Homework 8

Due December 12, 2017

Industrial Economics
Kosmas Marinakis
ICEF - HSE

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 pass IE in May 2037.

1. Cafedonia is a 4 km long linear town with 3000 uniformly distributed consumers. Coffee Max, a nationwide coffee-shop chain operates in Cafedonia and sells coffee at a price that is fixed by the national headquarters to \$4 per cup. The regional director of Coffee Max in Cafedonia cannot affect the price but is allowed to choose the number and location of stores.

   To open a new location an investment of \$600,000 is required. At the current price of \$4 each customer buys 2 cups of coffee per week. However, no customer will walk more than 1 kilometer to buy coffee. Marginal cost is \$1 per cup of coffee. The interest rate is 0.6% per week. The market conditions are unchanging, so present discounted profits can be regarded as level perpetuities. (Present discounted profits are equal to weekly profits divided by the weekly interest rate).

   A competitive coffee company, Tasty Coffee, considers entry in Cefedonia. Tasty Coffee has the same cost structure and price with Coffee Max. Consumers also view coffee at the two chains as equally good, so, if both brands are in town, each consumer buys from the closest store.

   (a) Suppose that Coffee Max faces no competition and no threat of entry. How many stores should Coffee Max open, and at which locations? [10p]
   (b) At what locations should Tasty Coffee open stores, given that Coffee Max has opened the locations found to be optimal in part (a)? [20p]
   (c) Recognizing the threat of future entry by Tasty Coffee, at what locations should Coffee Max open stores? [20p]
   (d) How would your analysis of these product location decisions be affected if you also considered the possibility of pricing competition, i.e., if prices were set independently given the locations of the stores (rather than being taken as fixed, as was done above)? [20p]
   (e) Moving beyond this particular model, discuss whether product positioning involves a first-mover advantage, a second-mover advantage, or whether this depends upon particular aspects of the market in question. [10p]

2. Consider a Salop setting where production costs are 1, transportation cost coefficient is 8, density is 16, perimeter is 2 and entry fee is 2. Find the number of firms and the equilibrium price. Prove any formulas you use. [20p]