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Market Power

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Agenda

1. What is market power?
2. How does market power arise?
3. How does market power affect welfare?
4. What policies can limit market power?
5. How can market power be measured?

1. What is market power?

Recall perfect competition

- Entry and exit
  - If profits $\Rightarrow$ new firms enter $\Rightarrow$ price $\downarrow$
  - If losses $\Rightarrow$ existing firms exit $\Rightarrow$ price $\uparrow$
- Equilibrium (long run)
  - price = cost of production (LR-AVC)

Stylized facts

- Example 1: Pharmaceuticals
  - Prices differ between different countries
    - Often produced in one location, eg. India
    - Transportation costs often small
  - Thus
    - Only lowest price could be equal to cost
    - Other prices > cost

Stylized facts

- Example 2: Telecom
  - Different customers pay different prices in same country
    - flat rates – low price per call
    - pre-paid – high price per call
  - Cost is the same

Market Power

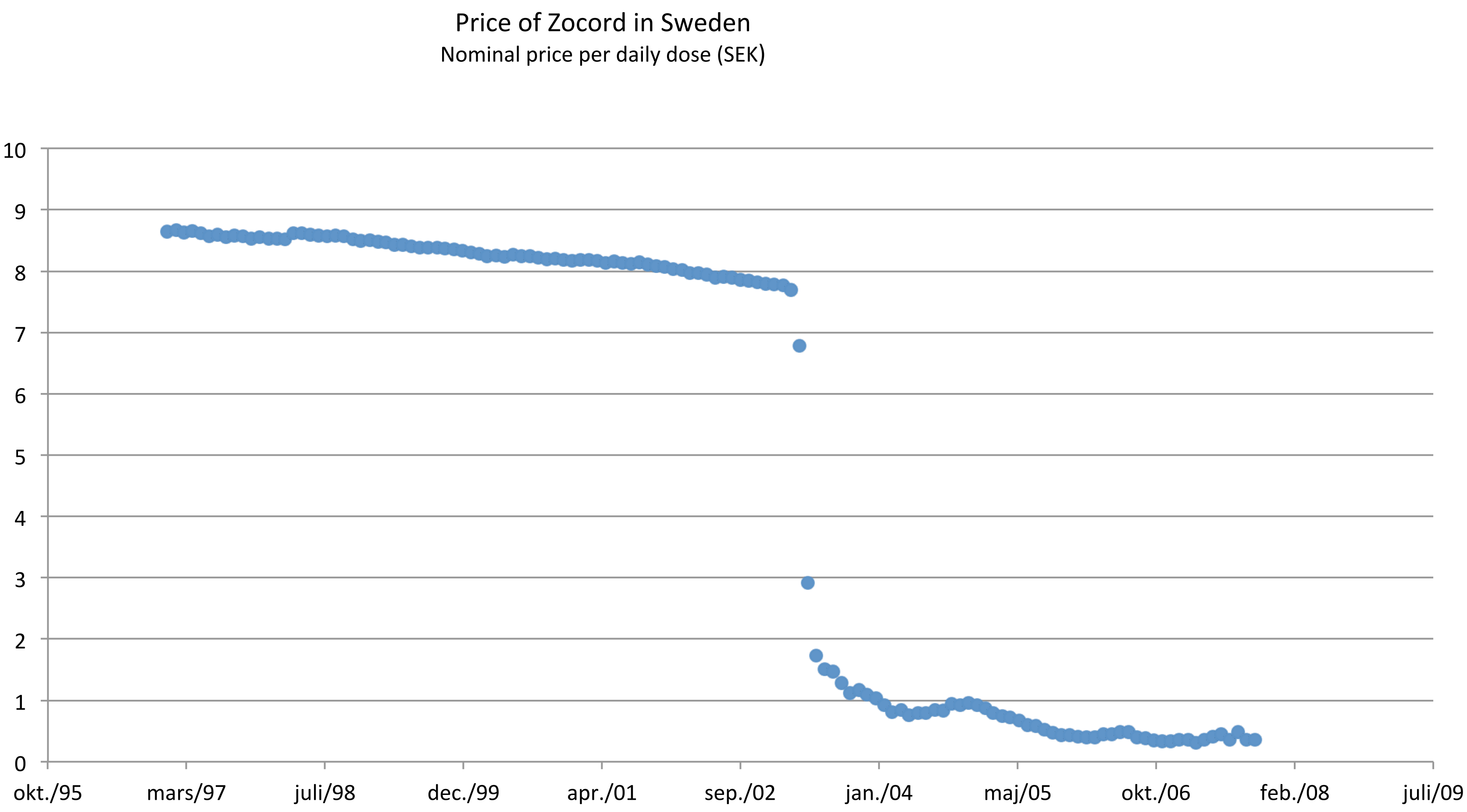
- Stylized fact
  - Firms charge prices above cost
  - And they can still sell their products
- Definition: Market power
  - Ability to charge a price above marginal cost, without losing all customers
- Alternative definition
  - Ability to charge a price above ***average*** cost, without losing all customers
  - This definition takes into account the fact that firms must cover all their costs, including any fixed costs

2. How does market power arise?

How does market power arise?

- Quick answer
  - It has to do with a lack of competition
- Illustration
  - Study what happens to price when pharmaceutical company looses its patent

How does market power arise?



How does market power arise?

- Extreme competition
  - A firm reducing price by one cent below the competitors, gets all customers
  - Then, reducing price is always profitable, as long as price > cost
  - Thus, all firms will choose to set price = cost

Source of market power

- Definition
  - Any reason why it is not profitable for a firm to reduce its price towards its own cost
- Example
  - A firm does not get all customers simply by reducing its price below the competitors

Sources of market power

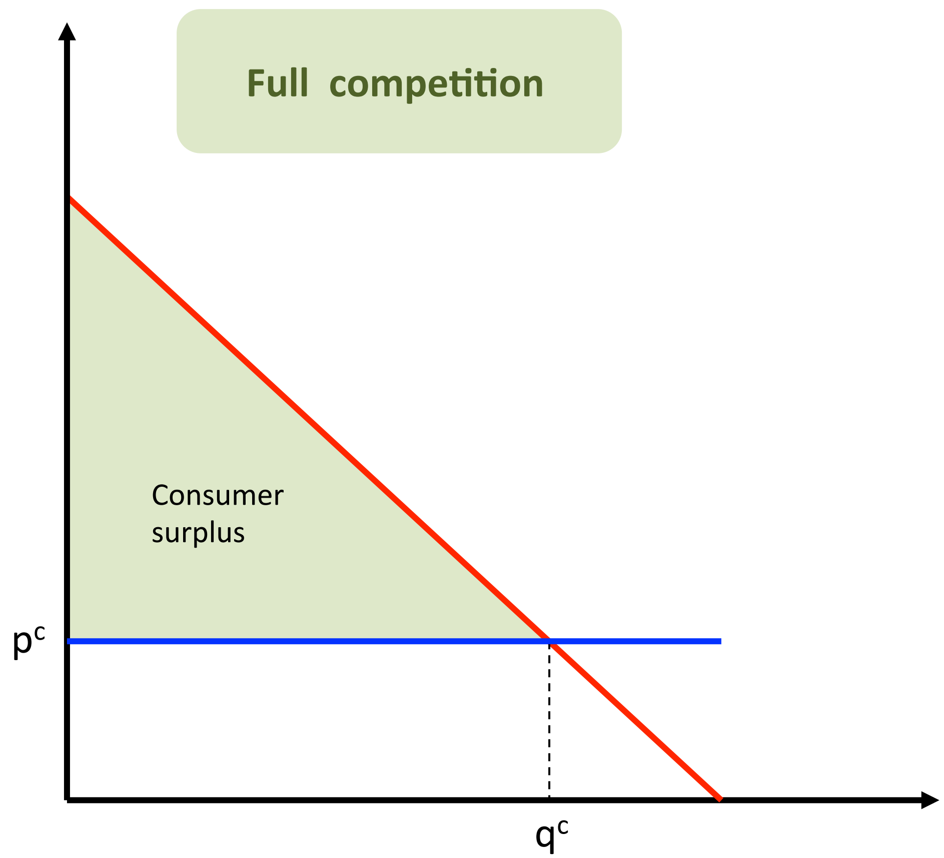
- Products
  - Vertical differentiation
  - Horizontal differentiation
- Customers
  - Price information
  - Switching costs
- Technology
  - Cost advantage
  - Capacity constraints
- Number of firms (market concentration)

3. How does market power affect welfare?

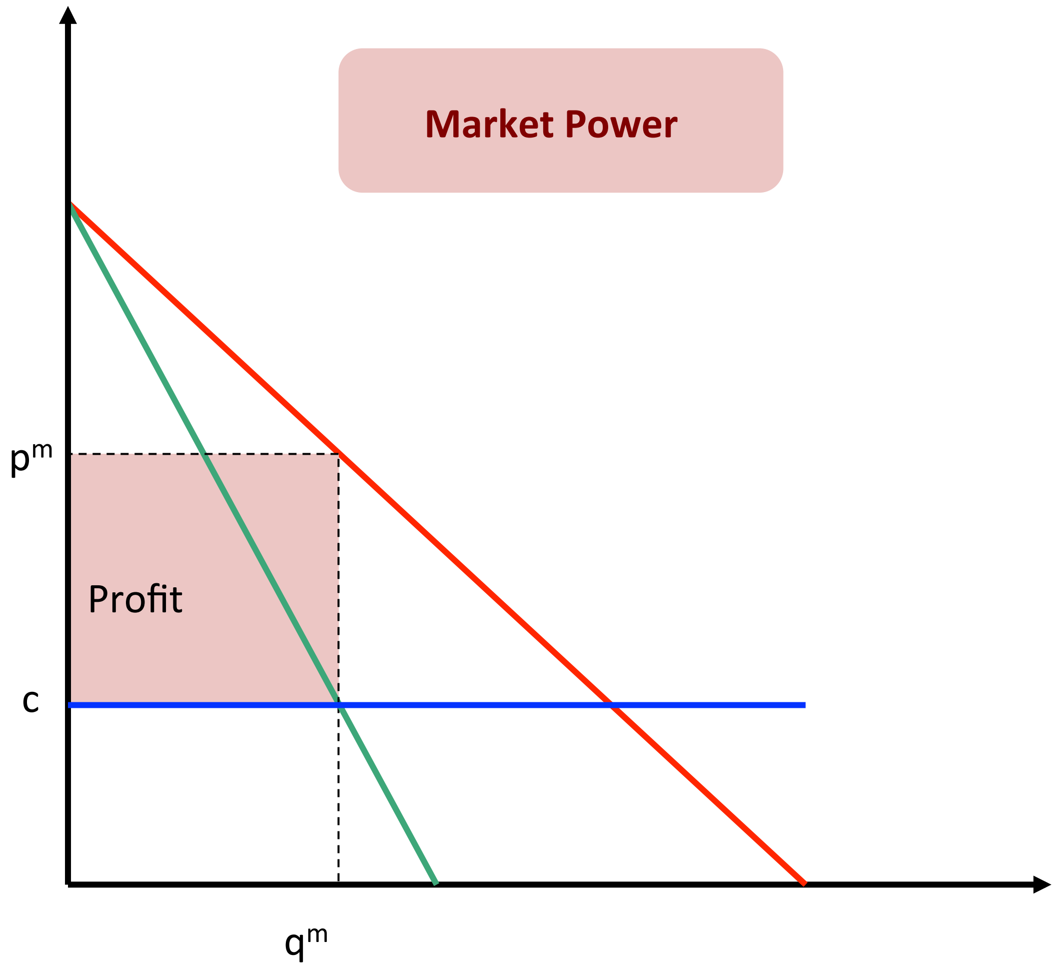
Effect on welfare

- Compare
  - Full competition
  - Monopoly

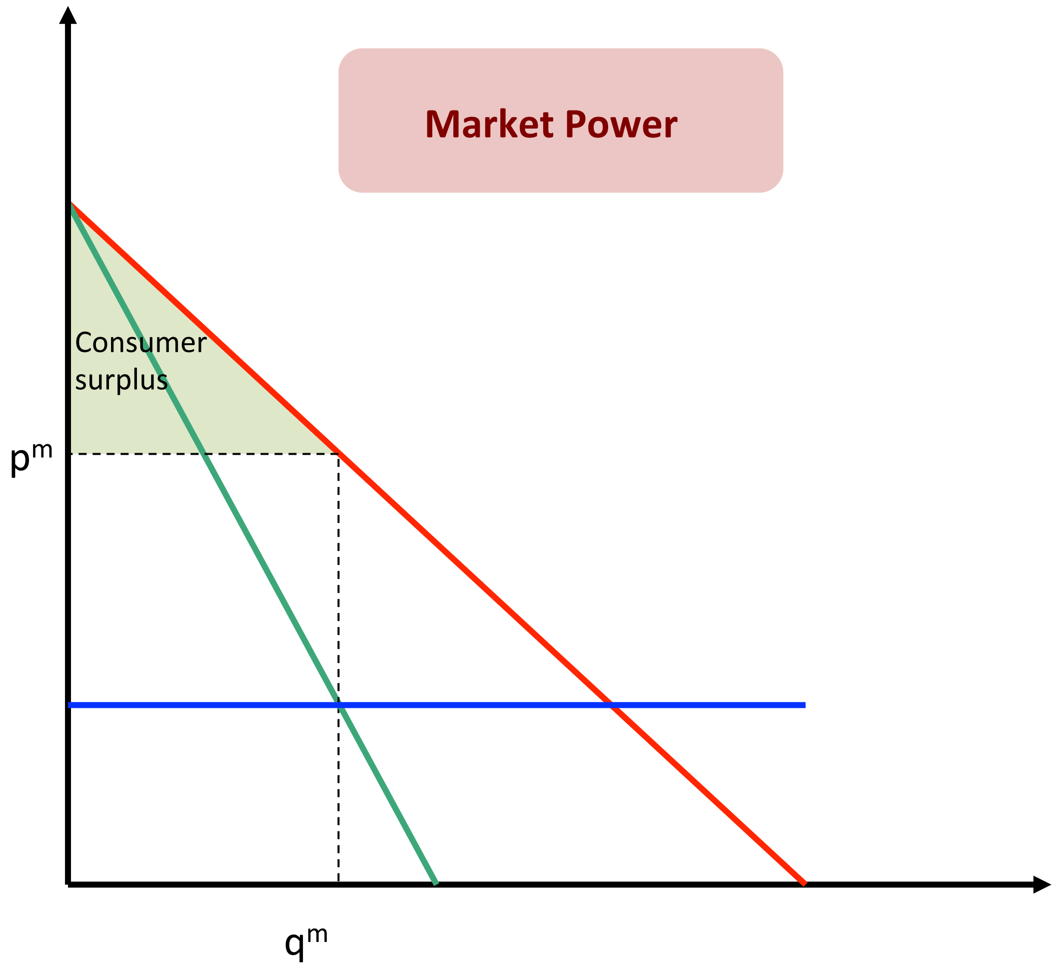
Effect on welfare



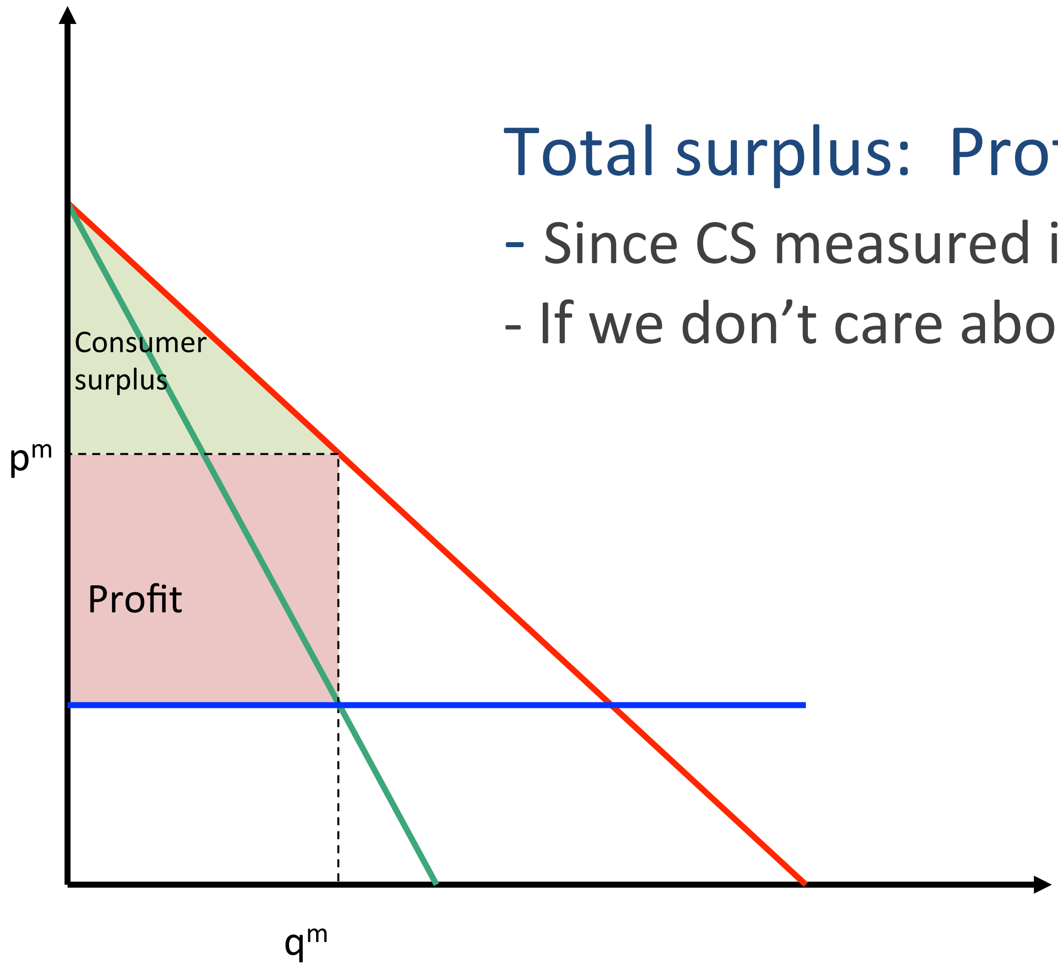
Effect on welfare



Effect on welfare



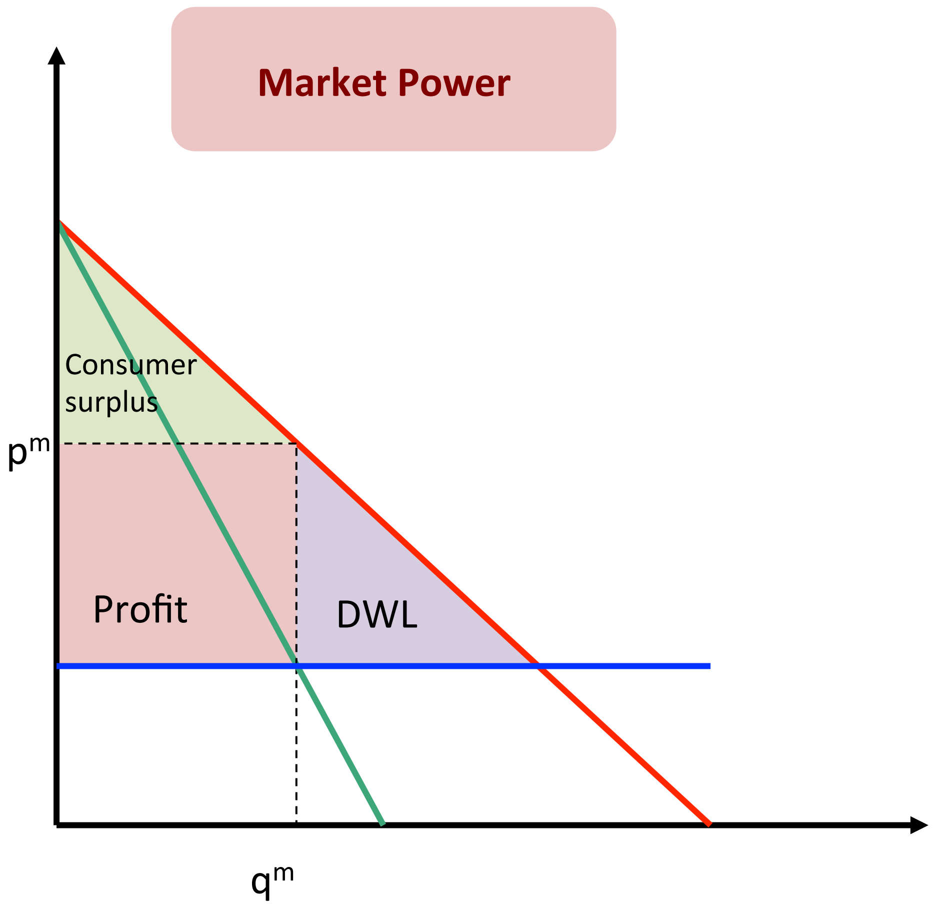
Effect on welfare

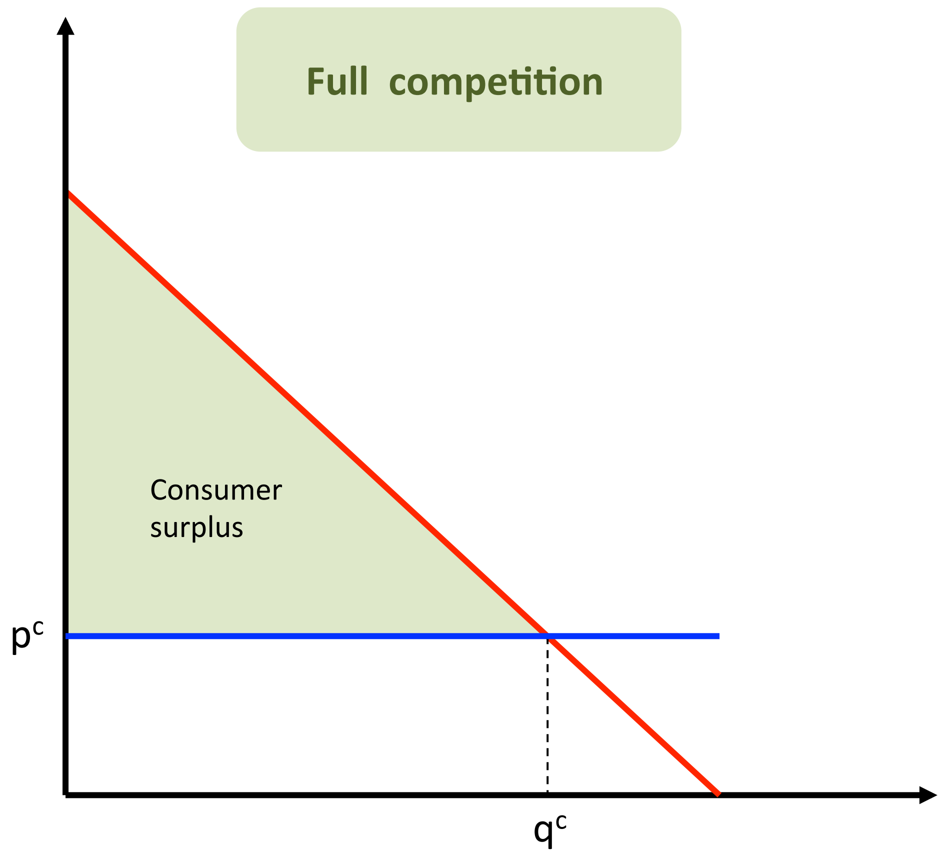


Total surplus: Profit + CS

- Since CS measured in €
- If we don't care about distribution

Effect on welfare





Effects on welfare

- Inefficiencies caused by market power
  - Reduced production & consumption (Dead weight loss)
  - Lower quality (not always)
  - Less choice (not always)
  - High cost firms can survive
  - Less incentives for innovation???
  - Lobbying to preserve monopoly
- Distribution
  - Transfer of wealth from consumers to producers

Effects on welfare

- But, there are also tradeoffs
  - More incentives for innovation???
  - Economies of scale
  - …

DWL, revisited

- Previously
  - Market power ⇒ DWL
- Effect of producing one more unit of good Y
  - Cost of production: MC_Y
  - Value of consumption: P_Y
  - Social gain: $P_Y > MC_Y$
- Caveat
  - This argument presumes perfect competition in all other markets
  - $P_X = MC_X$

DWL, revisited

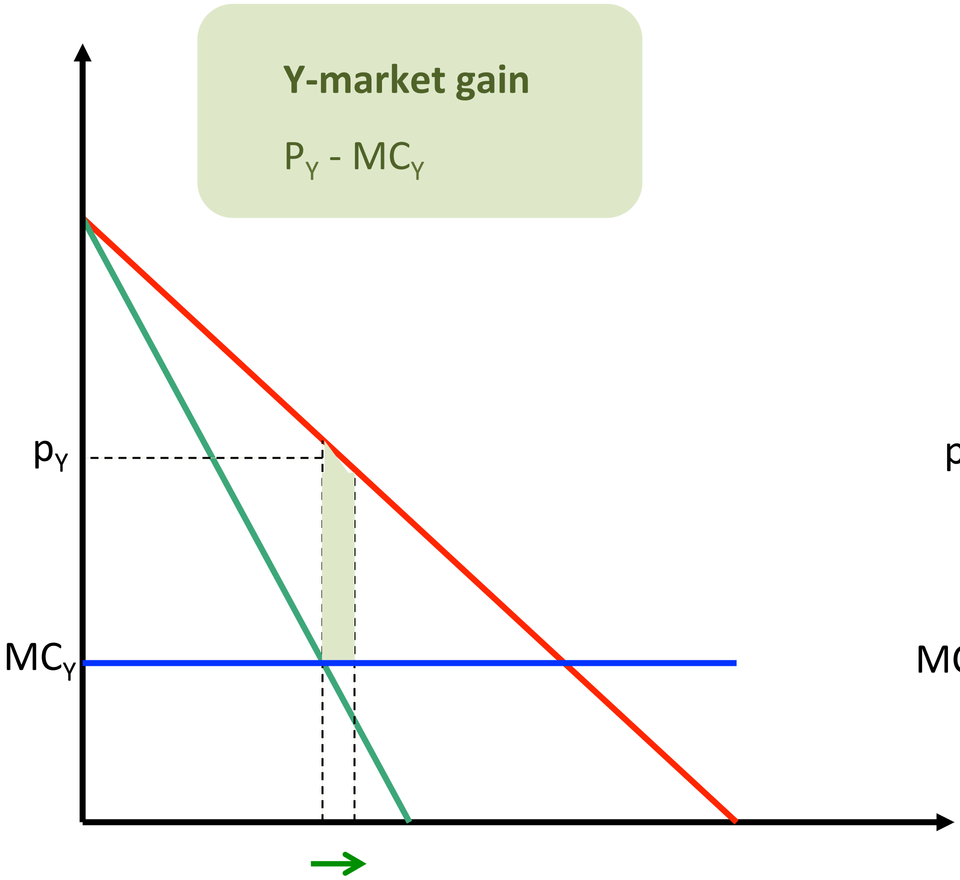
- Effect of producing one more unit of good Y
  - Produce and consume less of X
  - Q: How much less of X?
- Resource constraint
  - $TC(Q_X) + TC(Q_Y) = \text{Value of all resources}$
  - $MC_X \cdot dQ_X + MC_Y \cdot dQ_Y = 0$
  - $dQ_X = -(MC_Y/MC_X) \cdot dQ_Y$
- Cost of producing one more unit of Y
  - Lost value of consuming some X
  - $P_X \cdot dQ_X = -P_X \cdot (MC_Y/MC_X) \cdot dQ_Y$
  - $P_X \cdot dQ_X = -(P_X/MC_X) \cdot MC_Y \cdot dQ_Y$

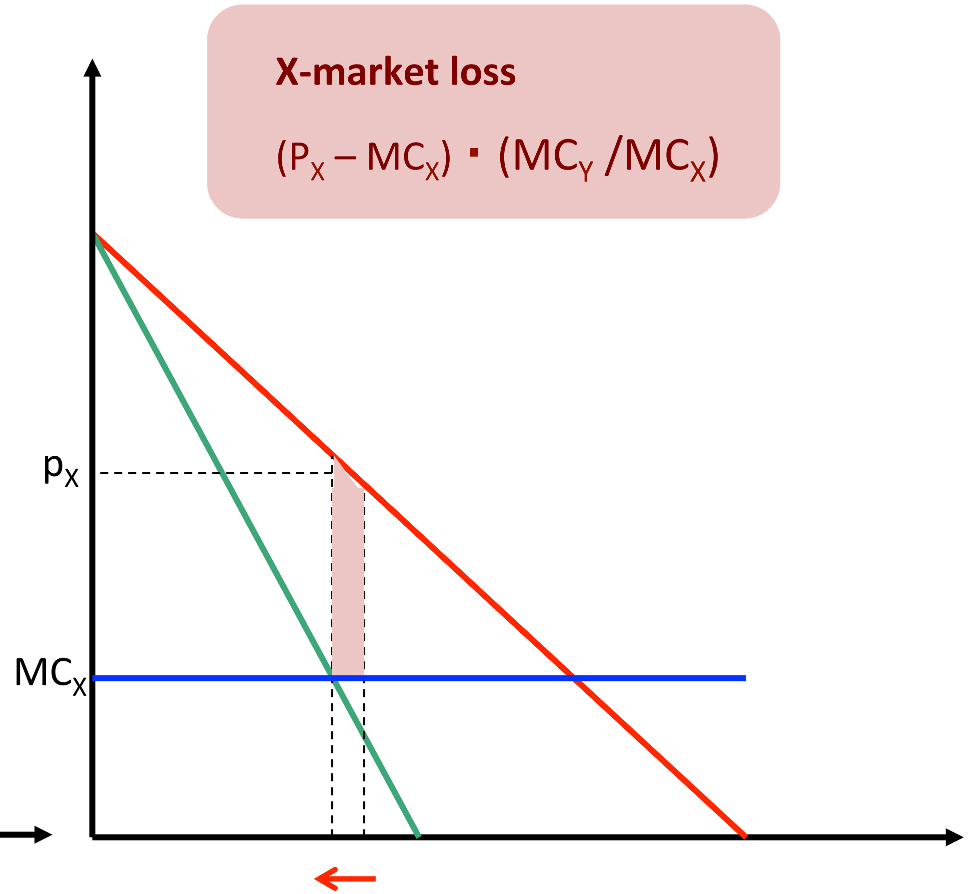
DWL, revisited

- Effect of producing one more unit of good Y
  - Cost of production: $(P_X/MC_X) \cdot MC_Y$
  - Value of consumption: P_Y
  - Social gain: $P_Y > (P_X/MC_X) \cdot MC_Y$

$$\frac{P_Y}{MC_Y} > \frac{P_X}{MC_X} \Leftrightarrow \frac{P_Y - MC_Y}{MC_Y} > \frac{P_X - MC_X}{MC_X} \Leftrightarrow P_Y - MC_Y > \left(P_X - MC_X\right) \cdot \frac{MC_Y}{MC_X}$$

DWL, revisited





Efficiency, revisited

- In words
  - If firms have more market power in market Y than in other markets
  - Then, there is too little produced and consumed of good Y
- Revised policy conclusion
  - We should increase competition (= reduce market power) in a market if there is less competition, than in other markets

4. What policies can limit market power?

What policies can limit market power?

- Deregulation
  - Ex: Airline market (entry used to be difficult)
- Free trade agreements
  - Ex: European Union
- Price regulation
  - Ex: Telecom; pharmaceuticals
- Subsides
  - Ex: public service; public options in health
  - But can also reduce competition
- Competition policy
  - The focus of this course

Growing importance

- Growing importance in the world
  - Modern origin: USA
  - Important part of EU
  - Recently: China, India and 120 other countries
- Growing importance in new sectors
  - Telecom, energy, transport, broadcasting, postal services

Interdisciplinary

- Law meets economics
  - Application of the law involves assessment of competition/market power
  - Requires economics
- Interdisciplinary
  - Competition lawyers must understand economics
  - Competition economists must understand law

4 pillars

- Anticompetitive agreements (ex: cartel)
  - Article 101 TFEU (Treaty of the Functioning of the EU)
  - KL 2 kap. 1 § (Swedish competition act)
- Abuse of dominant position (ex: predatory pricing)
  - Article 102 TFEU
  - KL 2 kap. 7 §
- Mergers that reduce competition
  - EUMR
  - KL 4 kap.
- Public restriction of competition (ex: subsidies)
  - Article 107 TFEU
  - KL 3 kap 27 §

5. How can market power be measured?

Measurement

- Issue
  - To reduce market power (= promote competition)
  - We need to measure market power (= competition)

How to measure market power?

- Naive
  - Lerner index: (p-c)/p
  - Accounting profits
- Pros and cons
  - Marginal cost can typically not be observed
  - Even price can sometimes not be observed
  - Accounting profits distorted eg by arbitrary depreciation rules

How to measure market power?

- Econometric techniques
  - Estimate demand: price and cross-price elasticities
  - Estimate marginal cost and conduct
- Pros and cons
  - Lack of data
  - May take too long time (legal time limits)
  - Used sometimes
- Important part of this course

How to measure market power?

- Traditional legal approach
  - Market shares
  - Concentration indexes (eg: C_4, HHI)
- Pros and cons
  - Indirect measures of market power, sometimes

Europ

Dominance = legal term
High level of market power = economic equivalent

1. Define relevant market
   - Product market (eg: cola flavored soft drinks)
   - Geographical market (eg: Sweden)
2. Assess dominanc

Dominant firms are not allowed to do certain things
Example: Mergers

   - Compute market s
   - Compare to thresholds. Example:
     - Market share < 40% ⇒ firm unlikely to be "dominant"
     - Market share > 50% ⇒ firm likely to be "dominant"
   - Consider other factors. Examples:
     - Ease of entry
     - Countervailing buyer power

How to define markets

How to define of markets

- Market
  - A collection of products that compete,
  - primarily since the consumers consider them to be substitutable

How to define of markets

- Different to other uses of the word “market”
  – Ordinary language: markets often defined broadly
    - “Car market” (But Spiker does not compete with Tata)
    - “World market” (But Ica does not compete with Walmart)
  – Microeconomics: markets defined narrowly
    - Any difference in physical characteristics, time, location, state of world that consumers care about => different market

How to define of markets

- Two dimensions
  - Product market
  - Geographical market
  - (Other dimensions less important)
- Two aspects
  - Demand substitution
  - Supply substitution

Example
Define product market for Toyota Corolla

- Let's start with an example
  - Define the product market for Toyota Corolla

Toyota Corolla

Example
Define product market for Toyota Corolla

Possible products on the same market

Toyota Corolla

Honda Civic

Ford Focus

Chevrolet Cruze

Example
Define product market for Toyota Corolla

- Step 1:
  - Suppose Toyota would increase price of Corolla by 5–10 % above the competitive level

Example
Define product market for Toyota Corolla

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  - IF profitable
    - ie if sufficient number of consumers stay
  - THEN Corolla is its own market
    - ie Toyota is monopolist

Example
Define product market for Toyota Corolla

- Step 1:
  - Suppose Toyota would increase price of Corolla by 5–10 % above the competitive level

  - IF profitable
    - ie if sufficient number of consumers stay
  - THEN Corolla is its own market
    - ie Toyota is monopolist

  - IF not profitable
    - ie if sufficient number of consumers leave
  - THEN at least one other product on the same market
    - ex: many consumers switch to Honda Civic
    - continue to step 2

Example
Define product market for Toyota Corolla

- Step 2:
  - Suppose the same firm would own both Corolla & Civic
  - and would increase price of boht by 5–10 % above the competitive level

- IF profitable
  - ie if sufficient number of consumers stay
- THEN Corolla & Civic is the relevant market
  - ie Toyota is duopolist

- IF not profitable
  - ie if sufficient number of consumers leave
- THEN at least one other product on the same market
  - ex: many consumers switch to Ford Focus
  - continue to step 3

Example
Define product market for Toyota Corolla

- Step 3:
  - Suppose the same firm would own Corolla & Civic & Focus
  - and would increase price of all by 5–10 % above the competitive level

  - IF profitable
    - ie if sufficient number of consumers stay
  - THEN Corolla & Civic & Focus is the relevant market
    - ie Toyota is triopolist

  - IF not profitable
    - ie if sufficient number of consumers leave
  - THEN at least one other product on the same market
    - ex: many consumers switch to Chevrolet Cruz
    - continue to step 4

Example
Define product market for Toyota Corolla

Relevant market for Corolla

Toyota Corolla

Honda Civic

Ford Focus

Chevrolet Cruze

Demand substitution

- Basic idea
  - Customer switching = Main restriction on pricing
  - Toyota has little influence over its price if its customers can easily switch to other brands
  - To define Toyota Corolla's market is to find the best substitute cars
  - This is done using an iterative thought process, called SSNIP-test

How to define of markets

- SSNIP-test
  - ***S***mall but ***S***ignificant ***N***on-transitory ***I***ncrease in ***P***rice
  - Invented in the US - Now used around the world.
- a.k.a. Hypothetical monopolist test
  - Idea: A market is the smallest collection of goods profitable to monopolize

How to define of markets

- Next step is to define geographical market
  - Set of delivery points (eg: stores)
  - That are good substitutes for consumers
- Examples
  - Geographical market of convenience store
    - Probably only other convenience stores within 500 meters radius
    - Consumers only walk 500 meters, if price increased by 5-10%
  - Geographical market of furniture store
    - Probably all other furniture stores in the same town.
    - Consumers switch if price increased by 5-10%.
- Reasons for geographical segmentation
  - Transportation costs
  - Reach of distribution networks
  - National borders (tariffs, quotas, safety regulations, language)
- Similar procedure: SSNIP-test (but also aggregation)

Geographical Markets

- Aggregation
  - Narrowly defined areas are often aggregated into a broader geographical market if competitive conditions are the same
  - Example: Cable-TV
    - Households want delivery in their house -- House next door is not a good substitute
    - Still, the whole neighborhood is considered a geographical market if
      - Households similar
      - Costs of supplying similar
      - Same firms compete for all households
      - Firms charge the same prices to all households
  - Reason: Can analyze the whole area at the same time

Other dimensions

- Some “microeconomic dimensions” less important in practice
  - **Time of delivery**
    - Seat on plane from Stockholm to Brussels at 7 p.m. may not be a good substitute for 7 a.m.
  - **Time of contracting**
    - Booking a flight a month before is not good substitute for booking on the day of departure
    - Different distribution of risk between buyer and seller
  - **State of nature**
    - Electricity on a cold day is different from electricity on a warm day
    - Electricity generators cannot store it between different times and different states

Supply substitution

How to define of markets

- Supply substitution
  - Only in Europe
- Example 1: product market – paper (Torras/Sarrio)
  - Consumers don't switch between
    - High quality paper - used for art books
    - Low quality paper - used for news papers
  - But paper manufacturers can easily switch
    - Thus, not profitable for hypothetical monopolist of high quality paper to increase price

How to define of markets

- Example 2: Geographical market for coffee houses
  - Coffee house market in Linköping
    - Chain stores: Espresso House, Wayne's Coffee, Coffeehouse by George
    - Individual: Babettes Kafferi
  - Q1: Should Starbucks be included in the Linköping market?
    - Not according to demand substitution
      (consumers don't go to the Stockholm or Gothenburg to buy a latte)
  - Q2: Suppose 3 big contemplate a merger to create a monopoly and to increase price by 10% - would they be successful?
    - Not necessarily – then it may be easy for Starbucks to quickly open operations in Linköping
    - Thus, not profitable to monopolize the coffee houses in Linköping – There is no Linköping market – Linköping simply a segment of a broader geographical market

How to define of markets

- Conclusion: supply substitution
  - Sometimes firms can quickly expand their operations from one segment to another
  - Then, an important restriction on pricing

How to define of markets

- SSNIP-test
  - Same procedure as with demand substitution
  - Start with candidate: Espresso House, Wayne's Coffee, Coffeehouse by George
  - If price increase would trigger supply substitution, not a relevant market → enlarge
- Supply substitution or Entry?
  - European Commission does not consider supply substitution if it takes too long time (entry).
  - US Agencies do not consider supply substitution as part of market definition

Evidence

Evidence

- Most often: Qualitative evidence
  - Product characteristics
  - How products are used

Evidence

- Q: Coke and Pepsi
  - Similar ingredients; similar taste
  - Used the same way
  - Probably same market

Evidence

- Q: Mineral water
  - Even more similar characteristics
  - But
    - Some brands charge much higher prices
    - Production cost should be similar
    - Indicates P >> C (<=> worth monopolizing)
    - Perhaps not same market!
  - Conclusion
    - Qualitative information can be misleading!
    - Also price comparisons can be used as evidence

Evidence

- Consumer surveys
  - Ask consumers what products they consider to be substitutes
- Demand estimation
  - Price elasticity
  - Cross price elasticity
- Other
  - Price correlations
  - Price differences
  - Past shipments between geographical areas

Applications

Application 1

- Q: Are bananas a separate market from fruit in general?
  - Bananas and apples have different forms, colors and tastes
  - Some people don't have teeth and may have difficulties eating apples

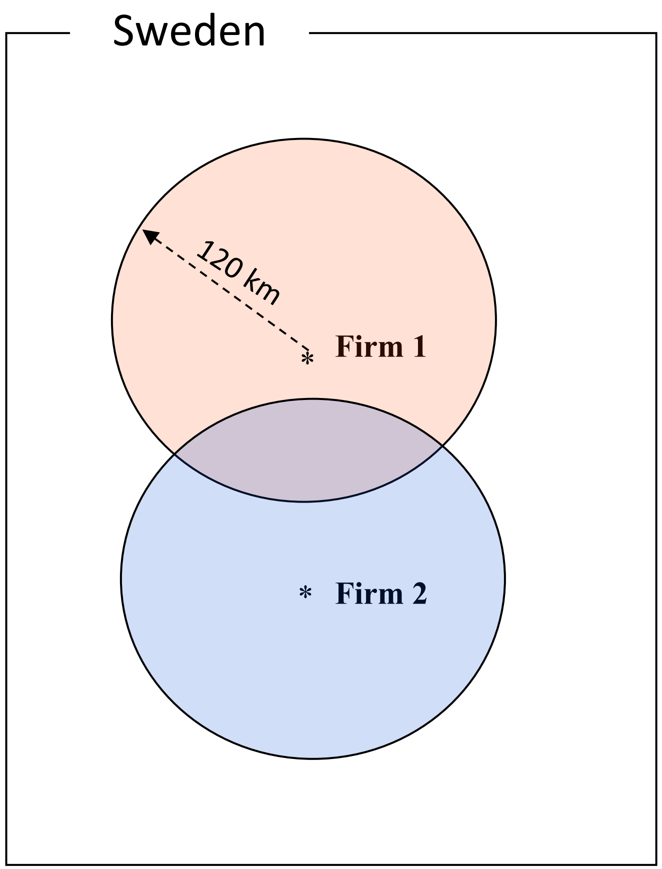
Application 1

- *ECJ* said yes in United Brands case
  - Babies and old people without teeth cannot switch
- Critique
  - Most people have teeth; they can switch
  - A banana monopolist would not increase price
- General insight
  - Price discrimination → More narrow markets
  - Not only supply and demand substitution matter

Application 1b

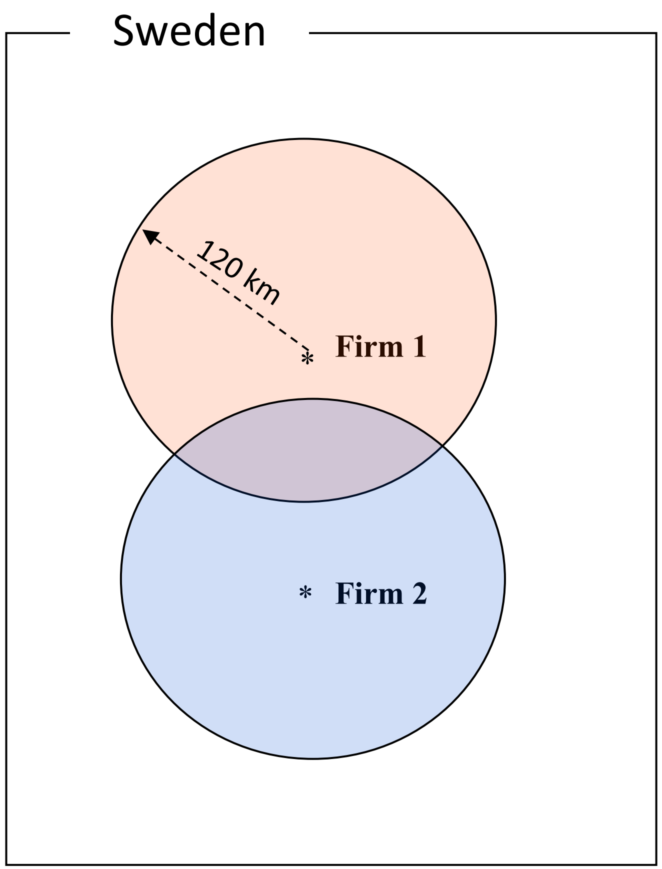
- Example: Asphalt
  - Can only be transported approx. 120 kilometers

- Q: Are firms 1 and 2 on the same market?



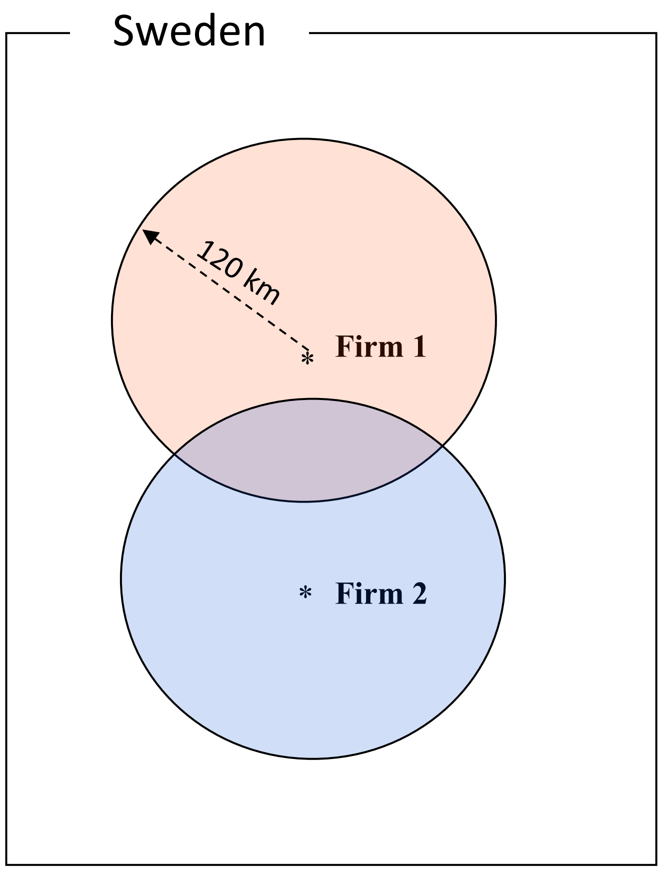
Application 1b

- Distinguish 4 “goods”
  - Prod by 1, sold in red
  - Prod by 1, sold in brown
  - Prod by 2, sold in blue
  - Prod by 2, sold in brown



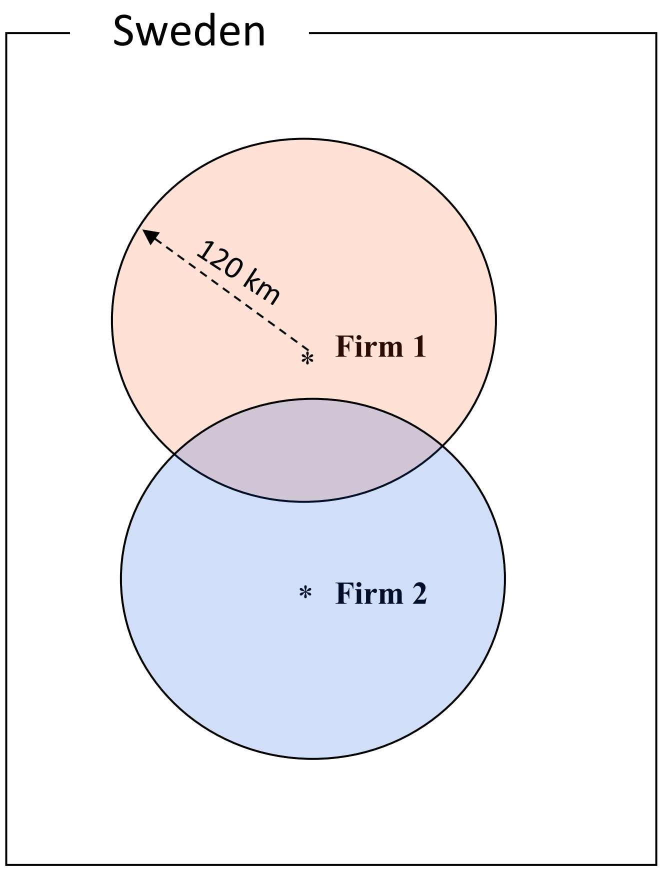
Application 1b

- <u>Q</u>: which *individual goods* are worth monopolizing?



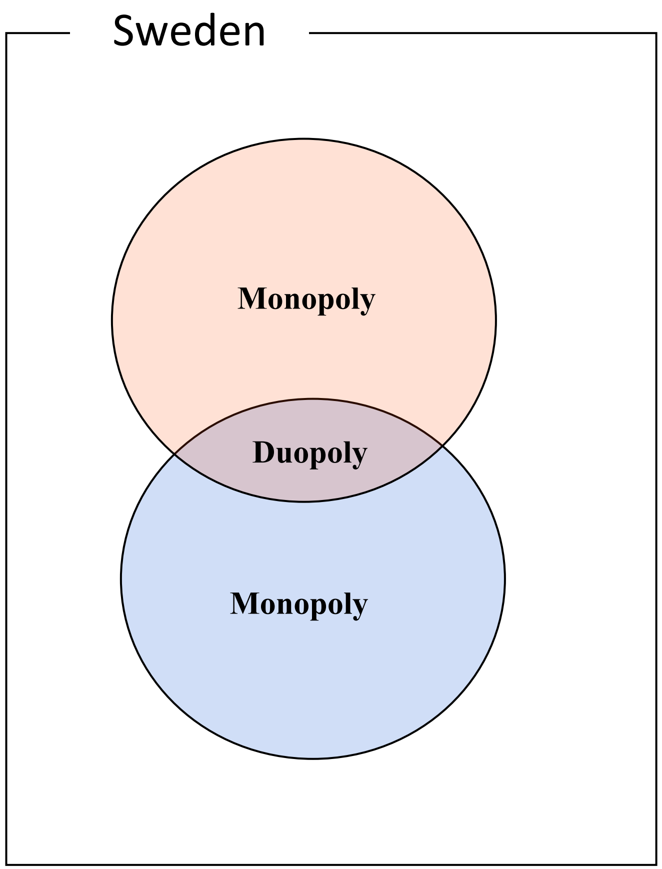
Application 1b

- Q: which *individual goods* are worth monopolizing?
  - Red worth monopolizing = separate market
  - Blue worth monopolizing = separate market
  - Two brown = same market



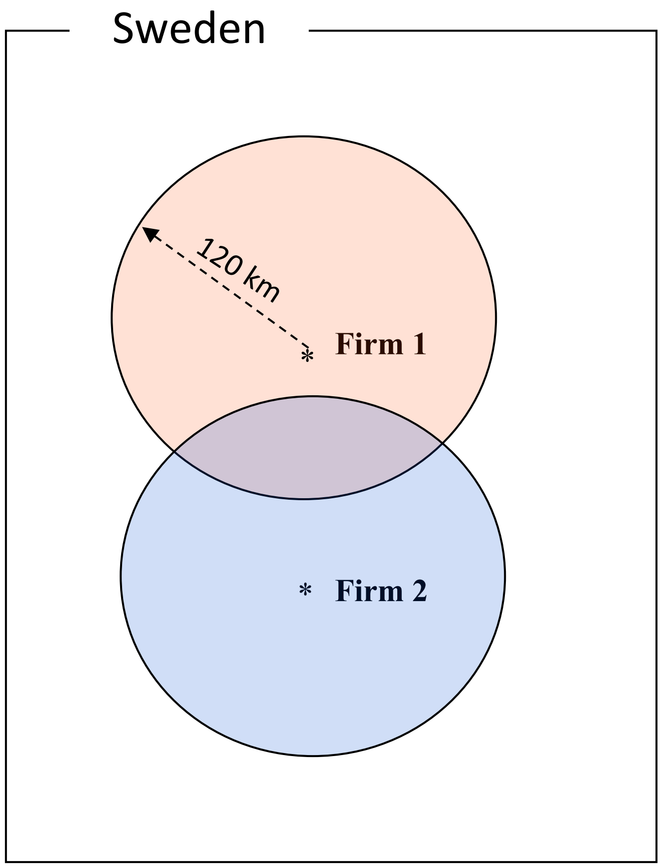
Application 1b

- Three different markets
  - May have consequences
  - Firms 1 and 2 may not be allowed to merge since that would reduce competition in the duopoly market



Application 1 b

- What if:
  - Assume firms unable to set different prices to different consumers
- Q: Define relevant geographical markets
  - If sufficiently many people live in intersection ("large overlap") compared to number of "captive consumers"
  - Then not profitable to increase prices above competitive level



Application 2

- Q: Can distant convenience stores be on the same market?
  - Four stores on the street

  - Some choose between A and B, some between B and C, but no one between A and C
  - Which stores are on A:s market?

Application 2

- Intuitively
  - B is on the same market as A

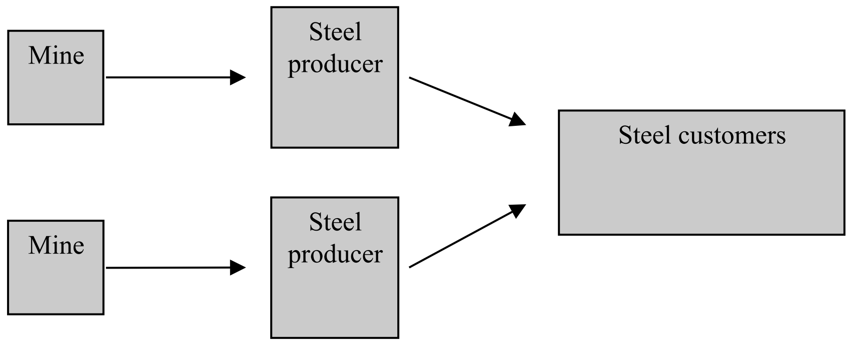
  - But also C and D might put competitive pressure on A
  - If C keeps low price, B has to keep low price, then A has to keep low price
  - Indirect competition = chain of substitution

Application 2

- Is indirect competition discovered by SSNIP?
  - B probably on the same market as A
    - If A increases price
    - most customers switch to B
  - Also C on the same market as A
    - If A & B increase price
    - people living between A and B may be captive
    - but they loose all living between B and C
  - D may not be on the same market
    - If A, B & C increase price
    - only small proportion of customers switch

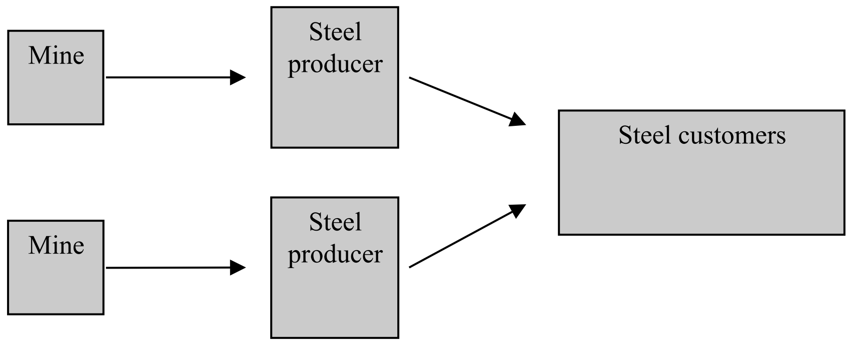
Application 3

- Q: Are iron mines far apart on the same market?
  - Steel producers only buy from local mine
  - Low value to volume



Application 3

- Demand substitution at retail level
  - Mine A cannot increase price above mine B
  - Steel customers would not stick with steel producer A if A needs to increase its price



Application 4

- Q: Are razors blades part of a system consisting of razors and blades?
  - If blades: Gillette is a monopoly provider of blades to Gillette razors
  - If system: Many suppliers of razor systems

Application 4

- Pricing trade-off
  - Captive consumers owning Gillette razor must buy Gillette blades
  - New consumers may consider life-time cost of different systems
- General Insight: After-markets
  - If razors are bought frequently and if customers are sophisticated, Gillette does not have ability to increase price of blades.

Application 5

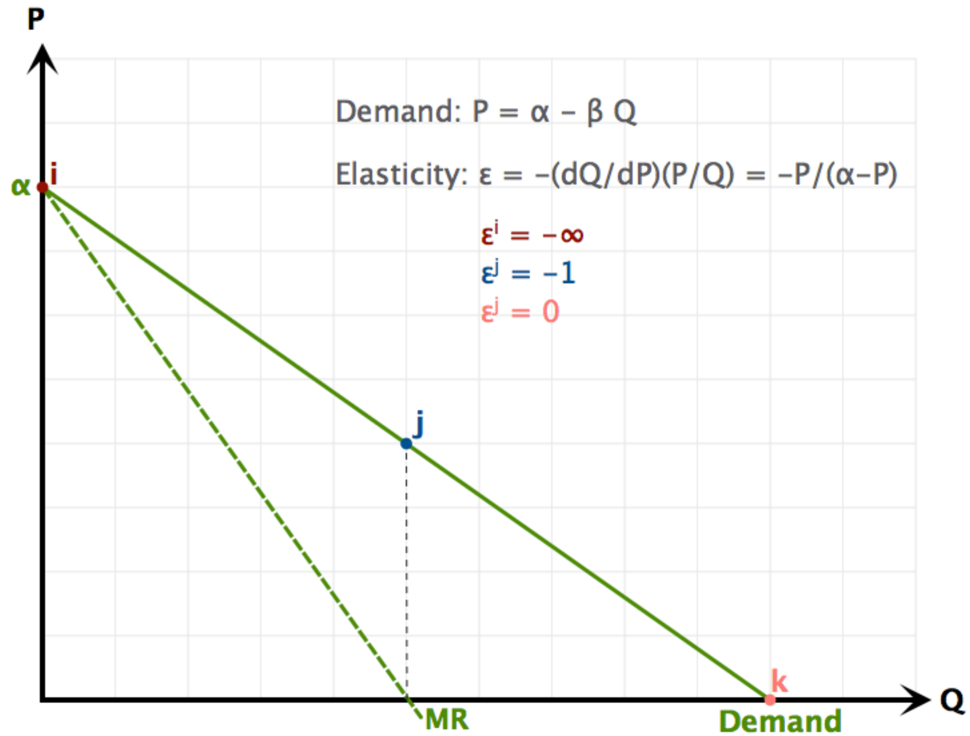
- Q: Is cellophane part of larger packaging market?
  - DuPont presented econometric evidence on price elasticities
  - DuPonts demand elastic
    - Thus: If it would increase price, large proportion of customers would switch to e.g. aluminum foil

Application 5

- US supreme court
  - Yes, cellophane is part of larger packaging market!

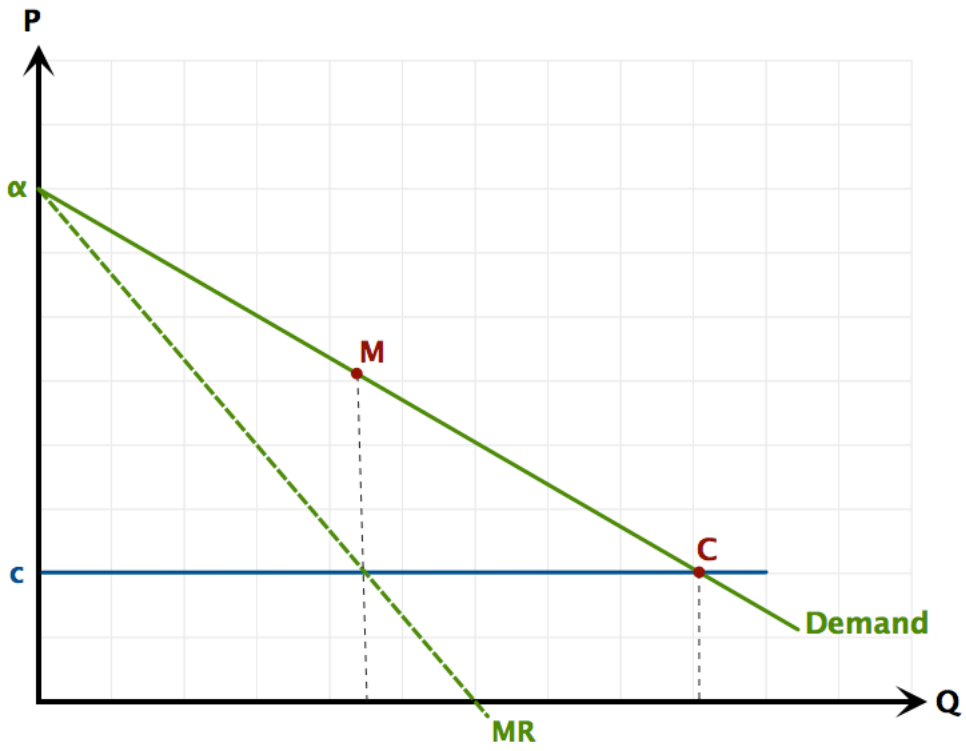
Application 5

- Critique: Price elasticity varies along demand curve



Application 5

- Monopolist chooses to operate on elastic part



Application 5

- Critique
  - The Court failed to see that DuPont had already increased its price above cost.
  - At this level further increases would, by definition, have been unprofitable
- General insight: Prevailing price vs competitive price
  - Firms increase prices as long as the gain from a higher markup outweighs the loss of customers. Since sales are reduced, the gain from a higher markup will sooner or later be dominated – the profit maximizing price.
  - To see if the cellophane market is worth monopolizing, one needs to consider price increases from the competitive price level (i.e. cost)

Application 6

- Market for spring mineral water
  - Should producers of soft drinks be included?
  - Easy to start sell purified tap water
  - No. Would require long and expensive advertising campaigns
  - (Nestlé/Perrier)

Application 7

- Market for air transport services in EU
  - Usually defined as city pairs, e.g.
    - London-Paris
    - Brussels-Berlin
  - Should firm active on other city pairs be included?
    - They have planes and personnel
    - No big deal to switch routes
  - But, no
    - Airports congested – impossible for airlines to switch
    - (Lufthansa/SAS)

Quiz

To be discussed next lecture – Please prepare!

Quiz

- European Commission prohibited Volvo from buying Scania
  - Commission: Volvo and Scania would become dominant on e.g. the Swedish and Finish markets
  - Volvo: We need to grow to be able to compete on the world market
  - Who was right?
    - How should geographical market be defined?