



## Homework 2

due September 18, 2018

Homework must be on the instructor's desk at K9 by 15:10 sharp. Submissions at any other time or manner will be ignored. Any paper which does not resemble work by a student of a world-class institution (not in A4 sheets, not clean, illegible, unnamed, unstapled, unlabeled tasks, final results not in boxes etc.) will be penalized with up to 50 points at the discretion of the grader. Do not submit your work in plastic covers. Copying in homework will be penalized with a 0 in that assignment and an additional penalty of 10 points in the course homework average. Students who give their homework away for others to copy from will be penalized with 0 in that assignment and a penalty of 30 points in their course homework average. Repeated offenders will be terminated from the course.

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

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

where  $I$  is an initial specific investment,  $V$  is an avoidable fixed cost and  $p$  is the price of the intermediate good. Assume, that the salvage value and termination cost are equal to zero.

- (a) Explain if firm B would be able to hold up A? [25p]
- (b) Explain if firm A would be able to hold up B? [25p]

2. Firm 1 and firm 2 must install a policy  $d$  from a set of possible policies  $D$ . After  $d$  is installed, it will affect the payoff for each firm according to concave functions  $\Pi_1$  and  $\Pi_2$ . Assume that  $d_1$  maximizes  $\Pi_1$ ,  $d_2$  maximizes  $\Pi_2$ ,  $d^*$  maximizes  $(\Pi_1 + \Pi_2)$  and  $d_1 \neq d_2 \neq d^*$ . Also assume that firm 1 is endowed with the right to choose  $d$  and that firm 2 can make a take-it-or-leave-it offer to pay  $t(d)$  to firm 1 in order to induce firm 1 to choose the  $d$  that firm 2 wants.

- (a) Explain how much is  $t(d_1)$  and why the offer is a function of  $d$ . [10p]
- (b) Calculate the value of the right that firm 1 is given. [15p]
- (c) Explain if it is possible for firm 2 to implement  $d_2$ . Assume that if firm 1 is indifferent between accepting an offer or not it will not mind accepting. [25p]

Good afternoon!

Industrial Economics is a course intended to help you *understand* the markets and to make you (finally) *use* the economics you have spent years learning. Therefore, our assignments are not designed to make you *solve* but to make you *think*. Solving will be easy once you figure out what you will have to solve.

Use homework questions to understand the material deeper. Find your answers and try to comprehend what you have found. Compare your results from one part of the problem to the other and see if you can tell how different assumptions affect the result and why. Doing this will exercise your *analytical ability*, which is valuable in the business world. "Feeling the market" is not a *gift*, it is a *skill* that you can work on and develop.

Kosmas