Industrial Organization

Problem Set #5

Universidade Nova de Lisboa
Faculty of Economics
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Instructions

1. Due date: December 19, 11:30 a.m., exam room.
2. This is **individual work**. Each student has to deliver a solution. The best, and perhaps the only, way to ensure that you understand the material taught in class is to solve these exercises under "exam conditions". One of the advantages of solving these exercises is that they provide a good preparation for the exams.
3. PLEASE **write on the front and back** of each sheet of paper that you use to solve this problem set. It's a waste of paper to write only on one side.

Barriers to Entry

Exercise 1. Firm 1 is the first firm in a given market. Firm 1 can choose between one of two technologies available, A and B. Technologies A and B have, respectively, the following cost functions:

$$C_A = 60 + 2q_1 \quad C_B = 10 + 8q_1$$

The inverse demand curve is $P = 20 - Q$, where Q is total output of industry.
a) Which technology firm 1 would choose if monopoly lasts forever?
b) Suppose that firm 2 is considering the possibility of entry in this market and it can also adopt any of the aforementioned technologies. If firm 2 enters, firms will compete à la Cournot. Knowing this, which technology should firm 1 choose? In this model, what is the effect in welfare of the existence of a potential competitor?

Exercise 2. One firm with marginal and average costs constants and equal to 10 is in a market with demand $P = 100 - Q$. Another firm is considering enter in this market with a technology with marginal and average costs constants and equal to 30 (higher than the costs of the other firm because this firm is starting its activity). The new firm can choose between build a plant with capacity 10 or 100. Assume that firms compete à la Cournot and the possibility of installed firm proceeds aggressively (following a strategy of limit pricing).

a) What capacity should the new firm choose? Why?

b) What is the equilibrium in this market after the entry of the new firm (quantities, prices and profits)?

c) If the firm that is considering entering has access to a technology equal to the technology of the firm already installed, how your previous answers change?