

Homework 15

Due February 20, 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 learn 'The Iliad' by heart in Greek to graduate.

1. An industry with no barriers of entry has market demand $p = a - bQ$. Each firm has a constant marginal cost c . Firms play a two-stage game: in stage 1, they pay a fixed sunk cost F to enter and in stage 2 they compete by quantity or price.
 - (a) Let firms compete in the second stage by simultaneously setting quantities. Find the number of firms (N^*) that will enter at equilibrium. How will N^* and output of the industry (Q^*) be affected by a change in technology that reduces F or, alternatively, reduces c ? [20p]
 - (b) Now assume that in the second stage firms compete by simultaneously setting prices. How would your answers in (a) change? [20p]
 - (c) Discuss how the equilibrium number of firms will be affected if in the second stage firms form a cartel. [20p]

2. A newly appeared industry is characterized by a large number of potential entrants in a market for a homogeneous product. Assume a two-stage game, where in stage 1 firms simultaneously decide whether or not to enter at a cost of entry F , while in stage 2 firms that have entered simultaneously set quantities. The demand function is $Q = S/p$, where Q is the total quantity produced and S is the total expenditure on the product. The marginal cost is constant and equal to c for all firms.
 - (a) Which of the above variables best describes the 'market size' as it is defined in Sutton's analysis? Explain briefly. [5p]
 - (b) Find the equilibrium price, industry profit and profit for each firm. [10p]
 - (c) Examine how each of the results derived in (b) is depended on the number of firms, N . [10p]
 - (d) Find the long-run equilibrium number of firms in the market and examine how it depends on S and F . Provide the economic intuition for these results. [15p]

Estimated completion time: 100 min

Difficulty level (normalized to UoL standards): 1. 4/5 2. 5/5