Prof. Dr. Johannes Brumm
Prof. Dr. Karl-Martin Ehrhart
Prof. Dr. Nora Szech

Advanced Game Theory
Wintersemester 2016/2017
Problem Set IV

Problem Set IV

4.1 (cf. MAS-COLELL, p.302, 9.B.7)

Consider the finite horizon bilateral bargaining game, but instead of assuming that players discount future payoffs, assume that it costs $c < v$ to make an offer. (Only the player making an offer incurs this cost, and players who have made offers incur this cost even if no agreement is ultimately reached.) What is the (unique) SPNE of this alternative model?

4.2 (cf. MAS-COLELL, p.302, 9.B.9)

Consider a game in which the following simultaneous-move game is played twice:

		Player 2		
		b_1	b_2	b_3
Player 1	a_1	10,10	2,12	0,13
	a_2	12,2	5,5	0,0
	a_3	13,0	0,0	1,1

The players observe the actions chosen in the first play of the game prior to the second play. What are the pure strategy subgame perfect Nash equilibria of this game?

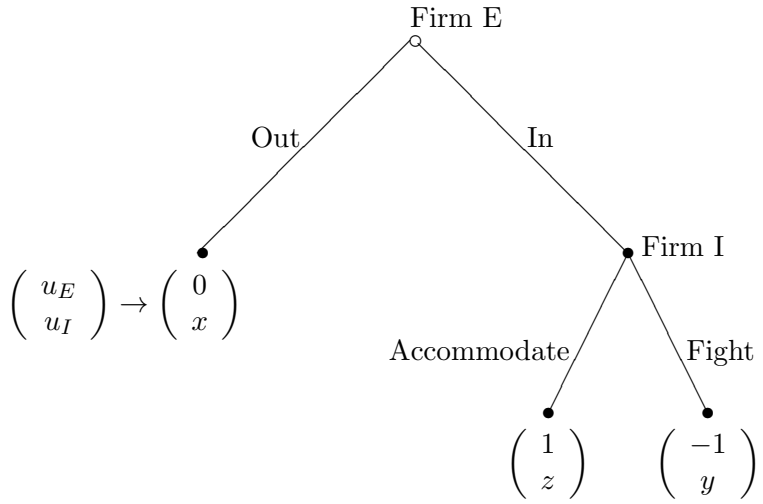
4.3 (cf. MAS-COLELL, p.303, 9.B.14)

At time 0, an incumbent firm (firm I) is already in the widget market, and a potential entrant (firm E) is considering entry. In order to enter, firm E must incur a cost of $K > 0$. Firm E's only opportunity to enter is at time 0. There are three producction periods. In any period in which both firms are active in the market, the game below is played. Firm E moves first, deciding whether to stay in or exit the market. If it stays in, firm I decides whether to fight (the upper payoff is for firm E). Once firm E plays out, it is out of the market forever; firm E earns zero in any period during which it is out of the market, and I earns x. The discount factor for both firms is δ.
Asumme that

(A.1) $x > z > y$.

(A.2) $y + \delta x > (1 + \delta)z$.

(A.3) $1 + \delta > K$.



a) What is the (unique) subgame perfect Nash equilibrium of this game?

b) Suppose now that firm E faces a financial constraint. In particular, if firm I fights *once* against firm E (in any period), firm E will be forced out of the market from that point on. Now what is the (unique) subgame perfect Nash equilibrium of this game? (If the answer depends on the values of the parameters beyond the three assumptions, indicate how.)

Enjoy!

Please direct queries to: `michael.mueller@kit.edu`