

Experimental Economics I: Behavioral Game Theory Homework (18S)

For BGT5

1. Consider the game below, where player 1 moves first and can earn 9.75 for himself by choosing L (giving 3 to player 2). Or she can choose R, putting player 2 on the move.
 - a. What is the SPE of this game?
 - b. Now, give that Player 1 believes Player 2 will have a chance of “p” choosing r, after observing Player 1 chose R. What is the value of “p” that makes Player 1 indifferent between choosing L and R?
 - c. What do you think would happen when real people play this game?

		Player 2	
		l	r
Player 1	L	9.75, 3	
	R	3, 4.75	10, 5

2. Consider the game below, where player 1 can move T and end the game with payoff (4, 4), or put player 2 on the move. Player 2 can then end the game with T, yielding (0, 1), or else they play a simultaneous game.
 - a. What is the SPE of this game?
 - b. What do you think would happen when real people play this game?

		Player 2	
		M	B
Player 1	T	4, 4	
	P	0, 1	
		M	B
		6, 3	0, 0
		0, 0	3, 6

3. (**Centipede Game**) Consider the game below, where agent 1 and 2 take their action in turn. E.g. agent 1 moves first and can end the game by T, or choose P to pass the game to agent 2 where agent 2 face the same choice.

	1	2	1	2	6.40
		P	P	P	1.60
	T	T	T	T	
	0.40	0.20	1.60	0.80	
	0.10	0.80	0.40	3.20	

- a. What is the SPE of this game?

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- b. What do you think would happen when real people play this game?
4. **(Mechanism Design)** Consider a pure coordination game where 2 agents both get 1.2 if they chose Red, 0.6 if they both chose Blue, and 0 otherwise.
- What is the NE of this game?
 - Now, if we divide all payoffs by T, and play the game for T period. Meanwhile, the first agent who plays Red gets a fine F ($> (1.2)/T$). What is the SPE of this game?
 - What do you think would happen when real people play the games described in (a) and (b)?
5. **(Dirty face Game)** Two agents each has a probability of 0.8 to be type X; 0.2 to be type O. They can only see the other person's type and are commonly told that at least one of them is type X. Both agents choose Up or Down (reveals that s/he is type X) simultaneously in each period, if nobody choose Down, they will observe the other person's choice and move to the next period. Consider the cases below.
- One of them is type X, and the other is type O. What would the SPE outcome be in the first period?
 - Both player are type X. What would the SPE outcome be in the first period? Second Period?
 - What do you think would happen when real people play the games described in (a) and (b)?

		Type	
		X	O
Probability		0.8	0.2
Action	Up	\$0	\$0
	Down	\$1	-\$5