International Trade in General Equilibrium Framework:

Consider the Home Economy (H) producing 2 goods:
Good X & Good Y [similar for Foreign (F)].

Production Possibility Frontier:

Suppose the home economy is endowed with $(\bar{L}, \bar{K})$ amt of labour & capital [factors of prodn for X & Y]

Let L_X : Labour employed in sector X
L_Y : labour employed in sector Y

$\Rightarrow L_X + L_Y \leq \bar{L}$

& define similar notations for capital $\Rightarrow K_X + K_Y \leq \bar{K}$

If factors are fully employed in the economy:

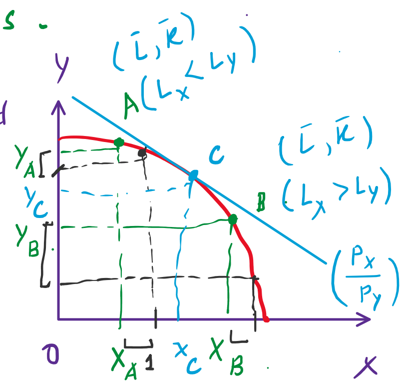
$$\left.\begin{aligned} L_X + L_Y &= \bar{L} \\ K_X + K_Y &= \bar{K} \end{aligned}\right\} \quad \ldots\ldots (i)$$

Prodn fns:

$$X = X(L_X, K_X)\ ; \quad X_L > 0,\ X_{LL} < 0,\ X_K > 0,\ X_{KK} < 0.$$

$$Y = Y(L_Y, K_Y)\ ; \quad Y_L > 0,\ Y_{LL} < 0,\ Y_K > 0,\ Y_{KK} < 0$$

i.e prodn fns exhibit diminishing returns.



PPF: Locus of (X, Y) that can be produced with full employment of factors of production in the economy.

Eg: $L_X \uparrow \Rightarrow L_Y \downarrow$ [when ope
$\hookrightarrow X \uparrow \quad \hookrightarrow Y \downarrow$. (PPF will be -vely sloped).

Note: All points on the PPF indicate full employment of factors of production

And all points inside the PPF are feasible but not supporting full employment.

Given competitive setup, full employment of factors of production is guaranteed, hence the economy only operates on the PPF.

Shape of the PPF is concave: due to Diminishing returns

At pt 'A', lesser amt of labour needs to be moved from sector Y to sector X to produce one extra unit of X as compared to pt 'B'. Hence as we move along the PPF the opportunity cost of producing X increases (in terms in Y). Hence the PPF is concave.

Slope of the PPF:

Given production fns of X & Y, we can obtain the cost fns:

$$C_X = C_X(X), \quad C_X' > 0, \quad C_X'' > 0$$

$$C_Y = C_Y(Y), \quad C_Y' > 0, \quad C_Y'' > 0.$$

Denote: $C = C(X, Y)$: total cost of producing X & Y

Diff: $dC = \left(\frac{\partial C}{\partial X}\right) dX + \left(\frac{\partial C}{\partial Y}\right) dY$

Along the PPF, full employment of L, K, $dC = 0$.

$$0 = MC_X \cdot dX + MC_Y \cdot dY.$$

$$\frac{dY}{dX} = -\frac{MC_X}{MC_Y}. \Rightarrow \left|\frac{dY}{dX}\right|_{PPF} = \frac{MC_X}{MC_Y} = MRPT$$

[Marginal Rate of Product

For a competitive mkt:-

[Marginal Rate of Product Transformation]

For a competitive mkt :-

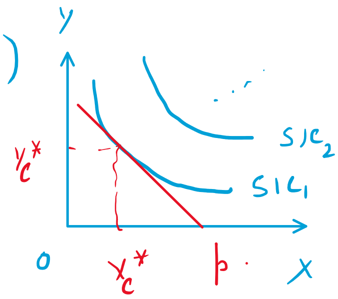
Optimal condition: $P_X = MC_X$.

$P_Y = MC_Y$

$$\therefore \boxed{MRPT = \frac{MC_X}{MC_Y} = \frac{P_X}{P_Y} = p} \Rightarrow$$ Optimal condition for production in the economy.

Social welfare function:

To capture the pattern of the individuals, we define the social welfare fn for the economy: $U = U(X, Y)$



Home Economy: