Nobody's perfect

Departures from perfect competition

Imperfect competition

- The essence of imperfect competition can be captured in two basic characteristics:

1. There are only a few firms,
   - so one firm can influence market price
2. Entry to the industry is restricted

How do firms limit competition?

- Differentiate their product (advertising)
- Create barriers to entry

Product differentiation

- Goods that are different but considered somewhat substitutable by consumers
- Take, for example, a firm selling running shoes that is earning short-run profits
  - Perfect competition eliminates any profits
  - The firm could prevent others from producing the "same" product
    - Nike - only Nike can put the "swoosh" on its shoes
- Clearly, the more substitutes available the less market power

Barriers to entry

- Something that prevents firms from entering

1. Control of a Scarce Resource or input

- Can't produce a good if you don't have access to the needed inputs
- Example, the diamond industry
  - Diamonds are difficult to produce
  - There are very few diamond mines
  - Most are owned by one company (DeBeers)

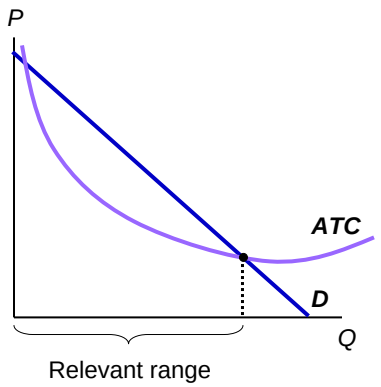
Barriers to entry

2. Economies of Scale

- Large capital requirements (fixed costs) may be necessary
- Example, an oil refinery
  - $500 million to build a refinery big enough to be efficient
  - This is certainly a barrier for most investors
- With economies of scale firms with a larger volume of sales will have an advantage

Economies of scale

- A firm experiences *economies of scale* if its average total cost is always decreasing (over the relevant range).
  - Economies of scale lead to *natural monopoly*.
  - Large fixed costs mean that a given quantity is produced more cheaply by one large firm



Barriers to entry

3. Technological superiority

- Companies that maintain a consistent technological advantage may establish a monopoly
  - Example, Intel
- Success may not be because of technological advantage but because of *network externalities*
  - When the value of a good to a consumer rises when the number of people using the good increases
  - Examples, Betamax and Microsoft

Barriers to entry

4. Government-created barriers

- Legally created monopolies.
- Most important arise from *patents* and *copyrights.*
  - Patents are given to inventors of new products and last for 20 years in Canada
  - Copyrights are given to authors of literature and music and last a minimum of 50 years
- These are given to encourage innovation

Monopoly

… because you can

Monopoly

- A *monopolist* is the only producer of a good or service.
  - We're eliminating the assumption of small market share, and of free entry and exit.
  - Produces a product with no close substitutes
  - Significant barriers to entry (no entry)
- We'll continue to assume that:
  - The firm maximizes profits
  - Input markets are competitive
    - The firm has the same cost curves as in competition

Production decisions

- Production decisions are “how much” decisions.
- Produce output up to the point where *MR* = *MC*.
  - This *optimal output rule* has got to be true for any producer (perfectly competitive or not).
- The differences between perfect competition and a monopoly are that:
- Monopolist chooses both *Q* and *P*
- The demand curve facing a monopolist is different
  - No longer a horizontal line at P
  - Demand curve for a monopolist is the industry demand

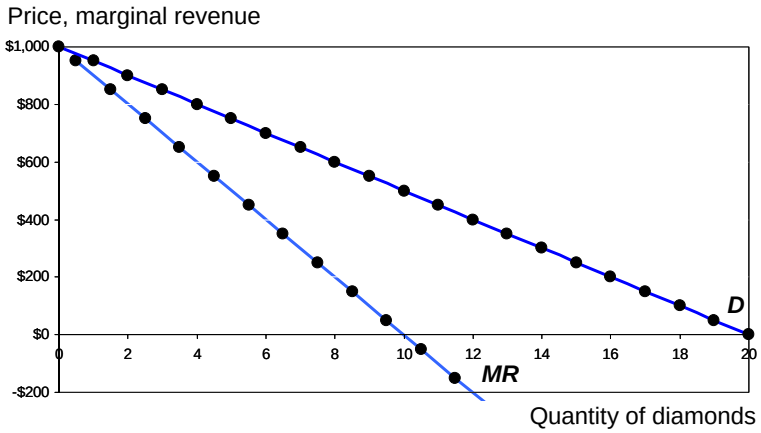
Production decisions

- Because the demand function is upward sloping for a monopolist marginal revenue no longer equals price
- Let’s see what the marginal revenue curve looks like for a monopolist
- We’ll start with a *single-price monopolist*: a monopolist who cannot price-differentiate.

Demand and marginal revenue

Price of diamond, P	*Quantity of diamonds, Q*	*Total revenue TR = P·Q*	*Marginal revenue MR = ΔTR/ΔQ*
$1,000	0	$0	
			$950
950	1	950	
			850
900	2	1,800	
			750
850	3	2,550	
			650
800	4	3,200	
			550
750	5	3,750	
			450
700	6	4,200	
			350
650	7	4,550	
			250
600	8	4,800	
			150
550	9	4,950	
			50
500	10	5,000	
			-50
450	11	4,950	

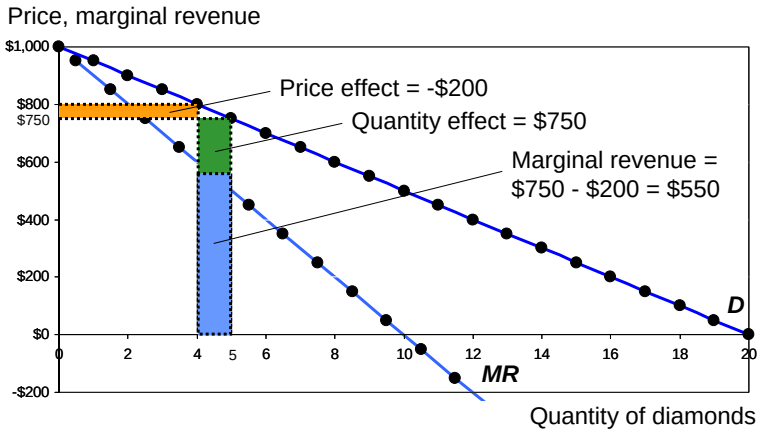
Demand and marginal revenue



Demand and marginal revenue

- Why is the marginal revenue of one more unit less than the price of that unit?
  - Because the monopolist is a *single-price monopolist*.
- By selling one more unit, there are two effects on revenue:
  - Revenue rises by the price of that unit.
    - This is the *"quantity effect"*.
  - Revenue falls by how much the price of all other units now has to be lowered too.
    - This is the *"price effect"*.

Demand and marginal revenue



Price and quantity effects

- As a monopolist produces one more unit, the price falls.
  - Or: as the price falls, the quantity demanded increases.
  - By how much does the quantity demanded increase?
    - How responsive is the quantity demanded to changes in the price?

Price and quantity effects

- Price elasticity of demand:
  - If demand is elastic, quantity demanded changes proportionately more than price:
    - The quantity effect is larger than the price effect.
    - As price falls, revenue increases (marginal revenue is positive).
  - If demand is inelastic, quantity demanded changes proportionately less than price:
    - The price effect is larger than the quantity effect.
    - As price falls, revenue decreases (marginal revenue is negative).

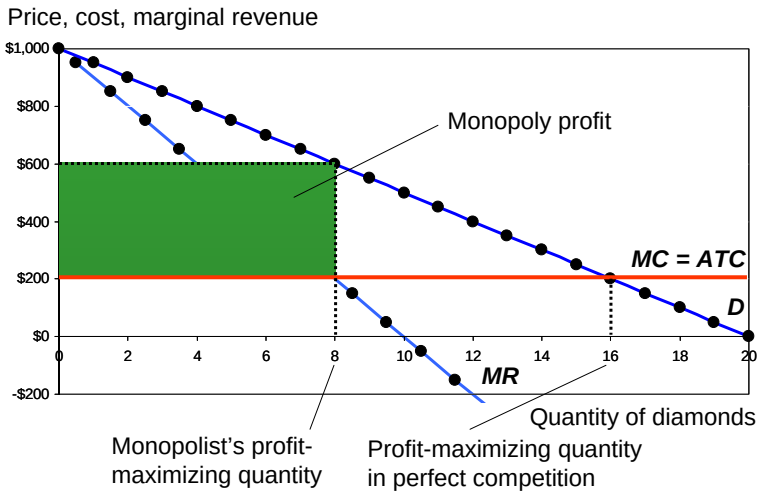
Price and quantity effects

- Example:
  - As price falls from $800 to $750 …
    - (price falls by $50 / $775 = 0.065, or 6.5%)
  - … quantity increases from 4 to 5 …
    - (quantity increases by 1 / 4.5 = 0.22, or 22%)
  - … so the price elasticity of demand is:
    - 22% / 6.5% = 3.4.
    - At that quantity, demand is elastic and therefore marginal revenue is positive.

Production decisions

- Optimal output rule:
  - Produce output up to the point where $MR = MC$.
    - We know now that for a monopolist, $MR < P$.
- Example:
  - $FC = 0$,
  - MC = $200 (marginal cost is “constant”),
  - Therefore $ATC = AVC = MC$.

Production decisions



Monopoly and the supply curve

- A monopolist has no supply curve.
  - The supply curve shows the quantity supplied at an given price.
  - The monopolist chooses the price and the quantity herself at the same time.
- This is why the supply and demand framework is a framework for perfect competition only.

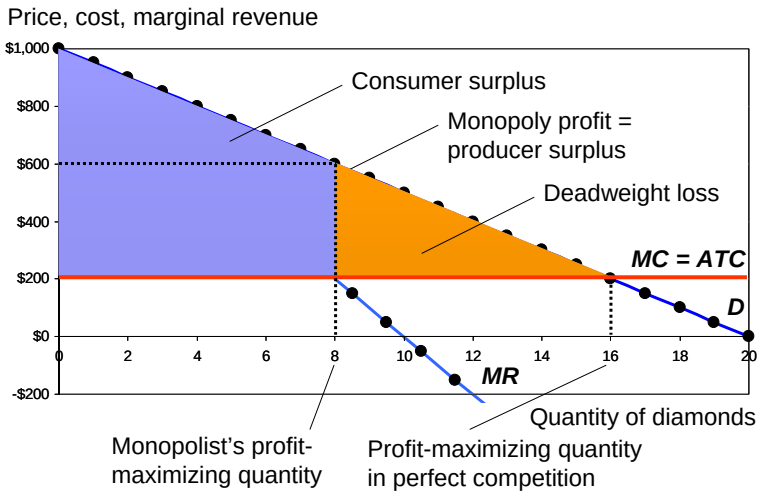
Monopoly profit

- A monopolist can make (positive) profit.
  - Yeah – so what's new? A perfectly competitive producer can too – in the short run.
- A monopolist can make (positive) profit even in the long run – as long as she is a monopolist.

Monopoly and efficiency

- There is the same kind of inefficiency we found when prices were artificially distorted (price floors, price ceilings, taxes):
  - $MR = MC$, but $P > MR$, so $P > MC$
  - Mutually beneficial transactions do not take place.
    - Deadweight loss is a measure of the value of those transactions.
    - Deadweight loss is the loss of total surplus.

Monopoly and efficiency



Monopoly and policy

- Given that monopoly is inefficient should governments prevent monopoly?
- Answer depends on whether or not the industry is characterized by a natural monopoly
- If not, then it is clearly optimal to break up the monopoly
- This is usually done by creating laws that attempt to ensure a degree of competition

Competition law in Canada

- *Combine Laws* (1889)
  - To prevent firms from combining into one unit or acting as one unit
  - Largely toothless
  - No firm ever convicted
- *Competition Act* (1986)
  - Criminal offence to collude to restrict output
  - All mergers are subject to review of the Competition Bureau

Natural monopoly and policy

- Should natural monopoly based on economies of scale also be prevented?
  - Natural monopoly is good (low cost) …
  - … and bad (price > marginal cost).
  - Thus, governments often regulate through…

"Public ownership"

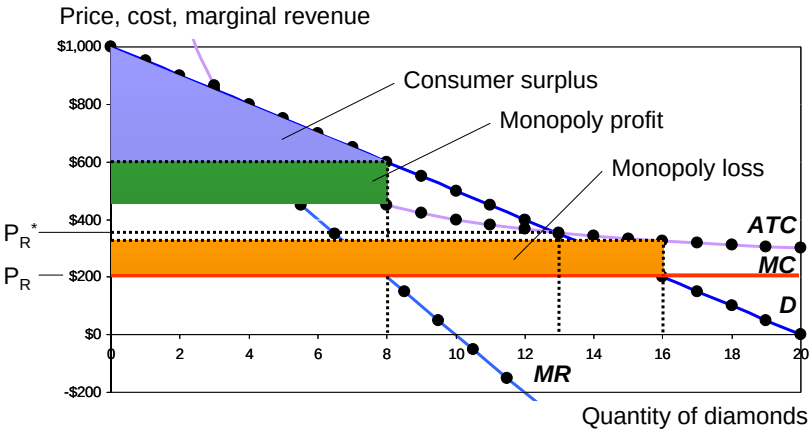
  - Example, Crown corporations like Canada Post
- The idea is that if publicly owned the monopoly can set price etc. based on efficiency
- However, these firms tend to be inefficient for other reasons

Natural monopoly and policy

"Regulation"

- Leave the industry in the private sector and regulate the price
  - Often use both public ownership and regulation
- Because the monopolist charges a price above marginal cost we don't get the negative outcomes associated with price ceilings under perfect competition
- Let's look at an example
- Assume VC is incurred at a constant proportion of output (i.e. MC = AVC is constant)

Natural monopoly and regulation



The assessment

- When there is monopoly, the unregulated "market" outcome is inefficient.
  - Government intervention (regulation, i.e. a price ceiling) may improve efficiency.
  - Complete efficiency is probably unattainable in practice.
    - It is difficult to identify the monopolist's ATC
  - There are those that argue that it is better to leave monopolies unregulated

Monopoly: price discrimination

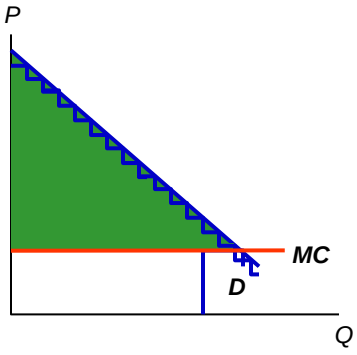
What your student ID can do

Price discrimination

- A *price-discriminating* monopolist is one that can charge different prices …
  - … to different consumers
    - (third-degree price discrimination)
  - … for different quantities consumers buy
    - (second-degree price discrimination: quantity discounts)
  - … to different consumers and for different quantities each consumer buys
    - (first-degree or "perfect" price discrimination)
- In what follows we'll assume that each consumer only has use for at most one unit of the good.
  - So second-degree price discrimination is irrelevant, and there is no distinction between first and third-degree price discrimination.

Price discrimination

- If there are two groups of consumers (e.g. students and non-students), the monopolist can gain from price-discrimination (student discount).
- The more different prices the monopolist can charge, the greater her profit.
- *Perfect price discrimination*: the monopolist charges a different price to each consumer.



Perfect price discrimination

- Perfect price discrimination is efficient.
  - There is no deadweight loss.
  - All surplus goes to the monopolist.