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 
  
  \[ P > MC, \quad T = A_2', \]
  
  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 
  
  \[ P < MC, \quad T = A_2'' \]
  
  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.
2 Bundling

Figure 4: Price without Packaging.

Figure 5: Price with Packaging.
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.
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.
3 Monopolistic Competition

Figure 8: Short Run in Monopolistic Competition Market.

Figure 9: Long Run in Monopolistic Competition Market.