BEE2017 Intermediate Microeconomics 2
Price and product discrimination

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Price Discrimination

- We thus far have studied a monopolist that charges:
  - A. Same price for all units.
  - B. Same price to all customers.
- Changing one or both of these is called Price Discrimination. Can one profit from this?
  - 1st degree is different prices for both consumers and units (both A and B are changed)
  - 2nd degree is different prices for different units (A changed).
  - 3rd degree is different prices to different consumers (B changed).

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1st-Degree Price Discrimination

- Different prices for both consumers and units.
- To do this properly, a monopolist must have strong information on:
  - Consumers' preferences.
  - Who is who.
- 1st degree captures the whole consumer surplus.
- 1st degree is efficient.

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Effort to Discriminate

- In 1990, IBM introduced the LaserPrinter E.
- The difference was that it printed 5 ppm rather than 10 ppm.
- They did so by ADDING 5 chips in the E model. The purpose of the chips was to make the printer WAIT.
- The price of the new laserprinter E was 60% of the old one.
- Why did IBM pay for a reduction in the speed?

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Effort to Discriminate Model

- Jim values the faster printer at 1000 and the slower printer at 700.
- Sean values the faster printer at 700 and the slower printer at 600.
- It costs 450 to make the faster printer and 475 to make the slower printer.
- What should IBM charge for either printer?
  - If IBM only sells the fast printer, what should it charge?
  - If IBM wants to sell the fast printer to Jim and the slow printer to Sean, what is the max/min price difference.
  - What happens if the fast printer is priced at 1000 and the slow printer 600?

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Other Examples of Effort to Discriminate

- Intel with its SX processors had the math coprocessor disabled.
- Fast delivery service may hold back packages that are 2nd day rather than overnight.
- Photo shops won't give you films in 1 hour even though they may be ready if you have ordered the longer service.
- Sony Minidisc 60 minute vs. 74 minute versions minidiscs are the same except for a code on the 60 minute version written to stop it from writing the longer time.
- Hard disks in MP3 players. Sometimes is cheaper to buy the MP3 player and take out the hard disk. People did this so they had to take precautions.

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2nd degree Price Discrimination

- Ari values 1 umbrella at 10 pounds and has no need for another umbrella.
- Jodi values 1 umbrella at 11 pounds and also values 2 umbrellas at 15 (together).
- They each want to maximize the difference between their value and the price they pay.
- What is the maximum a monopolist with zero marginal cost could make charging the same price per umbrella?
- What is the max it could make charging a price for 1 and a special for two together?
  - Hint: what would happen if they charge 10 for one and 15 for two?

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Movie Release Dates

- Studios want to maximize revenue.
- Groups want the delay from the Theater release to be short and the release to the next outlet to be long.
- Consumers must decide when (if) to watch the film.
- What incentive does the studios have once the consumers have made their decision?

Venue	weeks to release
Theatrical Release	0
Airlines+Hotels	16
Home Video	27
Home Pay-per-view	34
Premium Cable/Sat.	61
Network TV	Huge var.

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Movie Release: A simple model.

- There are only two formats: Theater and Home.
- The home release can be *early* or *late*. The studio gets £5 for each Theater sale and £2 for each home viewer.
- Four Consumers.
  - **A** only wants to see the movie in the theater.
  - **B** only wants to see the movie at home.
  - **C** will see the movie in the theater if the release is late. Otherwise, **C** will see it at home.
  - **D** will see the movie at home only if only if the release is early.
- What is studio profit for *early*? *Late*? What should the studio do?

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Movie Release:further analysis

- After the studio announces release date and the movie is released, what should it do?
- What stops this from happening each time? Consumers judge the release date not by what the studio says, but by either previous record or what the studio has incentive to do.
- Do you remember which studio produced the Titanic?
- If consumers judge the industry as a whole rather than individual studios, then what happens?

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International Pricing of Pharmaceutical Companies

Prices of antipsychotic drug in various countries.

Why such a difference?

	Clozapine
Austria	$59.92
Belgium	$75.62
UK	$294.93
USA	$317.03

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3rd-degree price discrimination

- There are two groups of people that make up total demand D(p)=D1(p)+D2(p).
- Example: MC=0, D1(p)=100-p and D2(p)=60-p.
- q=D1(p)+D2(p)=160-2p.
- We find p=80-q/2. Marginal revenue is 80-q.
- MR=MC implies q=80 and p=40.
- Profit with one price is 3200.
- MR in market 1 is 100-2*q1 and in market 2 is 60-2*q2.

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3rd-degree price discrimination

- Find q1, q2, p1 and p2.
- Show that combined profits are 2500+900=3400.
- At home: Try the same for D1(p)=100-p and D2(p)=100-p.
- Need to ensure one group can't sell to another (leakage).
- Companies try to prevent leakage and take advantage when it is limited: DVDs and camcorders (PAL vs. NTSC).

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Examples of Price Discrimination.

- Book publisher having a cheap international edition of a book.
- How about paperbacks.
- Publisher charging libraries a higher rate to libraries than to individuals.
- Frequent Flyer Programs.
- First Class Train tickets.
- Saturday stayover for airfares.

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Two-Part Tariffs

- The sports center charges a fee to join and then a per usage fee.
- Why don't they just charge one or the other to make it simple?
- What form of price discrimination (if any) is this?
- Sometimes this may have a high transaction cost: Disneyland dilemma.

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Other two-part pricing

- This is also the case with video games such as the Xbox.
- Electric toothbrushes.

Textbook discusses this for with IBM and its punchcards (overpriced). Example:

- There are two types of consumers.
  - A is a heavy user and will make calculations all day long: needs 100 punch cards.
  - B is a light user and will need to make calculations only at the end of the day: needs 50 punch cards.
  - C is a hobbiest and would only fool around with the machine: needs 5 punch cards.
- The value of each calculation is £100 (over the year). C values owning the machine at £1000. The machine costs £3000 to produce and punch cards £0.

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Two-part tariff: punch cards

- What is the monopoly's profits if it charges 0 for each punch card?
- What happens if the monopoly charges 0 for the machine and only for the punch cards?
- What happens if the monopoly charges £1500 for the machine and £70 each punch card?

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Two Part Tariffs

Definition: A monopolist charges a two part tariff if it charges a per unit fee, r, plus a lump sum fee (paid whether or not a positive number of units is consumed), F.

This, effectively, charges demanders of a low quantity a different average price than demanders of a high quantity.

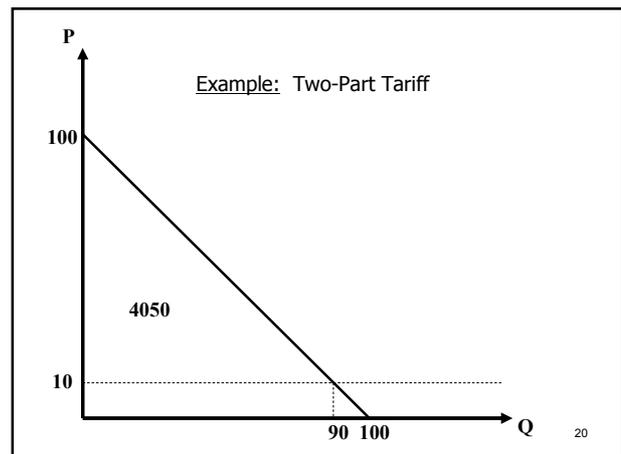Example: hook-up charge plus usage fee for a telephone....club membership...

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<u>Example:</u>

All customers are identical and have demand
$P = 100 - Q_I$
$MC = AC = 10$

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Example: Two-Part Tariff

P

100

4050

10

90 100

Q

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What is the optimal two-part tariff?

Two steps: (1) maximize the benefits to the
consumers by charging r =
MC = 10.
(2) capture this benefit by setting
F = consumer benefits = 4050.
Why?

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Any higher usage charge would result in a dead-weight loss that could not be captured by the monopolist. Any lower usage charge would result in selling at less than marginal cost.

In essence, the monopolist maximizes the size of the "pie", then sets the lump sum fee so as to capture the entire "pie" for itself.

The total surplus captured is the same as in the case of perfect price discrimination.

Bundling

- Two types of people:
  - A values $120 for Word, $100 for Excel.
  - B values $100 for a Word, $120 for Excel.
- If Microsoft charges separately for each program, it can make $200 for each software product for a total of $400.
- They could package both together (and stop selling it individually) and sell it for $220 making a total profit of $440.

Anti-Competitive Bundling

- A library has £10,000 to spend on journals.
- There are 10 good journals out there.
- They want to buy as many journals as they can for the budget as long as each journal is less than £2000.
- Six journals are owned by one publisher -E.
- The 4 independent journals cost £1000 each.
- What is the maximum the E can make if it charges a separate price for each (assume marginal cost is zero)?
- How about if E bundles all 6 together?
- If E bundles all together, what can the independent journals do?