

Problem Set 10 (due date: 20.01.2014)

1. It is often assumed that in equilibrium firms chose the maximum degree of product differentiation if consumers have heterogeneous preferences.
 - a) Discuss under which assumptions this statement is true. Which effects are decisive for this result?
 - b) Which influence might yield minimal product differentiation in equilibrium?
 - c) What are the socially optimal locations if there are two shops at a linear street on which consumers are uniformly distributed? Assume that consumers face linear transport costs.

2. LC Burger is currently the sole fast-food chain in Linear City, a city that is one mile long and consists of one street, with one thousand consumers distributed uniformly along the street. The price for the “BigLC”, the only product sold by the LC Burger chain, is set nationally at \$ 4 so that the local Linear City manager's decision is limited to choosing the number and location of its stores. Each store costs \$ 600 000 to open and lasts indefinitely. Each consumer buys one Burger per week at the current price of \$ 4. However, no consumer will walk for more than a quarter of a mile to buy a burger. Operating costs are \$ 1 per burger. The Interest rate is 0.1% per week. The market conditions are unchanged, so present discounted profits can be regarded as level perpetuities.

- a) Suppose that LC Burger faces no competition and no threat of entry. How many stores should LC Burger open and at which locations?

CS Burger is contemplating entering Linear City. Cs Burgers' costs and price are the same as those of LC Burger. Moreover, consumers regard the products at both chains as equally good so if both brands are in town each consumer buys from the closest store.

- b) At which locations should CS Burgers open stores, given that LC Burgers has opened the locations found to be optimal in part (a)?
 - c) Recognizing the threat of entry by CS Burgers, at what locations should LC Burgers open stores?
 - d) Would your analysis of these product-location decisions be affected if you also considered the possibility of pricing competition, i.e., if prices were then set independently given the locations of the stores (rather than taking prices as fixed, as was done above)?
 - e) Moving beyond this particular model, does product positioning involve a first-mover advantage, a second-move advantage, or does this depend upon particular aspects of the market in question?
3. Consider a circular city whose length is 1 with a uniformly distributed population of 100.000. Incumbent firms operate n outlets supplying their products at a fixed price $p = 1$ with production costs of 0. How many and at which locations must the outlets be placed in the market to deter entry if the outlets are not able to change their locations? Assume that entry costs per shop equal $F = 10.001$?