

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

For BGT1

1. **Ultimatum Games:** Paul the Proposer and Rachael the Respondent divide \$10.

Paul proposes how to split the money between the two of them, and Rachael decides to accept or reject. If Rachael accepts, the money is divided accordingly; if Rachael rejects, both earn zero. Find the SPE when the set of possible offers is:

- a. $A_p = \{(P, R): (9.99, 0.01), (9.98, 0.02), (9.97, 0.03), \dots, (0.01, 9.99)\}$.
- b. $A_p = \{(P, R): (10, 0), (9, 1), (8, 2), \dots, (0, 10)\}$.
- c. What do you think would happen when real people play this game?

2. ***p*-Beauty Contest Game:** 25 students each guesses a number between 0 and 100.

The winner is the one who guesses closest to two thirds of the average of all guesses.

- a. What is the NE of this game? Is it unique? Why or why not?
- b. What would happen when real people play this game for the first time?
- c. What if people played this game repeatedly for 10-20 rounds?

3. **Continental Divide Game:** Seven people each choose 1-14; payoff depends on one's choice and the median choice (See table below).

- a. What is the NE of this game? Is it unique? Why or why not?
- b. What would happen when real people play this game for the first time?
- c. What if people played this game repeatedly for 10-20 rounds?

You\Median	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	45	49	52	55	56	55	46	-59	-88	-	-	-	-135	-142
2	48	53	58	62	65	66	61	-27	-52	-67	-77	-86	-92	-98
3	48	54	60	66	70	74	72	1	-20	-32	-41	-48	-53	-58
4	43	51	58	65	71	77	80	26	8	-2	-9	-14	-19	-22
5	35	44	52	60	69	77	83	46	32	25	19	15	12	10
6	23	33	42	52	62	72	82	62	53	47	43	41	39	38
7	7	18	28	40	51	64	78	75	69	66	64	63	62	62
8	-13	-1	11	23	37	51	69	83	81	80	80	80	81	82
9	-37	-24	-11	3	18	35	57	88	89	91	92	94	96	98
10	-65	-51	-37	-21	-4	15	40	89	94	98	101	104	107	110
11	-97	-82	-66	-49	-31	-9	20	85	94	100	105	110	114	119
12	-133	-117	-100	-82	-61	-37	-5	78	91	99	106	112	118	123
13	-173	-156	-137	-	-96	-69	-33	67	83	94	103	110	117	123
14	-217	-198	-179	-	-	-	-65	52	72	85	95	104	112	120