Week 10

Oligopoly

Classroom exercises: Exercises 10.1 to 10.5

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Classroom exercises

Exercise 10.1 (Final exam 05.01.2010/ EM.10)

One feature of an oligopoly is:

a) Interdependence between the the oligopolists' decisions.
b) Existence of only two firms.
c) Absence of competition among the firms.
d) Firms choose quantities and not prices.

Exercise 10.2 (Recourse-period exam 29/01/2008)

Consider the game between two players shown in the payoff matrix below. The dominant strategy equilibrium in this game is:

		Player 2	
		L	**R**
Player 1	**U**	**10, 20**	**5, 8**
	D	**5, 10**	**4, 9**

Note: each cell in the matrix shows player 1's payoff first, then player 2's payoff

a) The pair of strategies (D, L).
b) The pair of strategies (U, L).
c) The pair of strategies (D, R).
d) The pair of strategies (U, R).

Exercise 10.3 (Normal-period exam 10-01-2008)

The payoff matrix below shows a game between players 1 and 2, who can choose to play X or Y. What conditions must the payoff parameters obey so that Y is a dominant strategy for player 1?

		Player 2	
		X	**Y**
Player 1	**X**	**a , b**	**c , d**
	Y	**e , f**	**g , h**

Note: each cell in the matrix show player 1's payoff first, then player 2's payoff.

a) $e>g \wedge f>g$.
b) $e>a \wedge g>c$.
c) $e>a \wedge f>b$.
d) $d>b \wedge h>f$.

Exercise 10.4

In the following payoff matrix for what values of *a* and *b* is there an equilibrium in dominant strategies. Explain.

		Player 2	
		X	**Y**
Player 1	**X**	**2, 0**	**3, -2**
	Y	**5, 1**	***a, b* + 1**

Exercise 10.5 (Exam 09-01-2012)

At a school in Copyland teachers found two exams with identical answers. Two find the culprits teachers questioned the two pupils separately to prevent communication between them. The matrix below shows the months suspension the pupils will get depending on what they do.

		Bruno	
		Does not tell anything	**Tells the truth**
Anne	**Does not tell anything**	3, 3	6, 1
	Tells the truth	1, 6	4, 4

a) All other alternatives are correct.
b) There are dominant strategies in this game.
c) This is a non-cooperative game.
d) There is a Nash equilibrium in this game.

Home exercises

Exercise 10.6 (Normal-period exam 06-01-2009, E.M 10)

For what values of the parameter z will there be an equilibrium in dominant strategies?

		Player 2	
		X	**Y**
Player 1	**X**	**3 , 3**	**1 , z**
	Y	**4 , 2**	**4 , 4**

a) $z \leq 4$.
b) $z = 4$.
c) $z > 3$.
d) (Y,Y) is not a noncooperative solution for any value of z.

Exercise 10.7 (Final exam 06.09.2007/ EM.10)

In a prisoners' dilemma game the pair of dominant strategies will be the solution of the game:

a) Always.
b) Only when players do not cooperate with each other
c) Only when players cooperate with each other.
d) None of the above is correct.

Exercise 10.8

Firms *A and B* are the only sellers in a market. Each firm can sell either type *M* or type *I* computers. The matrix below shows the firm's profits (in each cell the number on the left-hand side are firm *A*' profits), which depend on what type of computer both sell.

		Firm *B*	
		M	***I***
Firm *A*	***M***	**300, 800**	**700, 700**
	I	**500, 500**	**800, 300**

a) Find and categorise the noncooperative equilibrium in this game.
b) Is there any other pair of strategies that would earn both firms higher profits? Explain. If such a pair exists in what conditions could that outcome be achieved?

Exercise 10.9 (Exam 5-01-2010)

The payoff matrix below shows the profits the firms will earn depending on their strategies. Each firm strives to maximise its profits. What values of *x* and *y* will make the pair of strategies (*B, C*) an equilibrium in dominant strategies?

		Firm 2	
		Strategy *C*	**Strategy *D***
Firm 1	**Strategy *A***	**2 , 4**	***x* , 3**
	Strategy *B*	**3 , *y***	**2 , 1**

a) $x > 2$ and $y < 1$
b $x < 2$ and $y > 1$.
c) $x > 1$ and $y < 2$.
d) $x < 1$ and $y > 2$.