Problem Set 1: Due in class Tuesday, March 21, 2006

1. Not quite odds and evens

Consider an economy consisting of a large and equal number (each of mass 1) of two types of infinitely lived agents. There is a single non-storable type of consumption good. 

Type 1 agents receive the endowment stream \( \{y^1_t \}_{t=0}^{\infty} \) with
\[
y^1_t = \{1, 1, 0, 1, 1, 0, 1, 1, 0, 1, 1, 0, 1, 1, 0, 1, 1, 0, 1, 1, 0, 1, 1, 0, ... \},
\]

while type 2 agents receive the endowment stream \( \{y^2_t \}_{t=0}^{\infty} \) with
\[
y^2_t = \{0, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, ... \}.
\]

Agents of type \( i \) wish to maximize: \( \sum_{t=0}^{\infty} \beta^t lnc^i_t \), \( i = 1, 2 \), \( \beta \in (0, 1) \) where \( c^i_t \) is the time \( t \) consumption of the single good by an agent of type \( i \).

(a) Define an Arrow-Debreu competitive equilibrium for this economy. Who trades with whom when?

(b) Compute all the prices and quantities for a complete markets competitive equilibrium.

2. Ljungqvist-Sargent, page 935, Exercise 25.6

3. Ljungqvist-Sargent, page 937, Exercise 25.9