Monopoly

Barriers to entry

Revenue for the monopolist

The firm’s cost and profit maximization

Monopoly and the allocation of resources

Problem estimating the welfare cost of monopoly

Price discrimination

Barriers to Entry

- **A *monopoly* is the sole supplier of a product with no close substitutes**
- **The most important characteristic of a monopolized market is *barriers to entry***
- ***Barriers to entry are restrictions on the entry of new firms into an industry***
  - **Legal restrictions**
  - **Economies of scale**
  - **Control of an essential resource**

Legal Restrictions

- **One way to prevent new firms from entering a market is to make entry illegal**

- **Patents (**專利權**), licenses, and other legal restrictions (**專賣,特許**) imposed by the government provide some producers with legal protection against competition**

Patent and Invention Incentives

- **A *patent* awards an inventor the exclusive right to produce a good or service for 20 years**

- **Patent laws**
  - **Encourage inventors to develop new products/ processes**
  - **Provide the stimulus to turn an invention into a marketable product.**

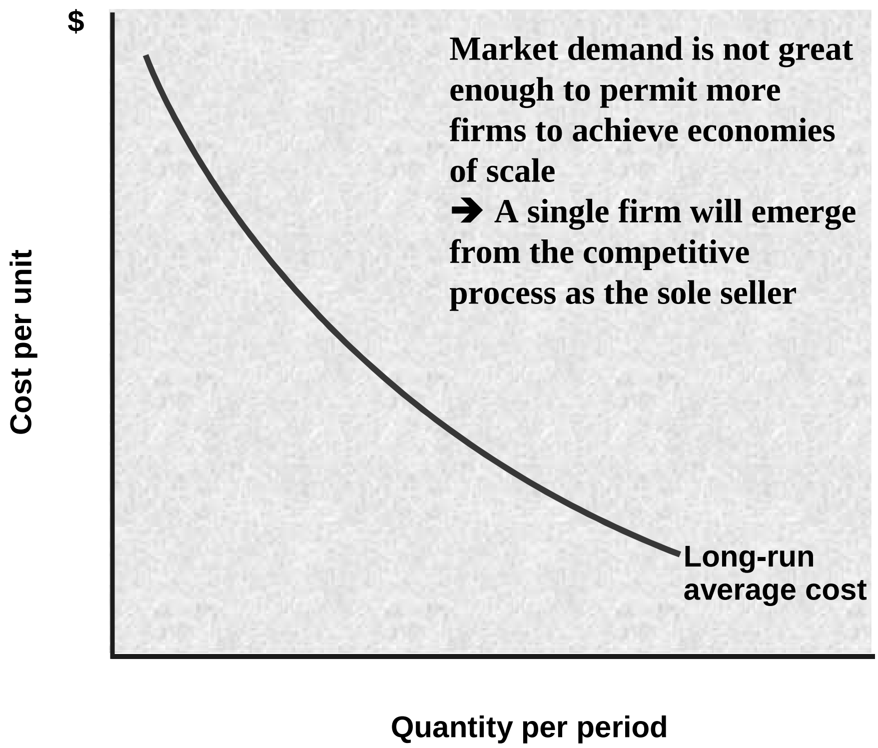
Licenses and other Entry Restrictions

- Governments often award a single firm the exclusive right to supply a particular good or service
  - Federal licensing of Broadcast TV and radio rights
  - State licensing of hospitals
  - Cable TV and electricity on local level
- 我國: 郵政,菸酒,油品(已廢止)

Economies of Scale

- A monopoly emerges naturally
  - Experiences economies of scale
  - downward-sloping, long-run average cost curve
- A single firm can supply market demand at a lower average cost than could two or more firms at smaller rates of output
- See next slide

Exhibit 1: Economies of Scale as a Barrier to Entry



Natural Monopoly

- **Because such a monopoly emerges from the nature of costs, it is called a *natural monopoly***
- **A new entrant cannot sell enough output to experience the economies of scale enjoyed by an established natural monopolist**
  - **➔ entry into the market is naturally blocked**

Control of Essential Resources

- Control over some nonreproducible resource critical to production
  - Professional sports teams try to block the formation of competing leagues by signing the best athletes to long-term contracts
    (明星球員簽訂高薪長期契約)
  - Alcoa was the sole U.S. maker of aluminum(鋁) because it controlled the supply of bauxite (鐵鋁氧石)
  - China is the monopoly supplier of pandas(貓熊)
  - DeBeers controls the world’s diamond trade

Local Monopolies

- More common that national or international monopolies
- Numerous natural monopolies for products sold in local markets
- Profitable monopoly attracts competitors
  - Ex: Wireless transmission will break local cable TV provider.

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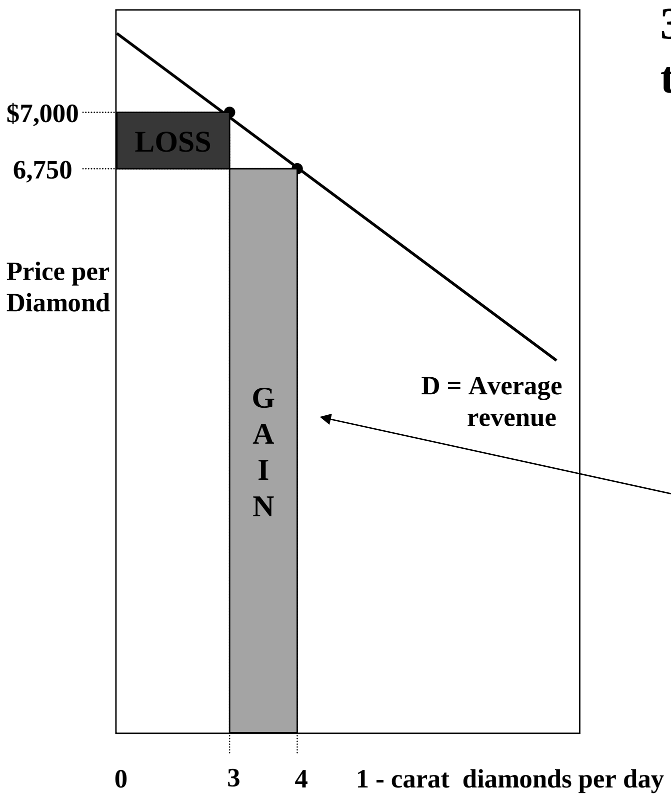
Revenue for the Monopolist

- **The demand faced by monopolist = market demand**
  - **The demand curve for the monopolist's output therefore slopes downward**
  - **This has important implications for revenues**
- **Remark: Flat demand curve for perfect competition**

Demand, Average and Marginal Revenue



3 diamonds a day ➔ Price ->7000, total revenue of $21,000

4 diamonds → Price→$6,750, total revenue=$27,000

Marginal revenue= 27,000-21,000 =6,000 <Average revenue(=price)

=Gain-Loss=6750-750

Note: MR=AR=Price for the perfectly competitive firm

Revenue Schedule

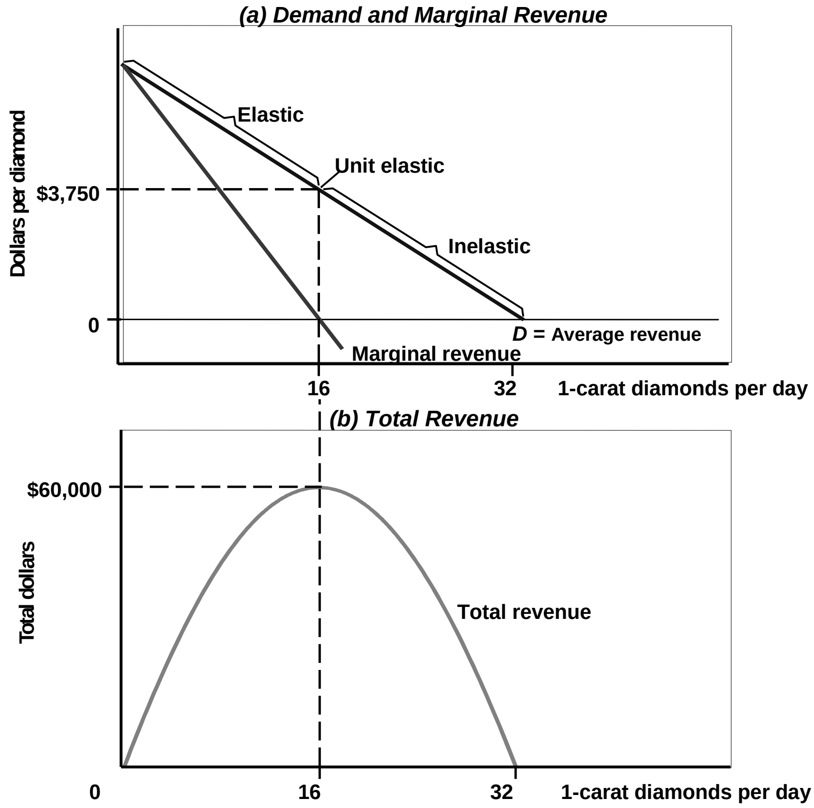
Revenue for De Beers, a Monopolist

1-Carat diamonds per day (Q) (1)	Price (average revenue) (p) (2)	Total revenue (TR = Q x p) (3) =(1) x (2)	Marginal revenue (MR = ΔTR / ΔQ) (4)
0	$7,750	0	-
1	7,500	$7,500	$7,500
2	7,250	14,500	7,000
3	7,000	21,000	6,500
4	6,750	27,000	6,000
5	6,500	32,500	5,500
6	6,250	37,500	5,000
7	6,000	42,000	4,500
8	5,750	46,000	4,000
9	5,500	49,500	3,500
10	5,250	52,500	3,000
11	5,000	55,000	2,500
12	4,750	57,000	2,000
13	4,500	58,500	1,500
14	4,250	59,500	1,000
15	4,000	60,000	500
16	3,750	60,000	0
17	3,500	59,500	-500

Max. revenue.

Next slide depicts this information graphically.

Monopoly Demand and Marginal and Total Revenue



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Firm's Costs and Profit Maximization

- **Monopolist can choose either the price or the quantity,**
  - **choosing one determines the other!**
- **Because the monopolist can select the price,**
  - **Monopolist is a *price maker***
- **Any firm that has some control over price is a price maker**

- **Comparison: Price taker in perfect competition**

Profit Maximization

- **Profit = TR-TC**

- **Which price-quantity combination should De Beers select to maximize profits**

- **See next slide for the short run data**

Short-Run Revenues and Costs for the Monopolist

Short-run Costs and Revenue for a Monopolist							
Diamonds per day (Q) (1)	Price (average revenue) (p) (2)	Total revenue (TR = Q x p) (3) =(1) x (2)	Marginal Revenue (MR = ΔTR / ΔQ) (4)	Total Cost (TC) (5)	Marginal Cost (MC = ΔTC / ΔQ) (6)	Average Total Cost (ACT = TC/Q) (7)	Total Profit or Loss = TR - TC (8)
0	$7,750	0	-	$15,000	-	-	-$15,000
1	7,500	$7,500	$7,500	19,750	4,750	$19,750	-12,250
2	7,250	14,500	7,000	23,500	3,750	11,750	9,000
3	7,000	21,000	6,500	26,500	3,000	8,830	-5,500
4	6,750	27,000	6,000	29,000	2,500	7,750	-2,000
5	6,500	32,500	5,500	31,000	2,000	6,200	1,500
6	6,250	37,500	5,000	32,500	1,500	5,420	5,000
7	6,000	42,000	4,500	33,750	1,250	4,820	8,250
8	5,750	46,000	4,000	35,250	1,500	4,410	10,750
9	5,500	49,500	3,500	37,250	2,000	4,140	12,250
10	***5,250***	***52,500***	***3,000***	***40,000***	***2,750***	***4,000***	***12,500***
11	5,000	55,000	2,500	43,250	3,250	3,930	11,750
12	4,750	57,000	2,000	48,000	4,750	4,000	9,000
13	4,500	58,500	1,500	54,500	6,500	4,190	4,000
14	4,250	59,500	1,000	64,000	9,500	4,570	-4,500
15	4,000	60,000	500	77,500	13,500	5,170	-7,500
16	3,750	60,000	0	96,000	18,500	6,000	-36,000
17	3,500	59,500	-500	121,000	25,000	7,120	-61,500

Profit max.
MR=3000 ≧
MC=2750

Would not produce 11th→ MR=2500<MC=3250

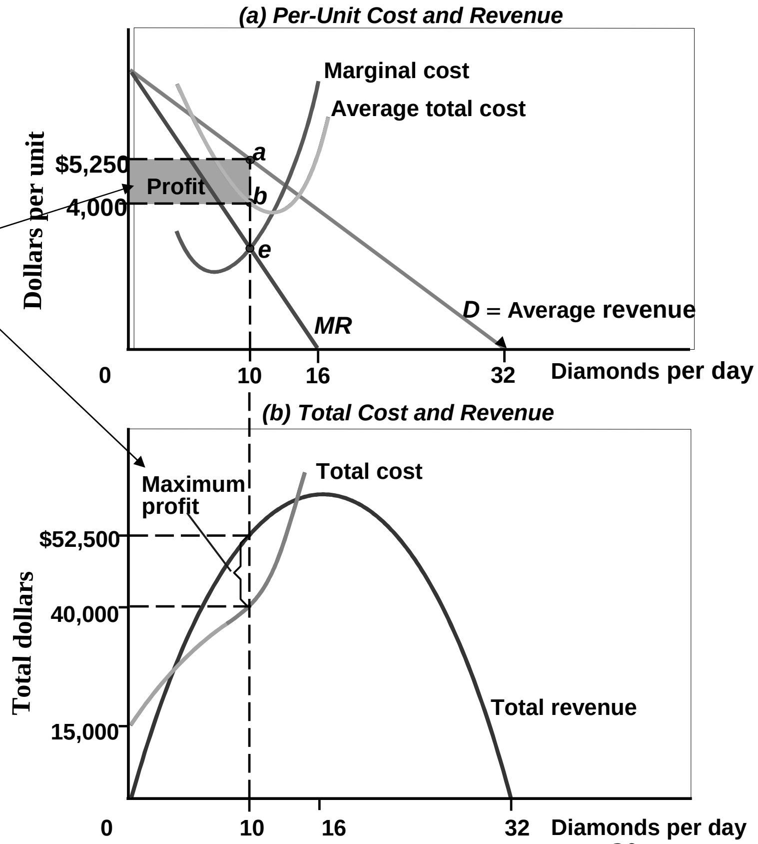
Next slide provides a graphical illustration of this process.

Monopoly Costs and Revenue

MR=MC at point e
→Profit is maximized at e. when 10 diamonds are sold.
Diamond price =$5,250.
Average cost= $4,000

Economic profit= (5250-4000)=$12,500

Profit/loss is measured by the difference between TR & TC



Short-Run Losses and the Shutdown Decision

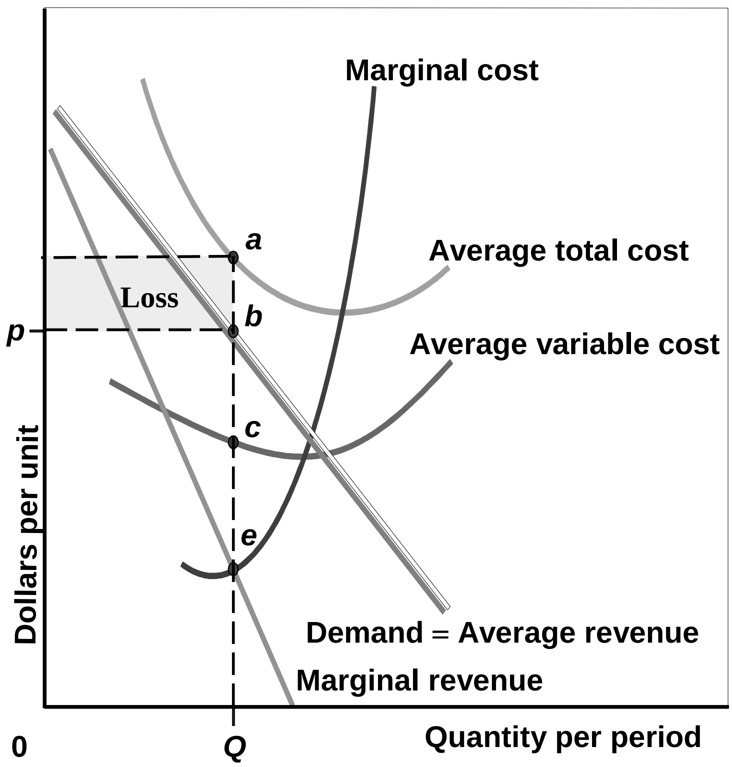
- **A monopolist might lose money**
  - **Demand may not be great enough to generate economic profit in short/long run**
  - **Minimize loss.**
- **In the short run, decide whether to produce or to shut down**
  - **Price>average variable cost**
    - **→Produce**
  - **Otherwise**
    - **→shut down**

The Monopolist Minimizes Losses in the Short Run

ATC=AFC+AVC

MR=MC at point *e*,
Q→ quantity
p*→ *price

The firm covers its AVC (point c)
It covers making some AFC
The average loss = *ab*,
Total lose= yellow shaded area



Monopolist's Supply Curve

- **MR=MC identifies the profit maximizing quantity, but the price is found on the demand curve**
  - **Remark: We can't determine Demand with MR**
  - **Ex: f'(x) → Can't determine an unique f(x)**

- **There is no curve that shows the relationship between both price and quantity**
- **No *monopolist supply curve!***

Long-Run Profit Maximization

- **The distinction between the long/short run**
  - **Important for perfect competition**
    - **Firms enter/exit→ erase economic benefit/loss**
  - **If a monopoly protected by blocking the entry, economic profit can persist in the long run**

- **However, short-run profit is no guarantee of long-run profit**
  - **Ex: Patent→ 20years.**

Long-Run Profit Maximization

- **A monopolist can increase the profit / eliminate the loss in the long run by adjusting the scale of the firm**

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Comparison between Perfect Competition &Monopoly

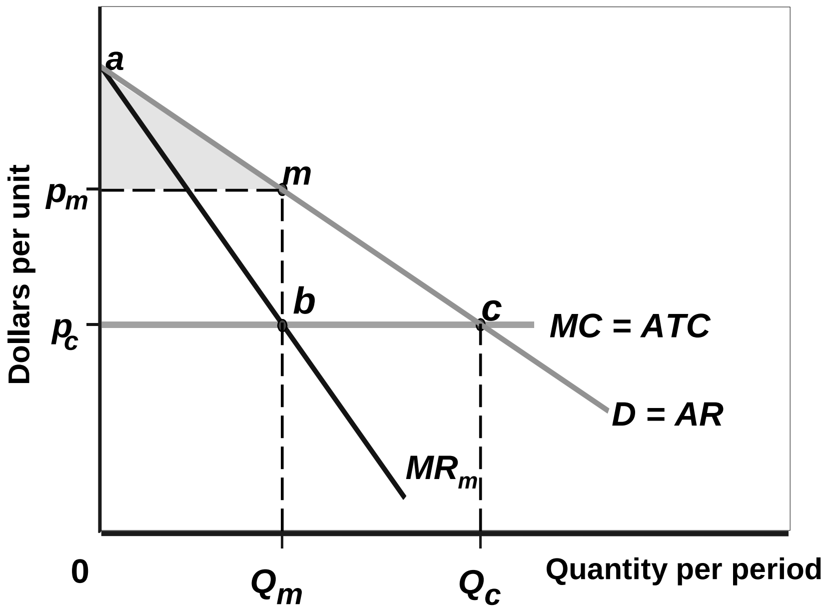
- **When there is only one firm in the industry,**
  - **industry demand=monopolist's demand ➔ the price the monopolist charges determines how much gets sold**

- **See next slide**
  - **Assume a constant-cost industry**
    - **ATC=MC →Flat curve**

Perfect Competition and Monopoly

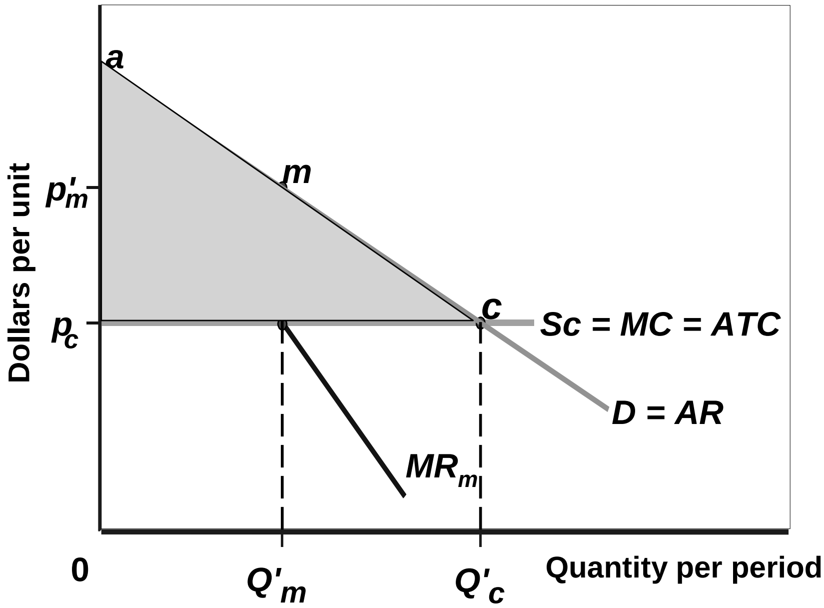
Equilibrium:
Perfect competition: ***c***
Price: p_c
Quantity: Q_c.

Monopoly: b
Price: p_m
Output: Q_m.



At Qm, marginal benefit (point m)>marginal cost (point ***b*****)**
Society would be better off if output were expanded
➔ The monopolist restricts output below the level that maximizes social welfare ➔
Reduced consumer surplus : yellow triangle amp_m

Perfect Competition and Monopoly



Consumer surplus
Perfect competition: *acp*$_c$
Monopoly: shrinks to *amp*$_m$

Monopolist earns economic profit: shaded rectangle
Transfer from consumer surplus to monopoly profit
➔Not lost to society
➔Not considered a welfare loss from monopoly.

Consumer surplus reduces more!
Lost the triangle *mcb* ➔ the deadweight loss of monopoly
It is a loss to consumers but a gain to nobody.
This loss results from the *allocative inefficiency arising from the higher price and reduced output.*

Monopoly

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- Problem estimating the welfare cost of monopoly
- Price discrimination

- The actual cost of monopoly might be
  - overestimated or
  - Underestimated

  by the welfare loss stated above

Why the Welfare Loss Might Be Lower

- **If economies of scale are extensive enough, a monopolist can produce output at a lower cost than competitive firms**
- **If this is true, the price or at least the cost of production could be lower under monopoly than under competition**

Why the Welfare Loss Might Be Lower

- **The welfare loss may overstate the true cost of monopoly**
  - **Monopolists may, in response to public scrutiny and political pressure, keep prices below what the market could bear (Ex: 電價水價的管制)**

- **Monopolist may keep the price below the profit maximizing level to avoid attracting new competitors**

Why the Welfare Loss Might Be Higher

- **The welfare loss of monopoly may, in fact, be greater than shown in our example**

- **If resources are devoted to securing and maintaining a monopoly position, monopolies may involve more of a welfare loss that simple models suggest**

Why the Welfare Loss Might Be Higher

- **For example, radio and TV broadcasting rights :**
  - **Use a particular band of the scarce broadcast spectrum**
- **These rights have been given away by government agencies to the applicants deemed most deserving**

Why the Welfare Loss Might Be Higher

- **Applicants spend millions on lawyers' fees, lobbying expenses, and other costs to make themselves appear the most deserving**
- **The efforts devoted to maintaining a monopoly position are largely a social waste because they use up scarce resources but add no unit to output**
- **Activities undertaken by individuals to influence public policy that will redistribute income to them are referred to as *rent seeking***

2005年台灣電視頻道換照爭議 (Wiki Encyclopedia)

- 中華民國新聞局於2005年8月對有線電視、衛星電視頻道撤消執照的爭議。
- 新聞局於2005年8月對有線電視、衛星電視頻道進行審核執照。最後有七個頻道未通過審核，因而停播：
  - 華爾街財經台
  - CASA財經台
  - 蓬萊仙山
  - 歐棚衛星電視台
  - 彩虹頻道
  - 龍祥電影台
  - 東森新聞S台
- 其中前六個頻道因播放色情節目或內容過於商業化而未通過審核，主要爭議點落於東森新聞S台一案上。
- 東森新聞S台為東森集團旗下頻道之一，新聞局認為此頻道多數節目過於商業化、綜藝化。並舉例王育誠主持之社會追輯令節目屢次播出「鋼管辣妹」、「應召酒店」等，被核處罰款23次。局長姚文智面對媒體時亦曾答覆：「（東森新聞S台）羊腥羶色、違法的情況特別嚴重」。
- 新聞局其他理由包括：腳尾飯事件即由此電視台工作人員協助「造假」、「東森新聞S台」及「東森新聞台」並存問題，以及新聞台報導內容問題不恰當，並舉例東森新聞董事長王令麟登上CNN及其女兒代言化粧品，亦成為報紙新聞中的一條。（見外部連接結）
- 無論新聞局出發點為何，可以肯定的是，此事件由審核執照轉為政治事件。臺灣在野黨即強烈批評新聞局違反新聞自由，要求催生通訊傳播委員會（NCC）。

Why the Welfare Loss Might Be Higher

- **Monopolists have been criticized for being slow to adopt the latest production techniques, to develop new products, and lacking innovativeness**

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Price Discrimination

- **A monopolist can increase economic profit by charging higher prices to customers who value the product more**

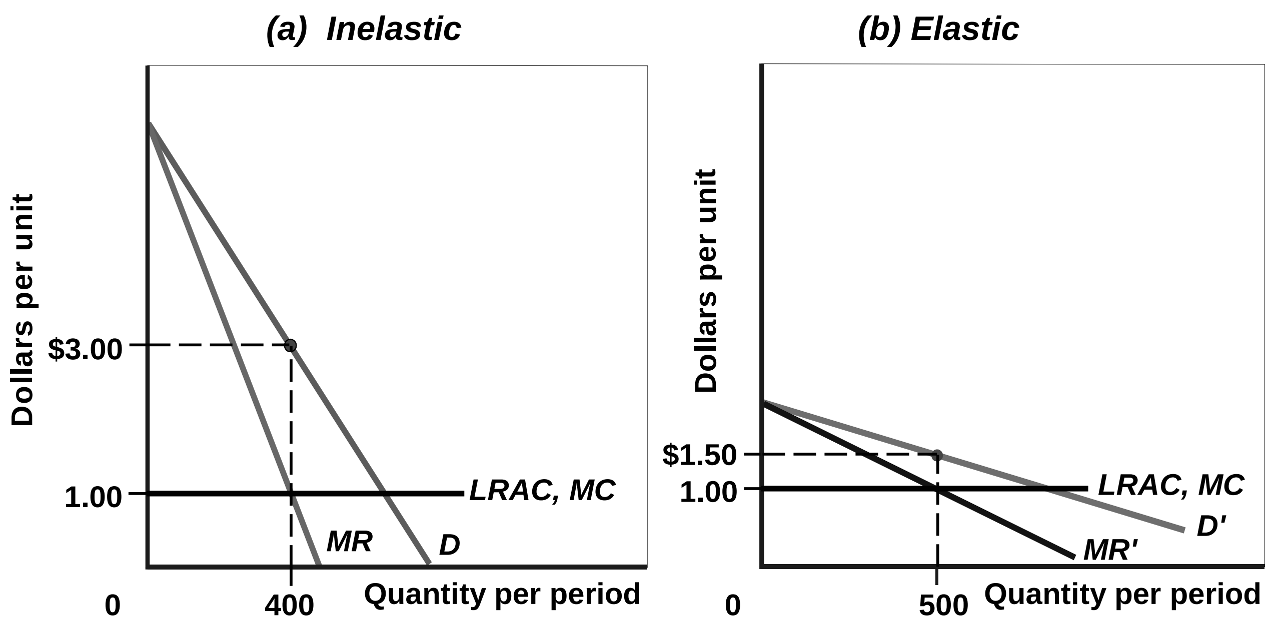
1. **Charging difference prices to different customers**
2. **the price differences are not justified by differences in cost**

called *price discrimination*

Conditions for Price Discrimination

- The demand curve for the firm slope downward
  - The firm is price maker
- At least two groups of consumers with a different price elasticity of demand
- Able (at little cost) to charge each group a different price for the same product
- Able to prevent those who pay the lower price from reselling to those who pay the higher price (防止轉售)
- In next slide, customers are divided into 2 groups.

Price Discrimination



Let LRAC=MC=1
consumers with the lower price elasticity pay \$3
with the higher price elasticity pay \$1.50

Examples of Price Discrimination

- **Businesspeople**
  - **urgent demands for travel and communication**
  - **less sensitive to price (因為可報帳)**

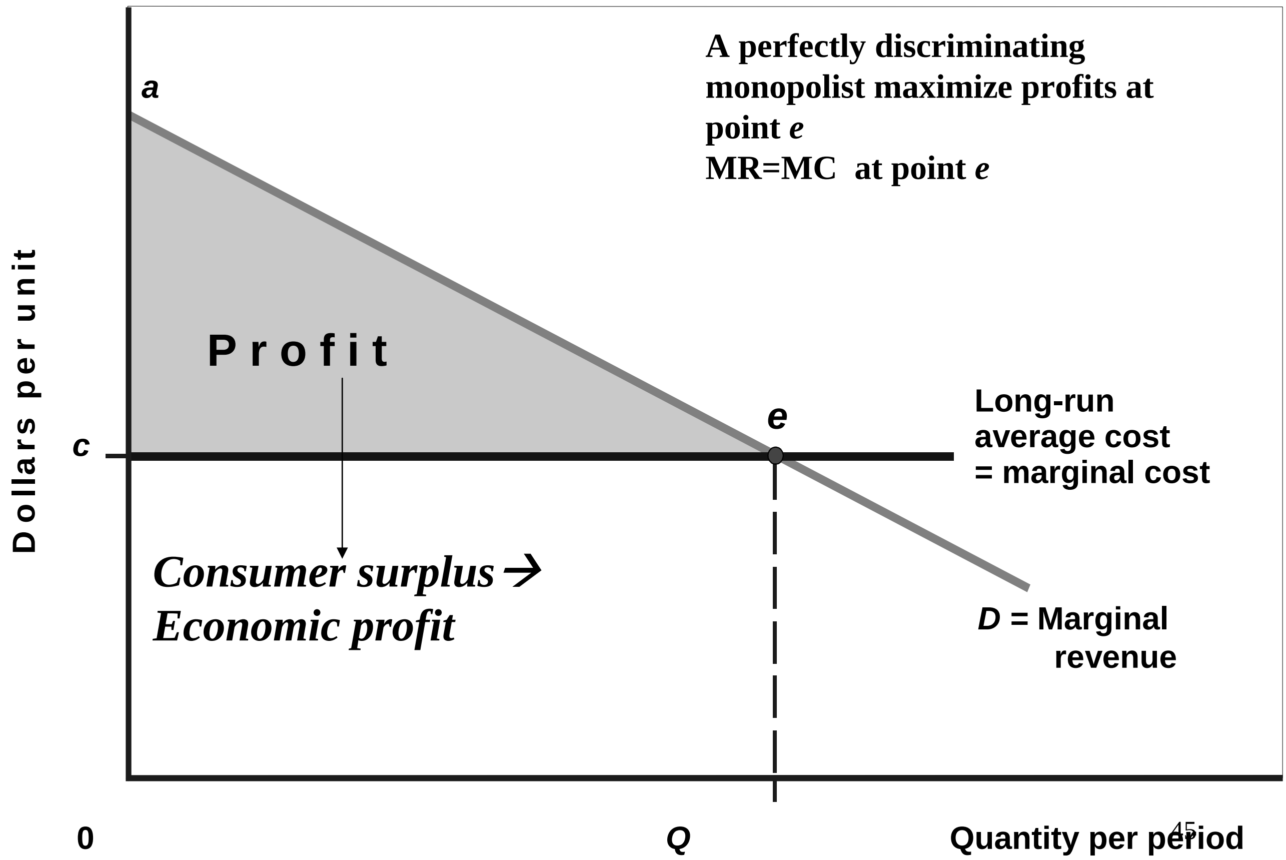
- **Telephone companies are able to sort out their customers by charging different rates based on the time of day**

Perfect Price Discrimination

- **If a monopolist could charge a different price for each unit sold,**
  - **MR=Price of the last unit sold**
  - **demand curve would = marginal revenue curve**

- **Call *perfect price discrimination***
  - **See next slide**

Perfect Price Discrimination



Perfect Price Discrimination

- Perfect price discrimination gets high marks based on allocative efficiency

- Monopolist does not have to lower price to all customers when output expands,
  - No reason to restrict output

- Quantity Q = quantity in perfect competition

Perfect Price Discrimination

- **Perfect price discrimination yields no consumer surplus,**
  - **Benefits consumers derive =**
    $ paid for the good
- **Since the monopolist does not restrict output, there is no deadweight loss**

課堂報告

- 請解釋何謂patent,並說明訂定patent law的優點
- 請解釋何謂price taker/ price taker.
- 請繪圖說明何謂 deadweight loss of monopoly
- 請舉例說明使用deadweight loss of monopoly估計actual cost of monopoly如何發生高估的問題
- 請說明何謂 price discrimination及其構成要件
- 請說明何謂 perfect price discrimination

Homework

- 13. Price discrimination
- 15. 根據圖形回答 monopolist 在短期如何讓利益極大化
- 16. Monopoly of a constant cost industry