Open Economy

When countries start trading.

Suppose there are 2 countries: Home (H) & Foreign (F).

∴ Under open economy: $AD = \underbrace{C + I + G}_{\text{domestic component}} + \underbrace{X - M}_{\text{components of trade}}$.

M = Imports [depends on domestic output] ⇒ $M = M(Y)$, $M' > 0$.

X = Exports [depends on foreign demand]. ⇒ $X = X(Y_f)$, $X' > 0$

& For a small economy: $X = \bar{X}$.

Value of exports $= P.X$.

Value of imports $= P_f . M$.

[P = Price in Home economy. P_f = Price in Foreign economy]

$$\therefore \quad AD = C + I + G + \frac{\cancel{P}.X}{\cancel{P}} + \frac{eP_f . M}{P}$$

[e = Nominal exchange Rate]

Eg: P = Rs. 10, $P_f = \$5$, e = Rs. 2/\$. [Value of one currency in terms of another].

Real Value of import for Home country $= \left(\frac{eP_f}{P}\right) = p$.

where p = Real Exchange Rate.

Goods Mkt:

Equillibrium condition: $Y = AD$.

$$Y = C + I + G + X - M.$$

$$Y = C(Y) + I(r) + \bar{G} + \bar{X} - M(Y) \quad \ldots \text{ Obtain the IS curve.}$$

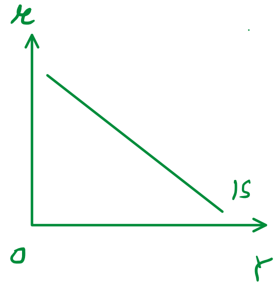
Diff: $dY = C'.dY + I'.dr - M'.dY$.

IS curve.

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

$$[1 - C' + M'] \cdot dY = I' \cdot dr.$$

$$\left.\frac{dr}{dY}\right|_{IS} = \frac{(I')_{<0}}{(1-c'+M')_{>0}} < 0.$$



Money Market

i) Supply of money is from central Bank ($M_s = \bar{M}_s$)
(money is local currency)

ii) Money demand = $TDM(Y) + SDM(r)$, $TDM' > 0$, $SDM' < 0$

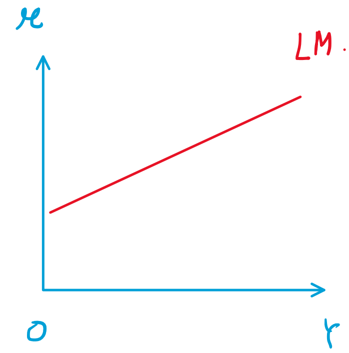
Equilibrium in Money Market:

$$\frac{\bar{M}_s}{P} = L(Y, r).$$

Diff: $0 = L_Y \cdot dY + L_r \cdot dr$.

$$L_Y \cdot dY = -L_r \cdot dr$$

$$\left.\frac{dr}{dY}\right|_{LM} = -\frac{L_Y^{>0}}{L_{r<0}} > 0.$$



iii) Balance of payments:

BP = Value of revenue from trade −
Value of expenditure from trade.

Eg: $I(r)$, $I' < 0$.

$r < r_f \Rightarrow$ Foreign investors will flood the domestic mkt $\Rightarrow$ Domestic investment $\uparrow \Rightarrow AD \uparrow \Rightarrow Y \uparrow$.

For trade there are ? .

For trade there are 2 components :
↳ Current Account (Trade in Goods).
Capital Account (Trade in Capital).

$\therefore \quad BP = BOT + KA.$

Current Account:

Revenue	Expenditure
Export of goods	Import of Goods.
Export of services	Import of services.

$BOT = $ (Total Exports − Total Imports) of Goods & Services.

Capital Account:

Revenue	Expenditure
K-imports.	K-exports.

$KA = (K\text{-imports}) - (K\text{-exports})$.

$$\therefore \quad \boxed{BP = BOT + KA.} \text{ --- } (*)$$

If $BP > 0 \Rightarrow$ Balance of Payment Surplus. $\qquad M = \bar{M} + m \cdot Y.$
If $BP < 0 \Rightarrow$ Balance of Payment Deficit.
If $BP = 0 \Rightarrow$ Balance of Payment is balanced.

$$\boxed{\left[\, M(Y) = \bar{M} + m \cdot Y, \; m > 0 \,\right]}$$

$\therefore$ Now $BOT = \overbrace{X - M} = \bar{X} - M(Y) = \bar{X} - \bar{M} - m \cdot Y, \; m > 0.$

$KA = KA(r - r_f), \; KA' > 0.$

$$= KA + \alpha(r - r_f) \quad , \alpha > 0 .$$

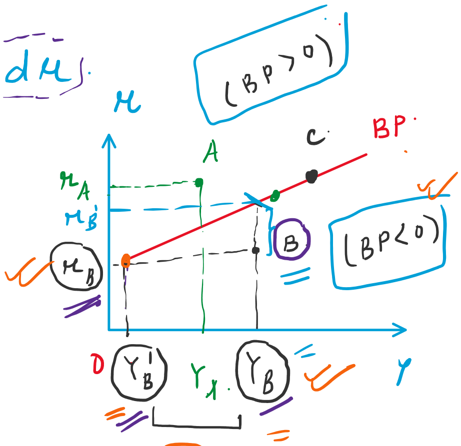
$$\boxed{BP} = \boxed{BOT + KA} = \bar{X} - \bar{M} - m \cdot Y + \overline{KA} + \alpha(r - r_f)$$

If $BP = 0 \Rightarrow \quad 0 = \bar{X} - \bar{M} - m \cdot Y + \overline{KA} + \alpha(r - r_f) .$

Diff: $0 = 0 - 0 - m \cdot dY + 0 + \alpha \cdot dr$

$$m \cdot dY = \alpha \cdot dr .$$

$$\left.\frac{dr}{dY}\right|_{BP} = \frac{m}{\alpha} > 0 .$$



$Y\uparrow \Rightarrow M\uparrow \Rightarrow BOT<0 .$

Interpretation of BP:

Locus of (r, Y) s.t. $BP = 0$ for the domestic economy.

Case I: $\alpha = 0 \Rightarrow \left.\frac{dr}{dY}\right|_{BP} = \frac{m}{0} \to \infty .$

$\therefore$ BP curve is vertical.

Interpret: $KA = \overline{KA} + \alpha(r - r_f)$

$\alpha = 0 \Rightarrow KA = \overline{KA}$ [Interest rate differ has no impact on capital mobility internationally] .

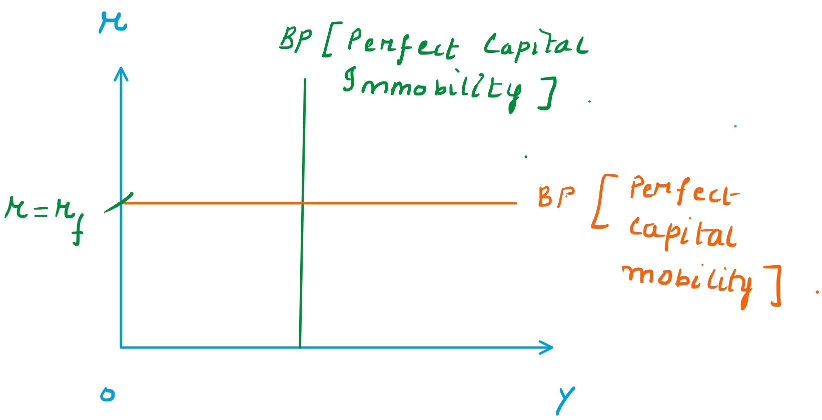
$\alpha = 0 \Rightarrow$ Perfect capital Immobility.

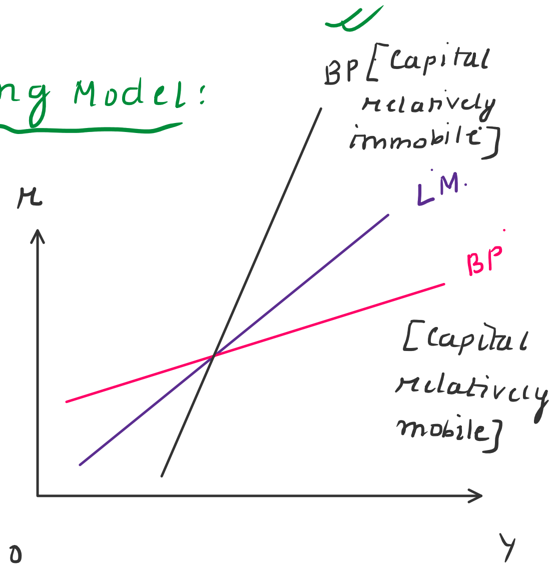
Case II: $\alpha \to \infty$, $\left.\frac{dr}{dY}\right|_{BP} \to 0$ [Horizontal BP] .

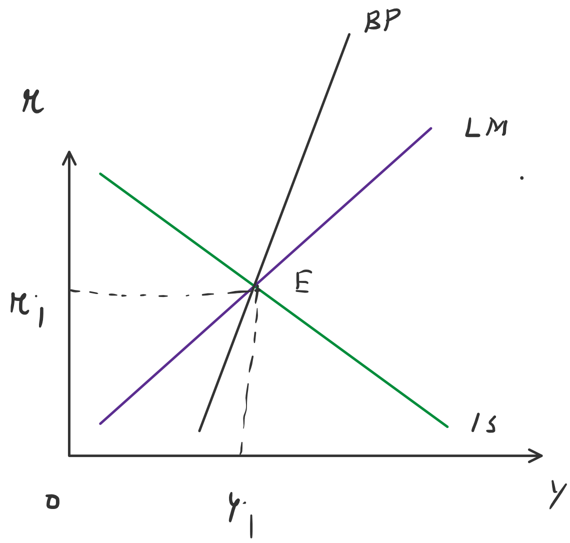
"This is called Perfect Capital Mobility"

Note: "α" captures the sensitivity of capital mobility to interest rate differentials.

Equillibrium in the Mundell-Fleming Model:







"Capital is Relatively Immobile"

Exchange Rate Regimes:-

e = Nominal exchange Rate = ₹/\$.

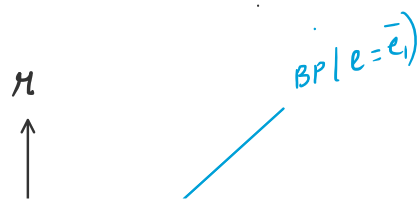
Eg: e = Rs. 85/\$ ⇒ To buy 1\$ from forex mkt pay Rs.85

↳ [Value of foreign currency in terms of domestic currency]

Central Banks broadly follow 2 types of exchange Rates Regime:

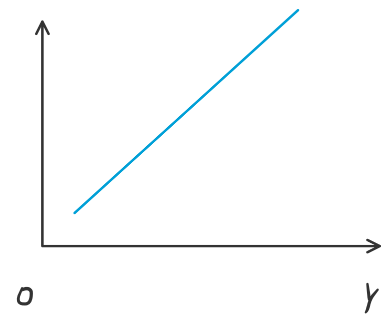
(i) Fixed exchange rate regime ($e = \bar{e}$)

Ex change is not mkt determined & no other domestic/foreign policy



ex change is not mkt determined & no other domestic/ foreign policy intervention can change 'e'.

[BP curve does not shift]

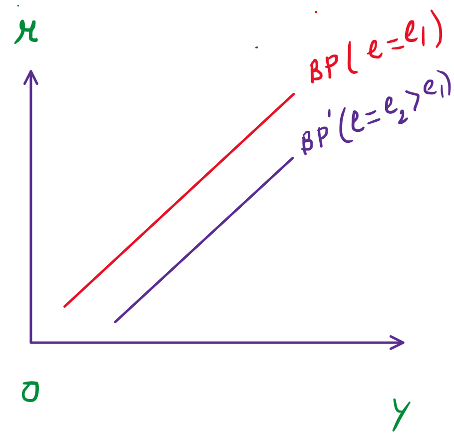


(ii) Flexible exchange Rate regime:

Mkt determined exchange rate.

∴ e is determined in the foreign exchange mkt.

Eg: Import demand ↑ ⇒ Demand for foreign ex ↑ ⇒ e ↑



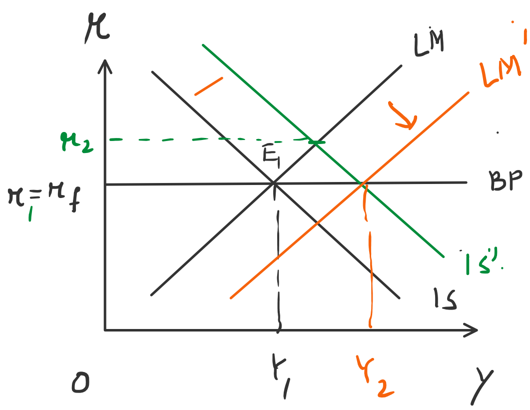
Under flexible exchange rate BP shifts & e ↑ ⇒ BP shifts right.

Fixed Ex. Rate	Flexible Ex. Rate
$\bar{e}$ ↑ ⇒ Devaluation.	e ↑ ⇒ Depreciation
$\bar{e}$ ↓ ⇒ Revaluation.	e ↓ ⇒ Appreciation.

Fiscal policy under Fixed Ex. Rate & Perfect capital Mobility.

G ↑ ⇒ AD ↑ ⇒ IS shifts right.

r ↑ ⇒ Capital Inflow ⇒ e will tend to fall ⇒ But given fixed change ⇒ CB will buy for ex / increase SS of home currency in mkt (M ↑)



Monetary policy under Fixed Ex-Rate & Perfect Capital Mobility.

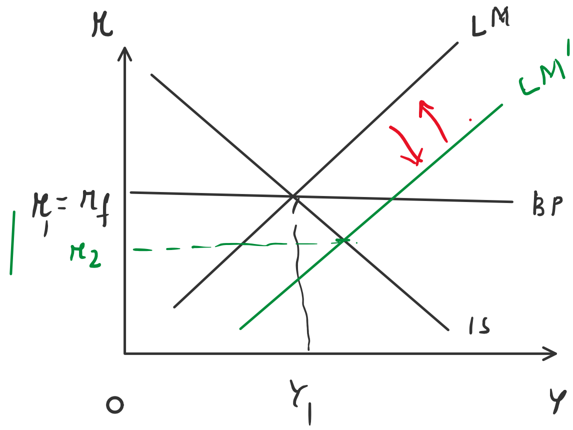
$M \uparrow \Rightarrow$ LM shift right

$r \downarrow \Rightarrow$ Capital outflow.

$\Rightarrow$ Demand for for ex $\uparrow$.

$\Rightarrow$ To Defend e, CB will reduce money supply.

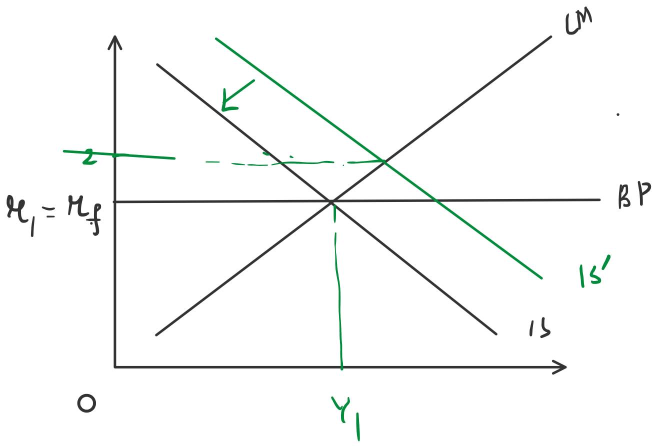
$\Rightarrow$ LM falls back.



"Impossible Trinity"

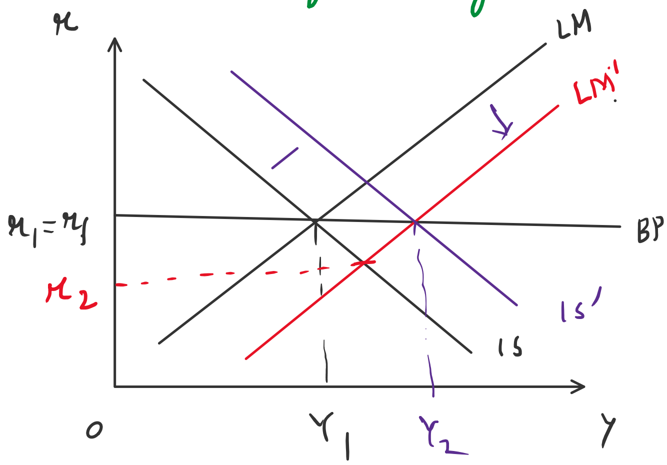
Flexible exchange Rate & Perfect capital Mobility:-

Fiscal policy



$e \downarrow \Rightarrow M \uparrow \Rightarrow BOT < 0$.

Monetary policy



Capital outflow $\Rightarrow$

Demand for F $\uparrow$ $\Rightarrow$

$e \uparrow$ (Depreciation)

$M \downarrow \Rightarrow BOT > 0$