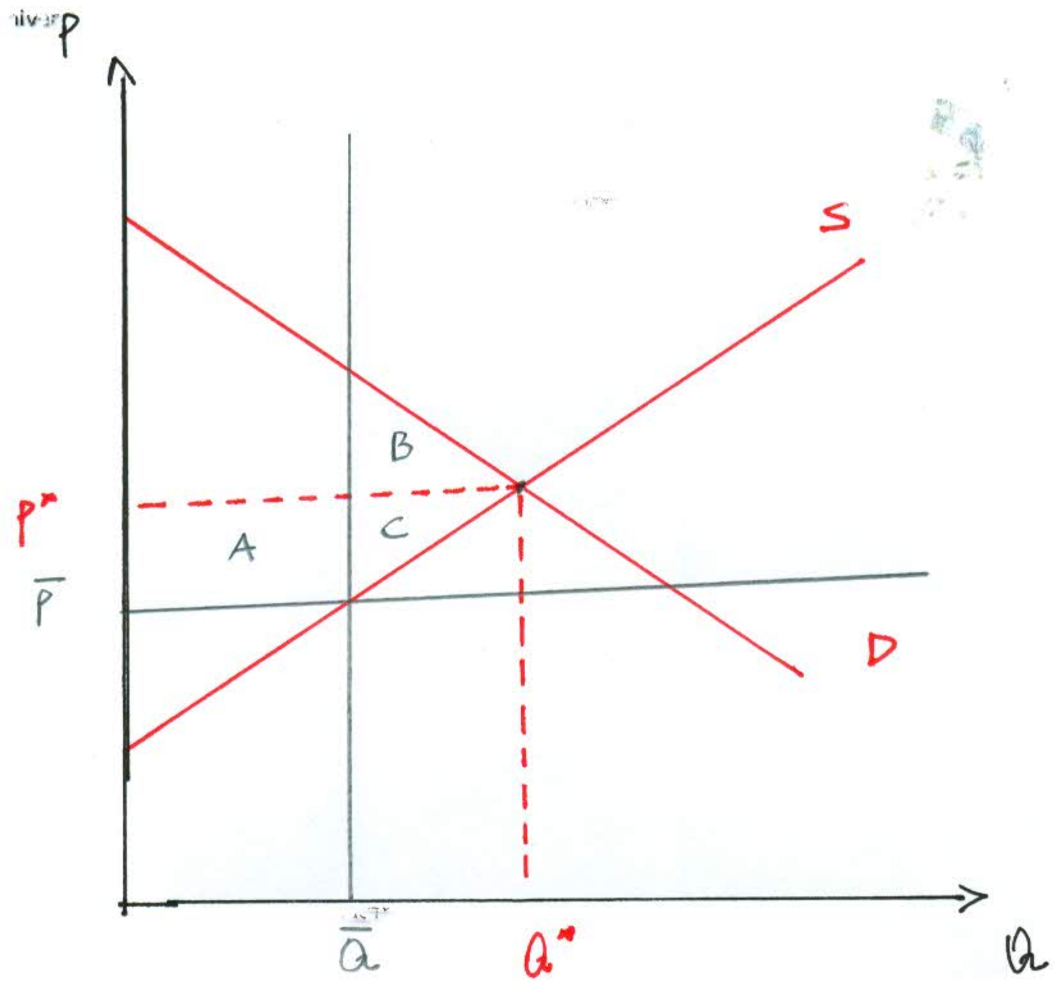
Welfare Economics

First Fundamental Theorem of Welfare Economics:

The competitive equilibrium allocation of resources, where supply equals demand in all markets maximizes social efficiency (i.e., the sum of consumer and producer surplus).

Altimalive Statement:

The competitive equilibriums is Pareto Optimum (i.e., There is no reallocation of resources, such that some individuals in society can be made better off (in terms of utility or welfare), without at the same time some individuals in society becoming worse off.



Departing from maximum social efficiency or Pareto Optimum

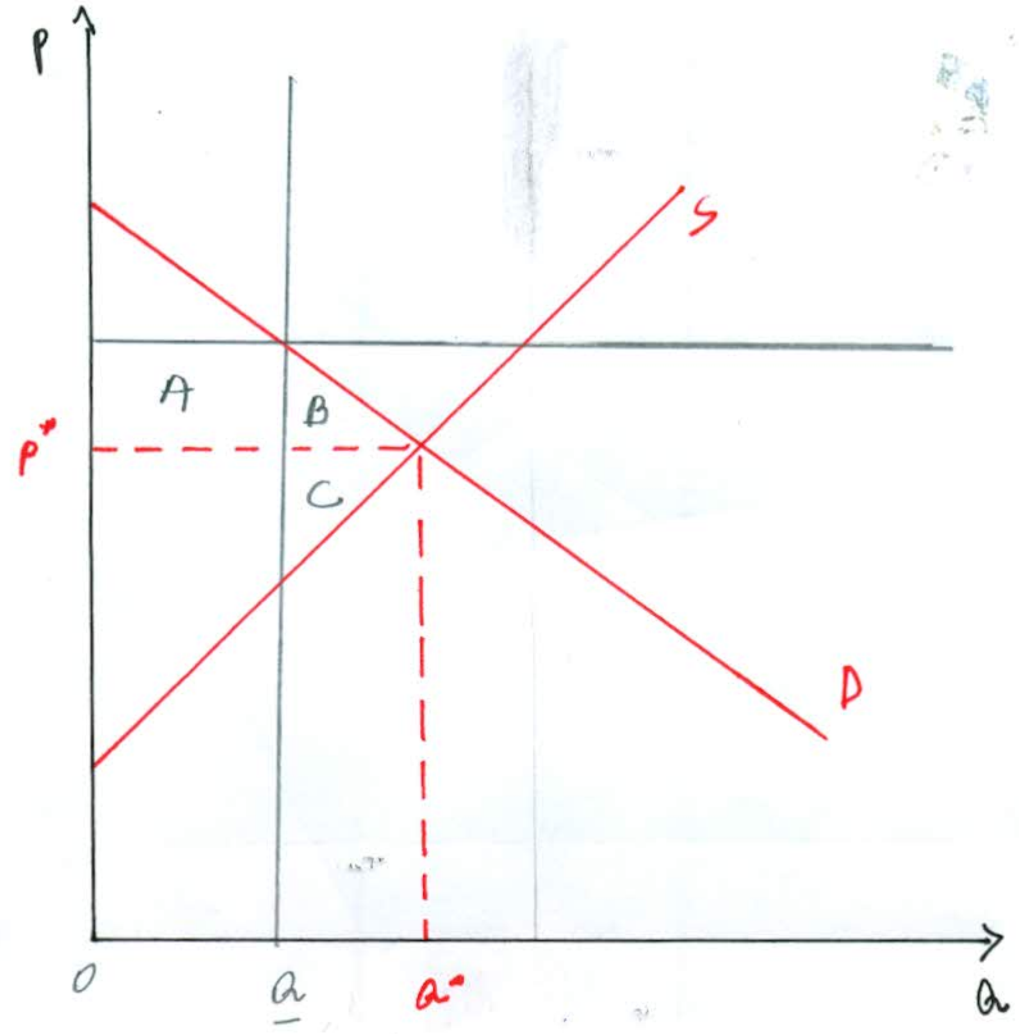
Market equilibrium at (P^*, Q^0)

Price restricted at $\overline{P} < P^*$ (quantity restricted at $\overline{Q}$)

Change in Consumer surplus: $^+$A - B

Change in Producer surplus: -A - C

Change in Total Social surplus: -B – C (Deadweight loss to society)



Market equilibrium at (P^*, Q^0)

Price restricted at $\underline{P} > P^*$ (quantity restricted at $\underline{Q}$

Change in Consumer surplus: -A - B

Change in Producer surplus: +A - C

Change in Total Social surplus: -B – C (Deadweight loss to society)

Remark: The First Fundamental Theorem of Welfare Economics is about social efficiency or maximizing social welfare. It says nothing about the distribution of welfare in society.

Second Fundamental Theorem of Welfare Economics:

Society via a competitive equilibrium allocation can attain any socially efficient outcome (Pareto Optimum), given an appropriate redistribution of resources (initial endowment).

Combining Social Efficiency and Equity

Social welfare function:

SWF = $G(U_1, U_2, \ldots U_N)$

↗ Utility of individual 1

Examples:

Utilitarian SWF :

SWF = $U_1 + U_2 + \ldots + U_N$

Note: Society is indifferent between who gets an additional unit of util, but is not indifferent who gets an additional unit of income

$$\max \quad U_1(Y_1) + U_2(Y_2)$$

$$\text{s.t.} \quad Y_1 + Y_2 = \overline{Y}$$

$$U_1(Y_1) + U_2(\overline{Y} - Y_2)$$

$$MU_1 - MU_2 = 0 \Rightarrow$$

$$MU_1 = MU_2$$

Suppose
$$U_1 = U_2 = U(Y)$$
$$\frac{\Delta U}{\Delta Y} = MU > 0 \;\&\; \frac{\Delta MU}{\Delta Y} < 0$$

Then, if $\overline{Y_1} > \overline{Y_2}$ initially, a utilitarian SWF implies :

$$\left.\begin{array}{ll} \max\limits_{Y_1 Y_2} & U(Y_1) + U(Y_2) \\ s.t & Y_1 + Y_2 + \overline{Y_1} + \overline{Y_2} \end{array}\right\} \Rightarrow$$

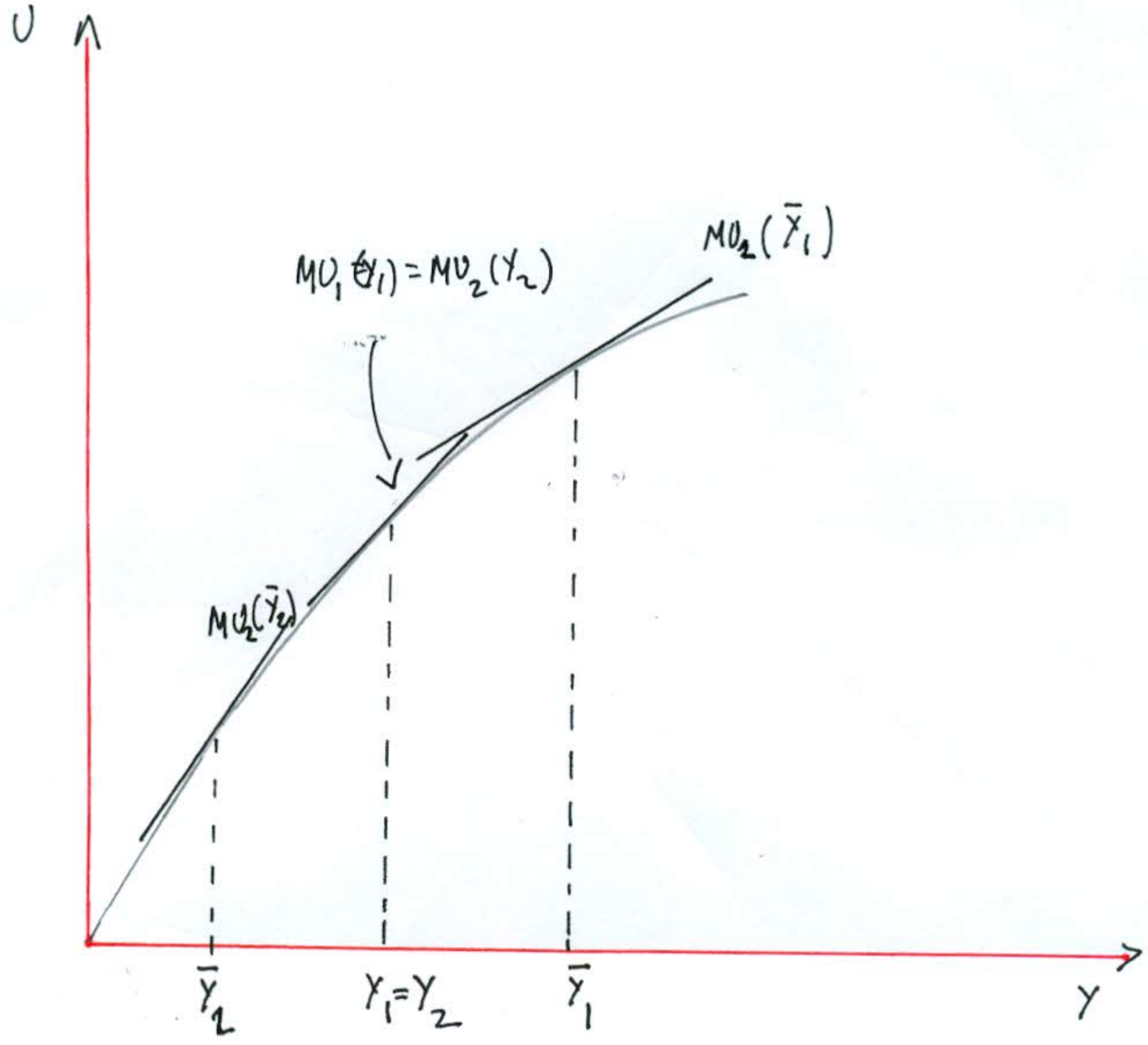
$$\max_{Y} \left[U(Y_1) + U(\overline{Y_1} + \overline{Y_2} - Y_1) \right] \Rightarrow$$

$$MU_1 - MU_2 = 0 \Rightarrow$$

$$MU(Y_1) = MU(Y_2) \Rightarrow$$

$$Y_1 = Y_2$$

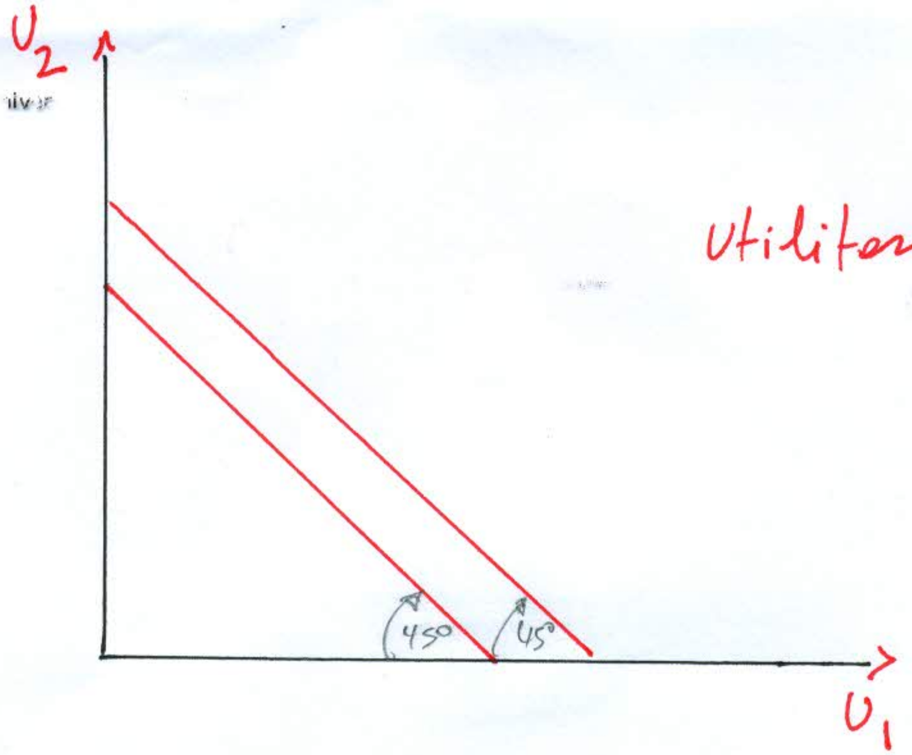
So, there should be a redistribution of $\overline{Y_1} - Y_1$ from 1 to 2. And both individuals should have an income $\dfrac{\overline{Y_1} + \overline{Y_2}}{2}$.

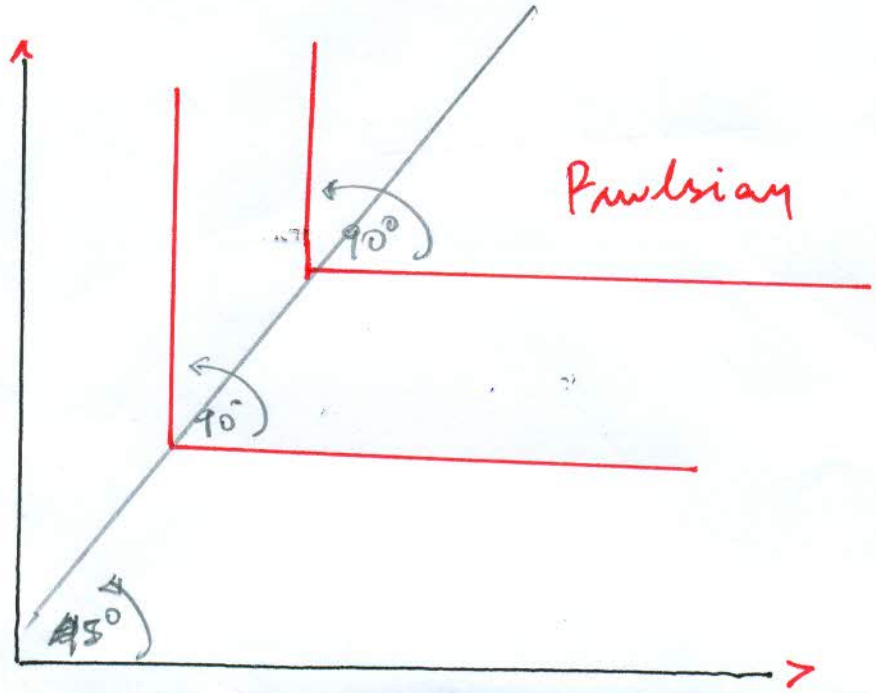


Rawlsian Social Welfare Fruction

$$SWF = \min\{U_1, U_2, \ldots, U_N\}$$

Social Welfare Indifference Curves





Commodity Egalitarianism

Ensure individuals meet some basic needs, but beyond that poin income distribution does not matter.