ECO206Y Problem Set 1 (Second Half)

Due Thursday, July 11 (optional)

Question 1

Recall the model presented in Chapter 25, Section 8. Assume a boardwalk of length 1 indexed over the unit interval [0; 1] and that people are distributed uniformly over this range. (You can imagine that there is a consumer at every real number [point].) Consumers inelastically demand one ice-cream cone (per unit of time). Moreover, suppose that there are $n = 4$ vendors on the beach. Show that there is no equilibrium strategy of this game, or conversely find a strategy such that no vendor has an incentive to deviate. Note that we know that there is no stable outcome when $n = 3$. (A vendor is thought of as trying to maximise the number of its customers. Customers choose a vendor solely on the basis of minimising walking distance. Thus a steady state of this game, if it exists, occurs when no vendor has an incentive to deviate from her current position.)

Question 2

In the political spectrum (ice-cream vendors on the boardwalk) game the result where both candidates (vendors) tend toward the middle (at the point 1/2 on a spectrum normalised to the unit interval [0; 1]) it was stated that the outcome is inefficient. The basis of this claim is that the outcome does not minimise the distance that voters (consumers) must travel. Find the allocation which minimizes aggregate distance travelled. Compare this to the total distance travelled when the two candidates (vendors) position themselves at the point 1/2. That is, what is the minimum aggregate distance travelled by voters in the most efficient outcome, and what is the aggregate distance travelled in the steady state outcome where both candidates are at 1/2. Now suppose that voters (consumers) pay a cost (possibly psychological) of $1 per unit of distance travelled. Under this interpretation is there any impetus for government intervention?

Question 3

Three Argentine *parilladas* are equally spaced along a circular street of length 90: Let *parillada A* be at the point 0, *parillada B* at the point 30, and *parillada C* be at the point 60.[1] At every point on the street there is one consumer who inelastically demands one *parillada* dinner (no earlier than 8:30pm). Each restaurant is identical except in location. Customers patronise the *parillada* with the lowest total cost: The price of a meal at any restaurant consists of the price of the meal plus any transportation cost, equal to $1 per unit of distance travelled.

[1] Note that in this circular environment it is possible to sustain $n = 3$ firms in a stable outcome.

(a) Determine the demand curve faced by restaurant *B*, given identical prices set by the other restaurants. Hint: Recall in class that we found the cut-off customer *x'* (the one who is indifferent between patronising restaurant *B* or *C*) by noting that for such a customer the price of going to either restaurant *B* or *C* should be the same: $p_b + x' = p_c + (30 - x')$, where p_c is the price charged by *parillada C*.

(b) Determine the equilibrium price of a meal charged at each *parillada*. For each restaurant, calculate the short-run profits earned and illustrate the market boundaries.

(c) You are considering opening up your own *parillada* on this street. What is the demand function that you would face given that the prices and locations of the established firms do not change? Are these reasonable assumptions?

(d) Suppose that the cost of establishing a restaurant along this street is $500. Is it profitable for you to enter? And given your decision what will be the profits of the incumbent restaurants?

Question 4

A cinema has monopoly rights to show movies in the small town of Elmira, Ontario. On any given week the demand for movies (the only form of entertainment in this small town) can be described by two demands by two groups: Adults: $p_a = 16 - y_a$; teens: $p_t = 10 - y_t/2$; where p_a is the price per adult ticket, p_t is price per teen ticket, y_a is the quantity of adult tickets purchased and sold, and y_t is the number of teen tickets. The marginal cost of printing and selling tickets is $MC(y) = y/3$ where $y = y_a + y_t$, and there are no fixed costs associated with ticketing.

(a) Given that the monopolist can practice third degree price discrimination determine the equilibrium prices and quantities for the two groups.

(b) Now suppose that the monopolist is prohibited by the local government from price discrimination. Determine the equilibrium price and quantity in this case. Has the government's action increased social welfare? Explain.

Question 5

Evaluate the following statement:

> "We know that monopolies are inherently inefficient. Therefore, it is in society's best interest to break up all monopolies and force the industry to have a large number of firms. When there is a large number of firms price tends towards marginal cost and thus bringing us closer to economic efficiency. In such a scheme (breaking up monopolies into many smaller firms) any losses on the producer side are more than compensated by gains to consumers."