

Collegio Carlo Alberto

Economic Principles

Problem Set 7

1. Consider the following Edgeworth box economy. The consumers have identical preferences given by $u^1(x_1, x_2) = u^2(x_1, x_2) = \min\{x_1, x_2\}$. There are 20 units of good 1, and 10 units of good 2. Characterize the set of Pareto-efficient allocations.
2. Consider a two-consumer, two-good exchange economy. The consumers have identical preferences given by $u^1(x_1, x_2) = u^2(x_1, x_2) = x_1x_2$. Their initial endowments are $e^1 = (1, 1)$, $e^2 = (1, 3)$. Compute the Walrasian equilibrium price and allocation.
3. (JR 5.19) An exchange economy has three consumers and three goods. Consumers' utility functions and initial endowments are as follows:

$$\begin{aligned}u^1(x_1, x_2, x_3) &= \min\{x_1, x_2\} & e^1 &= (1, 0, 0), \\u^2(x_1, x_2, x_3) &= \min\{x_2, x_3\} & e^2 &= (0, 1, 0), \\u^3(x_1, x_2, x_3) &= \min\{x_1, x_3\} & e^3 &= (0, 0, 1).\end{aligned}$$

Find the Walrasian equilibrium price and allocation.

4. Compute the Walrasian equilibria of the following two-consumer, two-good economy [HINT: there is more than one]:

$$\begin{aligned}u^1(x_1, x_2) &= \left[(x_1)^{-2} + \left(\frac{12}{37}\right)^3 (x_2)^{-2} \right]^{-1}, \\u^2(x_1, x_2) &= \left[\left(\frac{12}{37}\right)^3 (x_1)^{-2} + (x_2)^{-2} \right]^{-1}, \\e^1 &= (1, 0), \\e^2 &= (0, 1).\end{aligned}$$