Money, Interest Rate, and Monetary Policy Part 2

The Demand for Money

Keynes' Liquidity Preference Theory

- The theory is about the demand for money and liquidity.
  - Liquidity refers to how easily assets can be converted into a mean of exchange. Money is the most liquid asset.
- This theory assumes that people store wealth in money or bond, so interest rate (from bond) is the price of money.
  - **Normally, bond represents a loan** made by an investor (e.g. people) to a borrower (e.g. government). After certain time, the borrower then repays this loan, plus some interest.
  - **Here, bonds also includes an interest-bearing deposit.**

The Demand for Money

Keynes' Liquidity Preference Theory

According to Keynes, demand for liquidity is determined by three motives:

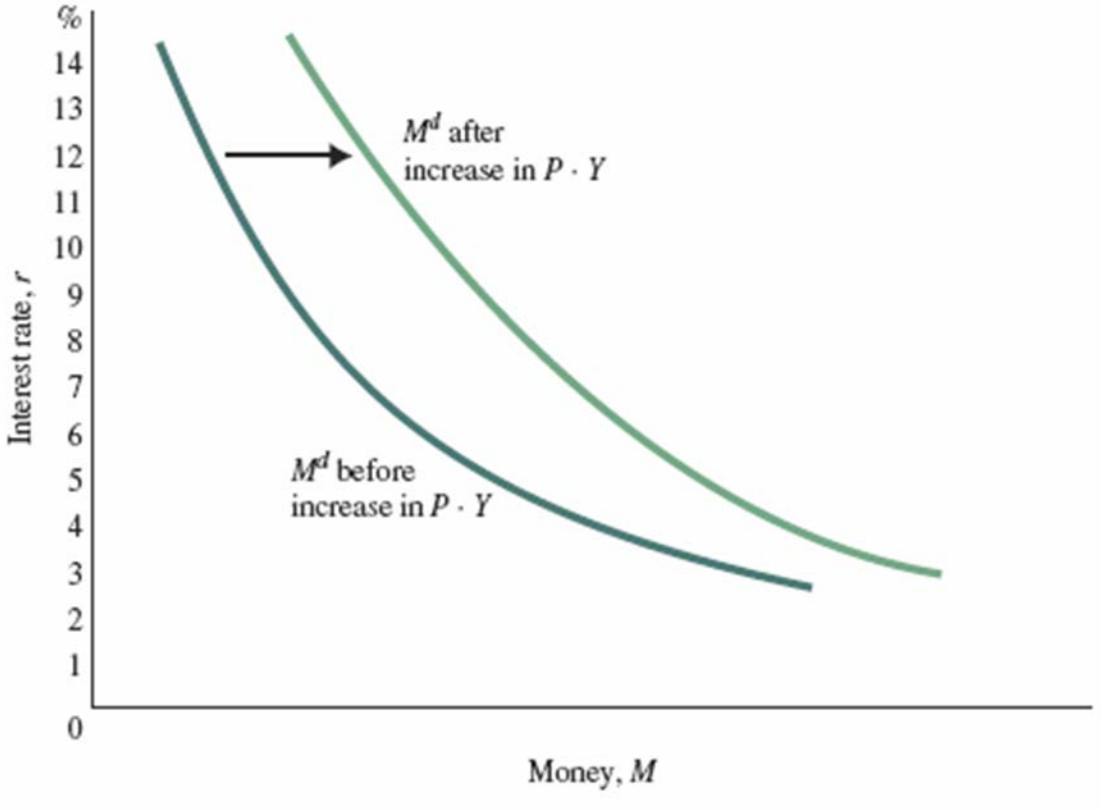
- Transaction Demand (for daily use)
- Precautionary Demand (for unexpected use)
- Speculative Demand (for investment / money vs bonds)

The Demand for Money

The **amount of money you want to hold** is:

- Positively related to the size of your transactions (shifts in money demand curve)
- Related to preference, e.g. debit card
- Negatively related to the interest rate, which is the opportunity cost of holding money (movement along the money demand curve)

The Demand for Money



The quantity of money demanded (Md) depends negatively on the interest rate because it is the opportunity cost of holding money.

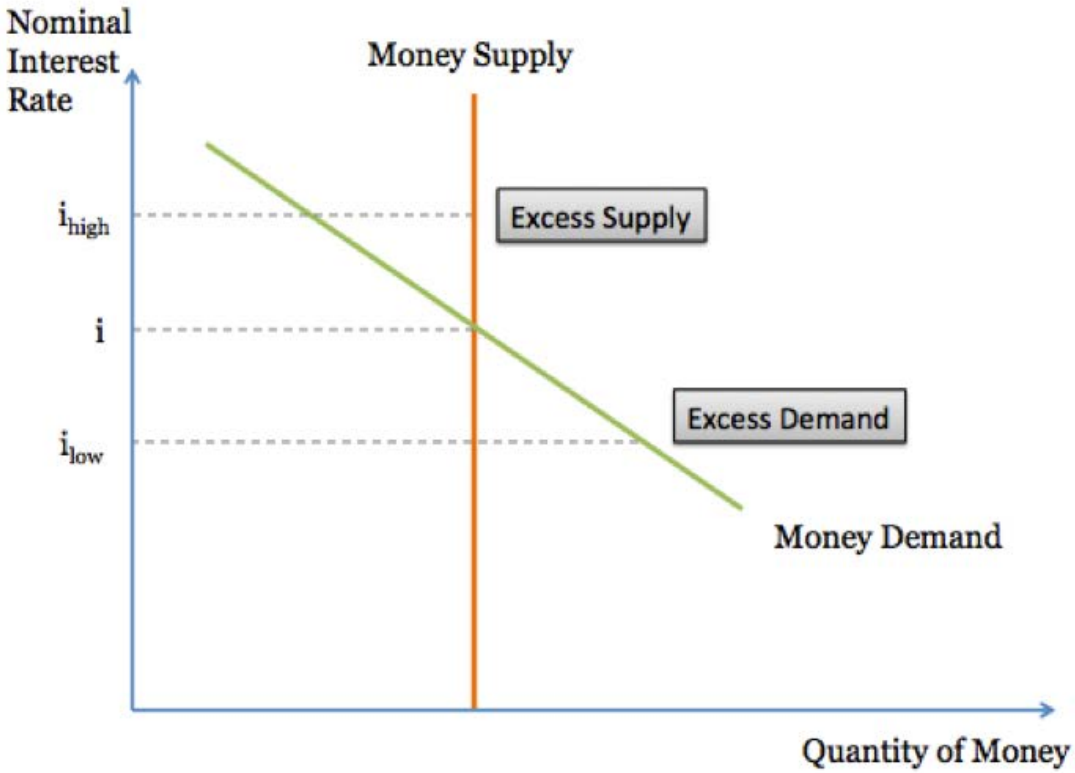
An increase in transactions (P*Y) shifts the money demand curve to the right.

The Supply of Money

- The money supply is determined by the Central Bank.
- It does not depend on interest rate.
- It depends on deposit through money multiplier.
- Monetary Policy to change the money supply:

1. Expansionary Monetary Policy
   - Increase Ms to reduce i
   - This is to boost the economy
2. Contractionary Monetary Policy
   - Decrease Ms to raise i
   - This is to slow down the economy

The Supply of Money

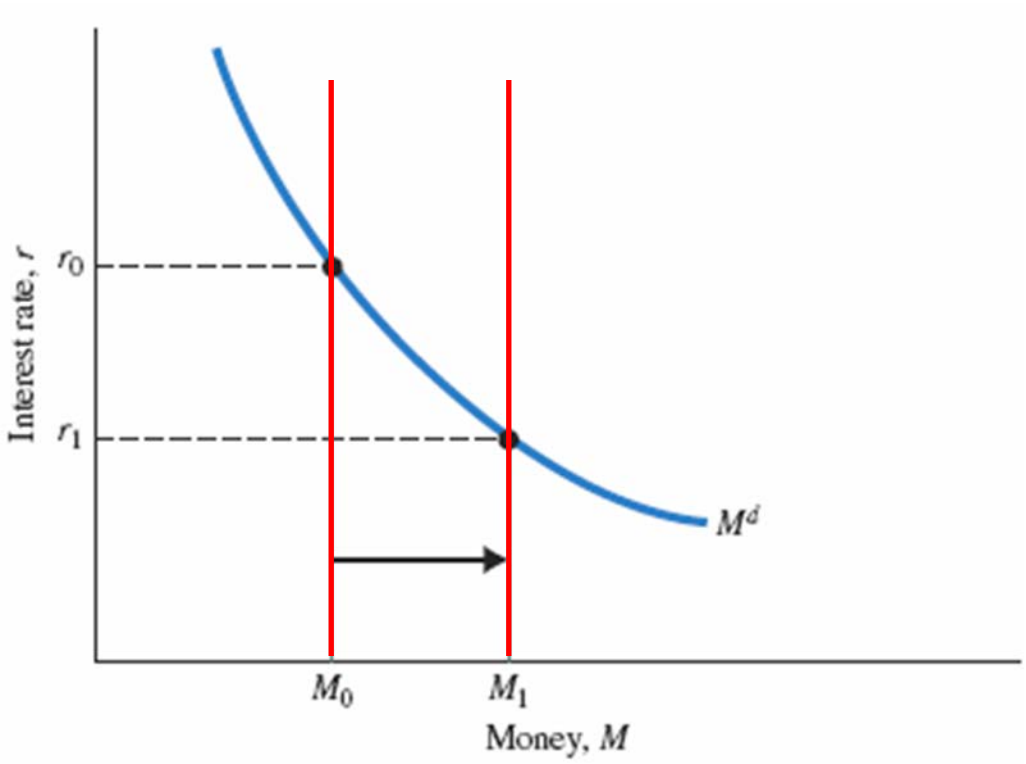


The Money Supply curve is vertical because it does not depend on i.

However, the Central Bank can change Ms through its monetary tools.

The i that equates Ms and Md is the equilibrium interest rate.

Change in the Money Supply



If the CB increases the money supply from M_0 to M_1, the interest rate falls from r_0 to r_1.

How the Central Bank Controls the Interest Rate *(1 of 2)*

Tools Prior to 2008

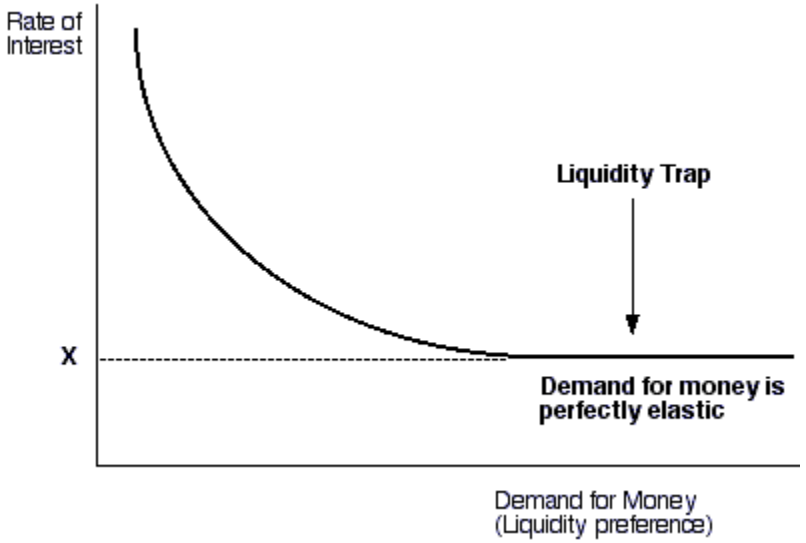
- Traditionally, the CB had three tools to control the interest rate:
  1. Open market operations (OMOs)
  2. Changing the reserve requirement ratio (RR)
  3. Changing the discount rate that banks pay to the CB to borrow reserves

How the Central Bank Controls the Interest Rate *(2 of 2)*

- **open market operations** The purchase and sale by the CB of government securities in the open market.
  - CB buys securities >> Increase Ms
  - CB sells securities >> Decrease Ms
- **discount rate** The interest rate that banks pay to the CB to borrow "reserve" from it.
  - CB lowers the rate >> Banks borrows more >> Higher Ms
  - CB raises the rate >> Banks borrows less >> Lower Ms
- **reserve ratio**
  - CB lowers RR >> more currency in the economy >> Higher Ms
  - CB raises RR >> less currency in the economy >> Lower Ms

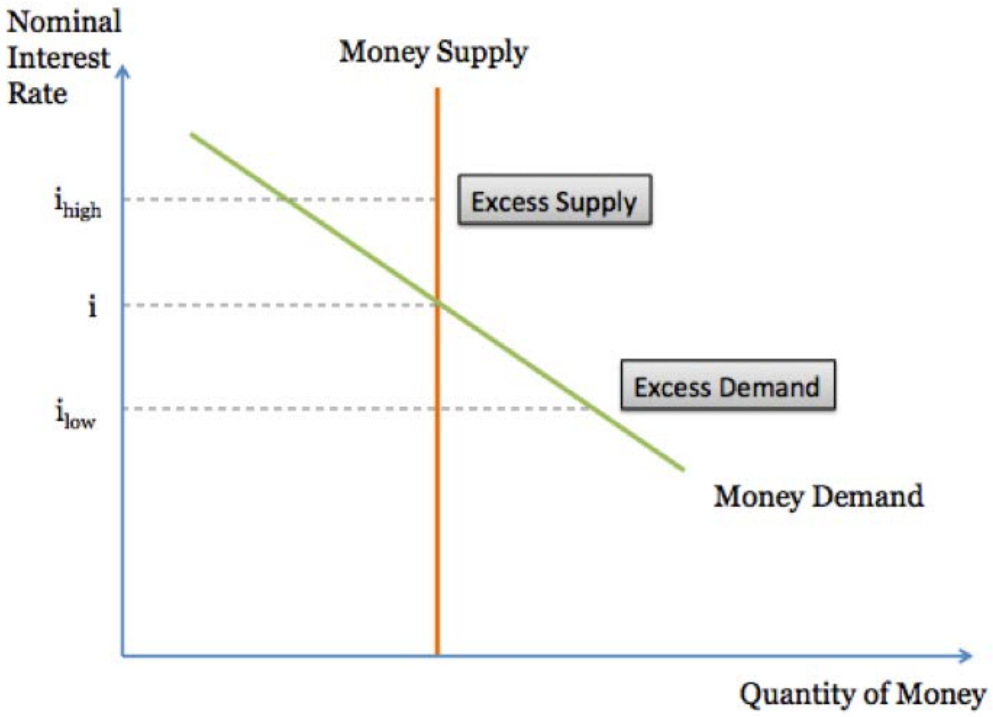
Tools to control Interest Rate after 2008

- After 2008, the traditional tools open market operations, reserve requirements ratio, and discount rate would become useless. This is due to **Liquidity Trap**.
- The Fed began paying a small interest rate on the bank reserves it holds, leading to excess reserves considerably above zero.



Adjustment towards the Equilibrium

- Suppose that the current interest rate is above the equilibrium rate. How will the interest rate adjust to reach the equilibrium?



Adjustment towards the Equilibrium

- In Disequilibrium, people try to adjust their portfolios of assets. This process will change the interest rate.

- If $i < i^*$, there will be excess money demand.
- People will try to **convert** bond or deposit **into** cash.
- The demand for bond will be low, so is the its price.
- **Bond issuers will respond by raising the interest rate**.
- The money market now returns to the equilibrium.

Adjustment towards the Equilibrium

- We can also see that **bond price and interest rate are negatively related.**
- **That is, if one goes up, the other goes down.**

- Suppose Govt Bond (that pays 30$ yearly) costs 1000$.
- Now, APPLE issues its bond (that pays 40$ yearly). Apple Bond costs 1000$.
- Can Govt Bond still be sold? >>> Yes, if it is CHEAPER.

Quantity Theory of Money

- The theory shows the relationship between the money supply and inflation.

- QTM: **MV = PY**
  - M = Money Supply
  - V = Velocity (how fast the money changes hand)
  - P = Price Level
  - Y = Real Output
  - Also note that PY = Nominal Output

Quantity Theory of Money

- QTM: **MV = PY**
- Assumptions:
  - V is constant.
  - Y is at the full-employment level and hence is constant.

- Conclusion: An increase in money supply leads to an increase in price level.
- That is, printing money creates inflation.