

Adv. Micro Theory, ECON 6202-090

Assignment 7, Fall 2010

Due: Wednesday December 8th by 5pm

Directions: Answer each question as completely as possible. You may work in a group consisting of up to 3 members – for each group please turn in only 1 set of answers and make sure all group member names are on that set of answers. All group members will receive the same grade.

1. Consider the problem from class where there is a two consumer, two good, pure exchange economy. Consumers have identical utility functions $u^i(x_1, x_2) = x_1^\rho + x_2^\rho$ where $0 < \rho < 1$. Demand functions for individual i and good j are given by:

$$x_j^i = \frac{p_j^{1/(\rho-1)} y^i}{p_1^{\rho/(\rho-1)} + p_2^{\rho/(\rho-1)}}$$

where p_j is the price of good j and y^i is consumer i 's income. Suppose the initial endowments are $e^1 = (1, \frac{1}{4})$ and $e^2 = (0, \frac{3}{4})$. Normalize p_2 to 1 and show that the Walrasian equilibrium price vector is $p^* = (p_1, p_2) = (1, 1)$ and the Walrasian equilibrium allocation is:

$$\begin{aligned} x_1^1 &= x_2^1 = \frac{5}{8} \\ x_1^2 &= x_2^2 = \frac{3}{8} \end{aligned}$$

meaning that consumer 1 consumes $\frac{5}{8}$ of the amount of goods 1 and 2 while consumer 2 consumes $\frac{3}{8}$ of the amounts of goods 1 and 2.

2. Consider a two consumer, two good exchange economy. The consumers have identical preferences given by $u^1(x_1, x_2) = u^2(x_1, x_2) = x_1 x_2$. Their initial endowments are $e^1 = (1, 1)$, $e^2 = (1, 3)$. Compute the Walrasian equilibrium price and allocations.
3. 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.