EE 366 Economics of Services Sector

Chapter 4: Service Market Analysis (Structure, Conduct and Performance)

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1 Market Structure

	Perfect Competition	Monopolistic Competition	Oligopoly	Monopoly
Number of firm	Very Many	Many/ Several	Few	One
Freedom of entry	Unrestricted	Unrestricted	Restricted	Completely blocked
Nature of product	Homogeneous	Differentiated	Homogeneous or Differentiated	Unique
Implications for demand curve faced by firm	Horizontal (Price taker)	Downward sloping, but relatively elastic	Downward sloping, relatively inelastic	Downward sloping, more inelastic than oligopoly.
Firm size	Small firms	Small firms	Few large firms	One big firm
Possible consumer demand	Highly elastic	Elastic	Inelastic	Highly inelastic
Firm Profit	Normal profits	Economic profits in short run; normal profits over long run	Losses to normal and economic profits in short run and long run	Economic profits in short run and long run
Government Intervention	Minimal	Minimal	Moderate to highly	Highly to nationalization
Example	Agricultural products	Retail stores and restaurant	Automobiles	Public utilities

Source: Pindyck and Rubinfeld (2013): Microeconomics

Market Power (examples of measures)

- The Lerner Index
- The Concentration Ratio
- Herfindahl Index

1 Market Power Measures: The Lerner Index

- **Lerner Index *(L)***: Firm's ability to set its' **product price *(P)*** above marginal cost ***(MC)***. It measures **firm's market power**

$$L = \frac{P - MC}{P} = -\frac{1}{\eta} \quad \textit{where} \quad \eta = \frac{\partial q}{\partial p} * \frac{p}{q}$$

η = Price elasticity

- ✓ **Perfect competition market** ⇨ Firm is price taker ⇨ ⇨
- ✓ **When firm has some market power** ⇨ ⇨

When L close to 1 ⇨

1 Market Power Measures: The Concentration Ratio

❖ **Concentration Ratio *(CR)***: The sum of market share of large firms in the industry. It measures the industry's **market power**

$$CR-4 = Total\ market\ share\ of\ four\ largest\ firms\ in\ the\ industry$$

$$CR-8, CR-12,\ CR-15, \dots\dots\dots\dots\dots\dots.$$

✓ **The higher CR the higher industry market power and the higher monopoly level**

✓ **Limitation of CR**

- No information about number of firms in the market
- Markets with the same level of CR-4 do not have the same level of monopoly if number of firms and market share of those 4 firms are different

1 Market Power Measures: Herfindahl Index

- **Herfindahl Index *(HI)* *or Herfindahl-Hirschman Index* *(HHI)***: The sum of square of market share of each firm competing in the market

$$HI\ or\ HHI = S_1^2 + S_1^2 + S_1^2 + \ldots + S_n^2$$

S_i^2 = *Market share of firm **i**. Suppose there are **n** firms in the market*

- ✓ Unlike Concentration Ratio, ***HI*** employs market share of all firms in the market in the calculation
- ✓ If there is **one firm** in the market ⇨
- ✓ If there are **two firms** in the market with the same market share ⇨
- ✓ If there are **n firms** in the market with the same market share ⇨
- ✓ So if **n** is large and each firm does not have market share larger than others ⇨
- ✓ So **0 < *HI* < 1**

2 Strategy

❖ Price strategy

For example

- ✓ Two-part tariff pricing
- ✓ Bundling strategy

❖ Non-price strategy

For example

- ✓ Product differentiation

2 Strategy: Two-Part Tariff Strategy

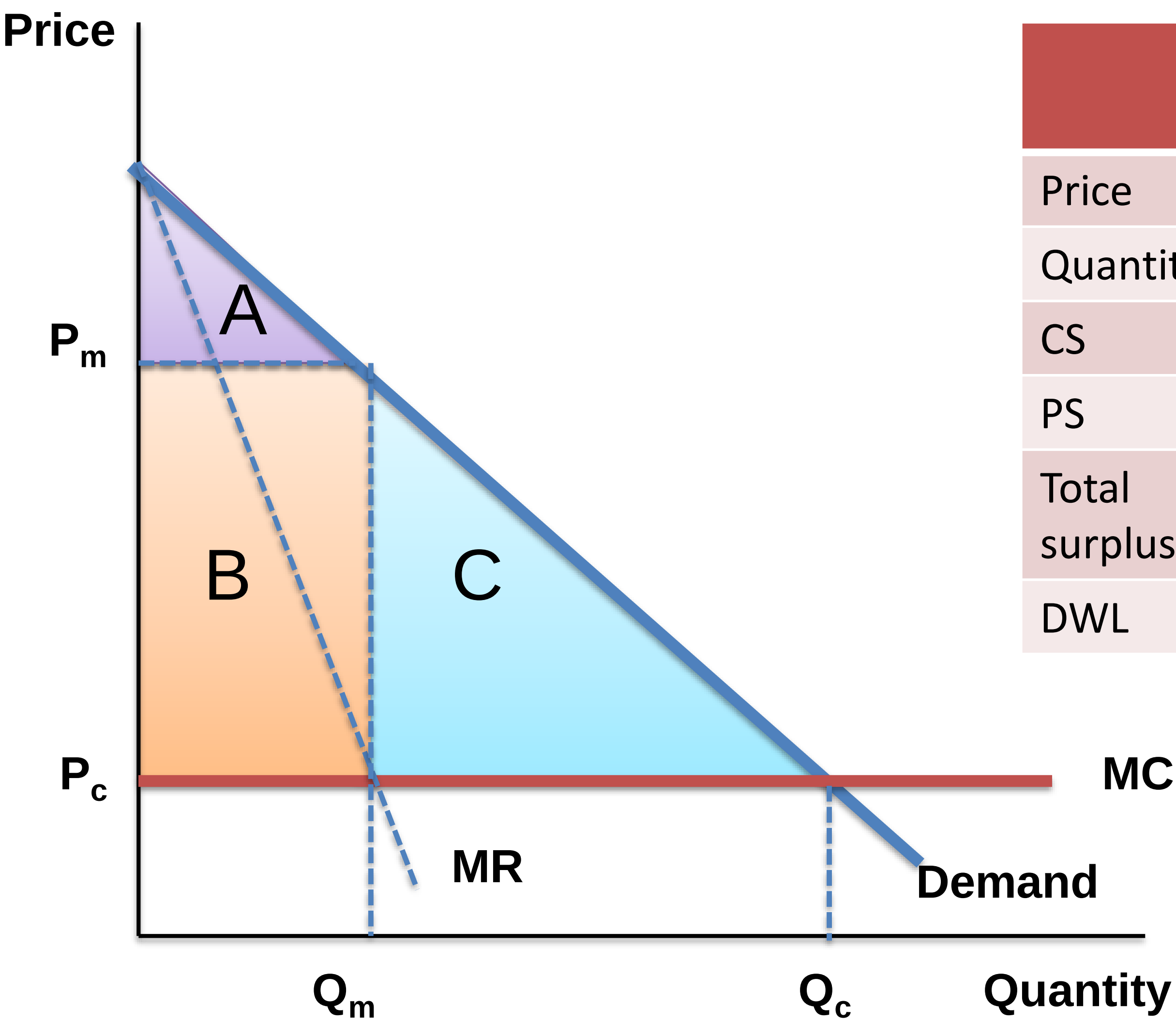
- **The Two-Part Tariff** is related to price discrimination and provides another means of extracting ***consumer surplus***.

- This price strategy can be divided into two parts: ***The entry fee*** (or membership fee) and ***the usage fee*** (or a fee of each unit used)

- **Example:** Tennis and golf club, Telephone service, Credit card services, and Disneyland ticket.

2.1 Strategy: Two-Part Tariff Strategy (Cont.)

Case1: When consumers have homogeneous demand (one consumer is representative of the market. (MC is assumed to be constant)



	Uniform pricing	Two-part Tariff
Price		
Quantity		
CS		
PS		
Total surplus		
DWL		

✧ The usage fee =

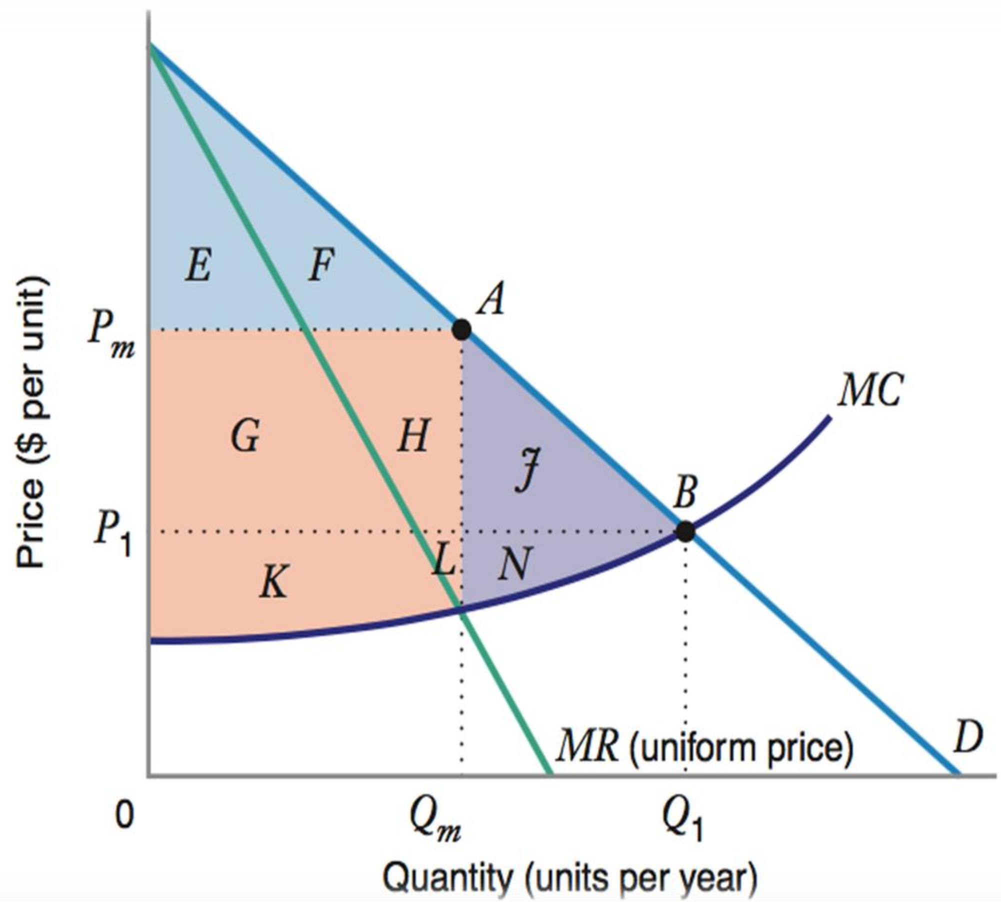
✧ An entry fee =

In this case, firm takes all consumer surpluses (Area ABC).

Source: Adapted from Pindyck and Rubinfeld (2012)

2.1 Strategy: Two-Part Tariff Strategy (Cont.)

- ✓ **Case1**: When consumers have homogeneous demand (one consumer is representative of the market.
- ✓ The producer captures ***all the surplus*** and there is no deadweight loss



	Uniform pricing	Two-part Tariff
Price		
Quantity		
CS		
PS		
Total surplus		
DWL		

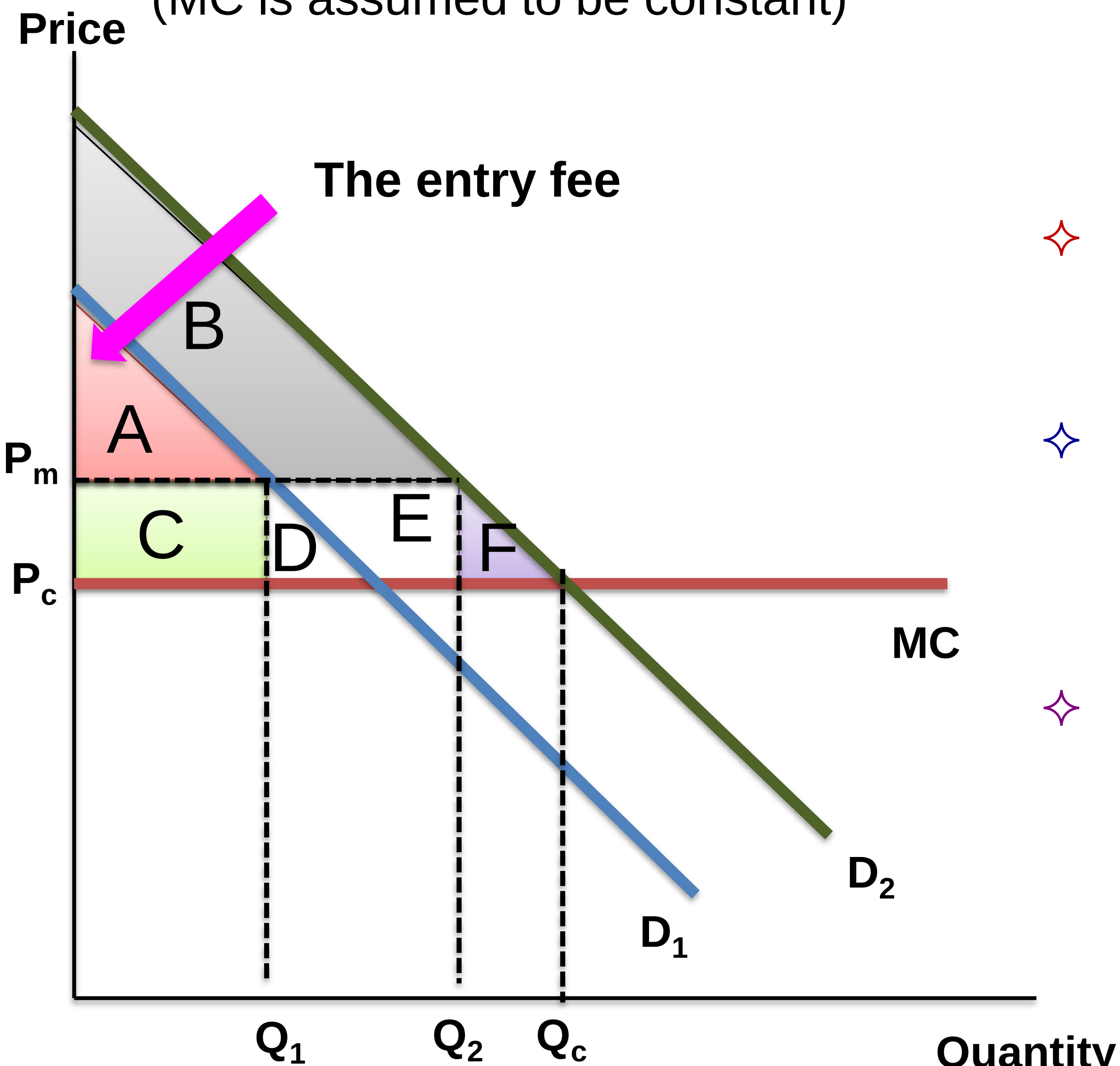
✧ **The usage fee =**

✧ **A entry fee =**

Source: Besanko and Braeutigam (2011)

2.1 Strategy: Two-Part Tariff Strategy (Cont.)

Case2: When consumers have heterogeneous demand.
(MC is assumed to be constant)



Strategies

- **The usage price = P_m (P>MC)**
- **The entry fee= area A (Surplus of consumer with the smaller demand.)**
- **Profit = 2A+(P_m-MC)(Q_1+Q_2)**

Source: Pindyck and Rubinfeld (2012)

2.2 Strategy: Bundling Strategy

- **Bundling** refers to sales in which customers are required to either purchase goods in ***a package*** or purchase goods separately.
- **Bundling** can increase profits when customers have ***different tastes*** (different willingness to pay) for the two products and when the firm cannot ***price discriminate***.
- **Example**
  - Restaurant
  - Vacation Package
  - Insurance

Source: Besanko and Braeutigam (2011)

2.2 Strategy: Bundling Strategy (Cont.)

Ex.1

	Reservation price (Maximum willingness to pay)	
	Hotel	**Airline Ticket**
Customer 1	$1,200	$600
Customer 2	$1,500	$400
Marginal Cost	$1,000	$300

Bundling can ***increase profit*** when customer preferences are

negatively

correlated

- **Without bundling**

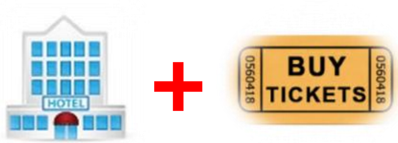
Price =$1,200

Price =$1,500

Price =$400

Price =$600

- **With bundling**



Price =$1,800

Source: Besanko and Braeutigam (2011)

2.2 Strategy: Bundling Strategy (Cont.)

➤ Bundling can not ***increase profit*** when customer preferences are ***positively correlated***

Ex.2

	Reservation price (Maximum willingness to pay)	
	House Insurance	**Car Insurance**
Customer 1	$1,200	$400
Customer 2	$1,500	$600
Marginal Cost	$1,000	$300

- **Without bundling**

Sale only **2**

Sale= $1,500 **Sale= $600**

Profit = $500 **Profit = $300**

Total profit **$800**

- **With bundling**

+

Sale only **2**

Sale = $2,100

Profit = $800

Total profit **$800**

Source: Besanko and Braeutigam (2011)

2.2 Strategy: Bundling Strategy (Cont.)

- Firms often allow customers to purchase components *individually*, as well as offering *a bundle.*

Ex.3: Mixed Bundling

	Reservation price (Maximum willingness to pay) (Per year)	
	Fitness	**Boxing**
Customer 1	$900	$800
Customer 2	$1,100	$600
Customer 3	$1,300	$400
Customer 4	$1,500	$200
Marginal Cost	$1,000	$300

The preference of consumer 2 and 3 is ***negatively correlated***

Source: Besanko and Braeutigam (2011)

2.2 Strategy: Bundling Strategy (Cont.)

Ex.3: Mixed Bundling

Option	Price	Sale for customer	Profit
1.No bundling	Fitness: $1,300	3 + 4	(1,300-1,000)*2 = **$600**
	Boxing: $600	1 + 2	(600-300)*2 = **$300**
			Total profit = $1,200
2.Pure bundling	Fitness & Boxing $1,700	1 + 2 + 3 + 4	**Total profit** (1,700-1,300)*4 = **$1,600**
3.Mixed bundling	Fitness:$ 1,499	4	1,499-1,000 = **$499**
	Boxing: $799	1	799-300 = **$499**
	Fitness & Boxing $1,700 (negative relationship)	2 + 3	(1,700-1,300)*2 = **$800**
			Total profit = $1,798

Source: Besanko and Braeutigam (2011)

2.3 Strategy: Product Differentiation

- **Definition**: Two goods are differentiated good if they are substitutes but not perfect substitutes.

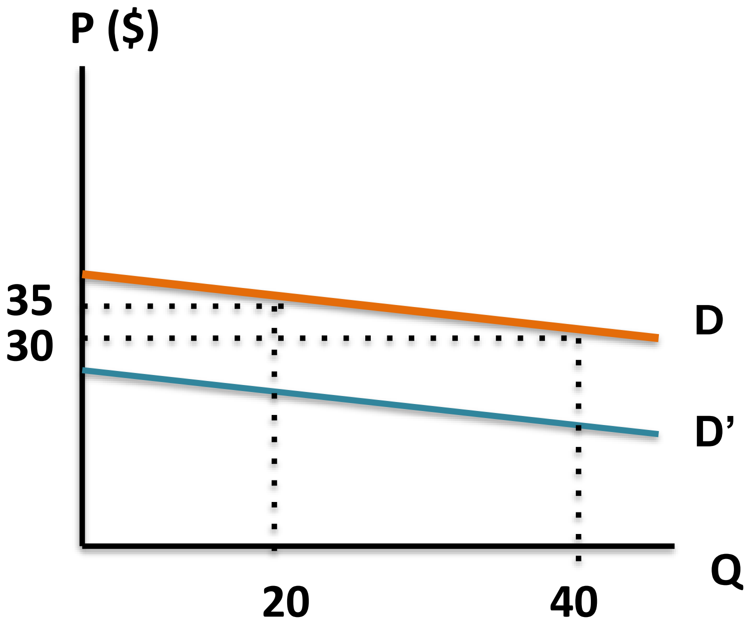
Horizontal Differentiation	Vertical Differentiation
✓ Goods are **different** but at the same price some consumers will buy one and some will buy other, it really depends **on their preferences.**	✓ Goods are **different** and all consumers would prefer one to the other if they were sold at the same price. **Goods are of different qualities.**

Source: Besanko and Braeutigam (2011)

2.3 Strategy: Product Differentiation (Cont.)

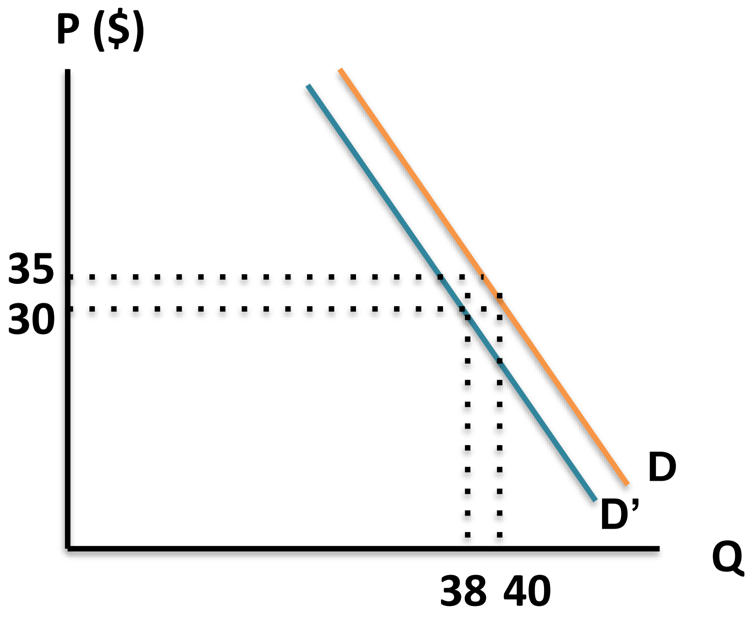
- **Horizontal differentiation** is an important concept for the theory of **oligopoly** and **monopolistic competition**.
- This is because some consumers have loyalties toward one brand over the other, and thus do not regard the products as perfect substitutes.

Figure A: Weak horizontal differentiation



The firm's demand is quite sensitive to a change in its own price and the prices of its rivals.

Figure B: Strong horizontal differentiation



The firm's demand is much less sensitive to a change in its own price and the prices of its rivals.

Source: Besanko and Braeutigam (2011)

2.3 Strategy: Product Differentiation (Cont.)

Figure A: Weak horizontal differentiation

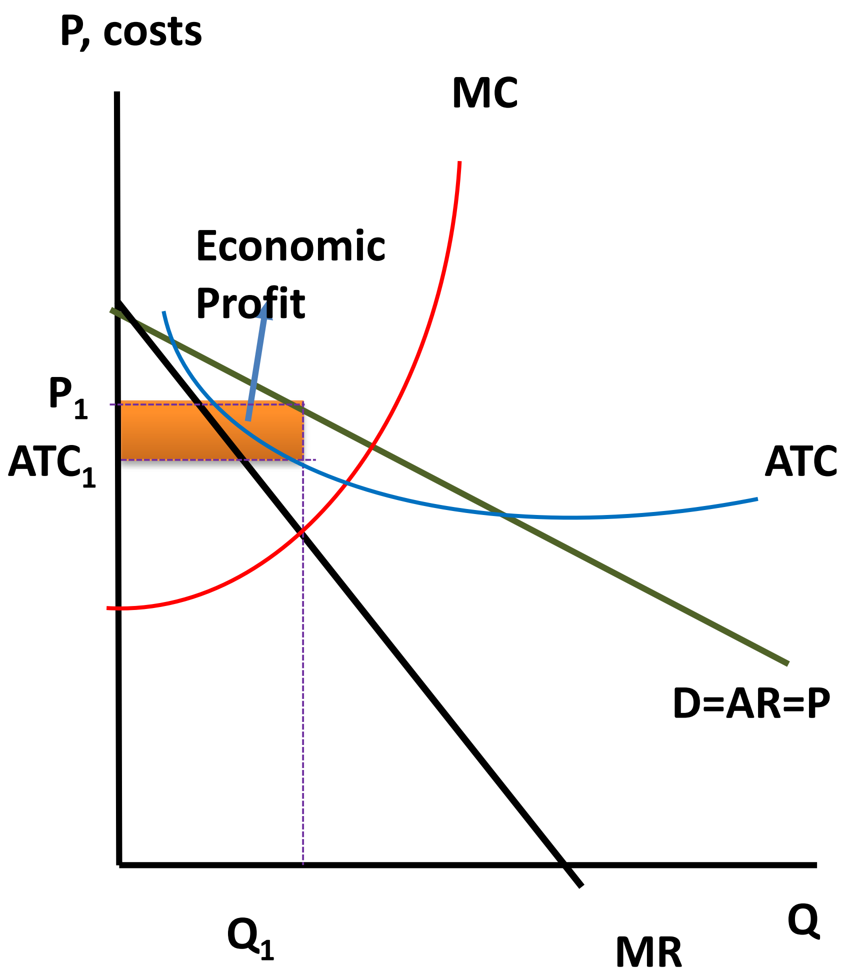
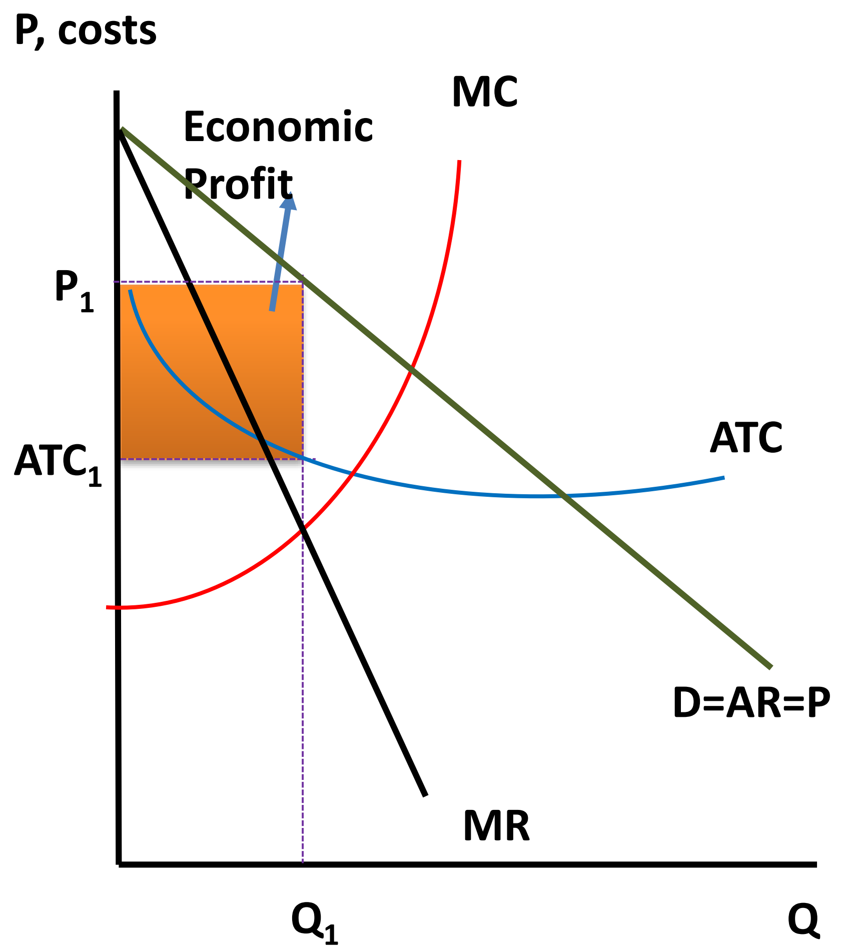


Figure B: Strong horizontal differentiation



Performance

Performance measures might depend on a firm's **short term goals** and/or **long term goals**. Might include for example,

Reference

- David Besanko, and Ronald Braeutigam, Microeconomics, 4th edition
- Robert Pindyck and Daniel Rubinfeld (2012), Microeconomics, 8th edition

Discussion

1. Explain **market structure** of your group service industry.
2. Provide examples of price strategy in the form of **two-part tariff pricing** and **bundling strategy** of your group service industry.
3. Do your group service industry has the characteristic of product differentiation both in terms of **horizontal differentiation** and **vertical differentiation**?
4. If there exists a horizontal product differentiation in your group service industry. Do you think it is a **weak or strong horizontal differentiation**?