

Homework 14

Due February 13, 2017

Homework will be collected at the end of the lecture on the day it is due. Submissions in any other time or manner will be ignored. The maximum score is 100. Unprofessionally looking papers or unnamed or unstapled sheets or improperly labelled questions or bad handwriting will result to a penalty up to 50% at the discretion of the grader. Plagiarism will be prosecuted and perpetrators will have to solve Goldbach's conjecture in order to pass.

1. Toyonda manufactures cars and Ruscar is the exclusive distributor of those cars in Russia. Every car costs Toyonda c to produce and is sold to Ruscar for w . Ruscar does not incur any costs other than w in the retail process. The inverse demand for cars is $P(q) = a - bQ$ and both companies behave as monopolies regarding their sales.
 - (a) Derive the downstream firm's demand as a function of w . [10p]
 - (b) What profits will both firms make when each maximizes its profit separately? [10p]
 - (c) How does the sum of their profits compare to what they could obtain if they were vertically integrated? [10p]
 - (d) How does consumer welfare compare in the two cases? Offer some economic intuition. [10p]
 - (e) Now suppose that instead of using linear pricing, Toyonda uses a two-part tariff. Calculate the profits for both firms and the consumer surplus. [10p]
 - (f) Does the ability to use a two-part tariff reduce the incentive to vertically integrate? [5p]

2. To produce a homogeneous final good, n manufacturing firms need two complementary technologies, the patents of which are held by two firms, A and B, who separately license the technologies at per unit royalty fees w_A and w_B . The interaction is as follows. At stage 1, A and B simultaneously and independently decide w_A and w_B . At stage 2, the manufacturers compete in a Bertrand way and incur marginal production costs $c + w_A + w_B$, where c is a positive constant. Consumer demand for the final good is $q = 1 - p$.
 - (a) Find the equilibrium levels of royalty fees and the final prices per manufacturer. [15p]
 - (b) Consider now that A and B merge, so that one entity sets both w_A and w_B in stage 1. Find the equilibrium levels of royalties and the final prices. [15p]
 - (c) Calculate the effect of the merger on: (i) the profits of manufacturers (ii) the total revenue from royalties (iii) the surplus of the consumers. [15p]

3. *Solve (2a) assuming that A and B offer perfectly substitute technologies and upstream competition is Bertrand. [0p]

Estimated completion time (for 1 and 2): 100min

Difficulty level (normalized to UoL standards): 1. 3/5; 2. 5/5 3. 6/5