

IS-LM Model

i) Extension of the SKM (under price rigidity  $P = \bar{P}$ ) by considering:

- ↳ Goods Market
- ↳ Money Market
- ↳ Bond Market (Asset Market)

Goods Market:

Components of AD: Consumption  $c = C(Y)$ ,  $0 < C' < 1$ .  
 Investment  $I = I(r)$ ,  $I' < 0$ .

[ Investment: today's expenditure for tomorrow's income,  
 As investment is financed through savings,  $r \uparrow \Rightarrow I \downarrow$  ]  
 Govt exp  $G = \bar{G}$  (autonomous)

Equilibrium in Goods Mkt:  $Y = AD$ .

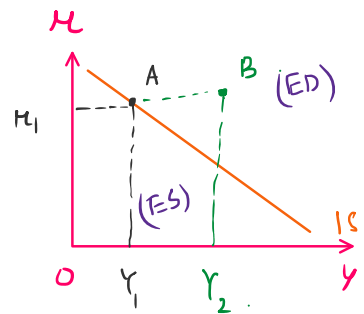
$$Y = C + I + G$$

(\*)  $Y = C(Y) + I(r) + \bar{G}$ , [Variables:  $Y, r$ ]

Diff:  $dY = C' \cdot dY + I' \cdot dr$

$$(1 - C') dY = I' \cdot dr$$

$$\frac{dr}{dY} = \frac{(1 - C') > 0}{(I') < 0} < 0$$



Interpretation: If interest rate is  $r_1$ , then for Goods Mkt equilibrium, output level should be  $Y_1$ .

At pt B:  $r = r_1$ ,  $Y = Y_2 > Y_1 \Rightarrow C \uparrow \Rightarrow AD \uparrow$ .

∴ Pts above the IS curve: ED in Goods Mkt

Pts below the IS curve: ES in Goods Mkt

Special case: If investment is non-responsive to interest rates ( $I' = 0$ )

Government is non-responsive to interest rates  
( $I' = 0$ )

Slope of the IS curve:  $\left. \frac{dr}{dy} \right|_{IS} = \frac{1-c'}{I'} \rightarrow \infty$  (Vertical IS)

### Money Market

- i) Supply of money is done by central bank.  
Nominal money supply in the economy =  $\bar{M}$  (autonomous)
- ii) Demand of money comes from consumers for the following purposes:
- $\Rightarrow$  Money is a medium of exchange, this generates transaction demand. If  $Y \uparrow \Rightarrow$  purchasing power  $\uparrow \Rightarrow$  Transaction demand  $\uparrow$ .

Transaction dd for money  $TDM = f(Y), f' > 0$ .

- $\Rightarrow$  Idea of speculation: Buy when cheap & sell when price is high to make profits. Goods are not used for speculative purposes as they are used for consumption/utility maximization. Hence speculative behavior is shown by assets (stocks/bonds etc..)

If  $r \uparrow \Rightarrow$  Opportunity cost of holding money  $\uparrow$   
 $\Rightarrow$  Demand for money  $\downarrow$ .

$\therefore$  Speculative demand for money (SDM) =  $g(r), g' < 0$ .

$\Rightarrow$  Demand for money =  $TDM + SDM = L(Y, r), L_Y > 0, L_r < 0$

- iii) Equilibrium in money market:

Supply of Real Money = Demand of Real Money

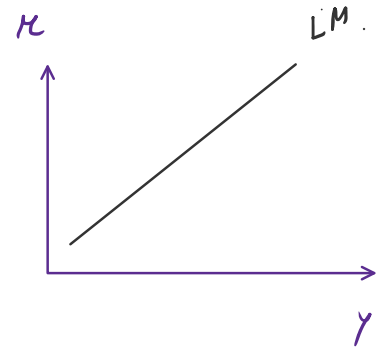
$$\left\{ \frac{\bar{M}}{P} = L(Y, r) \right\} \text{--- Eqn of equilibrium locus.}$$

$$\frac{\bar{M}}{P} = L(r, \kappa) \text{ --- Eqn of equilibrium locus.}$$

Diff:  $0 = L_Y \cdot dY + L_\kappa \cdot d\kappa$

$$-L_Y \cdot dY = L_\kappa \cdot d\kappa$$

$$\frac{d\kappa}{dY} \Big|_{LM} = - \frac{L_Y^{>0}}{L_\kappa^{<0}} > 0$$



HW Special cases for LM:

(i) TDM = 0

(ii) SDM = 0