Econ 201B: Problem Set VI

Due on March 9, 2012

1. **Electoral Competition with Sequential Entry**

   Consider a model of electoral competition with sequential entry where n potential candidates choose their positions $x_1, .., x_n$ from $[0, 1]$ or decide to stay out from the election sequentially. This is an extensive game with perfect information: every candidate's choice is publicly observable. Voters are distributed uniformly on $[0, 1]$. Voter $i \in [0, 1]$ votes for the candidate whose position is closest to i. The winner is the one who gets the largest number of votes. The winner is randomly selected in the case of a tie. A candidate's payoff is 10 if she wins, -1 if she loses, and 0 if she stays out.

   (a) Find a subgame perfect equilibrium when $n = 2$.

   (b) Find a subgame perfect equilibrium when $n = 3$.

2. **Alternative Offer Bargaining with Three Players**

   Three players are bargaining to allocate $V > 0$. Let $X = \left\{ x \in \mathbb{R}^3 | \sum_{i=1}^{3} x_i \leqq V \right\}$ be the set of all feasible allocations. The bargaining game proceeds as follows. In period $3n + k$ ($n = 0, 1, 2, ..$), player k makes a proposal $x \in X$, then player $k + 1$ (modulo 3) accepts or rejects it, and finally player $k + 2$ (modulo 3) accepts or rejects it. If x is accepted by both, then x is implemented. If either one rejects, then the game proceeds to period $3n + k + 1$. Find a stationary subgame perfect equilibrium: a SPE in which each player's proposal is always the same and each player's acceptance rule is always the same (a player's acceptance rule can depend on whether he responds first or second). Also show that it is the unique subgame perfect equilibrium in this class.