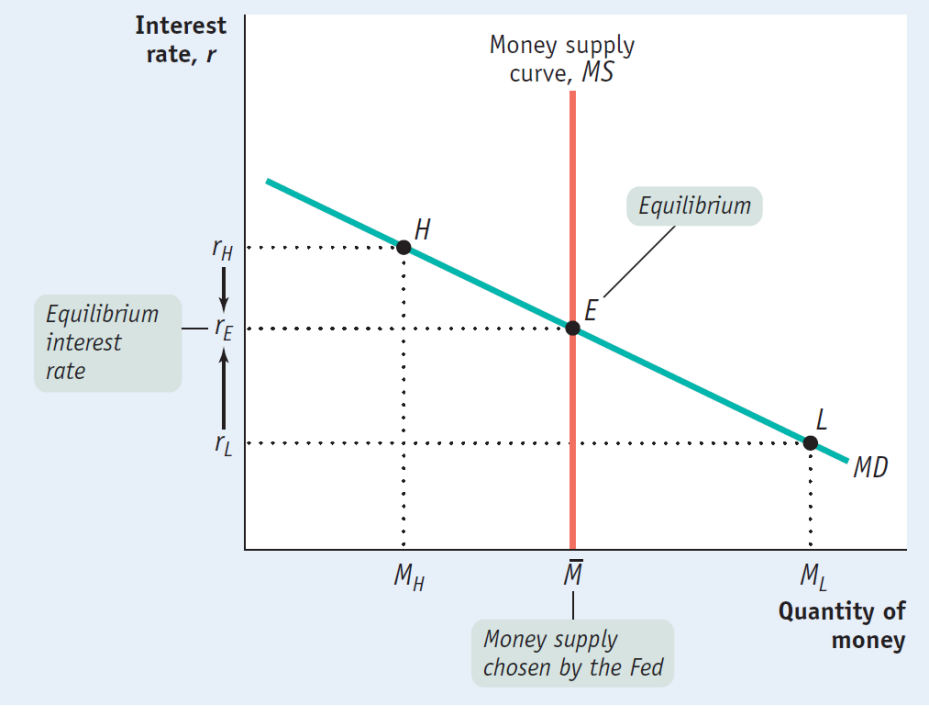
Changes in Institutions

3. **Changes in Credit Markets and Banking Technology**
   - When banking regulations changed, allowing banks to pay interest on checking account funds.



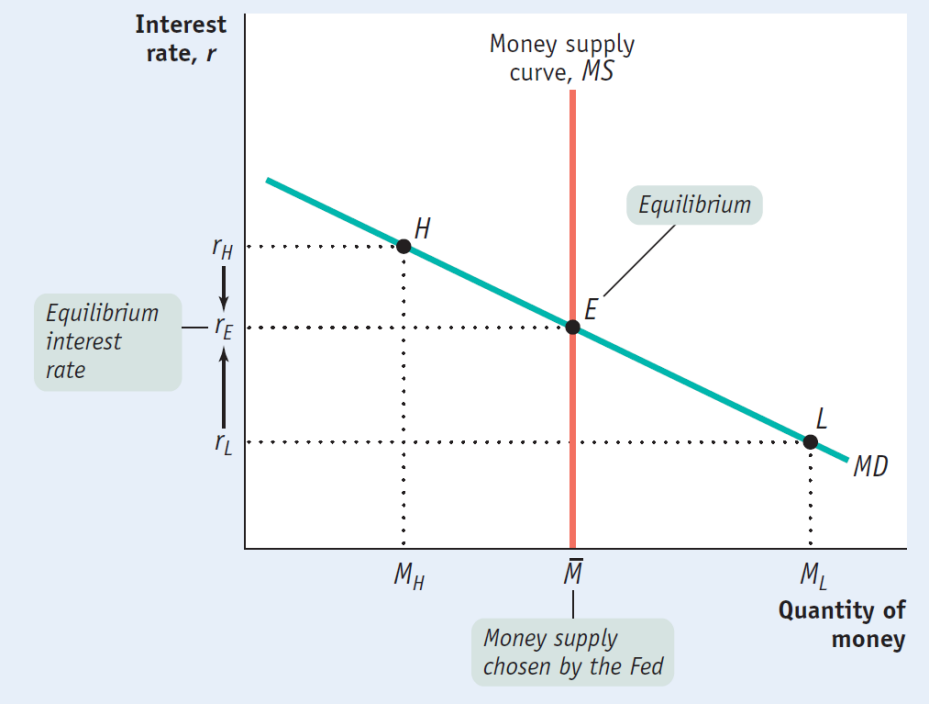
The Money Supply Curve

- The **money supply curve** shows how the quantity of money supplied varies with the interest rate. The money supply curve, MS, is vertical at the money supply chosen by the Federal Reserve.



The Equilibrium Interest Rate

- According to the **liquidity preference model of the interest rate**, the interest rate is determined by the supply and demand for money.



Two Models of Interest Rates?

- Loanable funds model of the interest rate

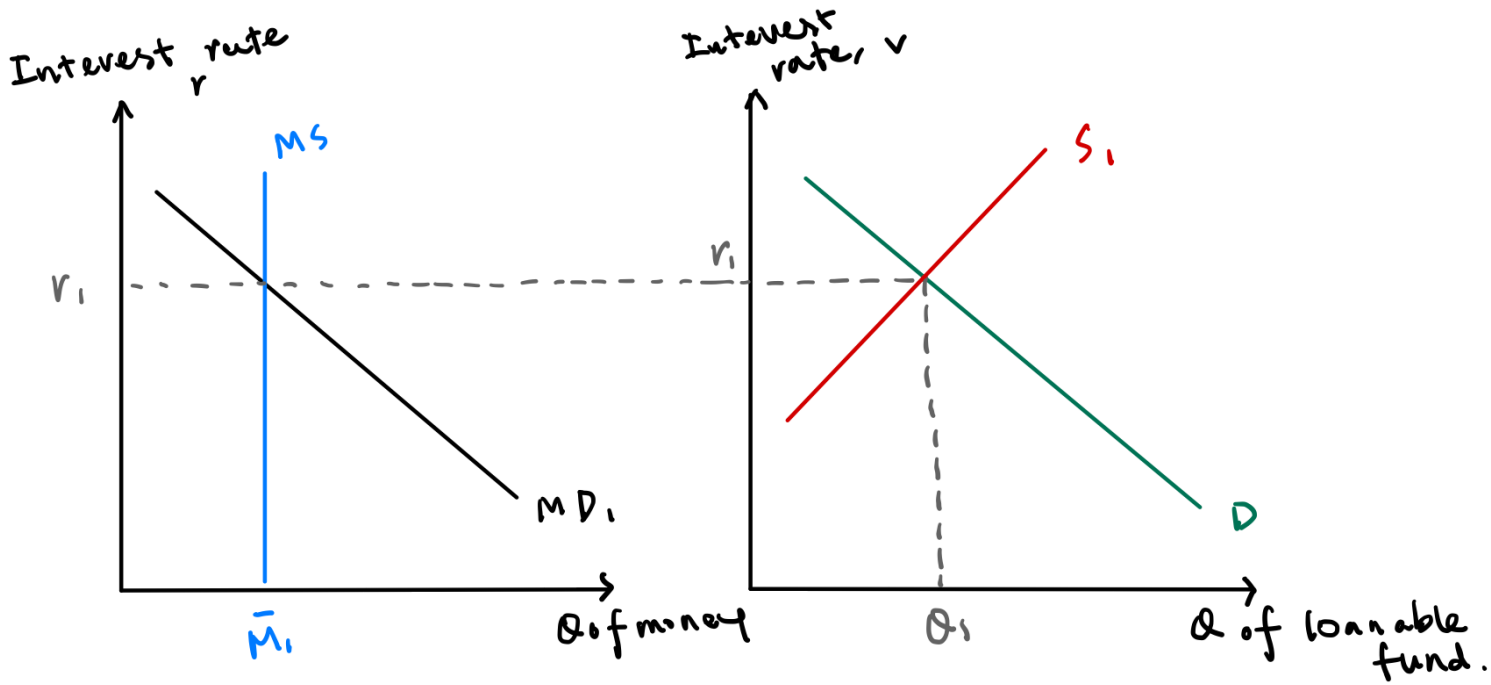
  according to that model, the interest rate is determined by the equalization of the supply of funds from lenders and the demand for funds by borrowers in **the market for loanable funds**.

- This chapter introduces a model determined by the equalization of the supply and demand for money in **the money market**.

Two Models of Interest Rates?

- The Interest Rate in the Short Run

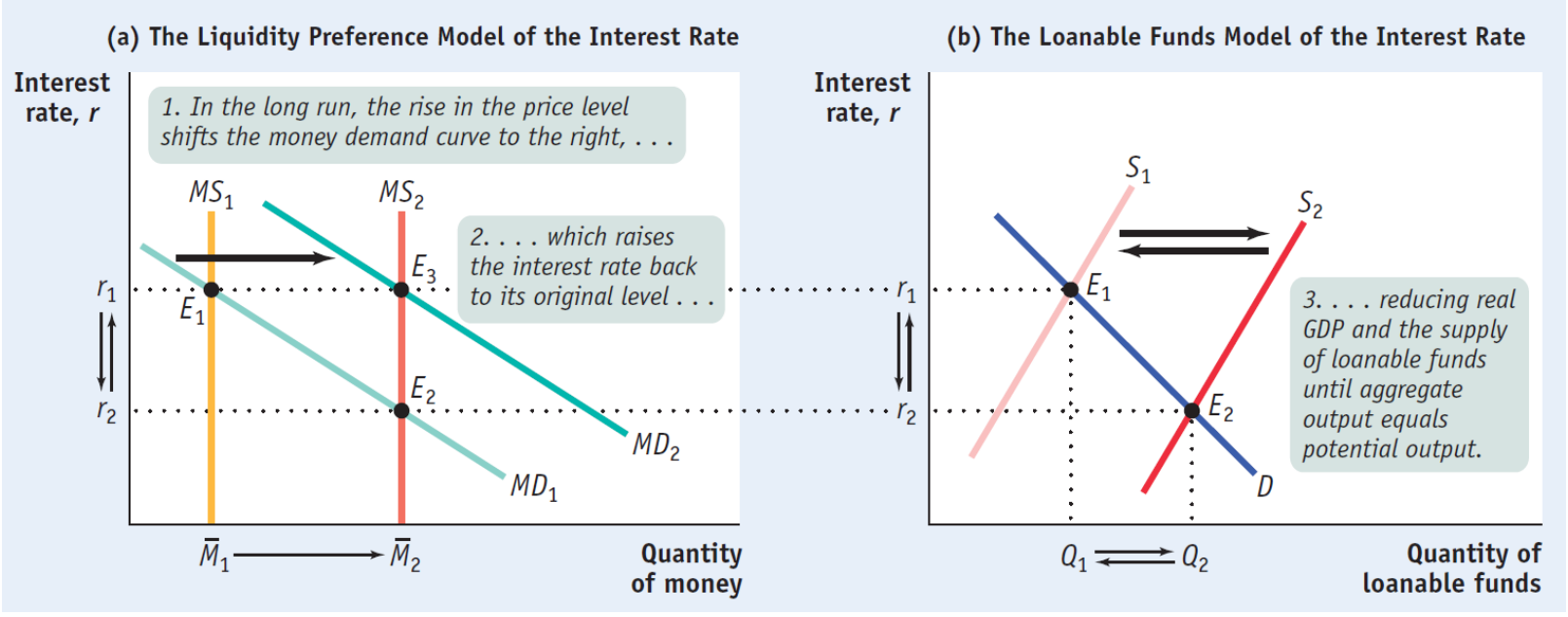
  In the short run, the interest rate is determined in the money market. Assume there is an increase in the money supply.



Two Models of Interest Rates?

- The Interest Rate in the Long Run

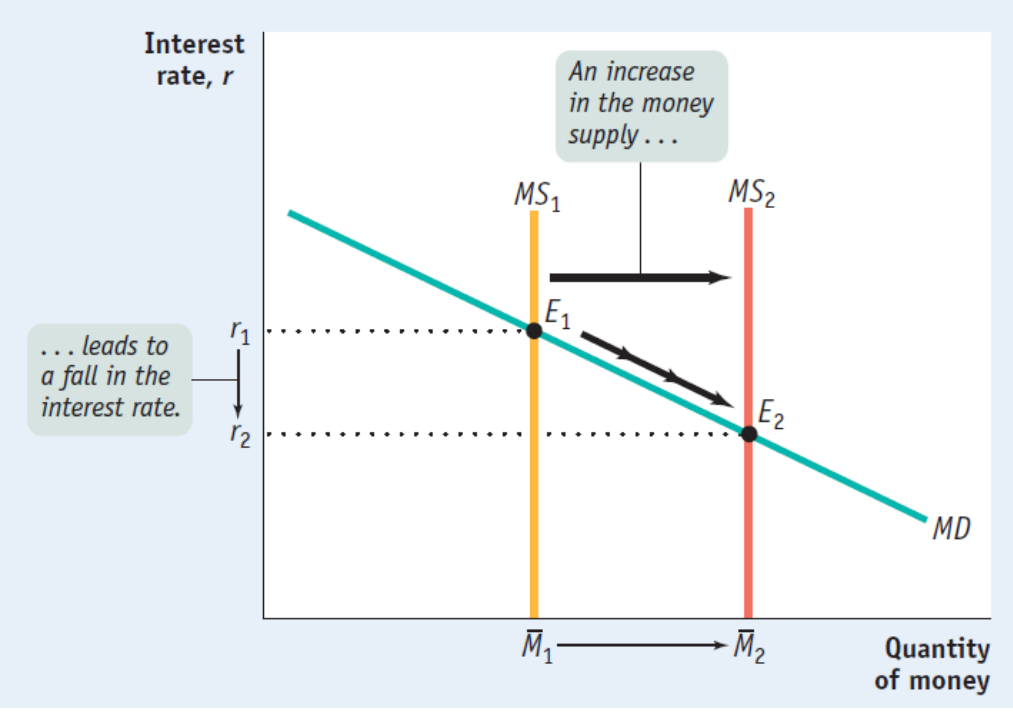
  In the long-run the interest rate is determined in the market for loanable funds. The interest rate will adjust until national saving = investment.



Monetary Policy and the Interest Rate

- The Federal Reserve can use changes in the money supply to change the interest rate

  The Federal Reserve can lower the interest rate by increasing the money supply.



Monetary Policy and the Interest Rate

- By adjusting the money supply up or down, the Fed can set the interest rate.
- In practice, at each meeting the Federal Open Market Committee decides on the interest rate to prevail for the next six weeks, until its next meeting. The Fed sets a **target federal funds rate**, a desired level for the federal funds rate.

Monetary Policy and Aggregate Demand

- Shift AD:

$$Y = C + I + G + (X - IM)$$

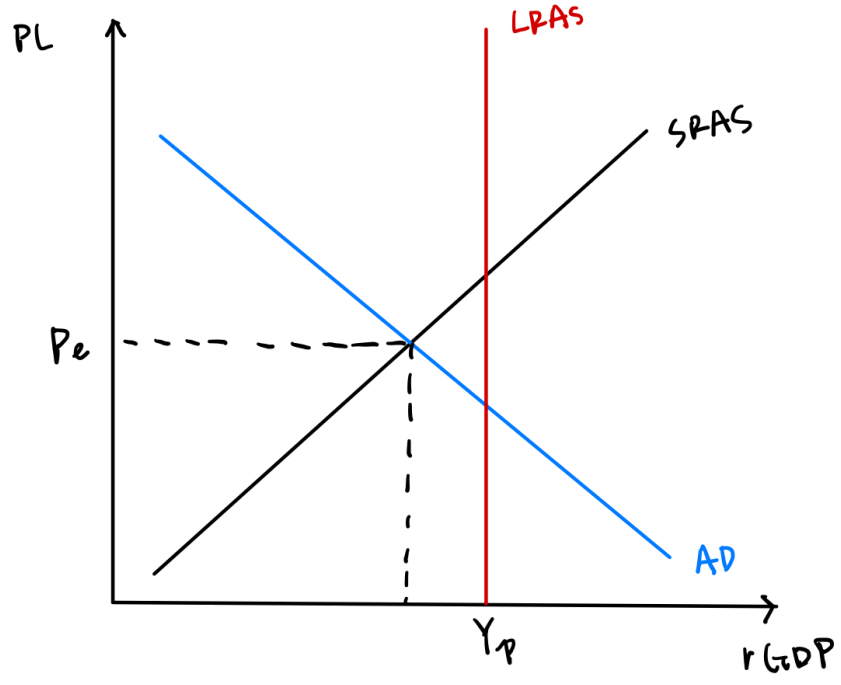
- When the central bank increases the quantity of money in circulation, households and firms have more money, which they are willing to lend out. The effect is to drive the interest rate down at any given aggregate price level, leading to higher investment spending and higher consumer spending.
  - Increasing the quantity of money shifts the aggregate demand curve to the right.

Monetary Policy

- **Monetary policy** is a set of tools used by a nation's central bank to control the overall money supply and promote economic growth and employ strategies such as revising interest rates and changing bank reserve requirements.
  - Contractionary Monetary Policy
  - Expansionary Monetary Policy

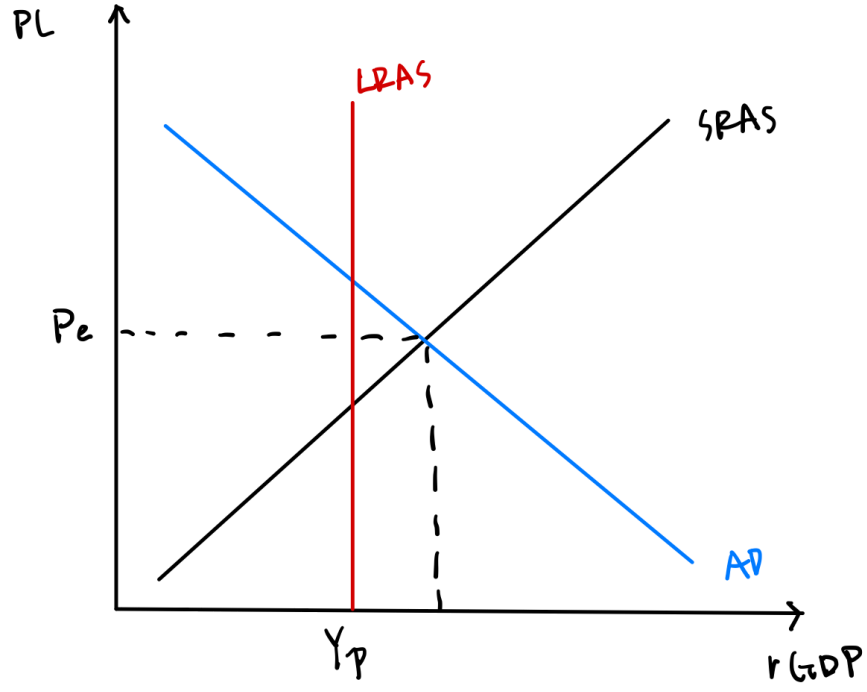
Expansionary monetary policy

- **Expansionary monetary policy** is monetary policy that increases aggregate demand.



Expansionary monetary policy

- **Contractionary monetary policy** is monetary policy that decreases aggregate demand.



Monetary Policy Tools

- The Federal Reserve has a variety of policy tools that it uses in order to implement monetary policy.
- **Traditional tools**
  1. Reserve requirements
  2. Discount window lending rate
  3. Open market operations (OMOs)

Monetary Policy Tools

- **Traditional tools**
  1. Reserve requirements
     Change required reserve ratio - regulates what % of deposites banks hold as reserves. By moving reserve requirements, the Fed could influence the amount of bank lending
     - $\uparrow$ reserve ratio $\rightarrow$ lending $\downarrow$ $\rightarrow$ AD $\downarrow$ (contractionary)
     - $\downarrow$ reserve ratio $\rightarrow$ lending $\uparrow$ $\rightarrow$ AD $\uparrow$ (expansionary)

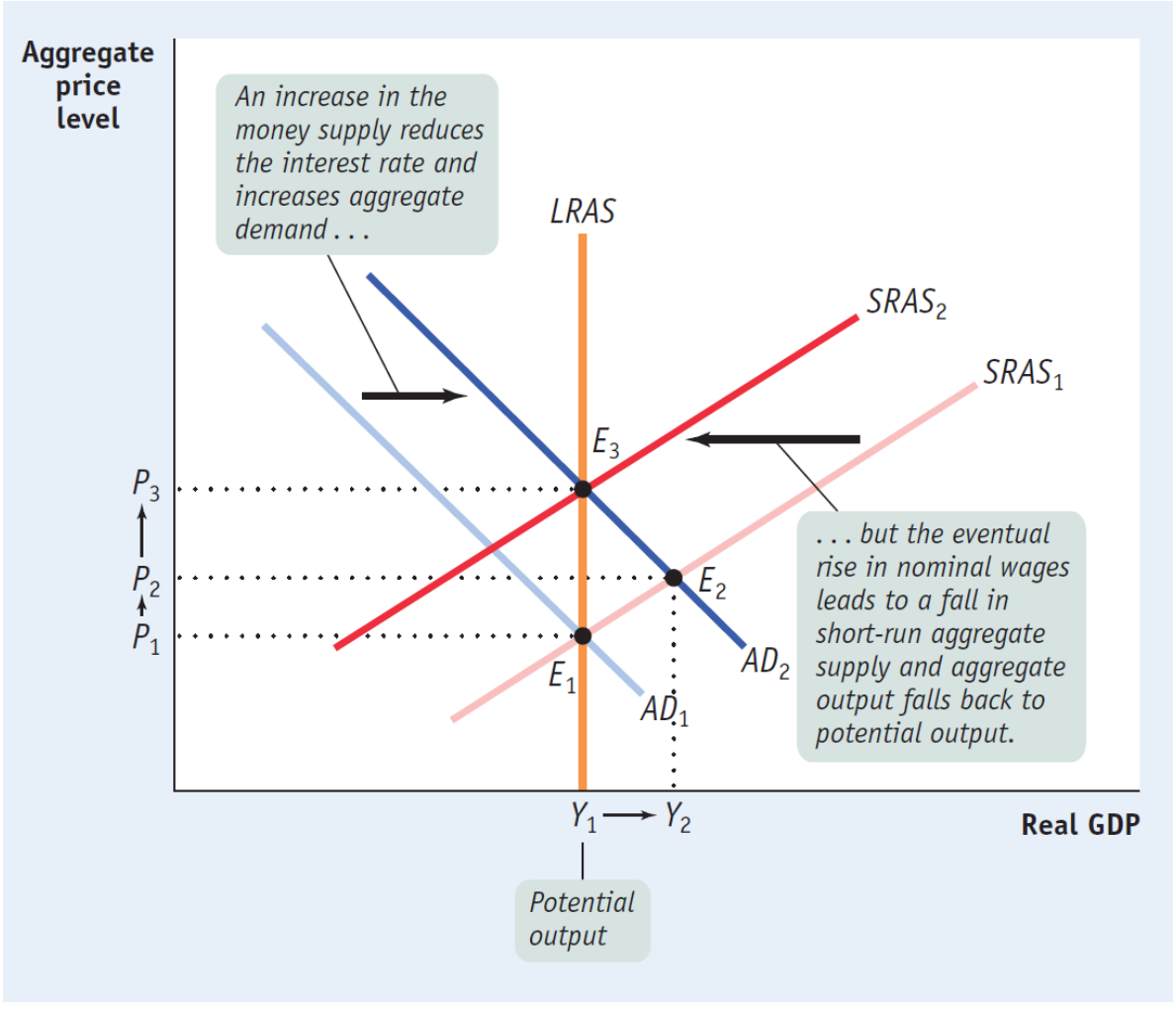
Monetary Policy Tools

- **Traditional tools**
  2. Discount window lending rate
     The discount rate is the interest rate a Reserve Bank charges eligible financial institutions to borrow funds on a short-term basis.
     - $\uparrow$ discount rate $\rightarrow$ lending $\downarrow$ $\rightarrow$ AD $\downarrow$ (contractionary)
     - $\downarrow$ discount rate $\rightarrow$ lending $\uparrow$ $\rightarrow$ AD $\uparrow$ (expansionary)

Monetary Policy Tools

- **Traditional tools**
  3. Open market operations (OMOs)
     An open-market operation is a purchase or sale of government debt by the Fed. In an open-market operation the Federal Reserve buys or sells U.S. Treasury bills, normally through a transaction with commercial banks—banks that mainly make business loans, as opposed to home loans. The Fed never buys U.S. Treasury bills directly from the federal government.
     - central bank sells government debt $\rightarrow$ commercial banks have less \$ $\rightarrow$ lending $\downarrow$ $\rightarrow$ AD $\downarrow$ (contractionary)
     - central bank buys government debt $\rightarrow$ commercial banks have more \$ $\rightarrow$ lending $\uparrow$ $\rightarrow$ AD $\uparrow$ (expansionary)

Short-Run and Long-Run Effects of an Increase in the Money Supply



Short-Run and Long-Run Effects of an Increase in the Money Supply

- In the short-run an increase in the money supply would increase AD which would result in higher PL and rGDP. (since wages are sticky)
- However in the long-run a change in MS cannot increase Y_p or push Y greater than Y_p permanently. The only effect is higher prices since wages increase as much as prices.
- Thus in the long-run money is "neutral": No real effect

Monetary Neutrality

- According to the concept of **monetary neutrality**, changes in the money supply have no real effects on the economy.
- All Economic Variables can be broken down into two types of variables: nominal and real.
- Any change in money supply(a nominal variable) will only affect other nominal variables but not real variables since it does not change resources or technology.

Monetary Neutrality

- Money is neutral in the long run.
- If the Fed doubles the Money Supply: all nominal variables including prices will double. All real variables including relative prices will not change.
- However, it does cause the **value of money** to change.

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Changes in the Money Supply and the Interest Rate in the Long Run

- In the short run, an increase in the money supply leads to a fall in the interest rate, and a decrease in the money supply leads to a rise in the interest rate.
- In the long run, however, changes in the money supply don't affect the interest rate.

Changes in the Money Supply and the Interest Rate in the Long Run