

Introduction to Industrial Organization

Homework #3

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Professor: Caixia Shen

1. First time to subscribe the Economist (and many other magazines) pay a lower rate than repeat subscribers. Is this price discrimination? Of what type? Explain.
2. Supermarkets frequently issue coupons that entitle consumers to a discount in selected products. Is this a promotional strategy, or simply a form of price discrimination? Empirical evidence suggests that paper towels are significantly more expensive in markets offer coupons than in markets without coupons. Is this consistent with your interpretation? For example, some KFC coupons need the customers to show student IDs, what do you think about this type of coupons?
3. A market consists of two population segments, A and B. An individual in segment A has demand for your product given by $Q(P)=50-P$. An individual in segment B had demand given by $Q(P)=120-2P$. Segment A had 1000 people, segment B has 1200. Total costs of production are given by $C(Q)=5000+20Q$.
 - a. What is total market demand for your product?
 - b. Assume that you must charge the same price to both segments. What is the profit maximizing price? What are your profits?
 - c. Assume that you are able to engage in 3rd degree price discrimination. What prices do you charge the A and B segments? What are total profits?
 - d. Suppose now you are only able to engage in 2nd degree price discrimination. Provide some intuition for why you expect profits to fall relative to “c”.
4. Reconsider the model of Starbucks and 2nd degree price discrimination discussed in class. Assume that $\theta_H=0.9$, $\theta_L=0.6$, and $c=0.05$.
 - a. Starbucks wants to select the sizes and prices of a small cup of coffee that maximize profits. What are these optimal sizes and prices? If Starbuck’s was prohibited from engaging in second degree price discrimination, and could only offer one size cup of coffee, what size would it be and how much would it cost? Assume that Starbuck’s designs this cup of coffee so that it sells to H and L consumers.
 - b. Suppose now a new coffee shop, “Inferior Coffee”, opens across the street. They offer an 8 ounce cup of coffee for \$1. Assume that H consumers will never purchase from Inferior

Coffee no matter what price they charge. L consumers will purchase from Inferior the 8 ounce, \$1 cup offers more utility than Starbucks's small. Solve for Starbucks's profit maximizing menu.

5. Assume that Apple is rethinking its pricing policy on iTunes' music downloads. It is considering policies where consumers pay a monthly fee (P) and a const per song $\text{\textcircled{c}}$. Consumer's receive utility, $u(q) = \theta\sqrt{q} - cq - P$ from downloading q songs under a given pricing plan. θ is a measure of how much consumers value music.
 - a. Solve an arbitrary consumer's utility maximization problem. For an arbitrary c , how much music will a consumer download. Your answer should be in terms of θ and c .
 - b. Assume $\theta=10$, there are 100 consumers, and $P=0$. What is the profit maximizing price per song (c) if Apple's total costs are given by $TC(Q)=0.5Q$, where Q is the total number of downloads?
 - c. Continue to assume that $\theta=10$. What is Apple's profit maximizing two part tariff?
 - d. Compare consumer surplus, profits, and total surplus under parts "b" and "c".
6. Consider the Salop circle model discussed in class. We derived equilibrium levels of product variety under the assumption that all firms own one restaurant and compete in Bertrand fashion. Assume now all restaurants are owned by the same firm. Or, that all firms collude in prices after entry occurs. Solve for the equilibrium levels of product variety. Assume the monopolist/cartel will choose a price such that all consumers visit a restaurant. Explain why your results differ from the results obtained in class.
7. Choose a product other than automobiles that you believe is horizontally and vertically differentiated. Explain.
8. Suppose two firms compete in a market and firm 1 had a cost advantage. If they compete under normal circumstance, Firm 1 will make \$100 in profit per year. Now Firm 1 want to engage in predatory pricing, in which case per year profits drop to \$50. After firm 2 exits the market, firm 1 becomes a monopolist and will make \$125 per year. Once firm 1 becomes a monopolist, the industry will no longer exist in exactly ten years due to newer technology.
 - a. Firm 1 is unsure when firm 2 will exit the market. How many years is firm 1 willing to engage in predatory pricing? Assume that if the firm is indifferent, it will engage in predatory pricing.
 - b. If firms are identical is predatory pricing credible?