Lecture 20: Price Discrimination, Monopoly Rents and Social Surplus

Clicker Question

A monopoly price increase leads to an increase in monopoly profits whenever

Example: Monopoly Profit Maximization

(The monopoly must produce whole units and charge everyone the same price.)

Chairs Price (P, WTP)	Quantity (Q)	Total Revenue (TR=PxQ)	Marginal Revenue (MR)	
100	1	100	100	
90	2	180	80	*MR = 90 – 1×10*
80	3	240	60	*MR = 80 – 2×10*
70	4	280	40	
60	5	300	20	← Q_M*: MR > MC
50	6	300	0	← MR < MC
40	7	280	–20	

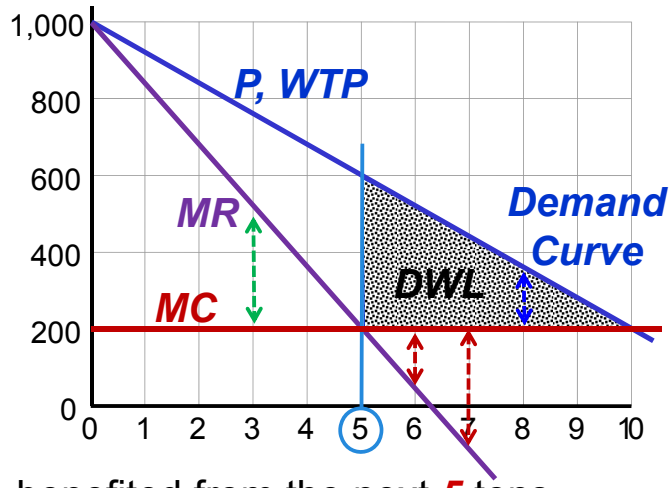
Note: continued from previous lecture.

- How many chair would the firm want to sell if the cost ***(MC)*** of each additional unit is ***$15***?
- At what price?
- Would chair #**6** increase social surplus? #**7**?

Monopoly and Social Surplus

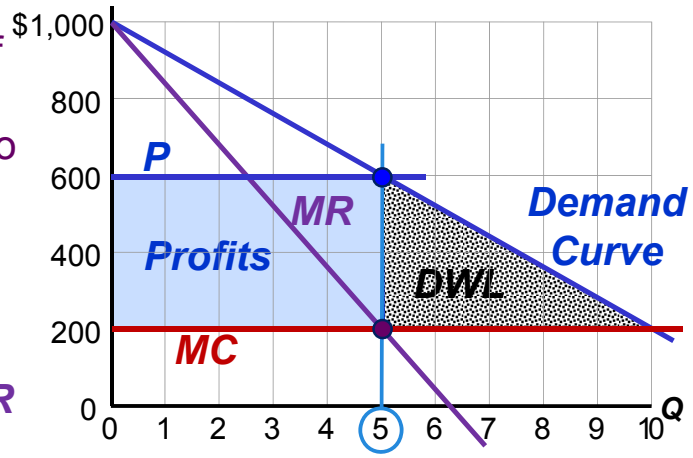
(Tons of Sugar: The monopoly can produce parts of a ton.
It must charge everyone the same price.)

- Monopoly earns profits ***(MR – MC)*** on every unit up to ***5*** tons…
- but she would lose profits on units between ***5*** tons and ***10*** tons.
- So she will sell ***5*** tons.



- But society would have benefited from the next ***5*** tons, because ***WTP > MC***.
- The next ***5*** tons, not produced, represent unexploited gains of trade ***(DWL)***.

- In our example,
  - The cost of each ton of sugar *(**MC**)* is ***$200***.
  - the monopolist wants to sell 5 tons, because ***MR*** ≥ ***MC*** for each of the first 5 tons.
  - She sets the ***price*** at $600 (on the ***demand curve***, NOT on the ***MR*** or ***MC*** curve). Why?



- Monopoly profits are ***5(600 – 200) = $2000***.
- Deadweight loss = $1000. Why?
- In this example, we have so far assumed that the monopolist cannot price-discriminate *[sell to different consumers at different prices]*.
- What if she could?

Price Discrimination

- **Example:** A lobster shop in Maine
  - Visitors must take a road along a hillside, down to the lobster shop near the beach.
  - The lobster-seller can see each car coming down the hillside long before it gets to his shop.
  - If the car is expensive, he writes a high price on the chalk-board in his shop ☺,…
  - but if the car is junk, …? ☹ .

Perfect Price-Discrimination

- Suppose De Beers (a former diamond monopoly) had an instrument that could measure every customer's ***WTP*** for diamonds.
- Then De Beers could set a "special" price for each customer, equal to the customer's ***WTP***.
  - How much consumer surplus will the customers get?
- If the firm wanted to sell an additional diamond, it could charge the new customer his own ***WTP***,…
- without having to lower prices charged to other customers.

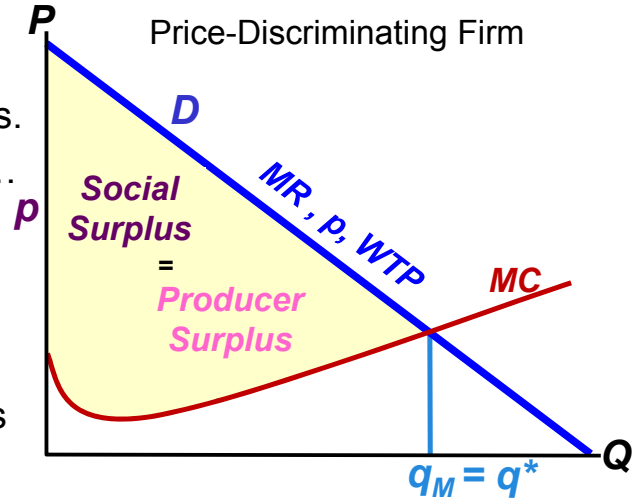
- If a consumer doesn't agree to be measured by the instrument,…
- De Beers would say "bye, bye."
- We show: If De Beers follows such policies,…
- the firm will maximize profits by producing the same quantity that would be produced in a perfectly-competitive equilibrium.
- Why?

Clicker Question

With perfect price discrimination, what portion of the total social surplus…?

Perfect Price-Discrimination

- Suppose that a perfectly discriminating firm facing demand ***D*** produces ***q − 1*** units.
- If the firm sells one more unit,…
- revenue increases by ***p***.
- Because the firm can charge different prices to different buyers,…
- it doesn't have to reduce prices to other buyers.
- Therefore, ***MR*** is always the same as ***p*** and ***WTP***.
- So profits on that unit are ***P − MC***.
- The firm will continue to increase sales as long as ***p > MC***,…



- and will stop only when ***p = MC***.
- Social surplus is maximized,…
- …but the monopoly gets all of the surplus as producer surplus,
- and consumers get none ☹.

- Price discrimination is difficult when goods can be resold with low transaction costs.
- In the case of De Beers, people with low WTP could buy diamonds and resell them to those with high WTP.
- Price discrimination is more effective in the case of services.
  - **Example:** …

Other forms of Price Discrimination

- Firms cannot perfectly identify an individual's ***WTP***, but they can test people and put them in groups with different average WTP ☹.
  - Age-based discounts on movies, airline tickets
  - …
- *[often called 3rd-degree price discrimination]*

Should Price Discrimination be legal?

- **Example:** Medication for AIDS.
- Price discrimination allows **AIDS** medication to be more expensive in rich countries than in poor ones.
- Price discrimination increases social surplus, because
  - pharmaceutical companies will produce more medicines, and
  - consumers in poor countries will be able to buy them.
- But with price discrimination,
  - pharmaceutical companies can make huge profits in rich countries…
  - at the expense of rich-country consumers.

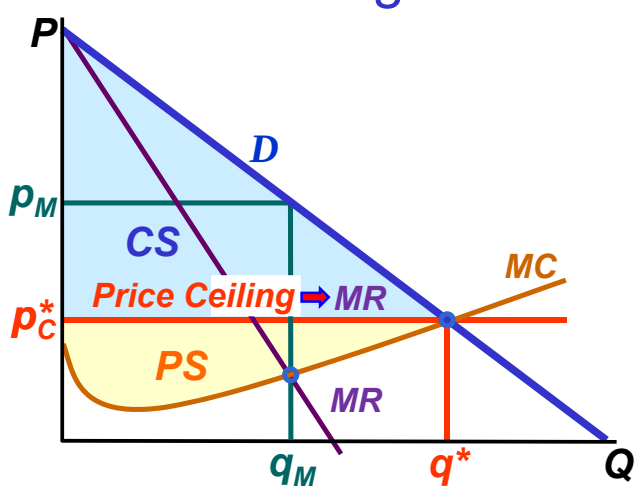
- Suppose price-discrimination were outlawed.
  - Pharmaceutical companies might charge close to the rich-country price everywhere,…
  - and medicines could become less available in poor countries.

Regulating Monopolies

- Some monopolies are regulated by government agencies.
  - Utilities: electricity, gas, water, etc.
  - Local telephone service.
  - Long-distance telephone service (in the past).
- Regulators often apply ***price ceilings***.
  - When used in competitive markets, price ceilings tend to reduce output and social surplus,…
  - …and induce nonprice rationing.
  - What effect does a price ceiling have on a monopolized market?

Monopolies and Price Ceilings

- When a nondiscriminating monopoly faces demand ***D*** and marginal cost ***MC***,…
- the competitive price is ***p****.
- But the monopoly will set the price to p_M and restrict the quantity to q_M.
- But if a price ceiling p_c is enacted at the competitive level ***p****,…
- then ***MR*** becomes p_c,…
- and the monopoly will increase output to ***q**** (the competitive output level).



- Social surplus is maximized,…
  - the monopoly gets some producer surplus,
  - consumers get consumer surplus.
  - *Difficulty:* to set an efficient price ceiling, the regulator needs to know both ***D*** and ***MC***.

Price-Discriminating Monopolists and Price Ceilings

- When monopolies cannot price-discriminate, price ceilings at the competitive level:
  - improve efficiency,
  - and redistribute the social surplus.
- Price-discriminating monopolists are already reasonably efficient,…
- so price ceilings at the competitive level do ***not*** raise efficiency very much, BUT…
- they do change the distribution of surplus in favor of the consumer.

Monopoly Rent Seeking

Rent Seeking and Social Surplus

- **Example:** "The Bicycle Thief" *[Ladri di biciclette]*

Film: 1948
Dir: Vittorio de Sica

- What happens to social surplus if someone steals your bicycle?
  - You lose an amount of surplus equal to your WTP for the bicycle.
  - The thief gains surplus equal to his WTP.
  - Net gain in total surplus?

- Theft (stealing) is a form of rent seeking! Why?
- What are the social costs of the bicycle-theft activity?
  - Static costs
    - Thief's time and effort.
    - Owner's effort and expense in order to avoid theft (e.g. the cost of locks).
  - Dynamic costs (over time)
    - The thief will have less incentive to work if he can steal.
    - The owner will have less incentive to work if the goods he buys are often stolen.

- The rent-seeking costs of a bicycle theft are likely to be higher …
- than the gain in surplus created by a thief who values the bicycle more than the owner does.
- Besides, if the thief really values the bicycle more than the owner, he could buy it, right?

Or maybe not. ***Why not?***

Clicker Question

A thief breaks your car window and steals $100 from the car's glove compartment….

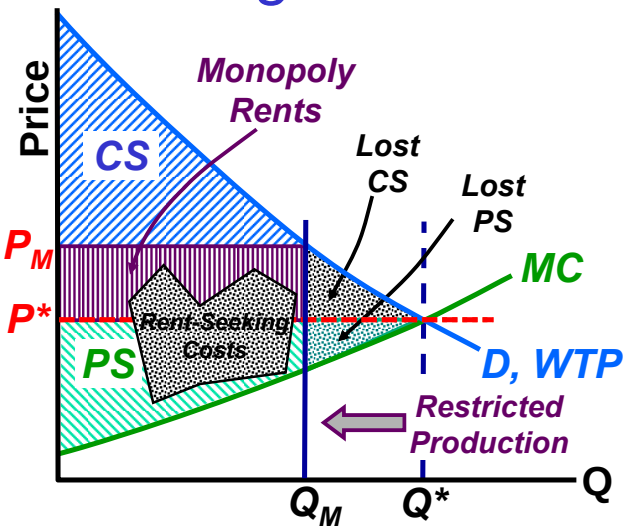
Monopoly Rent-Seeking

- Nondiscriminating monopolies create ***artificial scarcities*** and inefficiency by restricting output.
- But perfectly discriminating monopolists do not create artificial scarcities.
- However ***all*** monopolies tend to waste resources to protect their monopoly status.
- Rent-seeking costs may include:
  - legal expenses,
  - political campaign contributions and bribery,
  - and setting prices below costs.

- The costly attempt to obtain or maintain monopoly status is a form of rent-seeking.
  - **Examples:**
    - local mafias
    - NCR
    - De Beers ☹
- When monopoly status is conferred as a *legally enforceable intellectual property right* (patents and copyrights),…
- rent-seeking behavior may be discouraged...
- but certainly not eliminated.

Monopoly: Rent-Seeking Losses

- After restricting production, the monopoly can raise its price…
- and obtain monopoly rents.
- But this strategy can work only if the monopoly can prevent potential competitors…
- …from entering the market at a lower price.
- To maintain its monopoly position, the monopolist must pay rent-seeking costs,…
- …which reduce its own surplus and social surplus.



- Potential competitors are also likely to pay rent-seeking costs,…
- which reduce social surplus more.
- *Price-discriminating monopolists have exactly the same problem.*

- Patents and copyrights create legally owned monopolies.
- Yet, costly disputes over intellectual property rights are common.
- **Example:** Apple vs. Samsung mobile phones*
  - Apple and Samsung sued each other for patent infringement in the US, Korea, Japan, Germany and 6 other countries,…
  - …with more than 50 lawsuits worldwide.
  - On August 24, 2012, a US jury awarded Apple more than ***$1 billion*** in damages to be paid by Samsung.
  - In the Korean lawsuit, the verdict was mixed.
  - It seems likely that Apple and Samsung spent ***hundreds of millions of dollars*** on lawyers and expert witnesses.
  - These lawsuits are ***costly*** rent-seeking activities with little or no social value.

US Verdict

Jury's decisions in Apple v Samsung
August 2012

	Apple patent number	Number of infringements*
UTILITY PATENTS	7,864,163 Tap-to-zoom	16 *(24)*
	7,844,915 Interface for multi-touch gestures	21 *(24)*
	7,469,381 Bounce-back scrolling at end of page	21 *(21)*
DESIGN PATENTS	D593,087 A white iPhone's rounded edges	3 *(8)*
	D168,677 A black iPhone's rounded edges	12 *(13)*
	D504,889 An iPad's smoothed, rectangular form	0 *(2)*
	D604,305 Icon styles and layout	13 *(13)*

Sources: US Patent and Trademark Office; US District Court

*Samsung devices that the jury agreed infringed Apple's patents *(the number that Apple claimed)*

***see Wikipedia,** "Apple Inc. v. Samsung Electronics Co., Ltd."*

- **Example:** Awards of mobile-phone radio spectrum create legally owned monopolies.
  - In some countries (e.g. US, UK and Germany), spectrum for the use of mobile phones was allocated by auction.
  - In other countries (e.g. France, Spain, Italy), spectrum was allocated by what economists call "beauty contests."
  - Auctions force companies to pay for the spectrum they want,…
  - …but beauty contests encourage rent seeking.
  - Applicant firms spent $$$ on beauty contests, but the money spent created no social surplus.

Clicker Question

What types of firms are ***most likely*** to engage in costly ***rent-seeking***…?

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