Industrial Economics
ICEF, HSE & UoL
Kosmas Marinakis, Ph.D.
www.kmarinakis.org/ie
https://t.me/icef_industrial

Practice set 2

Investment, technology & concentration

This problem set contains material for the relevant lab. Lab teachers are expected to provide sufficient guidance for the entire problem set. It is in the teacher's discretion to select the most representative tasks to solve instructionally in every lab. For the rest of the tasks, methodology, hints and final answers will be provided. Students are expected to work on practice problems, however, they are not required to submit written solutions. It is a non-negotiable policy in this course to not provide handouts with the solutions of practice problem sets.

1. 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 $c < \frac{1}{2}$. 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, $v(I) = 3I - \frac{I^2}{2}$. 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 /2006 za/zb

2. Consider a buyer and a seller that may trade one unit of an indivisible good. There are two periods. In the first period the seller invests an amount F to buy a plant essential to the production. In the second period production and exchange take place. Let c denote the production cost in period 2 and let $v = c + 100$ be the value of the good to the buyer.
   (a) Derive the efficient allocation.
   (b) Suppose that the amount F can be specified in a contract. Can the efficient allocation be attained by the two parties?
   (c) How does your answer to (b) change if F cannot be specified in a contract? (Assume the ex post surplus is divided equally between the parties).
   (d) Comment and relate your answer to the theory of the firm.

   UoL: 2010 za/zb

3. What are the two possible market structures in an industry, where there are natural barriers to entry but continuous integration will eventually lead firms to diseconomies of scale? What is the key difference between them?

   End-module 2 Exam – December 2016