Examples of Price Discrimination

Basic intuition: **Many different methods are used to price discriminate between buyers. Some examples are given below that identify some common techniques.**

Trick is: Sellers determine size and price.

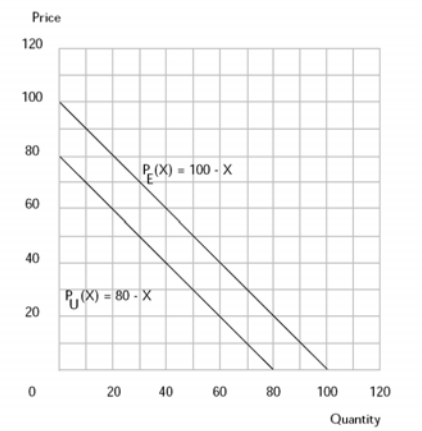
There are two interesting questions to answer:

Q1: Does the discrimination improve allocative efficiency?
(Does it bring quantity closer to MC=P?)

Q2: What are the effects of price discrimination on competition?

Theory treatment: Adverse Selection and asymmetric information (Buyer-Seller Model) PD by Self Selection

2nd Degree PD: Workbook example # 25.6



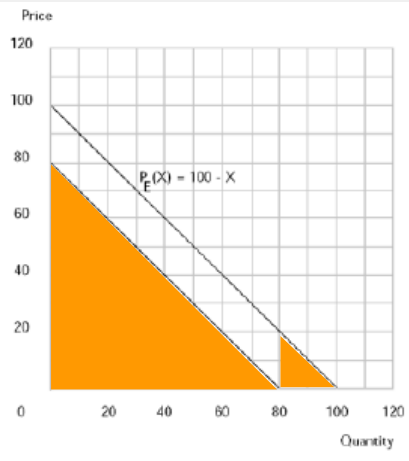
If the Mall Street Journal can tell the two consumers apart, it will offer the service of 80 articles to Students at

$$\frac{80 \cdot 80}{2} = 3,200 = \$32.$$

Similarly, it will offer 100 articles to professionals for

$$\frac{100 \cdot 100}{2} = 5,000 = \$50.$$

Now assume that it cannot tell them apart..

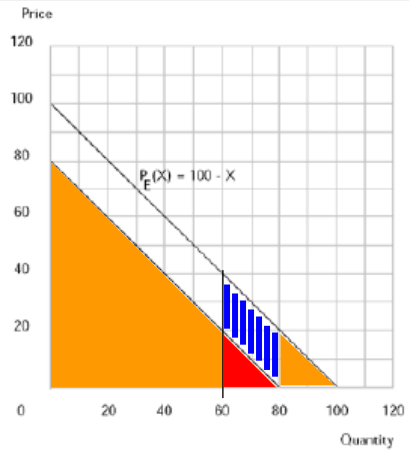


One solution is to offer the "upgrade" from 80 to 100 by charging the small triangle.

This implies that the professionals are willing to reveal their type because they are given the option to get the 80 articles for the same price as the students.

To be precise, the professionals save the white area under their demand curve. This is called their information rent.

But Mall Street Journal Can Do better



Imagine it does not offer the 80/100 options but a 60/100 choice only.

Then it loses revenue from the students: red triangle.

In the same way, it gains parts of the information rent back it needed to offer to professionals to reveal their type: blue area.

Solution: Mall Street Journal will distort the quantity sold to students downward until the two areas are the same (assuming the same # of buyer types).

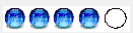
Examples of Price Discrimination

Jules Dupuit (1859)

"It is not because of the few thousand francs which would have to be spent to put a roof over the third class carriages or to upholster the third-class seats that some company or other has open carriages with wooden benches.

What the company is trying to do is prevent the passengers who can pay the second-class fare from traveling third-class; it hits the poor, not because it wants to hurt them, but to frighten the rich."

Make-Them-Pay-For-The-Label Discrimination



Ex: (Waldmann/Jensen): Lands End Catalog:

"Our $23 Weathered Mesh vs. the $55 "designer" mesh:

Same Fabric

Same Mill

Same features.

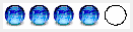
Less than half the price.

Some folks are slapping their animal emblem on essentially the same shirt as ours and charging $55 for it."

Typical form of discrimination in: clothing, food, automobile industry (ex: Toyota Corolla vs. GEO Prizm, SEAT vs. Volkswagen, Dodge Caravan vs. Plymouth Voyager).

Q: Is it really discrimination or is it a different good and thus product differentiation?

Keep-Them-In-Their-Zones Discrimination



1. Basing Point System: All buyers at the same location pay the same price, but prices vary by location (gas stations)

2. Keep-them-in-their-zones system: All buyers in a region (zone) pay the same price, the manufacturer absorbs all fright costs.

Intuition (different example): A manufacturer can eliminate competition between distributors (retailers). That is, every NH consumer pays the same. Not possible to pay less when ordering from a VT retailer..

Other, already known advantages: Demand for NH consumers is known..

Clear-the-Stock Discrimination

Remember Filene's Basement?

Filene sells upstairs at full price, and then moves the merchandise downstairs where it is continuously reduced until sold.

Does Fashion follow the same pattern in general?

Pesendorfer (1995, AER): Armani first sells the newest fashion in the highest class (Armani Prive`, then Emporio Armani, then Armani)

Problem: Fashion cycles don't permit price discrimination using time: You cannot sell spring fashion half a year later..

Realistic? - Who caters to whom?

- Personal Shoppers – what for?

Keep-Them-Loyal Discrimination

Example: Frequent Flyer Programs
Problem: How can you build up mileage credit?
Today, you can earn mileage without flying at all – loyalty??

Ex: Airline credit cards
Group: Business people

Another example: Preferred Customer plans of major hotel chains: Hilton Honors, Marriott Rewards (free stays)
Recall: network externalities (!!)

Major goal: Reduce competition through creating "ties" with customers (conspicuous consumption??)

Similar: coffee cards (Rosey Jekes, Panera, Dirt C.)
Videostop: Free DVD (birthday, 10th rental…)

2. Mixed Bundling

So far, when defining bundling we assumed that the firm has two options:

Selling the good either separate, or as a bundle.

Third option: Mixed Bundling: Practice of selling two or more goods both as package and individually.

Why? May be the ideal strategy when demands are only somewhat negatively correlated and/or when marginal costs are significant.

Recall: bundling!!

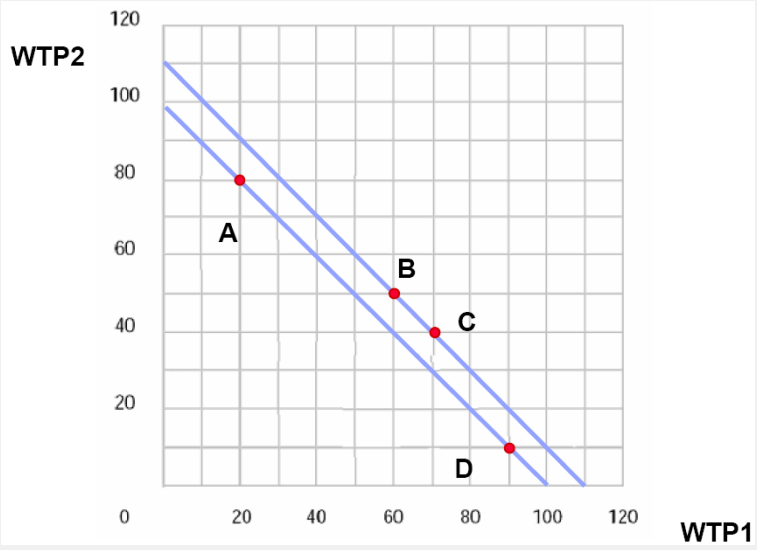
Mixed Bundling: Example

Your firm produces two products, the demands for which are independent. Both products are produced at zero marginal cost. You face four consumers (or groups of consumers) with the following reservation prices:

Consumer	Good 1 ($)	Good 2 ($)
A	20	80
B	60	50
C	70	40
D	90	10

Consider three alternative pricing strategies:
- selling the goods separately
- pure bundling
- mixed bundling.

Graphing the WTPs



Finding best strategy under separate selling

Good 1:

Price	Units sold	Profit
90	1	90
70	2	140
60	3	180
20	4	80

Good 2:

You set P1=60, P2=40, profit is 300

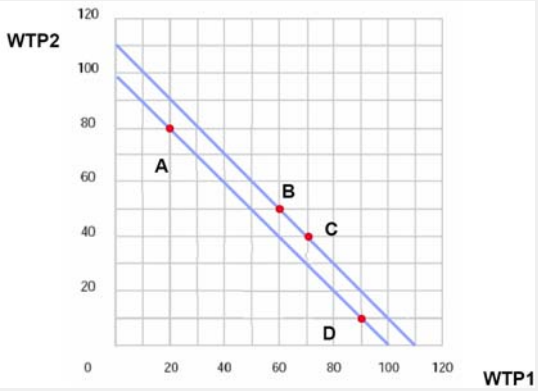
Price	Units sold	Revenue
80	1	80
50	2	100
40	3	120
10	4	40

Finding best strategy: pure bundling

Consumer	Good 1 ($)	Good 2 ($)	WTP Bundle
A	20	80	100
B	60	50	110
C	70	40	110
D	90	10	100

Best strategy under pure bundling: You need to get all consumers to buy the bundle, thus p=100.

Finding best strategy: mixed bundling



Best strategy under mixed bundling:
Set price to 110, P 1 to 90, P2 to 80.

B and C buy the bundle, A and D the single good.

25.6 Two-Part Tariffs

Ex: You sell

- a game console plus games (XBOX, Nintendo)

- a shaver with matching blades (Gillette, etc.)

- amusement park entrance tickets plus ride tickets (Disneyland)

A two-part tariff is a lump-sum fee, p_1, plus a price p_2 for each unit of product purchased.

Thus the cost of buying x units of product is

$$p_1 + p_2 x.$$

Q: Should a monopolist prefer a two-part tariff to uniform pricing, or to any of the price-discrimination schemes discussed so far?

Two-Part Tariffs

Assume: $p_1 + p_2 x$

Q: What is the largest that p_1 can be?

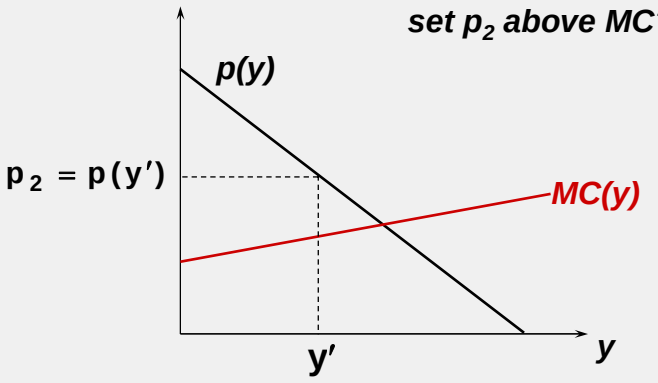
A: p_1 is the "entrance fee" so the largest it can be is the surplus the buyer gains from entering the market.

Set p_1 = CS and now ask what should be p_2?

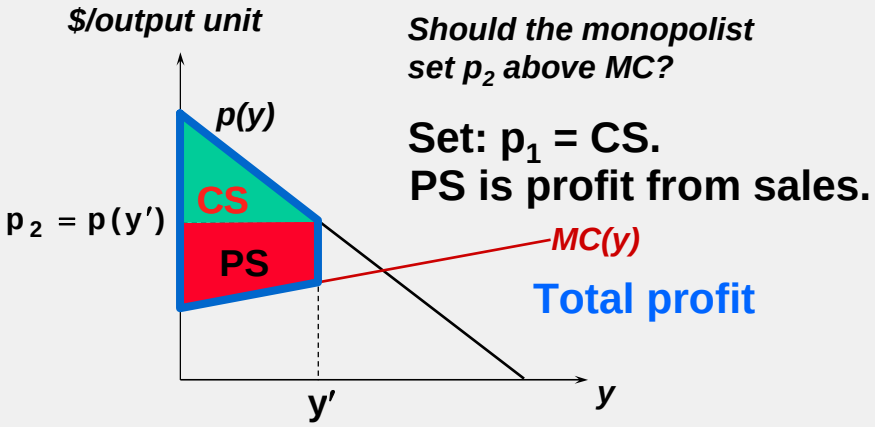
Two-Part Tariffs

\$/output unit

Should the monopolist set p_2 above MC?



Two-Part Tariffs

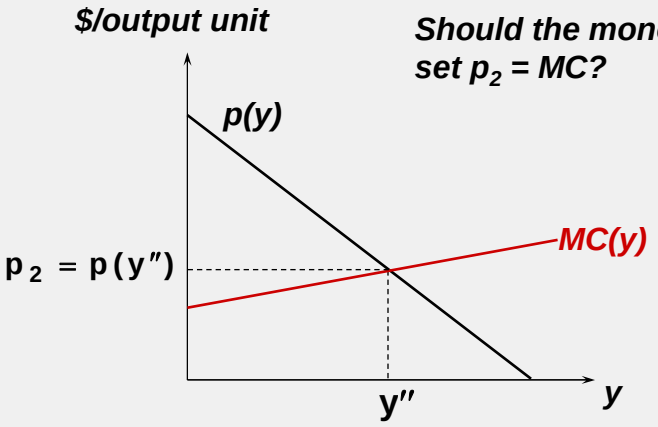


Should the monopolist set p_2 above MC?

Set: p_1 = CS.
PS is profit from sales.

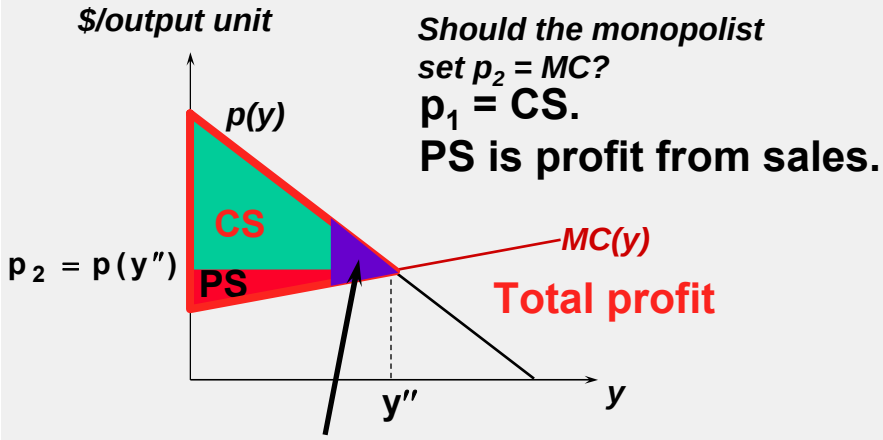
Total profit

Two-Part Tariffs



Should the monopolist set p_2 = MC?

Two-Part Tariffs



Should the monopolist set p_2 = MC?

p_1 = CS.

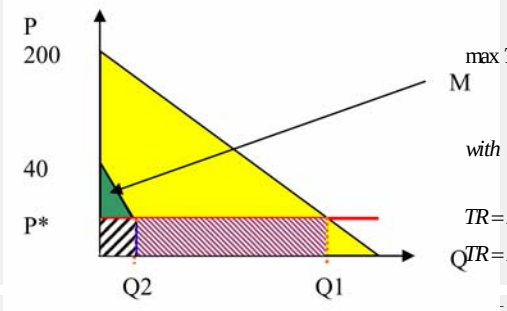
PS is profit from sales.

Additional profit from setting p_2 = MC.

Two-Part Tariffs: Two consumers

What changes if there are two consumers with known demand?

With two consumers, it is no longer optimal to set p_1 equal to marginal costs but to charge a markup over marginal cost such that total profit as sum of entrance fees M paid by all consumers plus rides purchased by all consumers times price is maximized. Assume: $Q_1 = 50 - 0.25P_1$, $Q_2 = 20 - 0.5P_2$. 100 consumers each.



$$M = \tfrac{1}{2}(Q2)(40-P) = \tfrac{1}{2}(20-\tfrac{1}{2}P)(40-P).$$

$$\max TR = \underbrace{300M}_{\text{Revenue from membership fees}} + \underbrace{P(Q1+Q2)}_{\text{Revenue from green fees}}$$

$$\text{with } TR = 300\cdot\left(400-20P+\frac{P^2}{4}\right) + \underbrace{P[100(50-\tfrac{1}{4}P)+200(20-\tfrac{1}{2}P)]}_{9000P-125P^2}$$

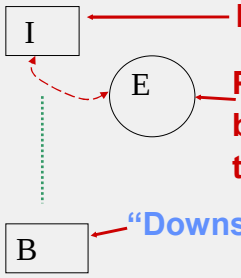
$$TR = 120000-6000P+75P^2+9000P-125P^2$$

$$TR = 120000+3000P-50P^2$$

Additional topic: Exclusive Dealing

What is Exclusive Dealing? A contractual agreement that require to purchase products or services for a period of time exclusively from one supplier.

Default situation is: Entrant E cannot deal with others

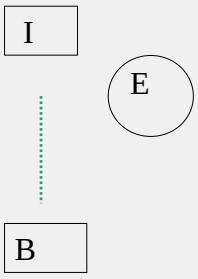


Incumbent (e.g. GE – silicone, 1970s)

Potential entrant that cannot enter if nobody buys his product (if he cannot get access to the retailer). (Rhodia)

"Downstream" buyer (distribution network, dealers)

What is Exclusive Dealing?



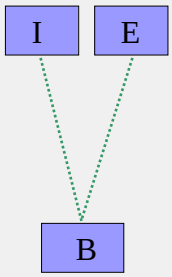
- **A buyer B can negotiate with an incumbent seller I concerning possible exclusivity (B as a retailer agrees to only carry I's good).**
- **If they do not agree on exclusivity, an entrant E will compete against I to serve B. If they do agree, E can't serve B.**

Intuition of Chicago School: There is no space for harmful effects on the buyer B: Whatever B agrees to must by assumption benefit him, *otherwise he would reject*.

Current view: Too simple and not true, we observe ED.

Approaching the topic backward: Why ED?

Imagine I and E *<u>are already</u> both in* the market.



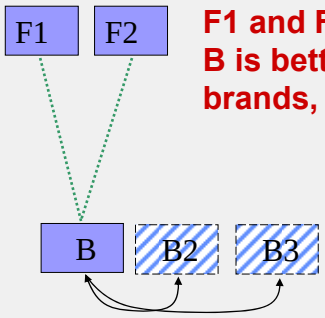
Assumption: I and E (F1 and F2) engage in price competition.

Two sellers bring the price down to marginal cost.

Rey/Stiglitz (Rand J., 1995): Price competition is softened if each picks the same retailer. Retailer increases sales.

Intuition: There is now a pie to be split, and E creates this pie.

Upstream Competition & how the cake is split..



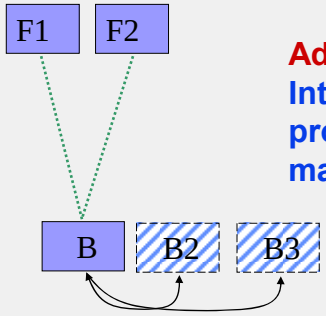
F1 and F2 give to B some monopoly power. B is better off because it carries two important brands, while other retailers don't.

Trick: as a compensation, each manufacturer requires that the dealer maintain a certain level of sales, and require a sales quota which creates minimum demand.

This cuts F1 and F2 some slack in their price competition: They can charge a higher price than MC and make some profit.
⇒ ET enhances the monopoly power of the producers. No efficiency gain, but rather the opposite: price collusion between F1 and F2 is facilitated.

Exclusive Dealing and Externalities

Now we think the other way round: Why would one of the two firms want to NOT have B carrying the other firm's product?

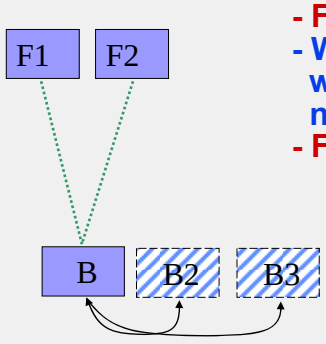


Advertising and Promotion:
Intuition: In many markets, a leading producer carries out advertising to create a market for a product.

Ex: Household products: Proctor & Gamble
Cosmetic producers: Revlon
Appliance firms: Maytag

Advertising as such an example…

Example: Let B be a pharmacy chain (CVS).
- F1 is produces Tylenol.
- F2 produces a cheap copy of Tylenol.
- Without F1's extensive advertising nobody would know about the existence of nonaspirin pain relievers.
- F2 free rides on these expenses.

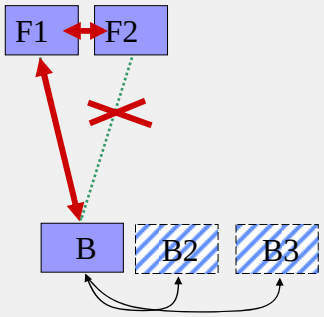


This problem is even exacerbated with B as a third player.

Assume F1 sells Tylenol at MC=$2, and F2 a copy at $1. The retailer (pharmacist) B is not interested to sell Tylenol at $2 to a downstream customer (which is the supposed WTP). Instead, he tells the customer that the copy is of similar quality and charges "$1.19" to the end user. B makes a profit.

Advertising as an incentive for ED

This practice comes at the expenses of F1. Tylenol makes no sale at all. The Tylenol manufacturer thus has an incentive to restrict such substitutions ⇒ Exclusive Dealing.



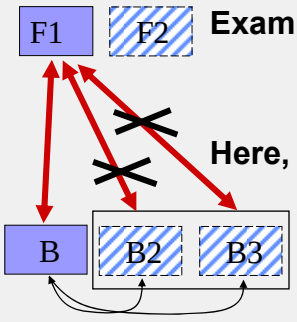
That is, F1 will want to limit B's options to sell other products that are close substitutes to Tylenol.

On one side, this protects F1 from free riding, on the other side, ED suppresses price competition between F1 and F2.

General explanation: You create vertical restraints and "your own retailer":
Car Dealers, SonyStyle, Franchising, Vertical Integration, Tapered Integration, Price Squeeze….

Advertising as B's co-ordination device

Q: Can it be that both F1 and B profit directly from ED?



Example: Toys "Я" Us (1997).

Here, Toys "Я" Us engaged in Retail Promotion.

← B2 and B3 are Discount Toy Sellers.

Those free-rode on B's Retail Promotion.

Thus, ED between Mattel and Toys "Я" Us increased the profits of both firms. ED creates property rights for B.
Result: Reduced Competition, higher prices.