

GENERAL EQUILIBRIUM – EDGEWORTH BOX AND WELFARE ECONOMICS

Problem #1

Is it true that if two consumers have identical preferences, then the contract curve linking all efficient allocations is a straight line?

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Paul's utility function is given by the formula $U_P(x_{P1}, x_{P2}) = x_{P1}^{1/3} x_{P2}^{2/3}$ and John's utility function is $U_J(x_{J1}, x_{J2}) = x_{J1}^{1/2} x_{J2}^{1/2}$. Paul disposes of an initial endowment $\omega_{P1} = 1$ and $\omega_{P2} = 0$, while for John it is $\omega_{J1} = 0$ and $\omega_{J2} = 1$. Their only income comes from selling some of the initial endowments. Assuming that prices p_1 and p_2 of goods x_1 and x_2 are determined by an impartial arbiter-auctioneer, at what ratio of these prices will the equilibrium for the exchange between Paul and John take place?

Problem #2

Within the Edgeworth box, is the Pareto set always a certain curve, where a given allocation of one good corresponds to precisely one allocation of the other good? Provide a reasoning for your answer.

Problem #3

Is it possible that a consumer is worse-off in a Pareto-optimal situation than in a setting which is not Pareto-optimal? Provide a reasoning for your answer.

Problem #4

A pair of earrings and a necklace are complementary goods for Margaret. For John, who does not really care about harmony, a single earring and a necklace are perfect substitutes and he values a single earring and a necklace identically. There are 4 necklaces and 2 pairs of earrings. From the Edgeworth box it can be seen that allocation (1,2) (i.e. 1 necklace and 2 earrings for Margaret, 3 necklaces and 2 earrings for John) is Pareto-optimal. Find the price ratio and initial allocation of the two goods between John and Margaret, for which the discussed allocation would be the market equilibrium.

Problem #5

Why equilibrium in a market where certain products are supplied by monopolists who do not apply price differentiation is not Pareto-optimal (when demand decreases together with increase in the price)?

Problem #6

Is it possible to prove the Second Theorem of Welfare Economics for a monopolist applying price differentiation?

Problem #7

The value of excess demands in five markets out of seven is equal to zero. What can we say about the remaining two markets?