11 Pricing with Market Power

ECO202 Fall 2019

November 8, 2019

Outline

1. Consumer Surplus
2. Sales Strategies
3. Advertising

Consumer Surplus

Firms want your consumer surplus

Willingness to pay WTP is the most a consumer would be willing to pay for a good or service

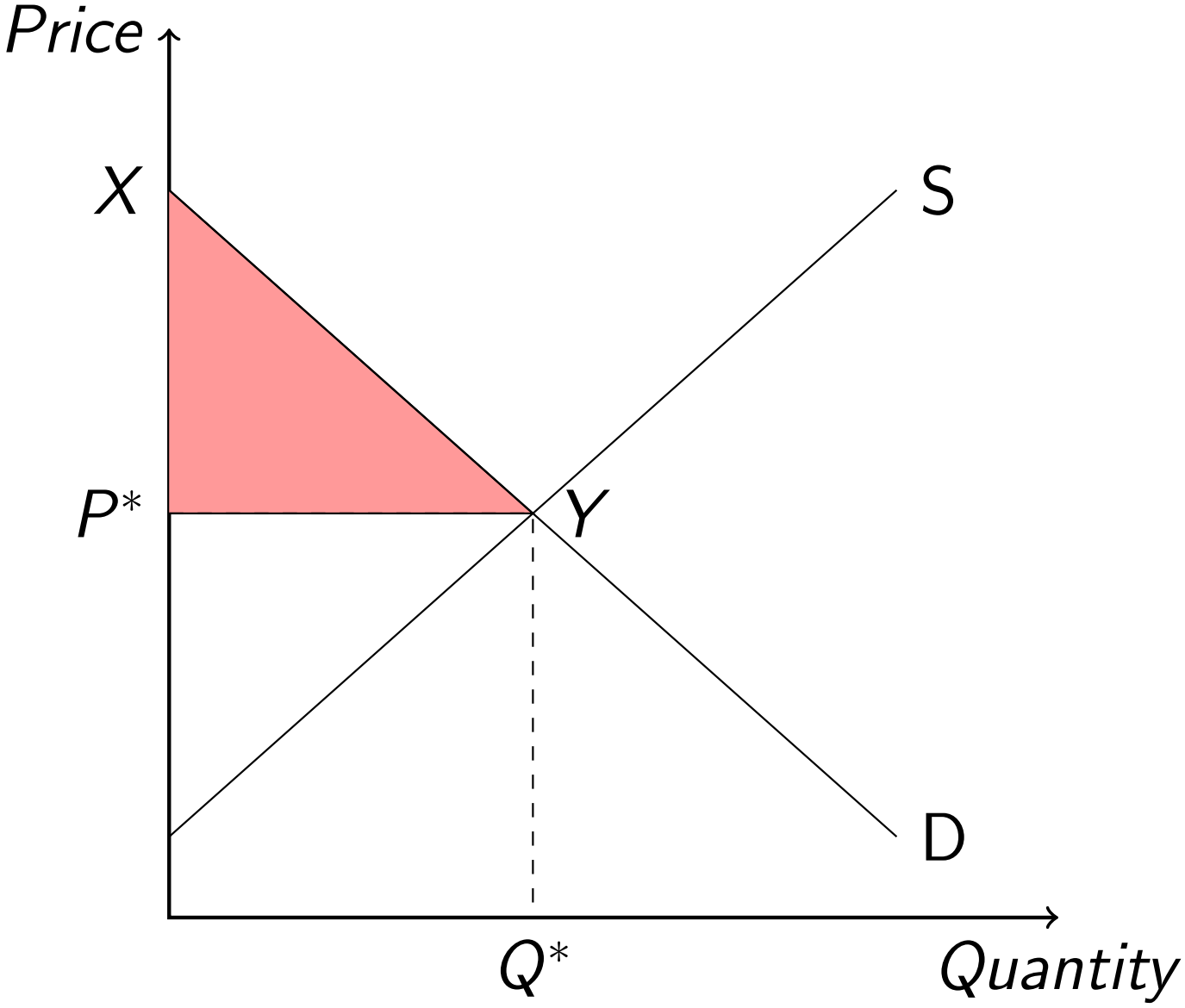
WTP might not be what she actually pays; consumers should never pay more than their WTP

Consumer surplus: $CS = P - WTP$

Firms want consumer to pay her WTP (not less)

How can firm get her CS?

Consumer Surplus

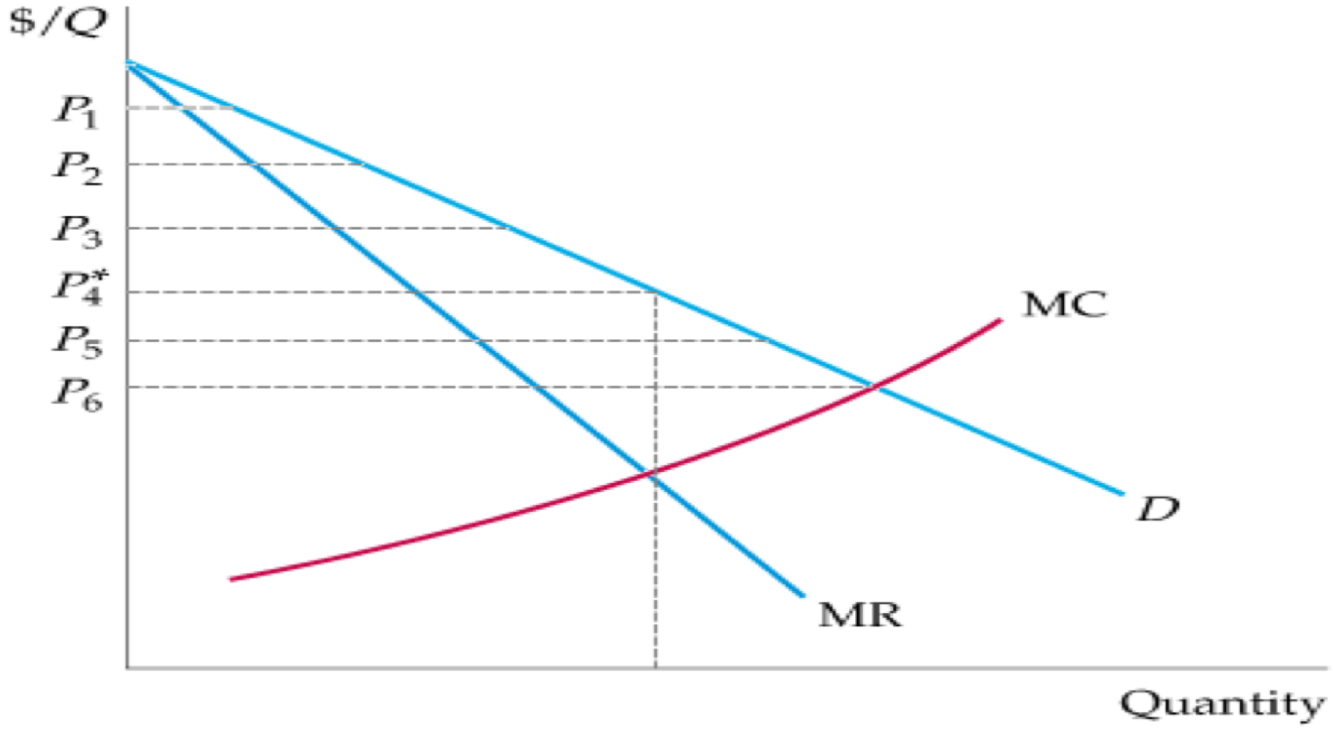


Firms discriminate across consumers

Price discrimination:

When firms charge different prices for the same product across consumers *based on consumers' WTP*

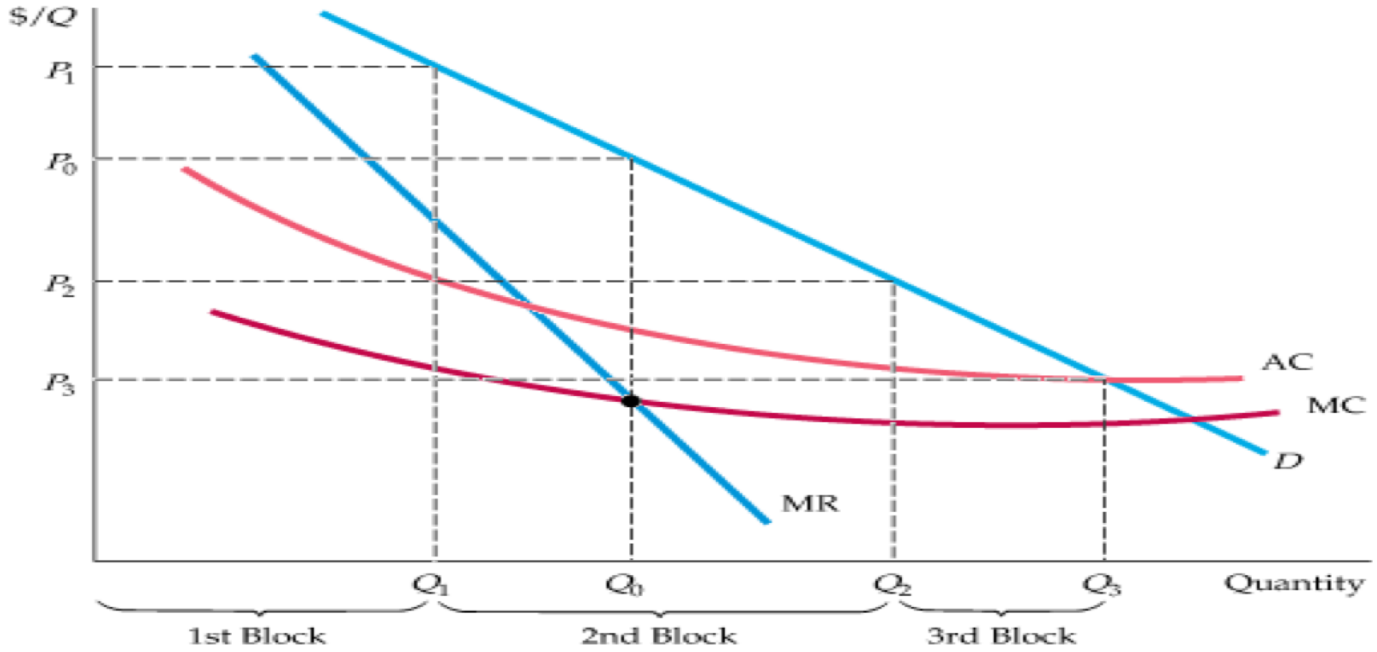
First-degree price discrimination



Charge each person exactly their WTP

Problem for the firm is identifying all these WTPs

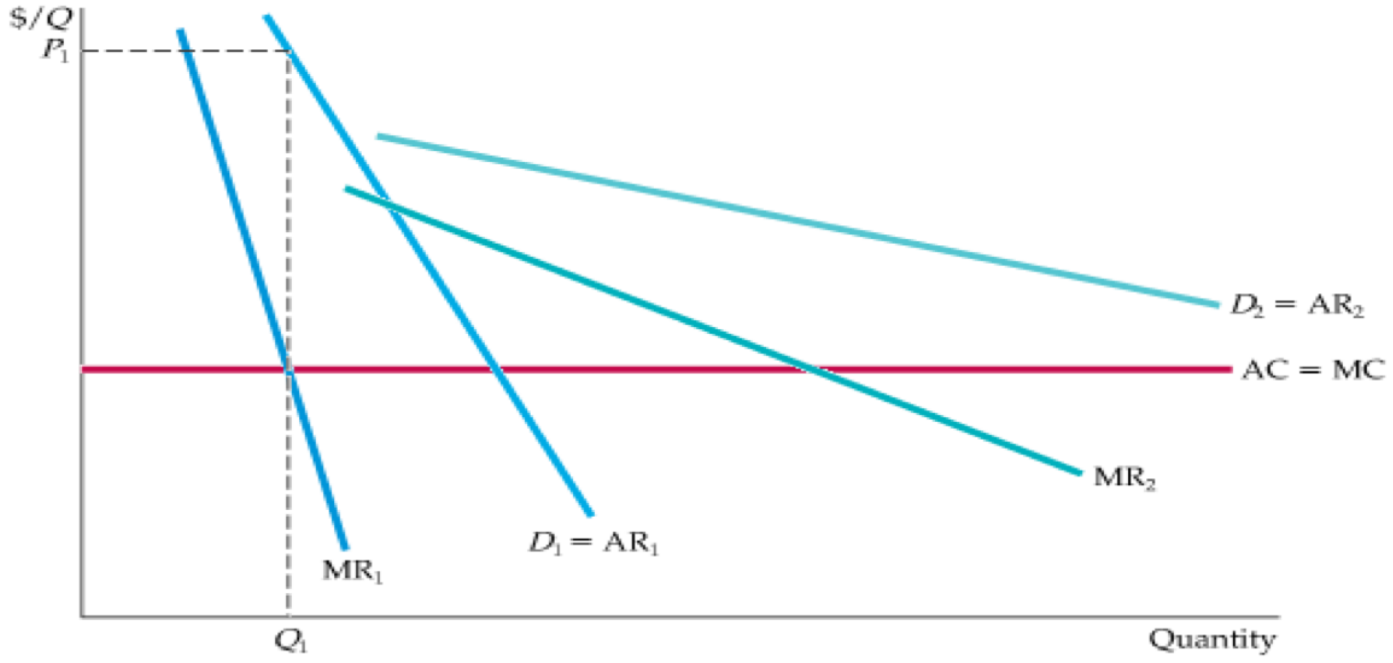
Second degree price discrimination



Charge different prices per unit for different quantities of the good (block or bulk pricing)

Consumers might benefit if MC is falling with bulk

Third degree price discrimination



Charge different prices across groups of consumers

Firm must ensure: group A cannot resell to group B; and group B will not sue

Separating groups

Third degree discriminate between groups 1 and 2

MC is same across both groups (same product)

Set output so MR is equal across both groups

Determining relative prices across groups 1 and 2:

$$\mathrm{MR}_1 = P_1(1 + 1/\epsilon_{p1}) \quad MR_2 = P_2(1 + 1/\epsilon_{p2})$$
$$\mathrm{MR}_1 = MC = MR_2$$
$$\mathrm{P}_1(1 + 1/\epsilon_{p1}) = P_2(1 + 1/\epsilon_{p2})$$
$$\mathrm{P}_1/P_2 = (1 + \epsilon_{p2})/(1 + \epsilon_{p2}) \times (\epsilon_{p1}/\epsilon_{p2})$$

Other forms of price discrimination

- Intertemporal pricing
  Charging different prices for different release dates (e.g. cars, movies)
- Peak-load pricing
  Charging different prices for different demand pressures (e.g. taxi in rain or rush-hour)

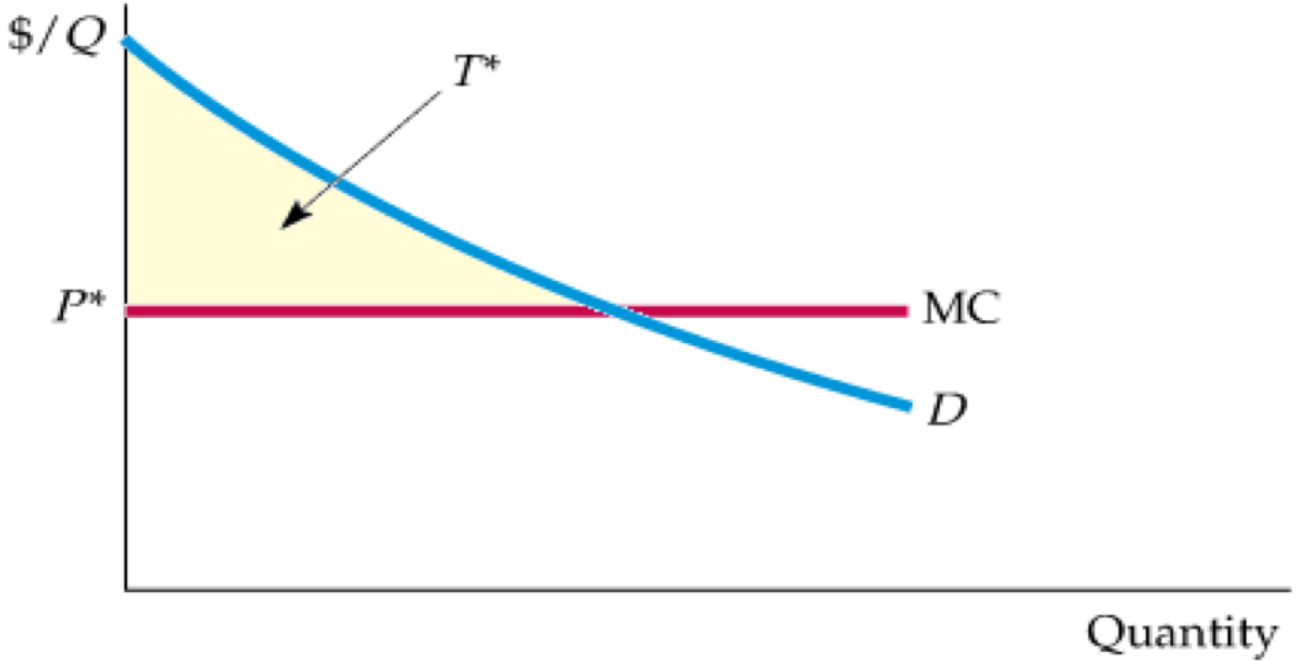
Discrimination only when MC $\approx$ same across goods

Sales Strategies

Two-part tariff

- Charge consumers both an entry free and a usage fee
  Gym membership, cellphone plan, amusement park, college
- Optimal tariff depends on whether consumers have identical or different demands

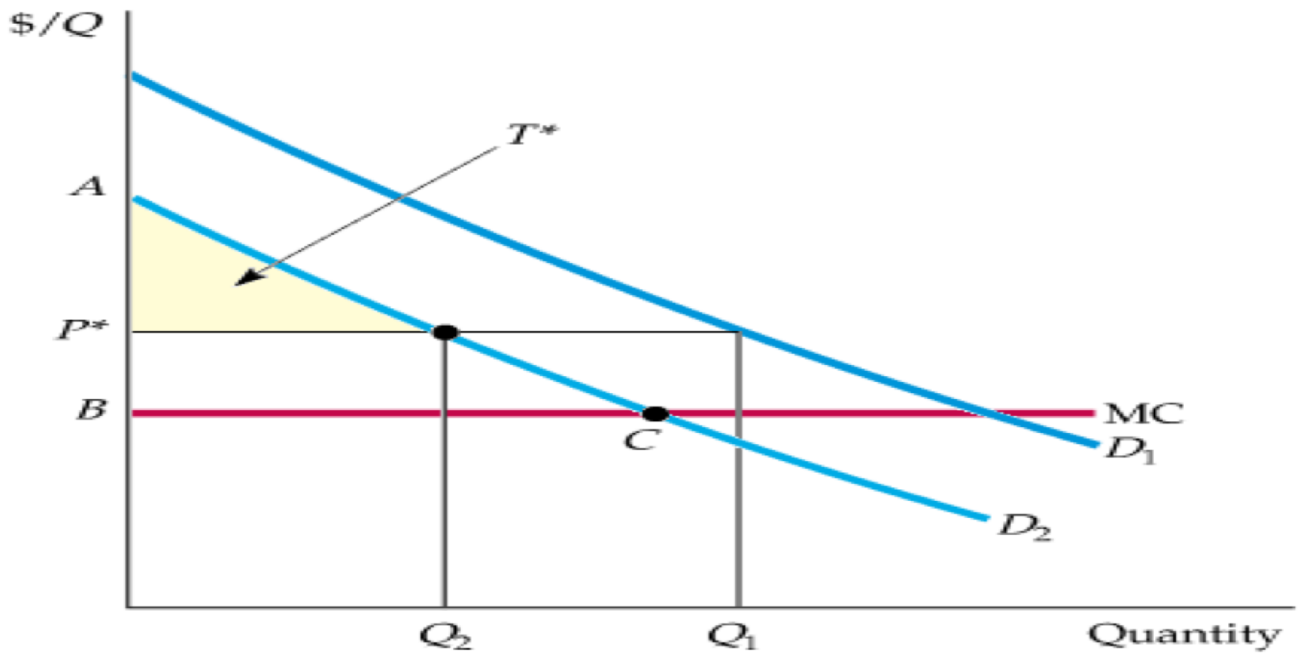
Two-part tariff: single consumer



Max π:

Set usage fee $P = MC$; charge entry free $T^* = CS$

Two-part tariff: two consumers



Max π: Set usage fee $P^* > MC$

Charge entry free $T^* = CS$ (of lesser consumer)

Bundling

- Selling multiple goods in same package
  MS Office, combo meal, cable TV
- Firm can exploit differences in relative valuation of consumers for goods within the bundle

General idea: demand for bundle is less variable than demands for each product

Season ticket bundle

WTP for NFL Games

	Fan	**Joe**
Regular season games	\$280	\$300
Preseason games	\$100	\$60
Bundled (all games)	\$380	\$360

Bundling works best if consumers have negatively correlated relative valuations across the bundle

Bundling yields extra π

WTP for NFL Games

	Fan	**Joe**
Regular season games	\$280	\$300
Preseason games	\$100	\$60
Bundled (all games)	\$380	\$360

If 1st degree PD, $TR = \$740$

If no PD, $TR = 2 \times 280 + 2 \times 60 = \$680$

If bundled, $TR = 2 \times 360 = \$720$

Mixed bundling yields even extra π

WTP for Dinner

	Homer	**Marge**
Big Mac	\$2.00	\$3.25
Fries	\$1.50	\$0.25
Combo (bundle) meal	\$3.50	\$3.50

MC=\$1; $\mathrm{P}_{combo} = \$3.50; P_{mac} = \$3.20; P_f = \$1.50$

Pure bundle: $\pi = 2(\$3.50) - 4(\$1) = \$3$

Mixed bundle: $\pi = \$3.50 + \$3.20 - 3(\$1) = \$3.70$

Bundling is very effective

Bundling is more profitable if:

- Negative correlation between goods
- Zero or low marginal cost
- High fixed costs (e.g. software)
- Semi-substitute goods (e.g. cable TV channels)

Bundling reduces CS but increases Q:

- Per-item pricing is not price of bundle divided by number of items
- Bundler sells where value of bundle is equal across consumers

Tying

Base good and variable good (e.g. printer and ink)

Sell base good for close to MC
Sell variable good at $P > MC$

High users of variable good have high WTP
So this pricing strategy exploits high WTP

Advertising

Advertising

Moves demand curve out so that the firm profits last longer or are bigger

Forces new firms to have higher fixed costs

Advertising costs $ but also increases Q

Profit max with advertising

Denote advertising spending by A

$$
\begin{aligned}
TR &= P \times Q(P, A) \\
MR_A &= P(\Delta Q/\Delta A) \\
TC &= C(Q) + A \\
MC_A &= \Delta TC/\Delta A + 1 \\
MC_A &= (\Delta TC/\Delta Q) \times (\Delta Q/\Delta A) + 1 \\
MC_A &= MC(\Delta Q/\Delta A) + 1
\end{aligned}
$$

Advertise until: $MR_A = MC_A$

Set $MR_A = MC_A$

$$
\begin{aligned}
P(\Delta Q/\Delta A) &= MC(\Delta Q/\Delta A) + 1 \\
1 &= P(\Delta Q/\Delta A) - MC(\Delta Q/\Delta A) \\
1 &= (P - MC)(\Delta Q/\Delta A)
\end{aligned}
$$

Multiply by advertising/revenue A/PQ:

$$
\begin{aligned}
A/PQ &= (P - MC)(\Delta Q/\Delta A)(A/PQ) \\
&= [(P - MC)/P][(\Delta Q/Q)/(\Delta A/A)] \\
&= [1/|\epsilon_p|][\epsilon_A] \\
&= \epsilon_A/|\epsilon_p|
\end{aligned}
$$

Dorfman-Steiner equation

$$A/PQ = \epsilon_A/|\epsilon_p|$$

Optimal % of revenue to spend on advertising depends on ratio of advertising elasticity and demand elasticity

Spend more on advertising if:

- inelastic demand
- advertising boosts Q a lot

Any Questions?

Consumer Surplus

Sales Strategies

Advertising