

Principles of Macroeconomics

Topic 5 Part 2

Money, Interest Rate, and Monetary Policy (CH 10)

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, especially “cash”, is the most liquid asset.
 - This theory is about why people hold “cash”.
- The theory assumes that **people store “wealth” EITHER in the forms of money OR bond**, so interest rate (from bond) is the “price or opportunity cost” of holding money.

The Demand for Money

Keynes' Liquidity Preference Theory

- Generally speaking, bonds are “loans”.
- When investors (lenders) buy bonds, they provide funds to companies or the government (borrowers).
- The borrowers then repay these loans, plus some interest.
- Bonds also include interest-bearing deposits.

The Demand for Money

Keynes' Liquidity Preference Theory

To sum up,

- This theory is about people choosing to keep “wealth” as
 - Money, which is a more liquid asset
 - Bond, which is a less liquid asset
- However, people face trade-off:
 - if they choose money, they don't get interest from bond
 - if they choose bond, they don't get liquidity from money

The Demand for Money

Keynes' Liquidity Preference Theory

According to Keynes, demand for liquidity (i.e. demand for cash) is determined by three motives:

- Transaction Demand (for daily use)
- Precautionary Demand (for unexpected use)
- Speculative Demand (for future investment)
 - People hold cash so that they are ready to invest whenever the returns are high.

The Demand for Money

Keynes' Liquidity Preference Theory

- Speculative Demand (for future investment) implies that when the returns from bonds (interest rates) are low, people will demand more cash.
- This is so that they can use this cash to re-invest when the returns are high.
- Thus, we can plot **a negative relationship** between Speculative Money Demand and Interest Rate.

The Demand for Money

Keynes' Liquidity Preference Theory

- On the other hand, Transaction and Precautionary Money Demands DOES NOT depend on interest rate.
- The sum of the three money demands gives the “Money Demand Curve”.
- Money Demand Curve thus shows a negative relationship between interest rate and quantity of money.

The Demand for Money

**Money Demand Curve
(Transaction)**

**Money Demand Curve
(Precautionary)**

The Demand for Money

**Money Demand Curve
(Speculative)**

**Money Demand Curve
(Total Money Demand)**

The Demand for Money

Money Demand Curve

- Movement along the money demand curve is due to change in interest rate.
- Shift in the money demand curve is due to change in factors other than interest rate, especially factors that affect Transaction or Precautionary Demands, e.g.
 - Income, i.e. when we are richer, we want to buy more goods and thus need more cash to do so.
 - Preference, i.e. due to some personal factors (e.g. pessimism), we may want to hold more cash.

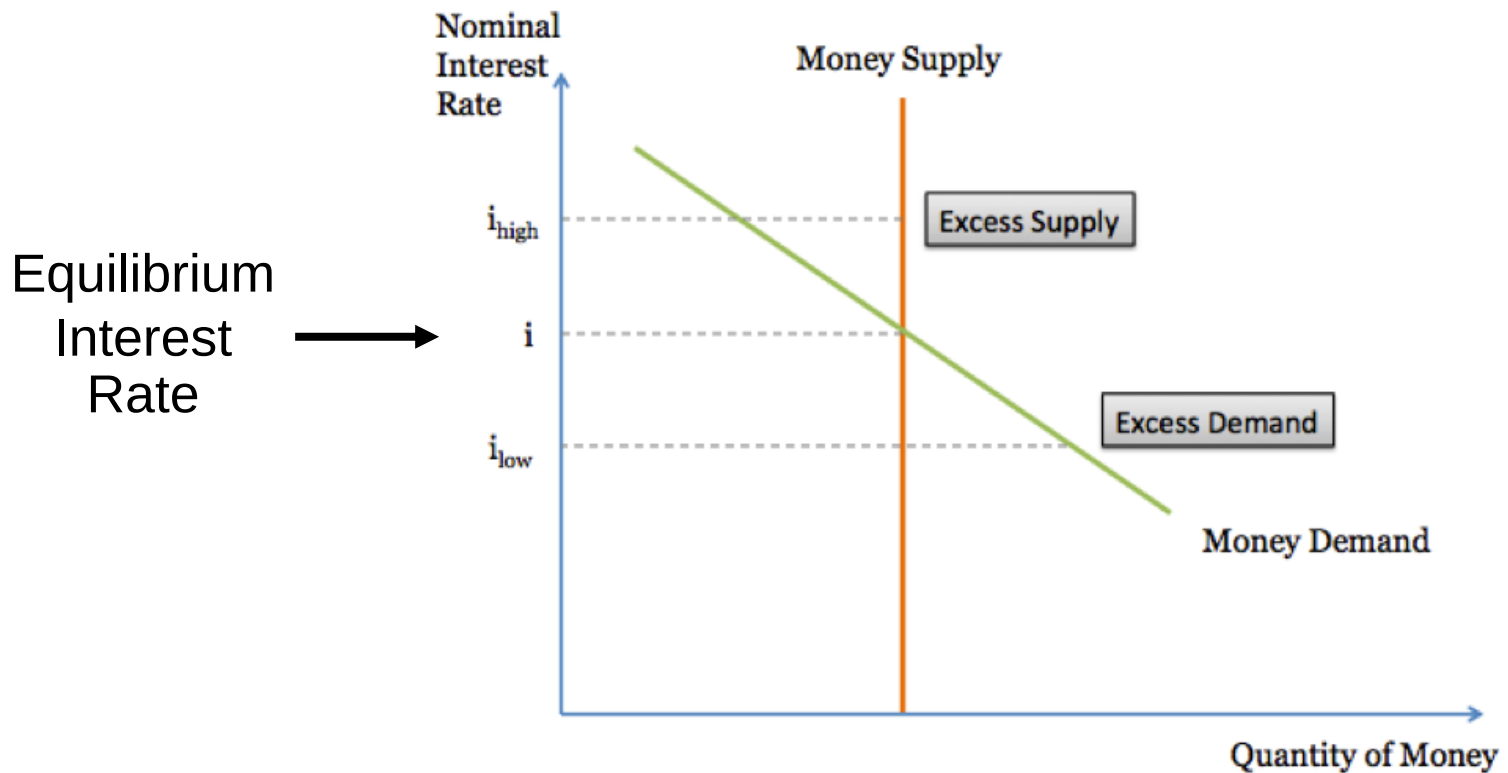
The Supply of Money

- The money supply is determined by the Central Bank.
- It does not depend on interest rate.
- Therefore, the money supply curve is VERTICAL.

Money Market Equilibrium

- **Equilibrium Interest Rate (i^*) is determined by the money demand and money supply.**
- Given that the Central Bank can control the money supply, it can effectively control the interest rate.
- The Central Bank can use
 - Expansionary **Monetary** Policy to increase money supply and reduce interest rate.
 - Contractionary **Monetary** Policy to decrease money supply and raise interest rate.

The Money Market Equilibrium

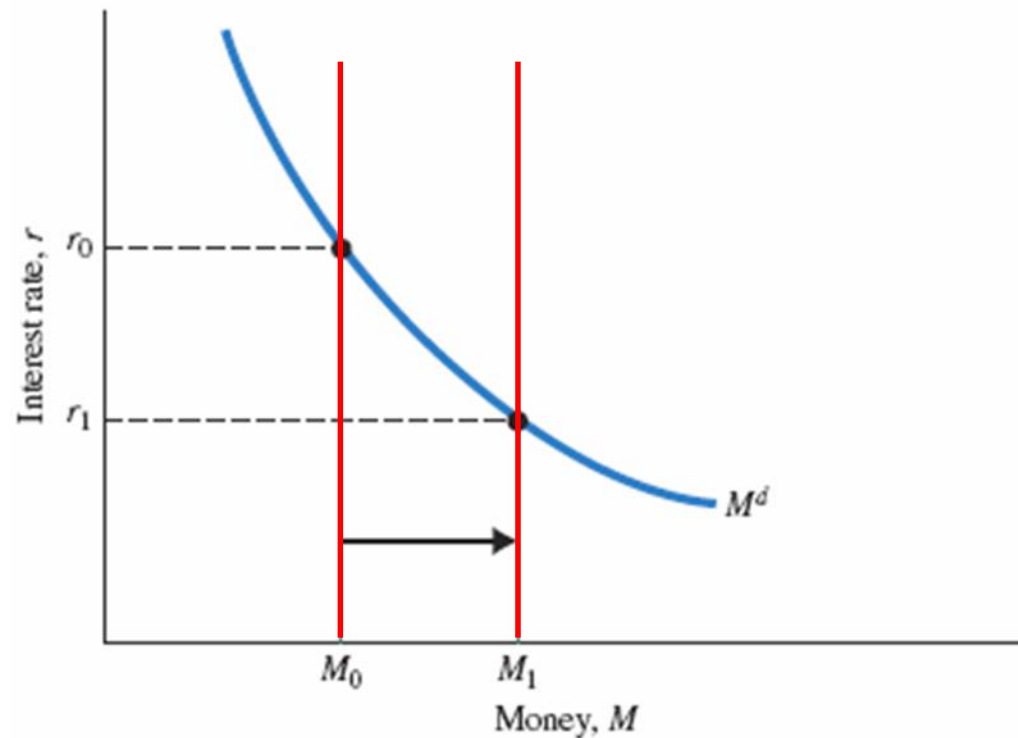


The diagram shows how the equilibrium interest rate is determined.

When i is too high, there is excess supply of money.

When i is too low, there is excess demand for money.

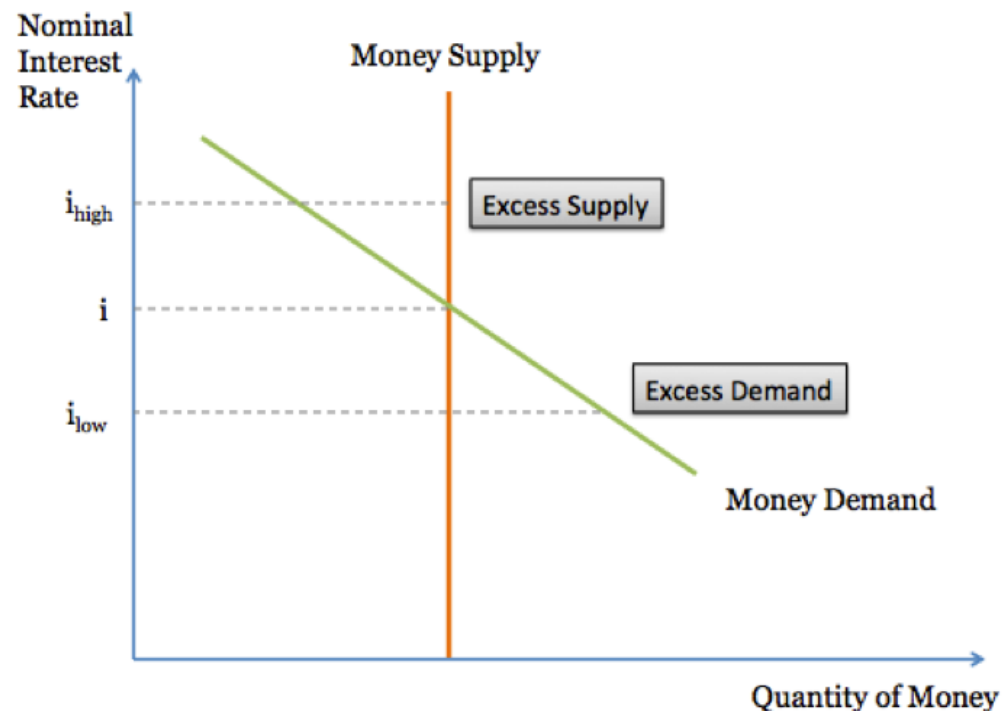
Change in the Money Supply



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

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 5\$ yearly) costs 100\$.
- Now, APPLE issues its bond (that pays 10\$ yearly). Apple Bond costs 100\$.
- Can Govt Bond still be sold? >>> Yes, if it is CHEAPER.
- Govt Bond should cost 50\$, instead of 100\$.

How the Central Bank Controls the Money Supply

The CB has three tools to control the money supply and hence the interest rate:

- **open market operations** The purchase and sale by the CB of government securities in the open market.
 - CB buys securities >> CB pays Money to the public
>> This increases Ms
 - CB sells securities >> CB takes Money from the public
>> This decreases Ms

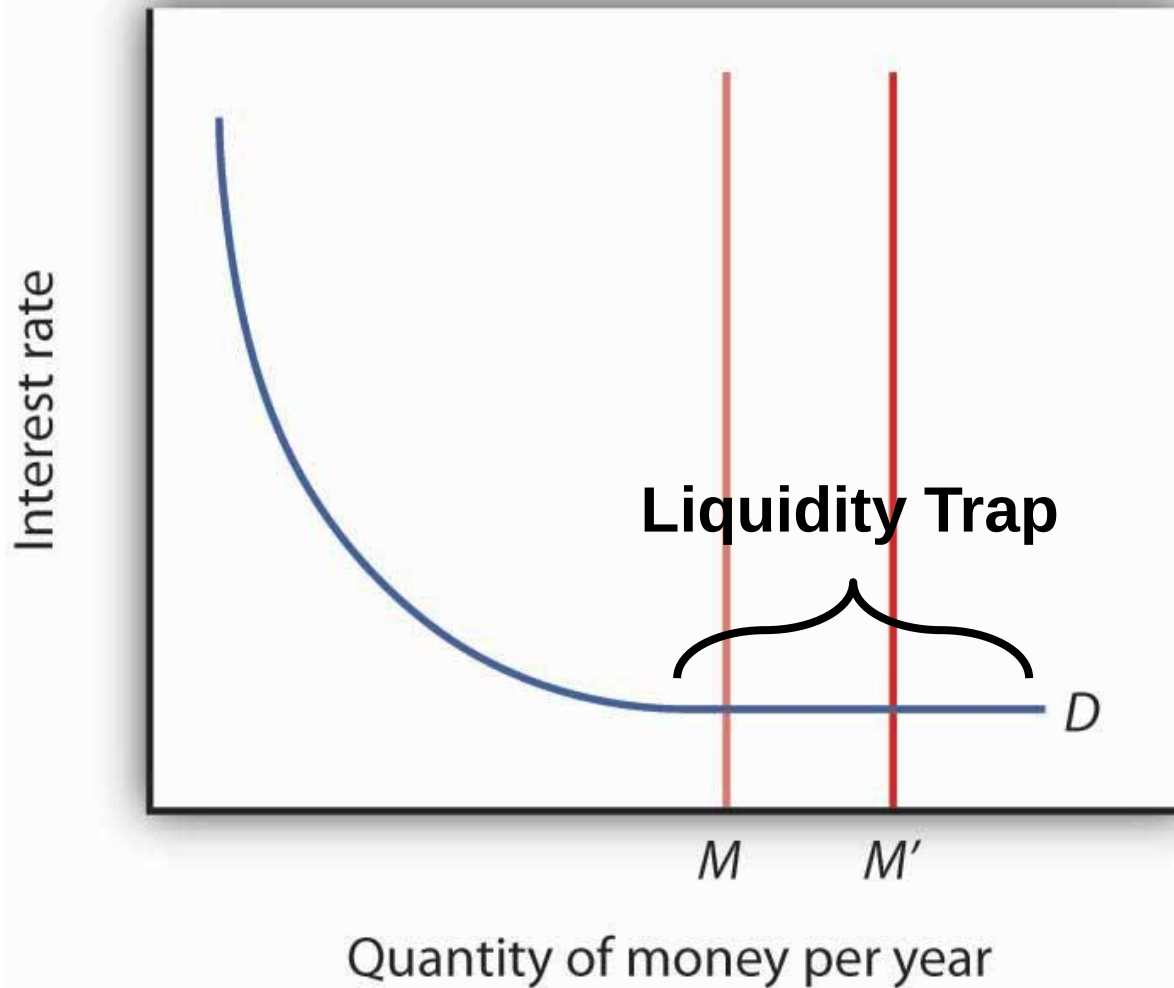
How the Central Bank Controls the Money Supply

- **discount rate** The interest rate that commercial banks pay to the CB to borrow “reserves” from it.
 - CB lowers the rate >> Commercial Banks borrows more reserves from CB >> Higher Ms
 - CB raises the rate >> Commercial Banks borrows less reserves from CB >> Lower Ms
- **reserve ratio**
 - CB lowers RR >> Less deposits being kept as reserves >> More currency in the economy >> Higher Ms
 - CB raises RR >> More deposits being kept as reserves >> Less currency in the economy >> Lower Ms

Liquidity Trap

- For a long time, the CB has been reducing interest rate in order to boost the economy.
- After the rate of interest has fallen to a certain level, almost everyone prefers holding cash rather than holding a bond which pays a low rate of interest.
- At such situation, monetary policy (changing Money Supply) can no longer affect interest rate. The policy becomes ineffective in boosting the economy.

Liquidity Trap



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.