Lecture 6
Pricing with Market Power
Pricing with Market Power

- Market Power refers to the ability of a firm to set its own price, as opposed to firms that are price takers and take market price as given.

- Challenge for a firm with market power: how to set price so as to extract maximum surplus from its customers.

- The simplest pricing strategy is to charge all customers the same uniform price per unit.

- Under certain circumstances, firms can increase their profits by adopting more complex pricing strategies.
The inverse-elasticity pricing rule

- A monopolist maximizes profit by choosing output where MR=MC and setting price according to the market demand curve.

- It can be shown that this price and output combination can be expressed as follows:

\[ P^* = \frac{MC}{1 - \left(\frac{1}{\varepsilon_{X,Px}}\right)} \text{, or } \frac{P - MC}{P} = \frac{1}{\varepsilon_{X,Px}} \]
Logic of Inverse Elasticity Rule: \( \frac{P - MC}{P} = \frac{1}{\varepsilon_{X,Px}} \)

- The IER suggests that in order to maximize profit, a monopolist should set price such that the markup of price over marginal cost is inversely related to own-price elasticity of demand.

- Optimal gouging: the less elastic is demand, the bigger or smaller the markup of price over marginal cost???

- Examples? Airline pricing policies? Student and senior citizen discounts? Industrial parts?

http://gattonweb.uky.edu/faculty/troske/teaching/eco411/articles/Perfect%20Prices%20WSJ%2027-03-07.pdf
Dr. Scott,

Sorry I won't be able to be there on Friday for class as we discussed. As promised, here are some thoughts I had on Parker Hannifin based on my experiences with them.

Prior to beginning the MBA program at UK, I worked as a developmental engineer at Cummins Inc. in Indiana. Our plants used many seals from Parker Hannifin. A notable experience from my work as an engineer that relates to this article:

Because the prices on seals and such were raised, especially when Parker realized it was the only manufacturer of such seals - e.g. specialty seals, such as those that have to resist high temperatures on the exhaust manifold - we (Cummins) wanted to source some of the seals from elsewhere to reduce costs.

Sometimes we were successful in finding lower cost providers (usually companies outside the United States), but more often than not, we accepted the price increase. Simply put, we had had no previous problems with their seals and didn't want to invest the R&D into validating a new seal from a different manufacturer. So Parker's strategy of raising prices for unique seals WAS effective in many of their contracts with us (Cummins).
Potential for higher profit

- A monopolist setting a uniform price for all customers may be able to earn positive long-run economic profits, if barriers to entry protect it from new competitors.

- Under certain circumstances the monopolist may be able to employ more complex pricing strategies that allow it to increase its profits.

- Simple example: backyard bar. Demand curve for typical customer:

- Uniform pricing strategy:

  \[ P^* = \$3, \quad Q = 2, \quad \pi = \$4 \]
Creative pricing strategies?

- Does a uniform price extract the maximum consumer’s surplus available in this market? i.e. can you come up with a more complex pricing strategy that increases your profits?
- [Refer to diagram drawn on board]
- Two-part pricing. Set an initiation fee or cover charge and charge an monthly fee or fee per drink as well.
- How should you set the price per ride? Admission fee?
Price Discrimination

Price Discrimination occurs when a firm charges:
1) Different prices to different customers for the same good
2) Different prices to the same customer for successive units of the good
3) The same price to different customers for different (in terms of cost) goods

Examples?

- [http://gattonweb.uky.edu/faculty/troske/teaching/eco411/articles/Phone Plan Pricing WSJ 08-01-13.pdf](http://gattonweb.uky.edu/faculty/troske/teaching/eco411/articles/Phone Plan Pricing WSJ 08-01-13.pdf)
- [https://www.verizonwireless.com/plans/verizon-plan/](https://www.verizonwireless.com/plans/verizon-plan/)
Price Discrimination

First Degree or Perfect Price Discrimination

- Charge a separate price to each customer: the maximum or reservation price they are willing to pay.
Without price discrimination, output is $Q^*$ and price is $P^*$. Variable profit is the area between the MC & MR (orange).

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Consumer surplus is the area above $P^*$ and between 0 and $Q^*$ output.

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With perfect discrimination, each consumer pays the maximum price they are willing to pay.

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Output expands to $Q^{**}$ and price falls to $P_c$ where $MC = MR = AR = D$. Profits increase by the area above $MC$ between old MR and D to output $Q^{**}$ (purple).
Price Discrimination

- First Degree Price Discrimination
  - Requires information about each consumer's reservation price
  - Relatively rare
  - The internet allows firms to obtain more information about an individual consumer's demand and charge individual prices
  - Is this what law schools (or Universities in general) are trying to do?
Second-Degree Price Discrimination (Block Pricing)

➢ In some markets where consumers buy multiple units of a good, their demand may vary with the number of units consumed.

➢ In this market it may pay for the firm to charge different prices for different numbers of units purchased.
Second-Degree Price Discrimination (Block or Menu Pricing)

- Example, Beer.
  - One price for a six pack.
  - Lower price if you buy 12 beers together.
  - Even lower price if you buy 24 beers together.

- Frequently occurs for goods in which there are economies of scale in production.

- Part of what Cycle Bar is trying to do
Without discrimination: $P = P_0$ and $Q = Q_0$. With second-degree discrimination there are three prices $P_1$, $P_2$, and $P_3$. (e.g. mobile phone plans)
The Two-Part Tariff

Examples

1) Amusement Park
   • Pay to enter
   • Pay for rides and food within the park

2) Country Club
   • Pay to join
   • Pay to play
The Two-Part Tariff

Examples

3) Site License for Software

• University pays flat fee
• Pays for every copy installed
• Tableau: https://www.tableau.com/pricing.
The Two-Part Tariff

- Pricing decision is setting the entry fee \((T)\) and the usage fee \((P)\).

- Choosing the trade-off between free-entry and high use prices or high-entry and zero use prices.
Two-Part Tariff with a Single Consumer

Usage price $P^*$ is set where $MC = D$. Entry price $T^*$ is equal to the entire consumer surplus.
Third Degree Price discrimination

- Suppose you are running a business that provides a service (say cutting hair).
- You have differentiated your business so you have some degree of market power.
- Two types of clients:
  - First type is very particular about the quality of the service. If they think you provide high quality they are unlikely to switch and they are willing to “pay for quality.”
  - Second type less willing to pay for high quality. More likely to switch to another business for reasons such as convenience.
- You can easily distinguish between the two types of customers, and one can’t sell the service to the other.
- How do you set your prices?
Price Discrimination

Third Degree Price Discrimination

1) Divide the market into at least two-groups.

2) Each group has its own demand function.
Price Discrimination

➢ Third Degree Price Discrimination

3) Most common type of price discrimination

• Examples: airlines, discounts to students and senior citizens, rapid transit peak vs. off-peak fares, first run movies vs. older movies
Price Discrimination

- Third Degree Price Discrimination

4) Feasible when the seller can separate the market into groups who have different price elasticities of demand (e.g. business air travelers versus vacation air travelers)
Price Discrimination

- Third Degree Price Discrimination
  - Pricing: Charge higher price to group with a low demand elasticity
Third-degree price discrimination

- Third-degree price discrimination involves market segmentation, whereby the firm is able to set different prices in each market segment. Inverse-elasticity pricing rule is the order of the day.

- Example: airline pricing. Suppose you have two types of travelers, leisure and business. Business travelers are relatively unresponsive to changes in price, while leisure travelers are relatively responsive to changes in price. [illustrated on board]

- How to set price for each type of customer? Choose Q and P such that MR = MC in each market segment.

- Challenge: How to identify and sort customers?
Profit from selling to market A – relatively elastic demand – lower price

Profit from selling to market B – relatively inelastic demand – higher market price
Third-Degree Price Discrimination

Four necessary conditions for third-degree price discrimination.

1. The seller must possess some market power (face a downward sloping demand curve).

2. The seller must be able to divide the market into 2 or more identifiable groups.
   - Sometimes the seller gets the customers to identify themselves.
Third-Degree Price Discrimination

3. The elasticity of demand must differ between the groups.
4. The seller must be able to prevent the resale of the product between the groups.
The Economics of Coupons and Rebates

**Price Discrimination**

- Those consumers who are more price elastic will tend to use the coupon/rebate more often when they purchase the product than those consumers with a less elastic demand.
  - Who are they?
- Coupons and rebate programs allow firms to price discriminate.
The Economics of Coupons and Rebates

Price Discrimination


Intertemporal Price Discrimination and Peak-Load Pricing

➢ Separating the Market With Time
  – Initial release of a product, the demand is inelastic
    • Book
    • Movie
    • Computer
Intertemporal Price Discrimination and Peak-Load Pricing

- Separating the Market With Time
  - Once this market has yielded a maximum profit, firms lower the price to appeal to a general market with a more elastic demand
    - Paper back books
    - Dollar Movies
    - Discount computers
Intertemporal Price Discrimination

Over time, demand becomes more elastic and price is reduced to appeal to the mass market.

Consumers are divided into groups over time. Initially, demand is less elastic resulting in a price of $P_1$.

Over time, demand becomes more elastic and price is reduced to appeal to the mass market.
Intertemporal Price Discrimination and Peak-Load Pricing

- City of Athens comes to you and asks you to “fix” the problem of traffic congestions.
- How might you use these ideas to fix the problem?

Intertemporal Price Discrimination and Peak-Load Pricing

Peak-Load Pricing

- Demand for some products may peak at particular times.
  - Rush hour traffic
  - Electricity - late summer afternoons
  - Ski resorts on weekends
  - Airline flights on Monday mornings and Friday evenings
Intertemporal Price Discrimination and Peak-Load Pricing

Peak-Load Pricing

- Capacity restraints will also increase MC.
- Increased MR and MC would indicate a higher price.
- Charge a higher price when a special event is occurring:
  - “Greece is the Word,” WSJ, 7/30/04.
    http://gattonweb.uky.edu/faculty/troske/teaching/eco411/articles/Greece_Is_the_Word_WSJ_07-30-04.pdf
Intertemporal Price Discrimination and Peak-Load Pricing

- MR is not equal for each market because one market does not impact the other market.
Peak-Load Pricing

- Peak-load price = $P_1$.
- Off-load price = $P_2$.

$D_1 = AR_1$

$D_2 = AR_2$

$MC$

$MR_1$

$MR_2$

$Q_1$

$Q_2$

$\frac{\text{$/Q}}{}$
Commodity Bundling

- Suppose that a firm sells multiple products, and that different customers have different reservation prices for each good.
- Example: Toyota sells Camrys, which can be equipped with moon roofs, or backup cameras, or neither, or both.
  [link]
- Different pricing strategies:
  - Pure components strategy: offer a la carte prices for each separate item.
  - Pure bundling strategy: bundle the two items and charge one price for the bundle.
  - Mixed bundling strategy: offer and price the two items separately, and also offer and price them together as a bundle.
- Bundling can be more profitable if it allows the firm to sort customers into groups with different reservation price characteristics and hence to extract consumer’s surplus. For a deeper analysis, see [link]
Simple bundling example

- Two movie theaters buying two old movies
- Slightly different customers, so different value of the two movies
- If sold separately, charge $7,000 for Casablanca, $2,500 for Godzilla
- Total revenue-- $19,000

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<td>Theater 2</td>
<td>$7,000</td>
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Simple bundling example

- But notice, theater 1 is willing to pay $10,500 for both, while theater 2 is willing to pay $10,000 for both.
- Bundle the movies, charge $10,000
- Total revenue $20,000.

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Other pricing issues: multiple products that are related in demand

- Demand Interrelationships: suppose a firm produces two products, A and B, that are related in demand but unrelated in cost.
  \[ \pi = TR_A(Q_A, Q_B) + TR_B(Q_A, Q_B) - TC_A(Q_A) - TC_B(Q_B) \]

- Suppose A and B are unrelated, how to set price?
  - No differently than two separate single-product monopolists would.

- Suppose A and B are substitutes, how to set price?
  - Set prices higher than if A and B were unrelated (cannibalization).

- Suppose A and B are complements, how to set price?
  - Set prices lower than if A and B were unrelated.
Sometimes firms try to create some market power

- “Seeking Fame in Apple’s Sea of Apps,” *WSJ*, 7/15/09.  
  [http://gattonweb.uky.edu/faculty/troske/teaching/eco411/articles/Apple_Apps_WSJ_15-07-09.pdf](http://gattonweb.uky.edu/faculty/troske/teaching/eco411/articles/Apple_Apps_WSJ_15-07-09.pdf)

- Monopolistic competition
Firms with market power are in an enviable position because they have the potential to earn large profits, but realizing that potential may depend critically on the firm’s pricing strategy.

A pricing strategy aims to enlarge the customer base and capture as much consumer surplus as possible.