General Equilibrium - Problem Set 2
due: classes on the 10th of Dec

Problem 1 (2p) *Consider an exchange economy E with two consumers $1, 2$ and two goods A, B, where consumers have: $u_1(x_1) = \min\{x_1^A, x_1^B\}$ and $u_2(x_2) = x_2^A + x_2^B$. Initial endowment is given by: $\omega_1 = (3, 3); \omega_2 = (5, 5)$. Find the core of this economy and allocation in the Walrasian Equilibrium.*

Problem 2 (2p) *Consider an economy with two goods x, y and infinitely many consumers $I = [0, 1]$, each i-th with preferences given by $u_i(x, y) = x^i y^{1-i}$. Endowment if each consumer is given by $(2, 2)$.*

- *Assume prices sum up to one. Derive demand of consumer i as a function of i and p_x, p_y.*
- *Compute equilibrium prices.*
- *Find equilibrium allocation for each i-th consumer.*

Problem 3 (2p) *Consider an exchange economy with two consumers (and subjective probability) and a single consumption good in two states of the world. Consumer i has a von N-M utility: $\pi_i \ln(x_{1,i}) + (1 - \pi_i) \ln(x_{2,i})$. Probabilities are, hence, subjective. Let the initial endowment be: $\omega_1 = (1, 0)$ and $\omega_2 = (0, 1)$. Find*

- *an Arrow-Debreu competitive equilibrium for this economy. Explain, how equilibrium prices depend on subjective π_i.*
- *a Radner equilibrium (as analyzed in class, i.e. with 2 dates, and Arrow securities).*

Are the equilibrium allocations of goods x^* the same? How about prices p^*?

Problem 4 (2p) *Consider an exchange economy with two consumers (and objective probability) and a single consumption good in two states of the world. Consumer i has a von N-M utility: $\pi \ln(x_{1,i}) + (1 - \pi) \ln(x_{2,i})$. Probabilities are, hence, subjective. Let the initial endowment be: $\omega_1 = (1, 0)$ and $\omega_2 = (0, 2)$. There is an aggregative risk. Find*

- *an Arrow-Debreu competitive equilibrium for this economy. Explain, how equilibrium prices depend on subjective π_i.*
- *a Radner equilibrium (as analyzed in class, i.e. with 2 dates, and Arrow securities).*

Why, even if $\pi = 0.5$ the equilibrium prices of both goods are not the same? Explain.

Problem 5 (2p) *Consider an exchange economy with two consumers and a single consumption good in two states of the world ($s = 1$ or $s = 2$). Consumer i has a utility: $\min_{s=1,2}\{\pi_i(s) \ln(x_{s,i})\}$. Let the initial endowment be: $\omega_1 = (1, 0)$ and $\omega_2 = (0, 2)$. There is an aggregative risk. Find an Arrow-Debreu competitive equilibrium for this economy. Explain, how equilibrium prices depend on subjective $\pi_i(s)$.*