General Equilibrium

General Equillibrium in Consumption:

Suppose there are 2 Goods - Good X, Good Y.
There are 2 consumers - A, B.

Endowments of the 2 consumers are

$$\omega^A = (\omega_X^A, \omega_Y^A), \quad \omega^B = (\omega_X^B, \omega_Y^B)$$

$$u^A = u^A(x_A, y_A), \quad u^B = u^B(x_B, y_B).$$

Obj: How both the consumers can trade both the goods among themselves, so that the overall welfare is maximized.

Total availability of Good X = $\omega_X^A + \omega_X^B$

$\therefore \quad x_A + x_B = (\omega_X^A + \omega_X^B)$ [At equillibrium].

Total availability of Good Y = $\omega_Y^A + \omega_Y^B$.

$\therefore \quad y_A + y_B = \omega_Y^A + \omega_Y^B$ [At equillibrium].

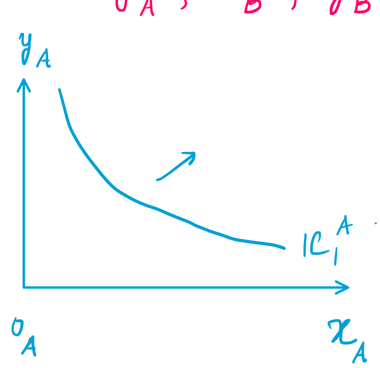
Edgeworth Box:

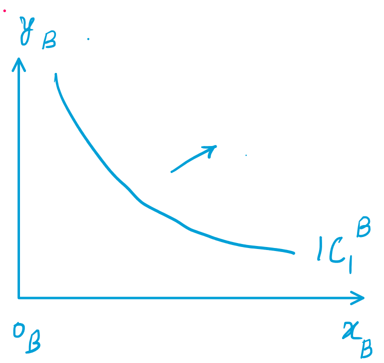
For consumer A: Good X: $0 \leq x_A^* \leq (\omega_X^A + \omega_X^B)$

Similarly we can define for y_A^*, x_B^*, y_B^*.

Now, $u_A = u_A(x_A, y_A)$

$u_B = u_B(x_B, y_B)$

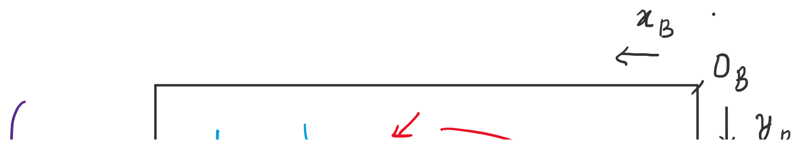




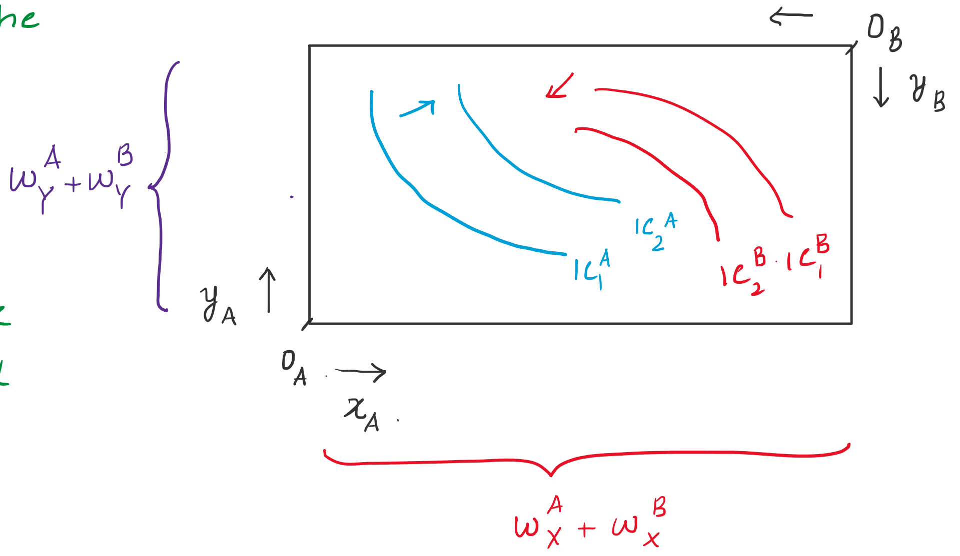
In the Edgeworth box:

For consumer A:

More the IC's are to the right, more is the



More the IC's are to the right, more is the level of utility

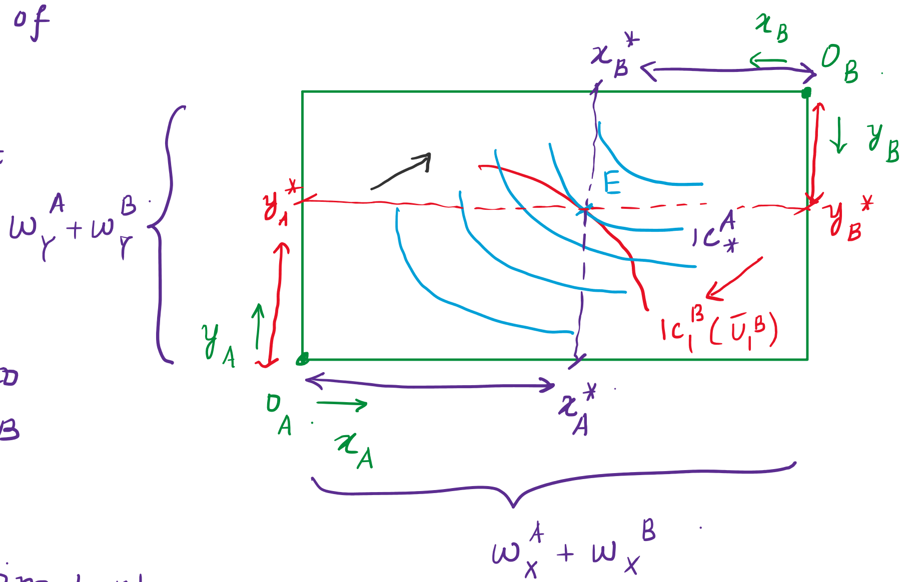


For consumer B:

More the IC's are to the left, more is the level of utility.

(i) Fix the level of utility of agent B at $IC_1^B(\bar{U}_1^B)$

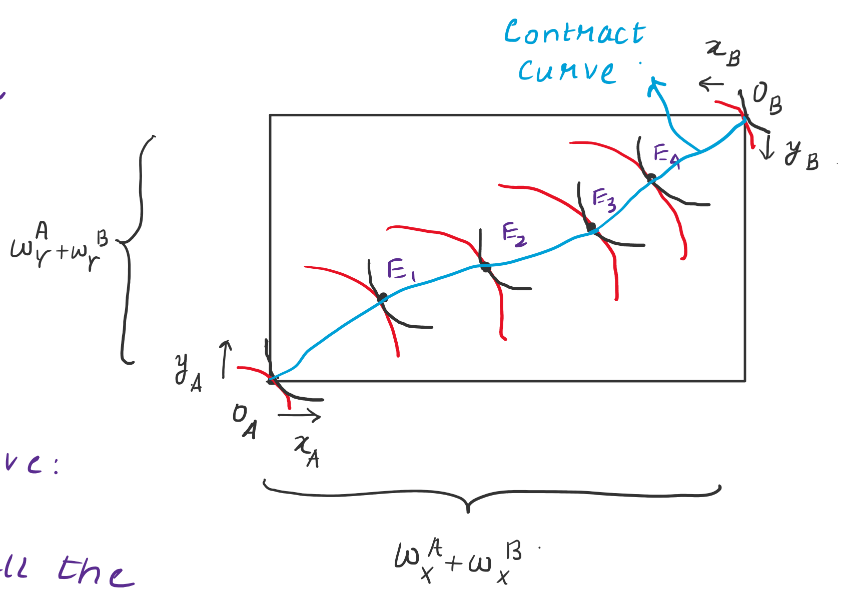
(ii) Given IC_1^B, the highest IC, that consumer A can achieve is the one that is tangent to the IC of consumer B [optimal pt E].



(iii) Pt E is a Pareto Optimal pt:

An allocation is pareto optimal if no consumer can be made better off without making someone else worse off.

(iv) By repeating the process, we can get the set of all possible pareto optimal points. This is known as the contract curve.



(v) To solve for contract curve:

Contract curve: Locus of all the pareto optimal pts.

Pareto optimal pt: Din--

pareto optimal pts.

Pareto optimal pt: Diagramatically, pt where IC's of both the individual's are tangent to each other

$\Rightarrow$ |Slope of IC of A| = |Slope of IC of B| (At pt E)

$\Rightarrow$ $\boxed{MRS_A = MRS_B}$ $\Rightarrow$ solve for eqn of the contract curve.