14.01 Principles of Microeconomics, Fall 2007
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Lecture 26

Pricing and Monopolistic Competition

Outline

1. Chap 11: *Two-Part Tariff*
2. Chap 11: *Bundling*
3. Chap 12: *Monopolistic Competition*

1 Two-Part Tariff

When there are two consumers. Consumer 1 has higher demand than consumer 2. If setting $P = MC$, consumer 1 consumes Q_1 units and consumer 2 consumer Q_2 units. A_1 is consumer 1's consumer surplus, and A_2 is consumer 2's consumer surplus. Assume that $2A_2 > A_1$. Then the maximum entry fee the firm can charge is A_2. If more than A_2 is charged, consumer 2 would not consume.

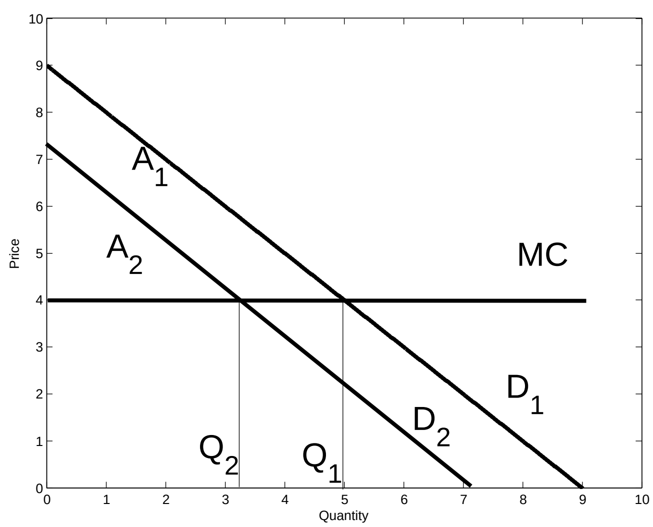

Figure 1: Entry Fee of Two Consumers.

Now consider the case that price is higher or lower than the marginal cost.

- If setting
$$P > MC,\ T = A_2',$$
we have
$$\pi_1 = A_2' + Q_1' \times (P - MC) = A_2 + C,$$
and
$$\pi_2 = A_2' + Q_2' \times (P - MC) = A_2 - B,$$
thus
$$\pi = \pi_1 + \pi_2 = 2A_2 + C - B.$$
Because
$$C > B$$
(see Figure 2),
$$\pi > 2A_2.$$

- If setting
$$P < MC,\ T = A_2''$$
we have
$$\pi_1 = A_2'' - Q_1'' \times (MC - P) = A_2 - D,$$
and
$$\pi_2 = A_2'' - Q_2'' \times (MC - P) = A_2 - E,$$
thus
$$\pi = \pi_1 + \pi_2 = 2A_2 - D - E.$$
Always
$$\pi < 2A_2.$$

Summary: the firm should set

- usage fee
$$P > MC,$$
namely, larger than the marginal cost;

- entry fee
$$T = A_2,$$
namely, equal to the remaining consumer surplus of the consumer with the smaller demand.

Summary: If the demands of two consumers are more similar, the firm should set usage fee close to MC and higher entry fee; if the demands of two consumers are less similar, the firm should set higher usage fee and lower entry fee.

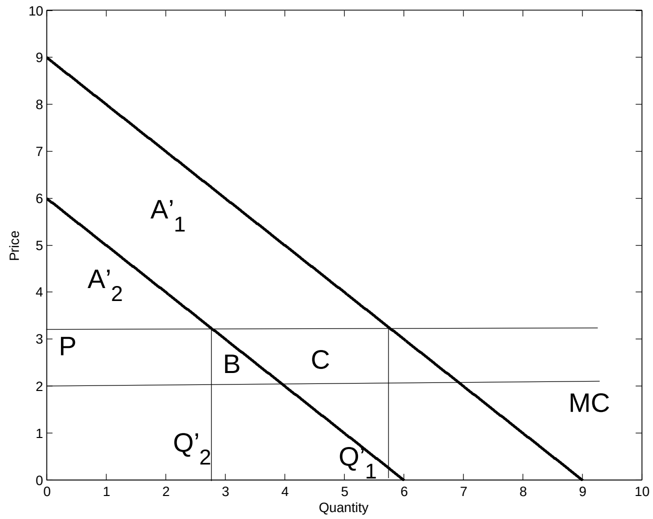

Figure 2: Two-Part Tariff: Price Higher than Marginal Cost

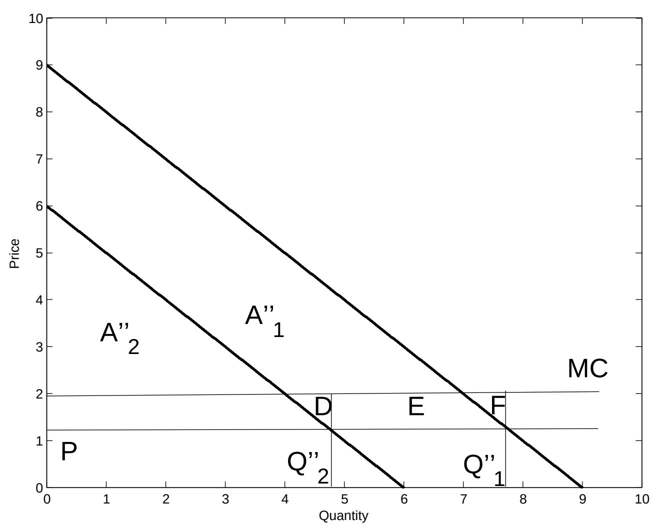

Figure 3: Two-Part Tariff: Price Lower than Marginal Cost

2 Bundling

Bundling means packaging two or more products, for example, vacation travel usually has a packaging of hotel, airfare, car rental, etc.
Assume there are two goods and many consumers in the market, and the consumers have different reservation prices (willingness to pay).
See Figure 4 and 5. The coordinates are the reservation prices of the two goods respectively.
If the firm sells the goods separately with prices P_1 and P_2 (see Figure 4),

- when
$$r_1 > P_1,$$
and
$$r_2 > P_2,$$
the consumer will buy both good 1 and 2;
- when
$$r_1 > P_1,$$
but
$$r_2 < P_2,$$
the consumer will only buy good 1;
- when
$$r_2 > P_2,$$
but
$$r_1 < P_1,$$
the consumer will only buy good 2;
- when
$$r_1 < P < 1,$$
and
$$r_2 < P < 2,$$
the consumer will buy neither good 1 nor 2.

If the firm sells the two goods in a bundle and charges price P_B,

- if
$$r_1 + r_2 > P_B,$$
the consumer will buy the bundle;
- if
$$r_1 + r_2 < P_B,$$
the consumer will not buy the bundle.

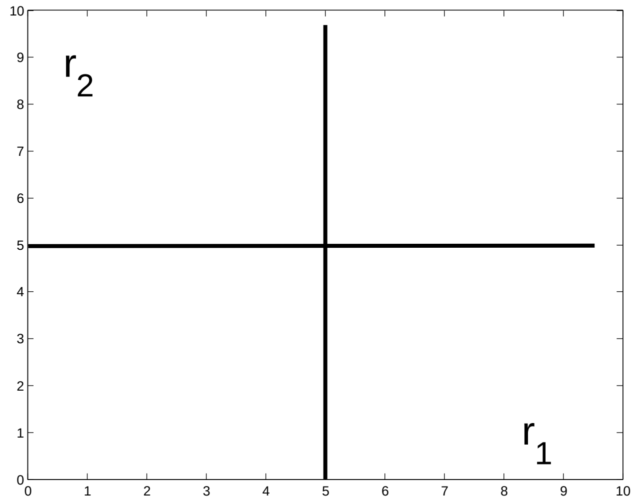

Figure 4: Price without Packaging.

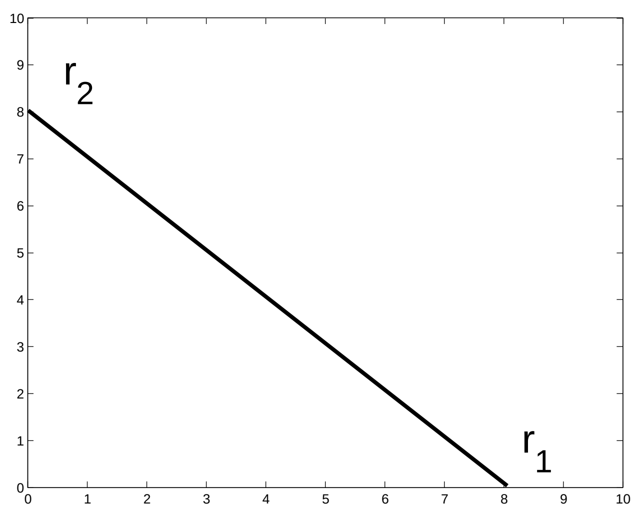

Figure 5: Price with Packaging.

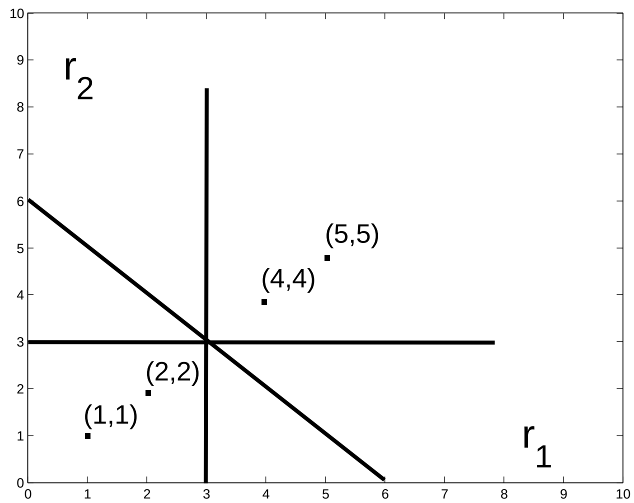

Figure 6: Bundling Example 1.

Bundling Example 1: the four points in Figure 6 represent the four consumers' reservation values. Consider two pricing strategies – one is that the two goods are sold separately with prices $P_1 = 3$ and $P_2 = 3$, and the other is that the two goods are sold in a bundle with price $P_B = 6$. Without bundling, the revenue is

$$R = 12,$$

and with bundling, the revenue is

$$R = 12;$$

bundling does not do better.

Bundling Example 2: Consider the other four consumers shown in Figure 7 and the firm chooses between the two pricing strategies mentioned before. Without bundling, the revenue is

$$R = 12,$$

and with bundling, the revenue is

$$R = 24;$$

obviously, bundling strategy benefits the producer in this case

Conclusion: bundling works well when

- the consumers are heterogeneous;
- price discrimination is not possible;
- the demand for different goods are negatively correlated.

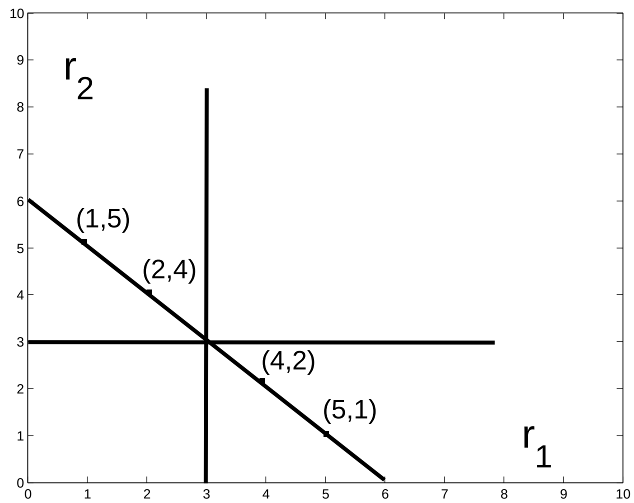

Figure 7: Bundling Example 2.

3 Monopolistic Competition

In monopolistic competition,

- there are many firms;
- there is free entry and exit;
- products are differentiated but close substitutes.

Thus

- each firm faces a distinct demand, which is downward sloping and elastic;
- there is no profit in long run (see Figure 8 and 9);
- price is higher than marginal cost because firms have some monopoly power, and thus there is some deadweight loss.

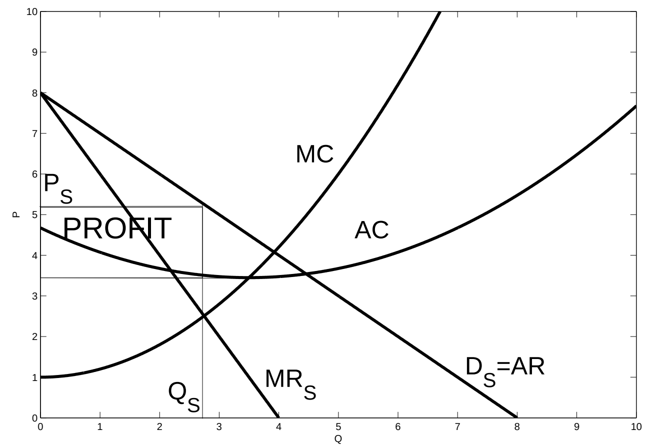

Figure 8: Short Run in Monopolistic Competition Market.

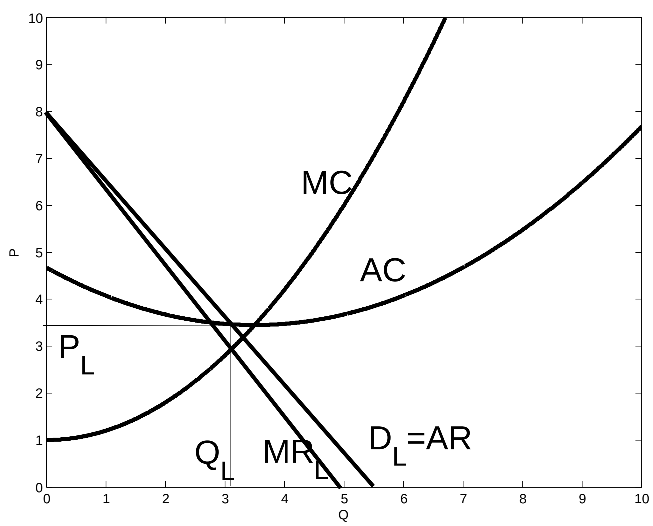

Figure 9: Long Run in Monopolistic Competition Market.