The Paretian Optimum

Pareto Optimality in Consumption or Exchange and Perfect Competition:

It can be easily shown that Pareto optimality in consumption is automatically achieved under perfect competition. For under perfect competition, the prices P_1 and P_2 of the two goods are given to the consumers, and each utility-maximising consumer equates his MRS of Q_1 for Q_2 to the ratio of the prices of the goods.

That is, for consumer I, we get:

$$\left.\begin{aligned} \frac{\frac{\partial u_1}{\partial q_{11}}}{\frac{\partial u_1}{\partial q_{12}}} &= \frac{p_1}{p_2} \\ \text{and for consumer II we have} \\ \frac{\frac{\partial u_2}{\partial q_{21}}}{\frac{\partial u_2}{\partial q_{22}}} &= \frac{p_1}{p_2} \end{aligned}\right\} \quad (21.17)$$

From (2.17), we have

$$\frac{\frac{\partial u_1}{\partial q_{11}}}{\frac{\partial u_1}{\partial q_{12}}} = \frac{\frac{\partial u_2}{\partial q_{21}}}{\frac{\partial u_2}{\partial q_{22}}}$$

$$\Rightarrow MRS_{Q_1, Q_2} \text{ of consumer I} = MRS_{Q_1, Q_2} \text{ of consumer II.} \quad (21.18)$$

which is nothing but the Pareto-efficiency condition (21.16) or (21.11).

Thus, perfect competition guarantees Pareto-efficiency in the distribution of commodities among the consumers.

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6. Pareto Optimality Conditions when the External Effects are Present:

The marginal condition for a Pareto-efficient distribution of given amounts of two goods (Q_1 and Q_2) between the two individuals (I and II) as given by (21.18) has been obtained on the basis of the assumption that externalities in consumption are absent.

We shall now see that if the external effects are present, the Pareto optimality condition in consumption would generally be different from the marginal condition (21.18).

Let us assume that the external effects are present in consumption in the sense that the utility level of one consumer depends also on the consumption of another.