

EC3322
Industrial Organization I
Semester 1, 2015-2016
Tutorial #6
SOLUTIONS

2.

		Player 2			
		a,c	b,c	a,d	b,d
Player 1	L,x	3,2	2,1	3,2	2,1
	L,y	1,2	2,1	1,2	2,1
	R,x	1,4	1,4	2,3	2,3
	R,y	1,4	1,4	2,3	2,3

Nash Equilibria: ((L,x), (a,c)) and ((L,x),(a,d))

3. Pre-merger HHI is 2472, and in class we estimated the counterfactual price to be \$.88.

(a) Post-merger $HHI = 4520$, $\Delta HHI = 2048$, $\bar{c} = .74$, $p = 1.04$

(b) Post-merger $HHI = 2864$, $\Delta HHI = 392$, $\bar{c} = .74$, $p = 0.91$

(c) Post-merger $HHI = 2728$, $\Delta HHI = 256$, $\bar{c} = .73$, $p = 0.89$

4. The marginal revenue of firm 1 is

$$MR_1 = 30 - 2q_1 - q_2.$$

Set MR_1 equal to $MC = 0$ and impose symmetry ($q_1 = q_2$) to find the Nash-equilibrium $q_1^* = 10$ and $q_2^* = 10$. Price is $p^* = 10$ and profit per firm is $\pi^* = 100$.

5. (a) Marginal revenue for firm i is $MR_i = 100 - 2q_i - Q_{-i}$, and marginal cost is $MC_i = 2q_i$. The q_i such that $MR_i = MC_i$ is $q_i^* = \frac{100 - Q_{-i}}{4}$. Imposing symmetry, $q_i^* = q^*$ for all i , we find $q^* = \frac{100}{3 + N}$, $Q^* = Nq^* = \frac{100N}{3 + N}$, and $p^* = 100 - Q^* = \frac{300}{3 + N}$. Profit is $\pi^* = p^*q^* - q^{*2} - F = \frac{20000}{(3 + N)^2} - F$.

(b) With entry and exit, firm profit will be driven to zero. Set profit equal to zero and solve for N : $\pi^* = \frac{20000}{(3 + N)^2} - F = 0 \Rightarrow N^* = \sqrt{\frac{20000}{F}} - 3$.