# The   Paretian   Optimum

The $MRS_{Q1,Q2}$ of the two consumers are equal at their utility maximising points, given the prices of the goods. Let us now assume that there are no external effects for consumer I, i.e., I's utility level is not affected by the consumption of II.

Although, consumer II's utility level is affected by the consumption of consumer I. Let us suppose, as we have done above, that as I consumes more of Q_1, II's utility level declines, i.e., $\partial u_2 / \partial q_{11} < 0$. This is the external effect present here.

(a) The indifference map of consumer I   (b) The indifference map of consumer II
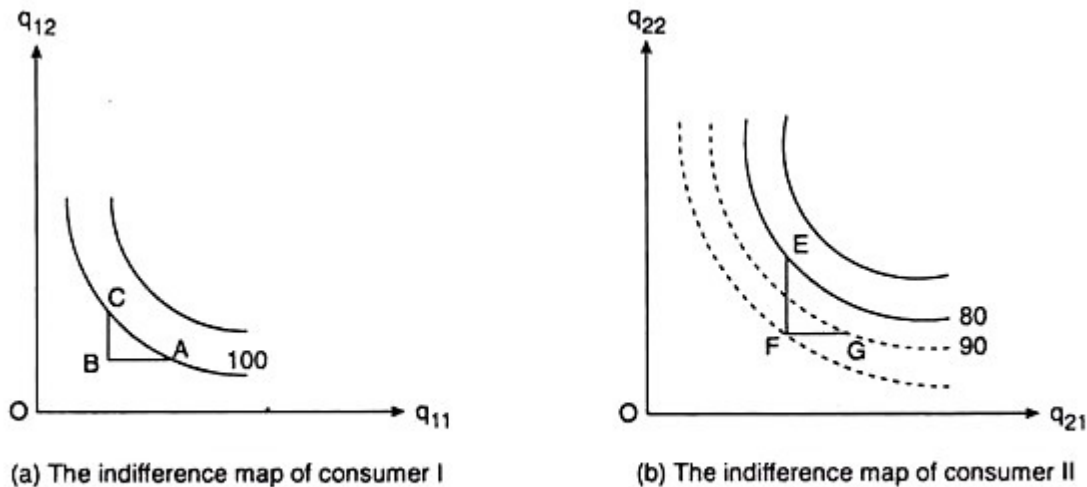
Fig. 21.3 Presence of external effects in consumption

Now, in Fig. 21.3(b), consumer II's indifference curves (solid ones) have been drawn on the assumption that I's consumption is given by combination A. In their individual equilibrium situations, consumer I's utility index is 100 and that of II is 80.

Let us now redistribute the commodities between the two individuals such that their aggregate quantities remain unchanged and I moves to point C having less of Q_1 and more of Q_2 and II moves to point G having more of Q_1 and less of

Q_2 (AB = FG and BC = EF). The utility level of consumer I has not changed because of this redistribution—he remains on the same IC.

However, since consumer I's consumption of Q_1 has decreased, consumer II's preference- indifference pattern would be affected. His new ICs are given by the dotted curves. Also, at the point G, consumer II's utility level has increased to 90 since I is now consuming less of Q_1.

Therefore, by means of the redistribution, we have been able to raise II's utility level, I's level remaining constant. That is, the initial equilibrium positions at A and E where the MRS of the consumers had been equal, were Pareto non-optimal. Therefore, we have seen that equality of MRS of the two consumers does not ensure Pareto optimality.

In the present equilibrium situations, the MRS of consumer I has increased since he has moved north-westward along the same IC, and the MRS of II has decreased since he has moved southeastward, not along the same IC, but along an almost parallel IC.

That is, if the said external effect is present, consumer II's MRS would be less than that of consumer I. This result we have already obtained in the mathematical analysis given above.