Lecture 4

Money Market Equilibrium

First: Money Demand

Second: Money Supply

Third: Equilibrium MS =MD

Fourth: Monetary Policy

Fifth: LM Curve

Savings can be held in 2 forms (for simplification):

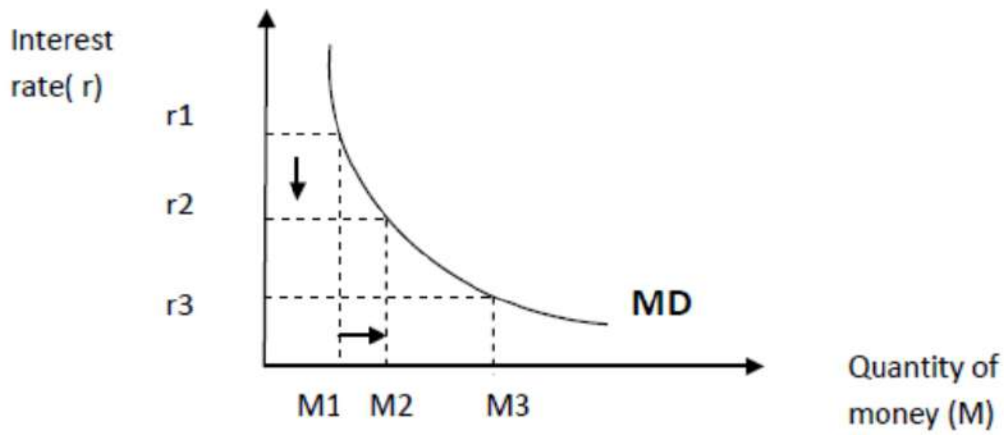
1- Money, Money is any object that is generally accepted as payment for goods and services and repayment of debts in a given country. It can be used for transactions but it pays no interest.

2- Bonds. A bond is loan from an investor to a borrower such as a company or government. The borrower uses the money to fund its operations, and the investor receives interest on the investment. It pays a positive interest rate, *i*, but it cannot be used for transactions

- The proportions of money and bonds you wish to hold depend mainly on:
  - *Your level of transactions*
  - *The interest rate on bonds*

First: MONEY DEMAND

- Your demand for money is how much of your wealth you wish to hold as money at any moment in time.
- The demand curve for money (MD) shows the quantity of money people will hold at each interest rate

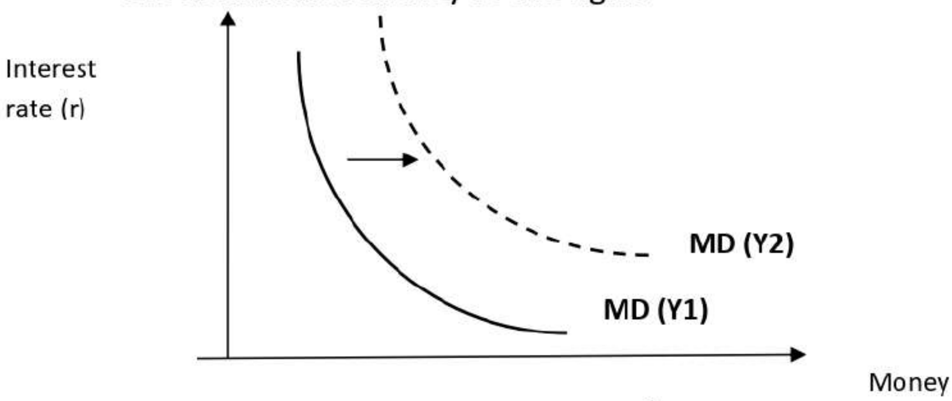


For a given level of nominal income, a lower interest rate increases the demand for money (movement on the money demand curve).

➔ The demand for money:

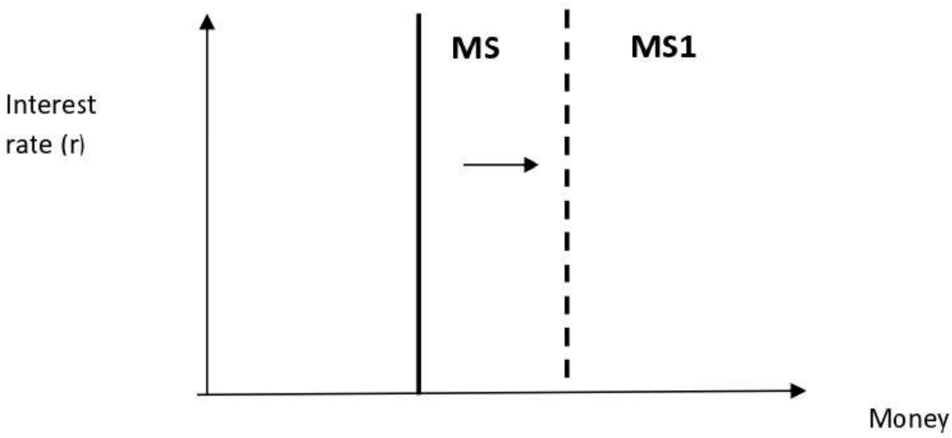
- depends negatively on the interest rate (change in interest rate causes movement along the MD)
- increases in proportion to nominal income (changes in income level causes shifting the MD curve)

➔ At a given interest rate, an increase in nominal income from Y1 to Y2 shifts the demand for money to the right.

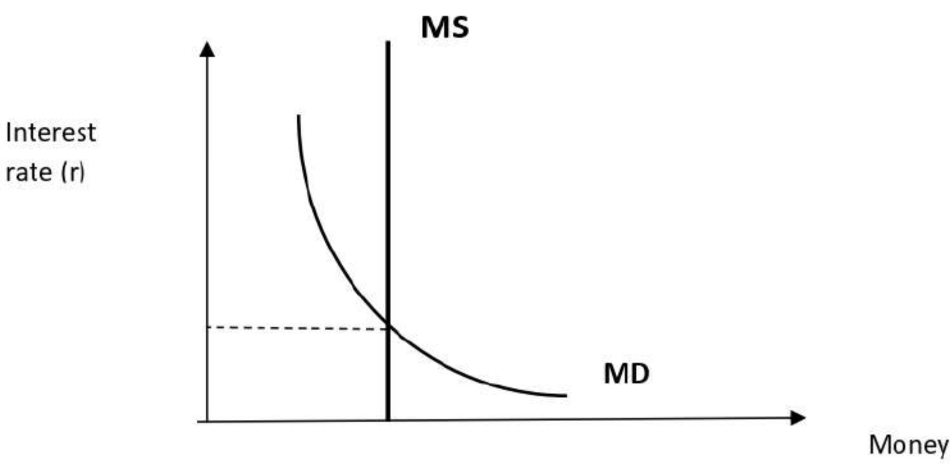


SECOND: Money Supply

- The central bank is the government institution that control the banking system and is the sole money-issuing authority. Through it, the government conducts monetary policy.
- The central bank determines the quantity of money supplied and on any given day, that quantity is fixed.
- The supply of money curve is vertical at the given quantity of money supplied (MS).
- An increase in money supply shifts the MS rightward



Third: The equilibrium (MS = MD)



- **Money market equilibrium (MS = MD) determines the interest rate:**

⇨ **The interest rate must be such that the supply of money (which is independent of the interest rate) is equal to the demand for money (which does depend on the interest rate).**

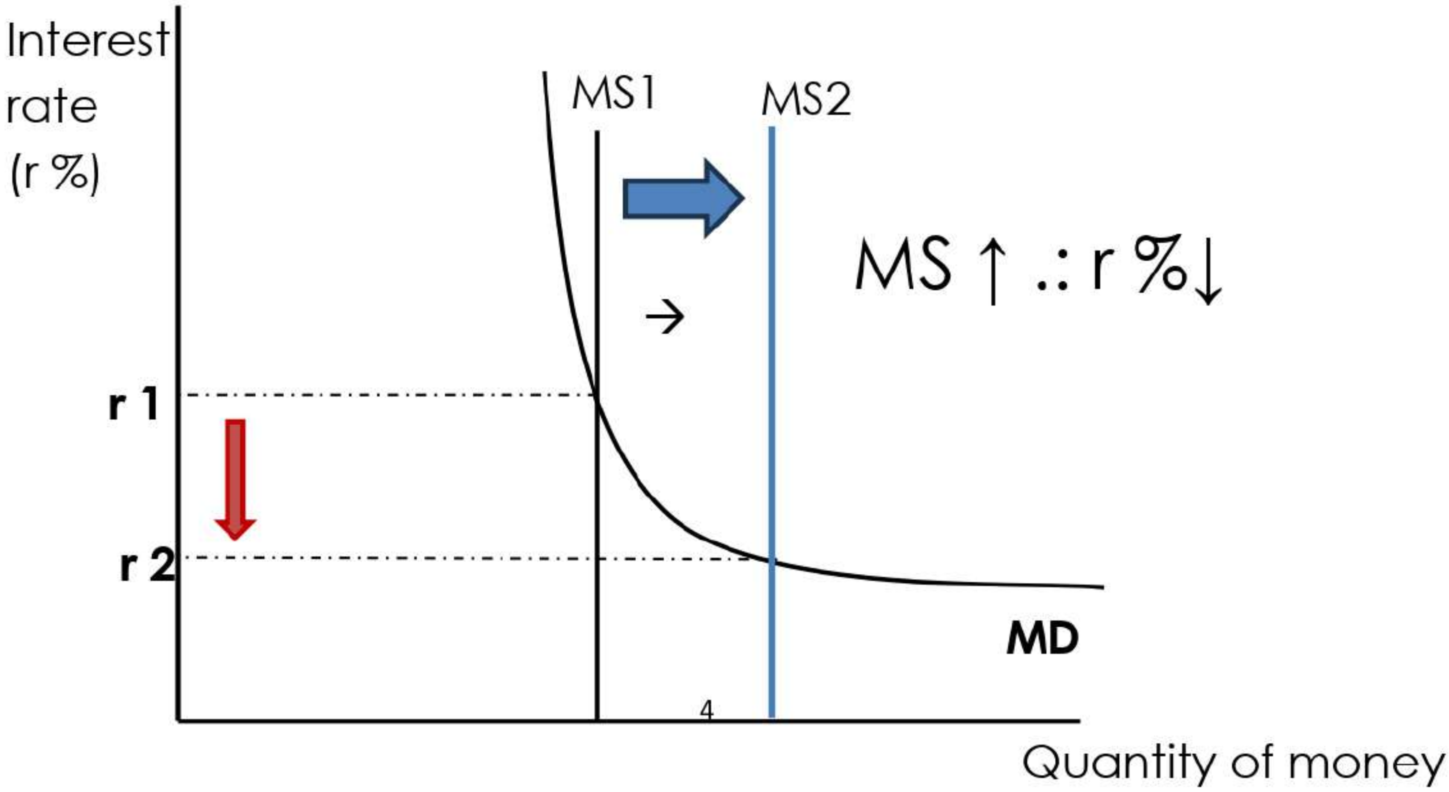
Fourth: MONETARY POLICY:

➔ **Monetary policy refers to the actions undertaken by a nation's central bank to control money supply and achieve economic growth.**

➔ **Monetary policy can be classified as either expansionary or contractionary.**

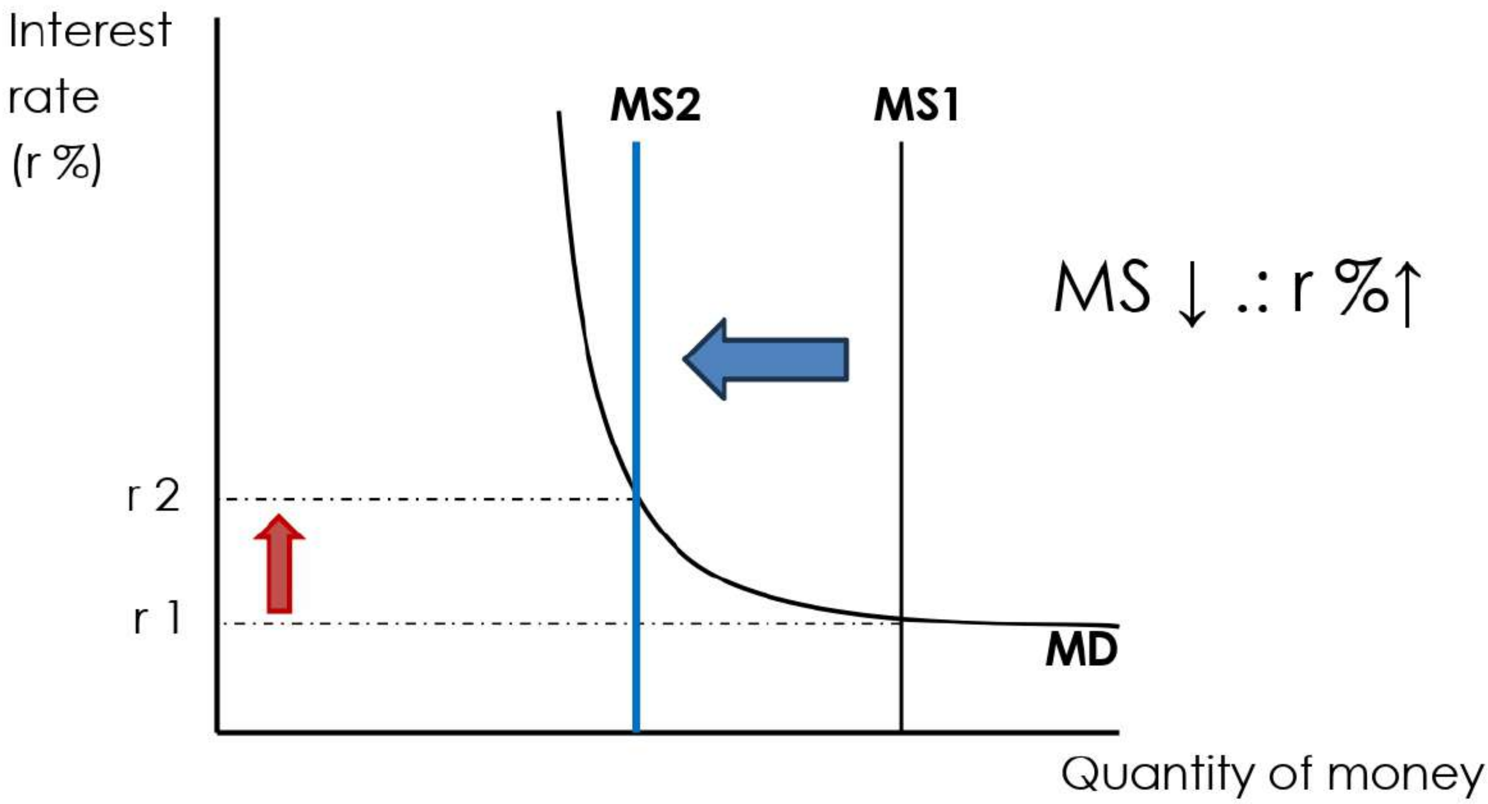
Expansionary monetary policy, increase in money supply:

If the economy is suffering a recession and high unemployment, with output below potential GDP, expansionary monetary policy can help the economy return to potential GDP. Expansionary monetary policy will reduce interest rates.



Contractionary monetary policy, decrease in money supply:

if an economy is producing at a quantity of output above its potential GDP, a contractionary monetary policy can reduce the inflationary pressures for a rising price level. contractionary monetary policy will raise interest rates.



Expantionary monetary policy	Contractionary monetary policy
➔ aims to boost investment and consumer spending	➔ aims to bring down inflation (inflation is related to increasing cost of living)
➔ the money supply increases	➔ the money supply decreases
➔ the interest rate falls	➔ the interest rate rise

A- Objectives of Monetary Policy:

- **price stability (or low inflation rate),**
- **full employment, and**
- **growth in aggregate income.**

B- Basic Functions of the central bank:

1) The controller of the nation's supply of money.

2) A regulator of money market (monetary policy).

3) As banks accept deposits from savers and make loans to borrowers. The central bank sets the **required reserve ratio** which is the percentage of a bank's deposits that must be kept in cash and therefore cannot be lent out

4) The central bank ***makes short-term loans t***o banks. The loans made by the central bank to banks are called ***discount loans***. The rate of interest that the Central bank charges on such loans is called the ***discount rate***.

5) The central bank sells and buys government bonds on the open market

<u>C - The central bank has 3 major policy instruments (tools) to affect money supply</u>:

1) **<u>Open-Market Operations (OMO) :</u>** (standard method)
   When the central bank buys bonds, we call this an expansionary monetary policy. This is because it is increasing the money supply.
   Buy Bonds MS↑ r↓

   - When the central bank sells bonds, we call this a contractionary monetary policy. This is because it is decreasing the money supply.

   Sell bonds MS↓ r↑

2) **<u>Discount rate on bank borrowing</u>**
   - If the central bank raises the discount rate, then banks will reduce their borrowing. Since fewer loans are available, the money supply falls and market interest rates rise

   Discount Rate ↑ MS↓ r↑

   - If the central bank lowers the discount rate it charges to banks, then banks will increase their borrowing. Since more loans are available, the money supply increase and market interest rates decrease.

   Discount Rate ↓ MS↑ r↓

3) **<u>RRR: Required reserve ratio:</u>** the stated percentage indicating how much in reserves banks are required to hold in relation to their outstanding deposits.
   When the reserve ratio increase, less money banks can lend out:
   RRR↑ MS↓ r↑

   - When the reserve ratio decrease, more money banks can lend out:

   RRR↓ MS↑ r↓

- NOTE: printing more money doesn't affect the economic output, so the money itself becomes less valuable. This can cause inflation, therefore, printing more money isn't the first choice of central banks.

Summary of Monetary Policy:

	Expansionary **MS↑ r↓**	**Contractionary** **MS↓ r↑**
1- OMO	Buy bonds	Sell bonds
2- RRR	↓	↑
3- Discount rate	↓	↑

FIFTH: LM CURVE

The LM curve gives the combinations of income (Y or GDP) and the interest rate (r) for which the money market is in equilibrium (MD = MS)

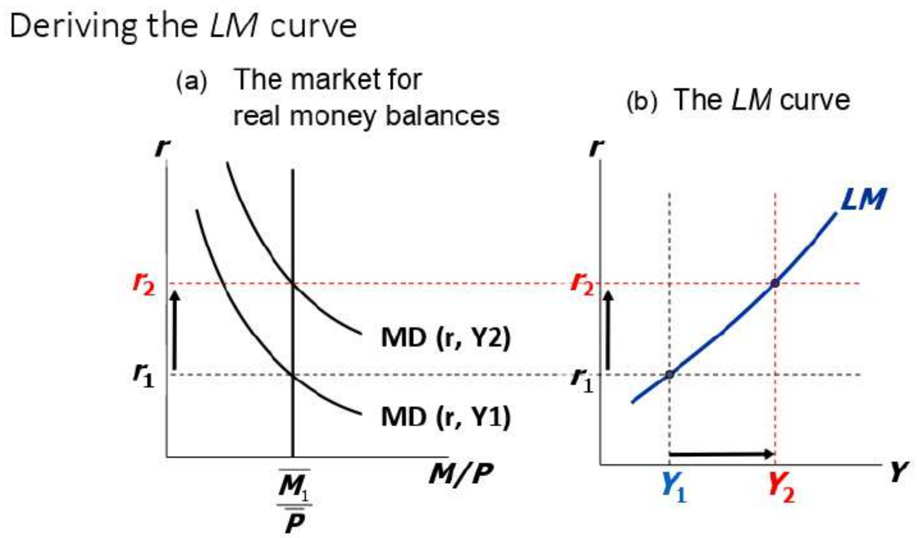
NOTE:

 # LM curve: Liquidity of money curve

 # (M/P) is the real money balances (money/price level)

The Derivation of the LM Curve

- **If income increases, the MD increases at any given interest rate (MD shifts upward).**
- **Given that the MS is fixed, the interest rate must increase to maintain equilibrium.**



This relation between output and the interest rate is represented by the upward-sloping LM curve (positive relation between the interest rate & output.).

All the points on this curve represent an equilibrium in the money market.
Changes in Y *cause* a *movement along the LM* curve.