Monetary Policy - Interest Rate

Important Definitions

Monetary Policy = Attempts of the monetary authorities to influence the money supply in the economy so as to bring about desired changes in the economy
Interest rate (from lender's perspective) = Cost of using borrowed money
Interest rate (from saver's perspective) = Reward of putting aside money

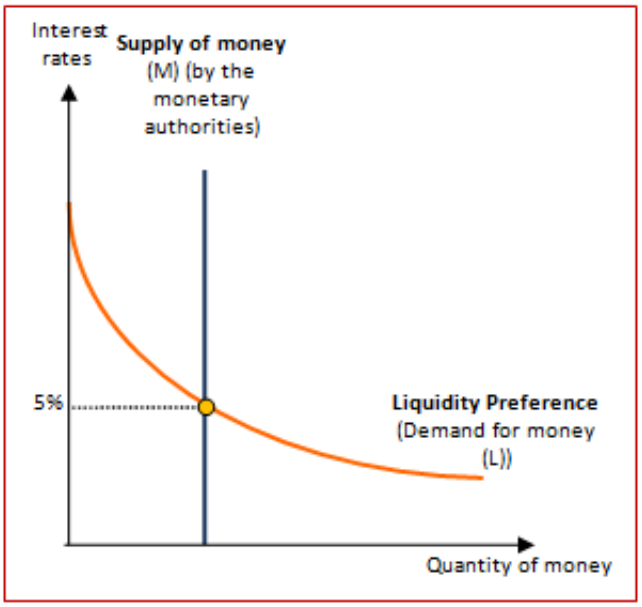
Liquidity Preference Theory

Assumptions:

1. **Central bank adopts interest rate policy
2. Supply (M_S) is independently set by the Central Bank (Perfectly inelastic supply)
3. Demand (M_D) is demand to hold assets in liquid form (downward-sloping demand curve)
    - Transactionary (i.e. demand for money as a medium to purchase things)
    - Precautionary (i.e. savings in case of emergency)
    - Speculative (i.e. buying bonds vs keeping money)
        - ↑i/r ⇒ ↑Qd of bonds ⇒ ↓Qd of keeping money

Non-interest rate determinants of demand for money

1. Real GDP
    - ↑ real GDP ⇒ ↑ ability to purchase goods and services ⇒ ↑ transactionary demand ⇒ ↑M_D (rightward shift of demand curve)
2. GPL
    - ↑GPL ⇒ ↑ quantity of money required to p same level of goods and services ⇒ ↑ transactionary demand ⇒ ↑M_D (rightward shift of demand curve)



Loanable Funds Theory

DD_{LF}

- Comprises:
  - DD_{firms} (to undertake new investment projects)
  - $DD_{households}$ (to purchase consumer durables and housing)
  - DD_{govts} (to finance fiscal deficits and public infrastructure)
- Downward-sloping since ↑i/r ⇒ ↑ cost of borrowing ⇒ ↓Qd of loanable funds

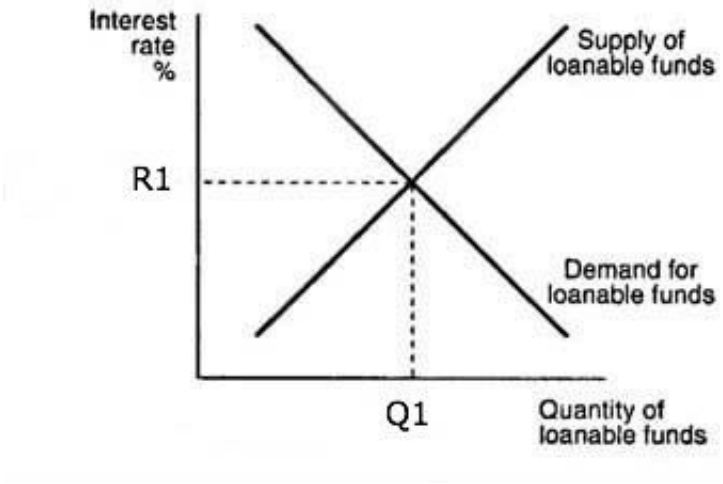
SS_{LF}

- Comprises:
  - Savings of households and firms
- Upward-sloping since ↑i/r ⇒ ↑ reward for saving money ⇒ ↑ savings ⇒ ↑Qs of loanable funds

How to explain change in i/r

1. SS_{LF} and/or DD_{LF} curve shifts
2. At current interest rate, quantity supplied of loanable funds exceeds quantity demanded of loanable funds (or vice versa)
3. Surplus/Shortage of loanable funds of QdQs in the market exerts a downward/upward pressure on interest rates
4. Interest rate will fall/rise until equilibrium interest rate where Qd = Qs reached

5. New equilibrium price at ir_1 and equilibrium quantity at Q_e



Non-interest rate determinants of DD_{LF}

1. Expected profit
   - ↑ expected rate of profit from new capital ⇒ ↑ amount of I ⇒ ↑DD_{LF}
2. Economic growth
   - High economic growth ⇒ ↑ optimism of firms and households ⇒ ↑ amount of C and I ⇒ ↑DD_{LF} assuming households/firms need to borrow money to finance their purchases/investments
3. Technological advancement
   - ↑ technology ⇒ ↑ productivity of capital ⇒ ↑ expected profits ⇒ ↑ amount of I ⇒ ↑DD_{LF}
4. Fiscal deficit
   - Fiscal deficit ⇒ ↑ need to borrow to finance ⇒ ↑DD_{LF} assuming government is unable to borrow from central bank/finance from reserves

Non-interest rate determinants of SS_{LF}

1. Disposable income
   - ↑ disposable income ⇒ ↑ savings, c.p. ⇒ ↑SS_{LF}
2. Expected future income
   - ↑ expected future income ⇒ ↑C in current period ⇒ ↓S in current period ⇒ ↓SS_{LF}
3. Monetary policy
   - ↑ money supply ⇒ ↑SS_{LF}

Monetary Policy - Interest Rate

Expansionary

How it works:

- Increase money supply through:
  - Purchase of bonds in the open market (Offer money to bond holders in exchange for their bonds)
  - ↓ Discount rate (short term rate which the central bank charges commercial banks for the funds borrowed)
    - ↓ discount rate ⇒ ↑ ability of commercial banks to obtain money from central bank ⇒ ↑M_S
- Direct transmission mechanism
  - ↑M_S (e.g. by purchase of bonds in the open market) ⇒ ↑ money held by households ⇒ ↑C ⇒ ↑AD
  - ↑C ⇒ ↑I to cater to ↑DD for goods and services ⇒ ↑AD
- Indirect transmission mechanism
  - ↑M_S ⇒ Surplus of money at existing interest rate ⇒ Downward pressure on interest rates ⇒ ↓i/r ⇒ ↑I by MEI theory
    - By MEI theory, firms will only invest if they make a profit, i.e. MEI (expected rate of return of an additional unit of investment) ≥ i/r (Cost of investment)
    - ↓i/r from r_0 to r_1 ⇒ ↑ number of investment projects that generate an expected rate of return ≥ lowered interest rate ⇒ ↑I from I_0 to I_1
  - ↓i/r ⇒ ↓ cost of borrowing ⇒ ↑ C of interest-sensitive items/big-ticket items e.g. cars
  - ↓i/r ⇒ outflow of hot money to countries with higher i/r ⇒ ↑SS of domestic currency ⇒ Depreciation of domestic currency against foreign currencies assuming free floating exchange rate, c.p. ⇒ Constant Px in terms of domestic currency but ↓Px in terms of foreign currency + ↑P in terms of domestic currency ⇒ ↑Qx + ↓Qm ⇒ ↑(X-M) assuming MLC holds ⇒ ↑AD
- ↑C + ↑I + ↑(X-M) ⇒ m.t.p. ↑AD via multiplier effect ⇒ ↑ real NY and ↓cyclical UnN since labour is a derived demand
- ↑I ⇒ ↑ capital formation ⇒ ↑ productive capacity in the long run ⇒ ↑AS (rightward shift) in long run
- ↑(X-M) ⇒ Improvement in BOT ⇒ Improvement in current account ⇒ Improvement in BOP position

Limitations:

- **Interest elasticity of demand for money/Liquidity trap (Liquidity preference graph)

    - If demand for money is interest elastic, for a given ↑M_S ⇒ Smaller ↓i/r ⇒ Smaller ↑I and ↑C ⇒ Smaller ↑AD ⇒ Smaller ↑ real NY and ↓UnN
    - Limit to lowering i/r due to liquidity trap, demand for money is perfectly interest elastic ⇒ Further increase in M_S will not have any effect on i/r
    - Indirect transmission mechanism will be ineffective
    - However, direct transmission mechanism will still work to the extent that households and firms spend the extra money that is pumped into the economy
- **Interest elasticity of demand for investment (MEI curve)
    - Keynesian argument: Investment depends on confidence in future profits ⇒ ↓i/r may not have significant impact on I (interest inelastic)
        - Other factors more important in influencing C and I
    - Monetarist argument: Investment is interest elastic ⇒ ↓i/r ⇒ m.t.p. ↑I
- Conflicts with other Macro objectives
    - Inflation
        - ↑ AD ⇒ ↑GPL assuming in intermediate range of AS curve ⇒ ↑DD-pull inflation
        - However, unlikely to be significant/likely to be muted given that expansionary MP is usually adopted in times of recession when economy is operating within Keynesian range
        - Depreciation of currency ⇒ ↑P of imported G&S + imported factors of production ⇒ ↑CPI + ↑COP ⇒ ↓AS ⇒ Import-push inflation
- **Other factors play a role in influencing C and I
    - Pessimism of economy
    - Conduciveness of country for doing business
        - Fall in interest rate may not cause C or I to increase by much due to other factors affecting C and I
        - Especially true in economic recession
- Time lag
    - Recognition lag (i.e. Time before problem is recognised and diagnosed)
    - Administrative lag (i.e. Time between recognition of problem to taking of action)
        - Planning, construction of policies
    - Operational lag (i.e. Time between taking of action and impact on output and employment)
        - Direct and indirect transmission takes time
        - Change in I takes time
        - Multiplier effect takes time
    - By the time expansionary MP takes effect, economy might have already recovered ⇒ Inflationary pressures
- Imperfect info
    - Difficulty in accuracy of forecasting outcome of change in interest rate
        - Difficulty in estimating size of k (MPC and MPM fluctuate depending on expectations of future prices and incomes; where on the AS curve the economy is operating at)

Contractionary
How it works:

- Decrease money supply
  - Methods:
    - Sale of bonds in the open market
    - ↑ Discount rate
      - ↑ discount rate ⇒ ↓ ability of commercial banks to obtain money from central bank ⇒ $\downarrow M_S$
  - Direct
    - Unlikely to be significant since contractionary policy likely to be used when there is optimism in the economy
    - Households likely to only buy bonds with spare money ⇒ Unlikely to directly lead to ↓C
  - Indirect
    - $\downarrow M_S$ ⇒ Shortage of money at existing interest rate ⇒ Upward pressure on interest rates ⇒ ↑i/r ⇒ ↓I (By MEI theory)
    - ↑i/r ⇒ ↑ cost of borrowing ⇒ ↓C of interest-sensitive items/big-ticket items e.g. cars
    - ↑i/r ⇒ inflow of hot money from countries with lower i/r ⇒ ↑DD for domestic currency ⇒ Appreciation of domestic currency against foreign currencies assuming free floating exchange rate, c.p.⇒ Constant Px in terms of domestic currency but ↑Px in terms of foreign currency + ↓Pm in terms of domestic currency ⇒ ↓Qx + ↑Qm ⇒ ↓(X-M) assuming MLC holds ⇒ ↓AD
  - ↓C + ↓I + ↓(X-M) ⇒ m.t.p. ↓AD via reverse multiplier mechanism ⇒ ↓GPL assuming economy is operating within intermediate range of AS curve ⇒ ↓DD-pull inflation

Limitations:

- Does not address cost-push inflation
- Conflicts with other Macro objectives
  - ↓AD may compromise real NY and UnN assuming economy is operating within the intermediate range of AS curve
  - ↓(X-M) ⇒ Worsening BOT ⇒ Worsening current account ⇒ Worsening BOP position
- **Interest elasticity of demand for investment (MEI curve)
  - Keynesian argument: Investment depends on confidence in future profits ⇒ ↑i/r may not have significant impact on I (interest inelastic)
    - e.g. There may be alternative sources of funds for I (e.g. FDI/Household savings)

    - Monetarist argument: Investment is interest elastic ⇒ ↑i/r ⇒ m.t.p. ↓I
- **Other factors play a role in influencing C and I
    - Optimism in the economy
    - Conduciveness of country for doing business
- Time lag
    - Recognition lag (i.e. Time before problem is recognised and diagnosed)
    - Administrative lag (i.e. Time between recognition of problem to taking of action)
        - Planning, construction of policies
    - Operational lag (i.e. Time between taking of action and impact on output and employment)
        - Direct and indirect transmission takes time
        - Long term investment projects cannot be abandoned easily without incurring great losses
        - Multiplier effect takes time
    - By the time expansionary MP takes effect, economy might have already recovered ⇒ Inflationary pressures
- Availability of alternative sources of funds
    - e.g. If FDI form significant component of a country's investment, effectiveness of contractionary monetary policy is reduced as foreign firms do not need to borrow money from domestic banks
- Imperfect info
    - Difficulty in accuracy of forecasting outcome of change in interest rate
        - Difficulty in estimating size of k (MPC and MPM fluctuate depending on expectations of future prices and incomes; where on the AS curve the economy is operating at)
- In the long run, supply-side policies are necessary to ↑AS to ensure sustained economic growth with low inflationary pressures