Econ 235
Agricultural Firms, Markets and Prices
Homework 2.

Do by 10/30/2007 at 12:40 pm.

- Late policy: The late homework assignment will receive a 25 percent discount penalty per each day late.
- Grading: simply giving numerical answer is not a warranty for obtaining maximum grades. The student should be prepared to explain in plain English sentences the reasoning that led him to obtain his result. Thus, it is not unexpected to give answer on a separate sheet of paper.

Question 1. Explain the reasons for the emergence of chain stores in maximum 10 lines.

Question 2. (Beverages retailing and non linear pricing)

You are manager of a music dancing place. People come to this place to meet, have a drink and listen to rock and roll. Your profit essentially comes from selling drinks while your total cost originates from, besides drinks, a rock band that you must pay for playing. Your patrons are mostly identical (say students) and have the same inverse demand curve for drinks \( P=12-Q \) where \( Q \) is the number of drinks consumed in an evening. The cost per drink that you face is $4 whereas the band will play for $300 every night. On average you have 100 customers every night. You are the only rock bar operating in town.

a) Compute the monopoly price \( P_m \), the monopoly profit, \( \Pi_m \), and the consumer surplus at this price. Explain.

b) Explain how you could extract consumer’s surplus. Compute your profit, \( \Pi_d \), in this case. How many drinks each consumers is buying?

c) After some years of operation, you realize that there are now two types of customers. You success has attracted a new clientele. In addition to students, there is another clientele with inverse demand curve for drinks \( P=16-Q \). Each type of customers represents 50% of the whole and you still have 100 customers every night. There is no way you can distinguish between these two types of client and, as such, you decide to offer a non linear pricing scheme. What is the best you can do in term of profit? What is the average price per drink for each type of consumers? What the surplus of your high demand clients? Explain.
Question 3.

A farmer is currently producing oats. The price of regular oats at the elevator is $2 per bushel. The average yield in that area is 50 bushels/acre. He is thinking about transferring to organic farming because the price of organic oats is 30 percent higher than the regular oats. If he transfers to organic farming the yield will be 40 percent smaller. The farmer does not need to pay for fertilizer and spraying in organic farming. (It is not allowed to use fertilizer and chemicals in organic farming.) Those costs are 10 dollars per acre.

a) Should the farmer transfer to organic farming?

b) Because organic farming does not harm nature as much as conventional farming, government decides to issue a subsidy to promote organic farming. The subsidy is $20 per acre. Should the farmer change his first decision?

Question 4. Price choice and the LOMA.

You are a decision maker in company A. There are two other companies, B and C. The distance between A and B is 40 miles and the distance between A and C is 80 miles. There are no other roads than B to A and C to A. Company A needs 10 units of strawberries for its processes. The farms are located next to the roads. The distance between the farms is 10 miles. The farmers pay the transportation. Each farm is producing 2 units of strawberries. The transportation cost is $1/unit of strawberries per 10 miles. All the farmers prefer A to B and A to C because it is a locally owned business. (They sell to company A if the price is the same.)

The competitors have the following prices:

<table>
<thead>
<tr>
<th>Company</th>
<th>Price/unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>$20</td>
</tr>
<tr>
<td>C</td>
<td>$25</td>
</tr>
</tbody>
</table>

40 miles

B       A       C

80 miles

FARM
a) What approach will solve this problem?

b) How much should company A pay to get enough strawberries?

c) How much should company A pay if company C rises the price by $3?

Question 5. Strategic store location choice and the LOMA

You are the owner of a retailing chain and you are looking for a place to locate a new food store in the main street of a midsize town. Unfortunately, competitor C has already chosen to open a store before you where he sells the same product as you for $2/unit. The street which is 9 miles long is represented below:

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  0   1   2   3   4   5   6   7   8   9
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You know that consumers are scattered uniformly on each point of the main street (i.e. there is 1000 consumers at point 0, a 1000 at point 1,…, a 1000 at point 9) and they have a transportation cost equal to $1/mile. Moreover you know that consumers who are indifferent between two food stores will buy at the closest one. Your objective is to maximize your sales.

1/ Assuming that the price that you will charge is $4/unit, where would you locate? Give your total sale in dollar and the total sale of your competitor assuming each consumer buys only one unit.

2/ Assume now that people living at 0, 1, 2, 3, 4, 5 are on average younger than the rest of the town and that they have a transportation cost equal to $0.5/mile. Where would you locate? Give your total sale in dollar and the total sale of your competitor assuming each consumer buys only one unit.
3/ Discuss whether your competitor’s choice (who anticipated your arrival) of location was wise in the first place. Would you have chosen the same location? explain.