Activity: Finitely Repeated Game

Econ 305

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# of times

Consider the game $G(2, 1)$ where the stage game G is:

δ = discount factor

		q	$1-q$	
		L	C	~~R~~
p	T	3,1	0,0	~~5,0~~
$1-p$	M	2,1	1,2	~~3,1~~
	~~B~~	~~1,2~~	~~0,1~~	~~4,4~~

What are the Nash equilibria of G?

$p + 1 - p = 2(1-p)$

$p = \frac{1}{2}$

$3q = 2q + 1 - q$

$q = 1/2$

$(T, L), (M, C), \left(\frac{1}{2}T + \frac{1}{2}M, \frac{1}{2}L + \frac{1}{2}C\right)$

$\left(3/2, \frac{1}{2}\right)$

$4, 4$

$4 + 3 = 7$

$4 + 1 = 5$

Construct a SPE of $G(2, 1)$ in which (B, R) is played in the first stage.

$$(s_1, s_2) = \begin{cases} (B, R) & \text{in stage 1} \\ \underline{(T, L)} & \text{in stage 2 if } \underline{(B, R)} \text{ played in stage 1} \\ \underline{(M, C)} & \text{in stage 2 otherwise} \end{cases}$$

Show no deviations in stage 1:

Player 1 has incentive to deviate from (B, R):

- Deviate to T ⇒ Total payoff = 6
- Deviate to M ⇒ Total payoff = 4

∴ no profitable deviation.

Bonus: Argue that there is no SPE of $G(2, 1)$ in which (B, C) is played in the first stage.