

Chapter 10

Strategic Behaviour

Exercise 10.1 Table 10.1 is the strategic form representation of a simultaneous move game in which strategies are actions.

	s_1^b	s_2^b	s_3^b
s_1^a	0, 2	3, 1	4, 3
s_2^a	2, 4	0, 3	3, 2
s_3^a	1, 1	2, 0	2, 1

Table 10.1: Elimination and equilibrium

1. Is there a dominant strategy for either of the two agents?
2. Which strategies can always be eliminated because they are dominated?
3. Which strategies can be eliminated if it is common knowledge that both players are rational?
4. What are the Nash equilibria in pure strategies?

Outline Answer:

1. No player has a dominant strategy.
2. Both s_3^a and s_2^b can be eliminated as individually irrational.
3. With common knowledge of rationality we can eliminate the dominated strategies: s_3^a and s_2^b .
4. The Nash Equilibria in pure strategies are (s_2^a, s_1^b) and (s_1^a, s_3^b)

Exercise 10.2 Table 10.2 again represents a simultaneous move game in which strategies are actions.

	s_1^b	s_2^b	s_3^b
s_1^a	0, 2	2, 0	3, 1
s_2^a	2, 0	0, 2	3, 1
s_3^a	1, 3	1, 3	4, 4

Table 10.2: Pure-strategy Nash equilibria

1. Identify the best responses for each of the players a , b .
2. Is there a Nash equilibrium in pure strategies?

Outline Answer

1. For player A the best reply is s_2^a if player B plays s_1^b , s_1^a if B plays s_2^b , s_3^a if B plays s_3^b . For player B the best reply is s_1^b if A plays s_1^a , s_2^b if A plays s_2^a , s_3^b if A plays s_3^a
2. The unique Nash Equilibrium is (s_3^a, s_3^b)