Industrial Economics
Kosmas Marinakis
ICEF - HSE

Practice problem set 1

The firm

This problem set constitutes recommended material for the relevant lab. The choice of tasks to be presented instructionally in every lab is in the discretion of the individual teacher. Students are expected to work on practice problems, however, are not required to submit written solutions. It is non-negotiable policy in this course to not provide hand-outs with the solutions of practice problem sets.

1. Firm A produces an intermediate good used in the production of a final good by firm B, There is only one firm like B but many firms like A. Costs per firm are

$$C_A = I + V, \qquad C_B = p$$

where I is an initial specific investment, V is an avoidable fixed cost and p is the price of the intermediate good.

(a) Assume that A and B sign a contract to cooperate. Find the benefit to each side from the contract assuming that the price of the final good is denoted by p_F.
(b) If the contract is broken by one of the two companies, both will incur costs. $S < I$ is the salvage value of investment and $T > 0$ the termination costs that firm B has to incur. Does A or B have an incentive to break the contract?
(c) Show that this contract will define $p = I + V$.
(d) Show that A can hold B up.
(e) Show that B can also hold up.

Handout 1 – 2015

2. Consider the following model of a vertical relationship between a buyer and a seller. There are two periods and the two parties can, if they wish, trade one unit of an indivisible good in period 2. Let v denote the value of the good to the buyer, c the production cost, and p the trading price. Assume that $c < 1/2$. Both c and v are commonly known at the beginning of period 2. The seller can invest in period 1 to increase the value of the good to the buyer (for instance, he can spend on R&D to increase the quality of the product). In particular, $v(I) = 3I - I^2/2$. The level of investment I cannot be specified in a contract because it is not verifiable and therefore such a contract would not be enforceable in court.

(a) What is the efficient level of investment?
(b) In the absence of any contract, what is the level of investment chosen by the seller if the ex post surplus is to be divided equally between the two parties? Explain why this level is not efficient.
(c) Suppose that the parties sign a contract which gives to the *seller* the right to choose the trading price in period 2 (i.e. after the investment has been made). What will be the level of *I* chosen by the seller? Explain the intuition for this result.

UoL: 2002 za/zb #1 / 2006 za/zb #1

3. As you enter the HSE campus at Shabolovka Ulitsa, on your right hand immediately after the entrance gate, there is an old building. This used to be a residential building. Today it may be vacant and in bad condition but its real estate value is quite significant. This is the only structure in campus that does not belong to HSE. The owner knows that HSE would be very interested in buying this building since it could use it in several ways. He also understands that no one else

(including himself) would be interested in owning a house that is entirely surrounded by someone else's property. Negotiations between HSE and the owner drag for years.

(a) Model this problem and derive the equilibrium outcome.

(b) Comment about the efficiency of the solution you got.

1st Module Examination – 2013

4. Johnny visits a diner and asks for coffee and dessert. The waitress tells him that there is only Apple pie (A) and Banana putting (B). Johnny chooses the Apple pie. After a few minutes, the waitress comes back to Johnny and informs him that she just became aware that they also have Carrot cake (C), if he is interested to change his order. Johnny thinks for a second and changes his order to Banana putting. Does Johnny satisfy rationality according to VNM?

End-module 1 test – October 2016