

Stat/Econ 473 Game Theory
Problem Set 7

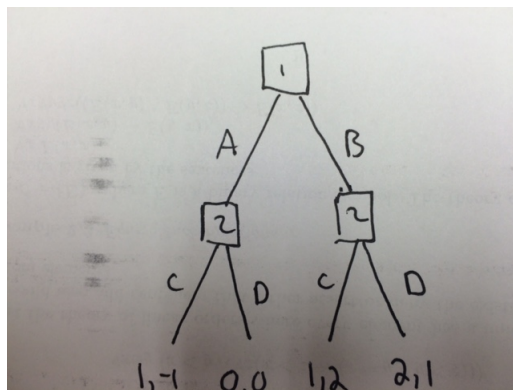
Due: Thursday March 10

From the Text: Do problems: 14.10, 14.11-14.13

Comments a) For 14.10 you may use your analysis from 4.8)-4.11 on problem set 2 and 5.7-5.9 problem set 3.

b) For Problem 14.13) just give an example of a subgame perfect equilibrium where (U,R,E) is played in the first game.

1) Consider the following extensive game.



Let σ be a mixed strategy for Player 2 where Player 2 uses CC with probability .3, CD with probability .1, DC with probability .4 and DD with probability .2.

a) Find an equivalent behavioral strategy τ . Under τ what is the probability Player 2 plays C if Player 1 plays A. Under τ what is the probability Player 2 plays C if Player 1 plays B.

b) Show that $v_2(A, \sigma) = v_2(A, \tau)$ and $v_2(B, \sigma) = v_2(B, \tau)$.

c) Let $\hat{\tau}$ be the behavioral strategy where: i) if Player 1 plays A, then Player 2 plays C with probability .5 and ii) if Player 1 plays B, then Player 2 plays C with probability .7. Find an equivalent mixed strategy $\hat{\sigma}$.

2) We play the following game twice.

	L	C	R
T	10,10	2,12	0,13
M	12,2	5,5	0,0
B	13,0	0,0	1,1

a) In the extensive form of the repeated game how many subgames are there (not counting the full game)? .

b) Describe pure strategies σ for Player 1 and τ for Player 2, such that (σ, τ) is a subgame perfect equilibrium and both Players make the same move in the second game that they made in the first game. How many such equilibria are there?

c) Let $\hat{\sigma}$ be the strategy of Player 1—play T in the first game and if the outcome of the first game is (T,L) play M in the second game, otherwise play B. Let $\hat{\tau}$ be the strategy for Player 2—play L in the first game, if the outcome of the first game is (T,L) play C in the second game otherwise play R. Argue that $(\hat{\sigma}, \hat{\tau})$ is a subgame perfect equilibrium.

d) Is there a subgame perfect equilibrium where (T,L) is played in the second game?