



课程名称: Game Theory 实验日期: _____ 年 _____ 月 _____ 日
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Problem. 1. Bayesian Hawk-Dove Game.

①

	HH	HD	DH	DD
H	$-2(1-p), 2(1-p)$	$6(1-p), 1-p$	$6p-2(1-p), p+2(1-p)$	$6, 1$
D	$1, 6$	$p+3(1-p), 6p+3(1-p)$	$3p+1-p, 3p+6(1-p)$	$3, 3$

②

	HH	HD	DH	DD
H	$2p, 2-2p, \underbrace{6-6p}_{1-p}$	$\underbrace{8p-2}_{1-p}, \underbrace{2-p}_{\textcircled{6}}$	$\textcircled{6}, 1$	
D	$(1, 6)$	$\underbrace{3-2p}_{1}, \underbrace{3+3p}_{1}$	$\underbrace{1+2p}_{1}, \underbrace{6-3p}_{1}$	$3, 3$

For player 1 & 2 ~~DD~~ mark out the best response.

(D, HH) is always a NE.

the NE (H, DH) exists only when $8p-2 \geq 1+2p$, or $p \geq \frac{1}{2}$.

Problem. 2. Bayesian Public Good.

a. Payoff matrix.

	WW	WS	SW	SS
W	(12, 8-2p)	14p-2, 12p-6	12-14p, 8+2p	-2, 16p-6
S	10, 4-6p	10p, -2	10-10p, 4-4p	0, -2p

b.c.d $P = \frac{1}{2}$.

player 1's best response is:

$$WW \rightarrow W, WS \rightarrow W, S \quad \cancel{SW} \rightarrow W, S \quad SS \rightarrow S$$

player 2's best response is:

$$\begin{array}{ll} \text{Standard: } & W \rightarrow S, S \rightarrow S \\ \text{Giving: } & W \rightarrow W, S \rightarrow W, \Rightarrow \begin{array}{l} W \rightarrow SW \\ S \rightarrow SW \end{array} \end{array}$$

So the bayesian NE is: $(W, SW) (S, SW)$.

e. Easy to find that SW is a strictly dominant strategy.

$$P > \frac{1}{2}, \text{ NE is } (S, SW)$$

$$P < \frac{1}{2}, \text{ NE is } (W, SW)$$

f.

	W	S
W	(12, 8-2p)	-2, 16p-6
S	10, 4-6p	0, 2p-2

NE is (W, W) .

$$S \quad 10, 4-6p \quad 0, 2p-2$$