

Homework Assignment 6

due by Oct. 28th, Friday

Try to provide organized answers, where you are careful to explain what you are doing! Please write your name and discussion section time on your problem set.

Problem from the Workouts book (Bergstrom & Varian (2002)): 10.9

Problem X: Tweedeldum and Tweedeldee consume two goods only: weekday wireless minutes and weekend wireless minutes. Tweedeldum has signed on with a service that gives him 1000 weekday minutes, but no weekend minutes and Tweedeldee has a service that gives him 1000 weekend minutes, but no weekday minutes. If you want to make life easy, assume that weekday minutes cannot be used in the weekend and the other way around.

(a) In a carefully labeled graph, put in the endowment described above together with some preferences for Tweedeldee and Tweedeldum. Draw the preferences in such a way that both Tweedeldee and Tweedeldum prefers 500 weekday minutes and 500 weekend minutes to their initial endowment.

(b) Explain carefully what a competitive equilibrium is in this environment and illustrate how a competitive equilibrium would look like graphically in a NEW GRAPH. Don't change the preferences or the endowment!

(c) Consider the following alternative trading institution. Tweedeldum first suggests an allocation. Then Tweedeldee either agrees, in which case they consume the allocation suggested by Tweedeldum. If Tweedeldee doesn't agree, they both consume their respective endowments. In a new graph, show how Tweedeldum will choose the allocation. Will this trading institution result in a Pareto Optimal equilibrium?

Problem Y: Gunnlaug and Einar are the only persons living on a small island outside Iceland. In the waters outside the island there is only cod (good 1) and herring (good 2) After a day of fishing Gunnlaug has a catch $\omega_G = (5, 5)$, and Einar has a catch $\omega_E = (10, 0)$. The fish can't be stored to the next day, so the equilibrium can be determined without any reference to the future.

(a) Carefully, draw an Edgeworth box where you should be explicit about where the endowment point is in the graph. In this graph you should also sketch some preferences and indicate which points in your graph are better for both Gunnlaug and Einar than the endowment.

(b) In a NEW Edgeworth box, depict a situation with a relative price which is not consistent with (Walrasian) equilibrium because there is excess demand for one of the goods given this price. Explain!

(c) Explain verbally what conditions must hold in an equilibrium and depict an equilibrium in a NEW Edgeworth box. In a few sentences explain how each equilibrium condition can be read off from the graph.

(d) What does it mean for an allocation to be Pareto efficient? Draw a NEW Edgeworth box where you depict the set of ALL Pareto optimal allocations and explain the construction in a few sentences. Is the competitive equilibrium depicted in part b. Pareto efficient? Explain!

Problem Z.1: Find the set of Pareto efficient allocations and draw it on an Edgeworth box for the following 2 person 2 good exchange economy:

$$u_A = x_1^A + \sqrt{x_2^A}, \quad \omega_A = (6, 0)$$

$$u_B = 4x_1^B + x_2^B, \quad \omega_B = (0, 4)$$

Problem Z.2: Find the competitive equilibrium for the following 2 person 2 good exchange economy:

$$u_A = x_1^A x_2^A, \quad \omega_A = (2, 0)$$

$$u_B = (x_1^B x_2^B + 5)^2, \quad \omega_B = (0, 3)$$