Overview: Pricing with Market Power II

- Two Part Tariffs
  - Base case: One Consumer Type
  - Self-selection with Multiple Types
- Volume Pricing
- Bundling

Recall: Price Discrimination

- Three types covered:
  - ‘Perfect’ - price at consumer’s full value
  - Price to each market segment
  - Price/design for consumer self- selection

- For all, need
  - market power
  - ability to prevent arbitrage/resale
  - Knowledge of preferences, segment differences, etc.

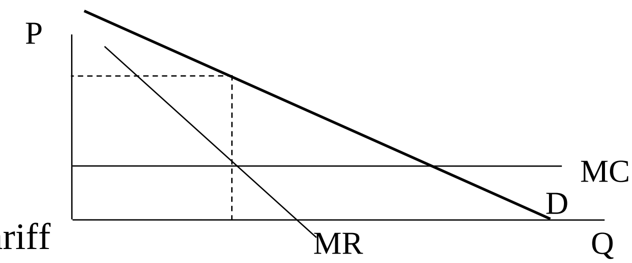
Two-Part Tariffs

- Access fee *and* per-unit price
  - Customers decide whether to pay access fee *and* how much to buy at the per-unit price

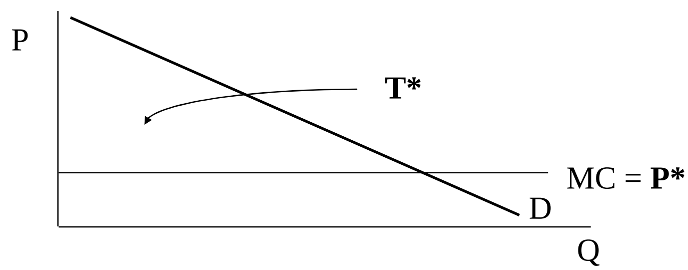
- Examples

Simple Case: One Consumer Type

- Single Price



- Two-Part Tariff



Worked-out Example: Tennis Club

- Tennis club
  - P = price for one hour of court time
  - Q is hours of court time purchased
  - 2 types of players, 1000 of each
    - "Serious", with demand $Q_S = 6 – P$
    - "Casual", with demand $Q_C = 3 – 0.5P$
  - Fixed cost of operating club is $5000/week
  - Marginal cost of additional court time = 0
- Pricing strategies we will consider
  - Single price
  - Two-part tariff
    - Designed so that only "serious" play tennis
    - Designed so that both "serious" and "casual" play tennis

Tennis Club: Single Price

- Individual demands:

  $Q_S = 6 – P$ and $Q_C = 3 – 0.5P$

- Total demand

  $Q = 1000(6 – P) + 1000(3 – 0.5P)$

  $= 9000 – 1500P$

  or, converting to an "inverse" demand function,

  $P = 6 – Q/1500$

Tennis Club: Single Price (cont'd.)

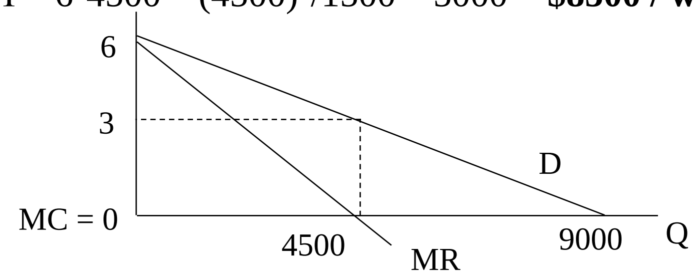
- Market Demand $P = 6 - Q/1500$
- Max profit:

$\Pi = PQ - FC = 6Q - Q^2/1500 - FC$

$d\Pi/dQ = 6 - 2Q^*/1500 = 0$

$Q^* = 4500$, $P^* = 3$

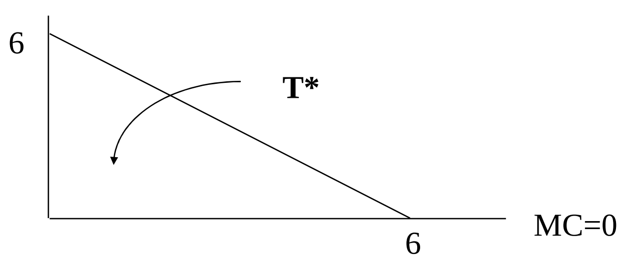
$\Pi = 6 \cdot 4500 - (4500)^2/1500 - 5000 =$ **\$8500 / week**



Two-Part Tariff: "Serious" Group Only

Make "Serious" pay access fee = full surplus

- For "serious" players: $Q_S = 6 - P$

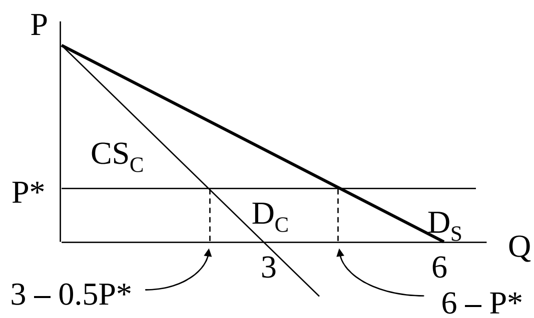


- $T^* = CS_S = 1/2 \cdot 6 \cdot 6 = \$18$/week
  - $P^* = 0$ (Why?)
  - $\Pi = 18 \cdot 1000 - 5000 =$ **\$13,000 / week**

Two-Part Tariff: Sell to Both Groups

Make "Casual" pay access fee = full surplus

- Set $T(P^*) = CS_C(P^*)$, given P*. But what P*?
- $CS_C = 1/2(6 - P^*)(3 - 0.5P^*) = (3 - 0.5P^*)^2$



Two-Part Tariff: Sell to Both Groups

- Now choose P^* to maximize Π

  $\Pi = 2000\ T(P^*) + 1000\ P^*Q_S(P^*) + 1000\ P^* \bullet Q_C(P^*) - 5000$

- Substitute for demand and T*:

  $$\Pi = 2000\ (3 - 0.5P^*)^2 + 1000\ P^*\ (6 - P^*) + 1000\ P^*\ (3 - 0.5P^*) - 5000$$

- Set $d\Pi/dP = 0 \rightarrow P^* = \$1.50$ / hour

  T* = \$5.06 / week, Q_S = 4.5 hrs/week, Q_C = 2.25 hrs/week

  Π = **\$15,250 / week**

Summary: Tennis Club Pricing

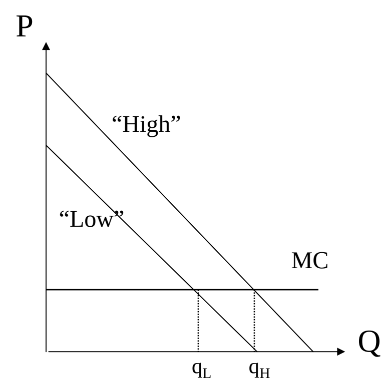
Approach	Profits per Week
Single Price	$ 8,500
Tariff: “Serious Only”	$ 13,000
Tariff: Sell to Both Groups	$ 15,250
Perfect Price Discrimination	$ 22,000

Implementing Two-Part Tariffs

- Setting access fee and per-unit price amounts to choosing which consumers will purchase your product and how much.
- Simplest when consumers are very similar. With many different types of consumers, solutions may involve trial and error
- Alternative schemes?
  - Different quality packages
  - Combining two-part tariffs with segmentation

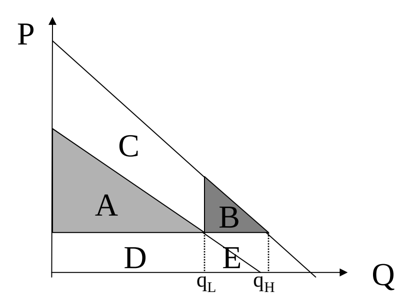
Volume Pricing: Example

- How does volume discounting maximize profits?
- Suppose there are two types of customers with demand curves as shown:
- Idea is to sell different blocks of quantities to different customer types.



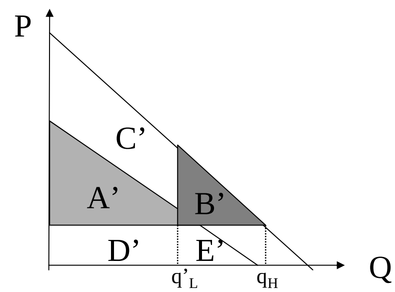
Volume Pricing: Example

- Attract only High, charge A+B+C+D+E for quantity q_H
- To attract High and Low, can sell two quantities $q_{L,}$ q_H.
- Idea is to get Low to buy q_L and High to buy $q_{H.}$
- Charge A+D for q_L, A+B+D+E for q_H
- Note: High gets surplus C
- As with tariffs, must compare profits from one group to profits from two groups.



Volume Pricing: Adjustments

- For more profits from High customers, consider selling Low some quantity q_L' other than q_L.
- With q_L' you maximize profits by:
  - Charge A'+D' for q_L'
    (Gives Low zero surplus)
  - Charge A'+ B'+D'+E' for q_H
    (or slightly less – give High enough surplus (C') to choose q_H over q_L')



Bundling

- Bundling refers to selling a combination of products for a single price; namely selling a "bundle."
- Many reasons to bundle
  - Customer convenience.
  - Extend market power (through tying)
  - Extract more consumer surplus than with separate prices

Bundling Example (from book)

Two theaters with known reservation prices. Price separately or bundle?

Case 1:	GWTW	GGG	
Theater A	$12,000	$3,000	
Theater B	$10,000	$4,000	
			Profit
Separate prices	$10,000	$3,000	$26,000
Pure bundle price	$14,000		$28,000

Take Away Points

- Two-part tariffs and volume discounts can be used to price discriminate through consumer self-selection.
- Both systems work best when there are few segments with very different demand.
- Bundling can also be used to extract more surplus.