

1.

		Player 2		
		L	C	R
Player 1	U	(6, 13)	(9, 8)	(2, 3)
	M	(5, 5)	(8, 12)	(6, 4)
	D	(7, 4)	(11, 6)	(3, 9)

		Player 2		
		L	C	R
Player 1	U	(6, 13)·	(9, 8)	(2, 3)
	M	(5, 5)	(8, 12)·	(6, 4)·
	D	(7, 4)·	(11, 6)·	(3, 9)·

No pure strategy Nash Eq.

Using Iterative Elimination:

For player 1, U is strictly dominated by D , Eliminate U

		Player 2		
		L	C	R
Player 1	M	(5, 5)	(8, 12)·	(6, 4)·
	D	(7, 4)·	(11, 6)·	(3, 9)·

For player 2, L is strictly dominated by C , Eliminate L

		Player 2	
		C	R
Player 1	M	(8, 12)·	(6, 4)·
	D	(11, 6)·	(3, 9)·

No further elimination is possible.

Find the mixed strategy Nash equilibrium

$$\begin{aligned} \mathbb{E}_1 \{M\} &= \mathbb{E}_1 \{D\} \\ 8\beta + 6(1 - \beta) &= 11\beta + 3(1 - \beta) \\ \beta &= \frac{1}{2} \end{aligned}$$

$$\begin{aligned} \mathbb{E}_2 \{C\} &= \mathbb{E}_2 \{R\} \\ 12\alpha + 6(1 - \alpha) &= 4\alpha + 9(1 - \alpha) \\ \alpha &= \frac{3}{11} \end{aligned}$$

$$\left\{ \left(\begin{array}{l} U \text{ with prob } \frac{3}{11} \\ D \text{ with prob } \frac{8}{11} \end{array} \right), \left(\begin{array}{l} L \text{ with prob } \frac{1}{2} \\ R \text{ with prob } \frac{1}{2} \end{array} \right) \right\}$$

2.

Player 3	F	Player 2	
		L	R
Player 1	U	$(1, 9, 4)$	$(2, 6, 2)$
	D	$(5, 2, 2)$	$(3, 8, 7)$

Player 3	S	Player 2	
		L	R
Player 1	U	$(3, 6, 11)$	$(6, 2, 5)$
	D	$(5, 4, 5)$	$(3, 6, 4)$

No players have strictly dominant strategies

Pure strategy Nash equilibrium:

$$\{D, R, F\}$$