Advanced Microeconomics
(Economics 104)
Fall 2007
Problem Set III
More on strategic games and maxminimization

- Let G be a 2×2 strategic game with game matrix

$$A = \begin{matrix} a_{11}, b_{11} & a_{12}, b_{12} \\ a_{21}, b_{21} & a_{22}, b_{22} \end{matrix},$$

  and consider the game G' with game matrix A'which is derived from G by changing player 1's payoffs while keeping player 2's payoffs the same as they were in G. That is,

$$a_{ij} \neq a'_{ij} \text{ and } b_{ij} = b'_{ij}$$

  for any $i, j = 1, 2$.

- Let p be a mixture over player 1's strategies and q be a mixture over player 2's strategies. Suppose that (p, q) is the unique equilibrium of G and (p', q') is the unique equilibrium of G'.

  (i) Suppose that both equilibria are completely mixed. What can be said, if anything, about the relationship between (p, q) and (p', q')?

  (ii) Suppose that both equilibria are pure. What can be said, if anything, about the relationship between (p, q) and (p', q')?

- Find player 1's max min and min max pure strategies in the following zero-sum game: $A_1 = A_2 = [0, 1]$ and

$$u_1(a_1, a_2) = a_1 + 2a_2 - 4a_1a_2 + 1$$

  where $a_1 \in A_1$ and $a_2 \in A_2$.

- All other questions are from O chapter 11.

363.1 (max min in a bargaining game)
363.3 (Finding the max min)
364.2 (NE payoffs and max min payoffs)
365.1 (NE payoffs and max min payoffs)
366.2 (Determining strictly competitiveness)
369.2 (NE payoffs in symmetric game)
370.2 (max min in BoS)
372.1 (Increasing payoffs and eliminating actions)
372.2 (NE in strictly competitive game)