lecture 8: competition and antitrust: market structure

the story so far

Regulation of a natural monopoly:

- Definitions
- (Ideal) Pricing solutions
- Regulation in practice
- Regulation under asymmetric information

Competition and antitrust

- Collusion
- Market structure: concentration, scale economies, barriers to entry, potential competition

to come

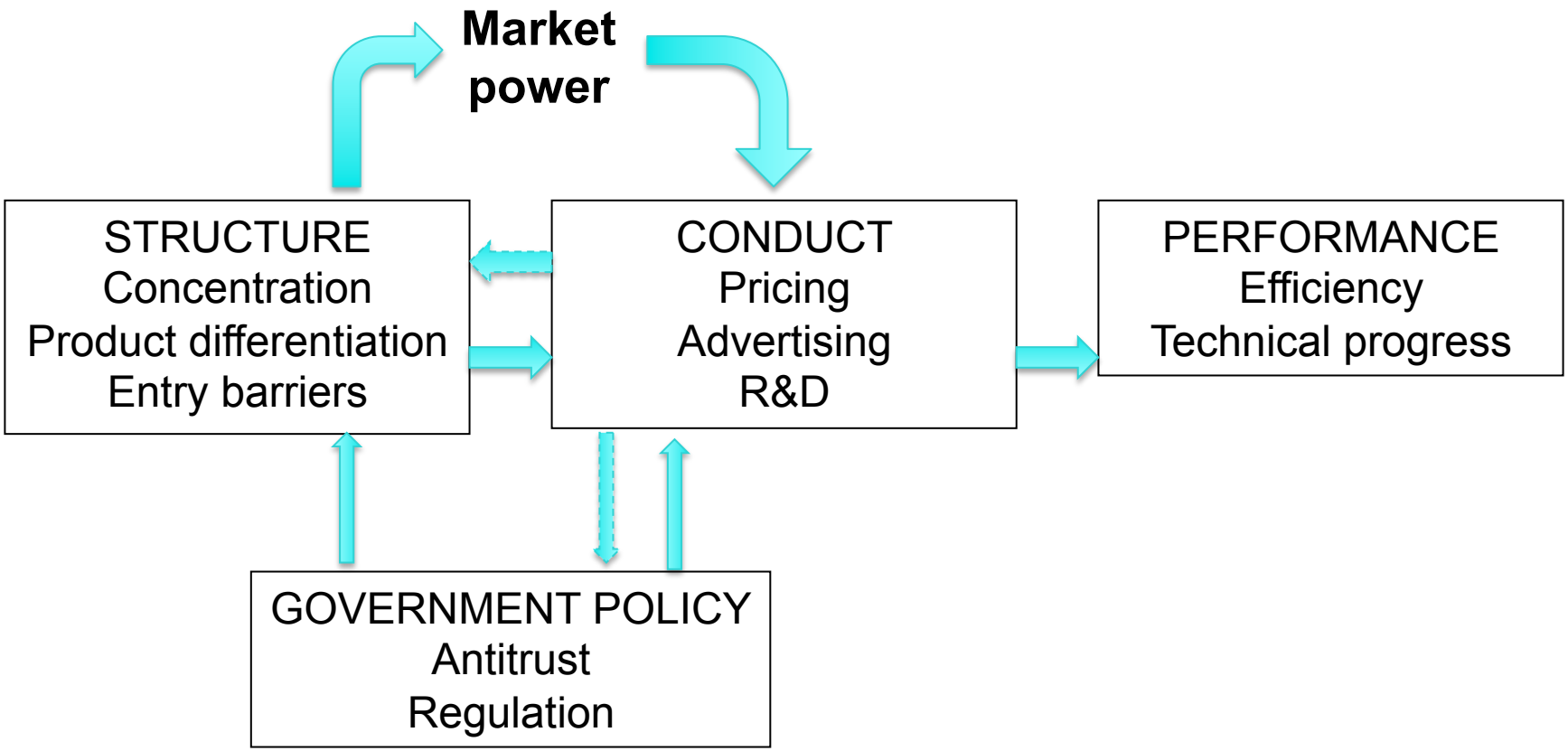
Competition and antitrust

- Mergers: horizontal and vertical mergers
- Other horizontal agreements: joint-ventures, cross-licensing, patent pooling
- Monopolization practices

References

- VHV, ch. 7, 8
- MM, ch. 5, 6

Structure-conduct-performance paradigm of IO



outline

- Mergers
- Unilateral effects
- Pro-collusive effects
- Remedies

Mergers

- Horizontal mergers: between competitors (firms in the same market)

- Unlike price fixing, which is *per se* an offense, horizontal mergers may result in increased efficiency and are thus considered under rule of reason

Mergers

vertical and conglomerate

- Vertical mergers: between firms with actual or potential buyer-seller relationships

- Conglomerate mergers (all the others):
  - Product extension merger: non-competing firms merge to use same marketing channels or production processes (ex: Pepsico and Pizza Hut)
  - Market extension merger: firms selling same product in different areas
  - Pure: no obvious relationship between firms

Horizontal mergers

(some) reasons

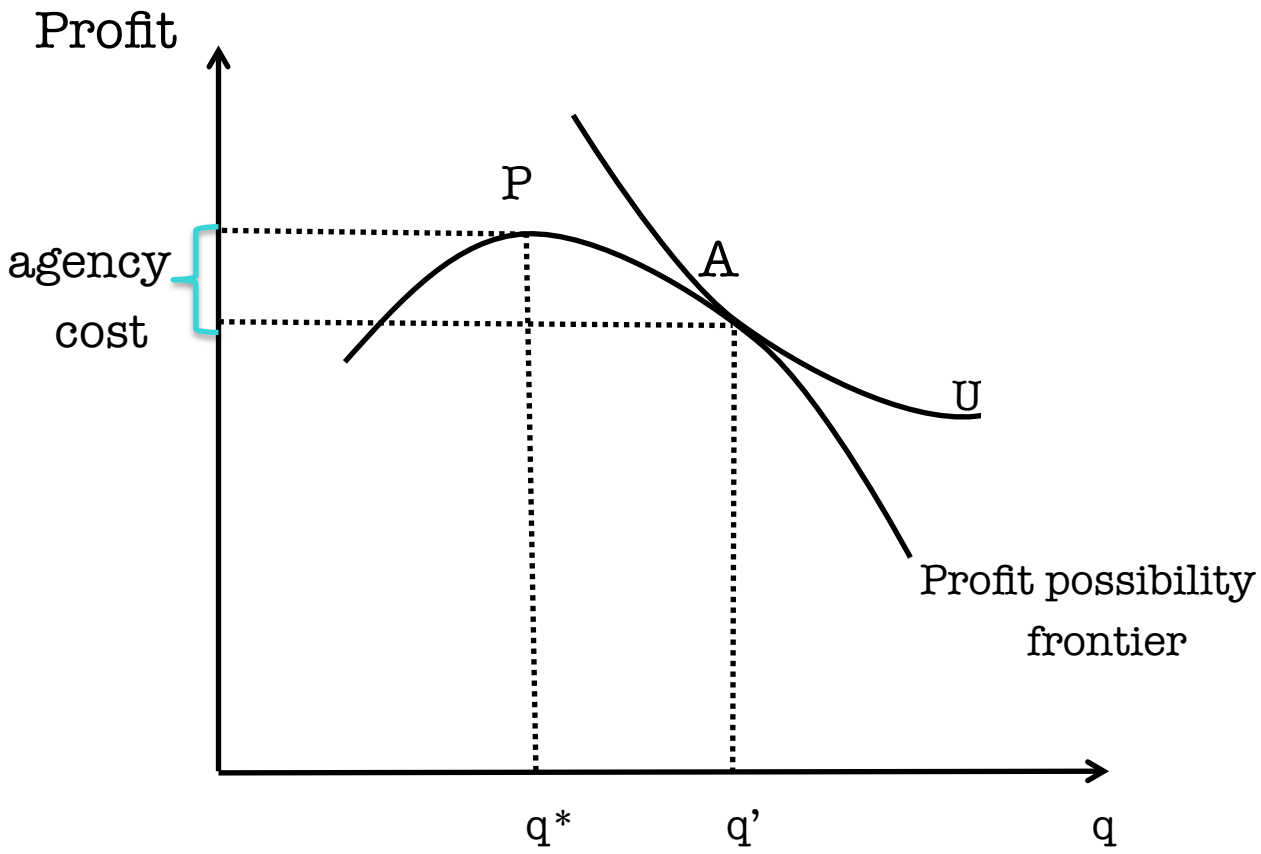
- Monopoly: attempts to monopolize a market are today restricted; but attaining a higher degree of market power may be an objective

- Economies: cost savings
  - Pecuniary: monetary savings from buying goods cheaply (increased bargaining power)
  - Resource (real) savings: increased specialization/scale ecs/shared input
  - In production, but also in marketing, in finance, in R&D,...

- Reducing management inefficiencies: moral hazard problem

Horizontal mergers

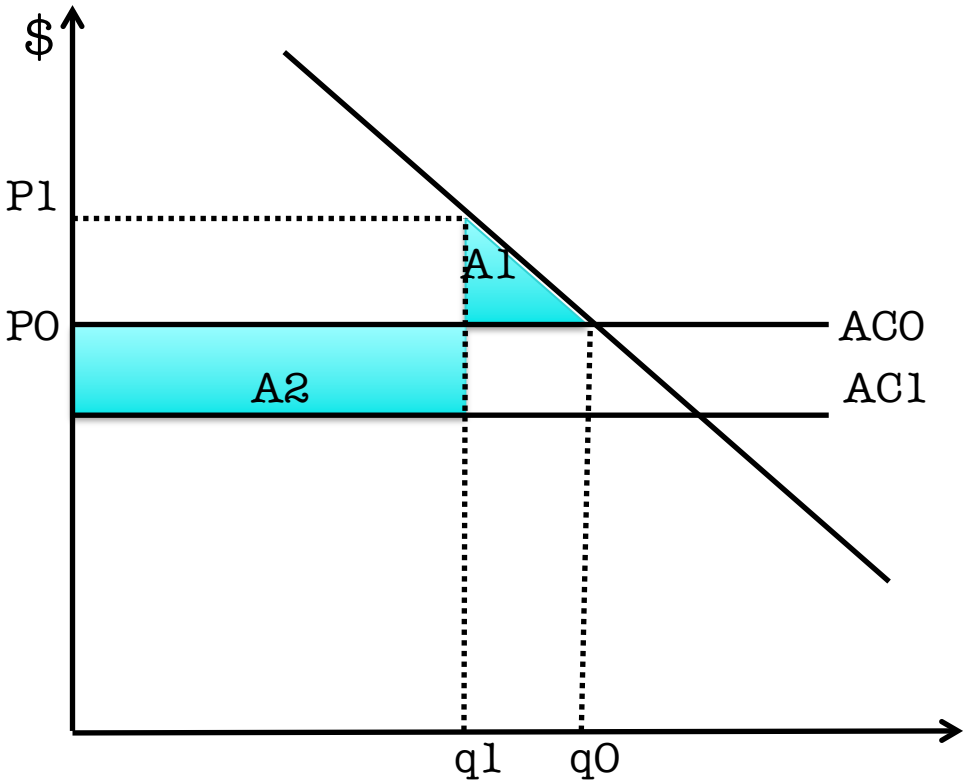
(some) reasons



Horizontal mergers

benefits and costs

- The welfare effect of cost reductions tends to swamp those of price rises: it takes a huge rise in prices to offset a fall in unit cost



Horizontal mergers
benefits and costs

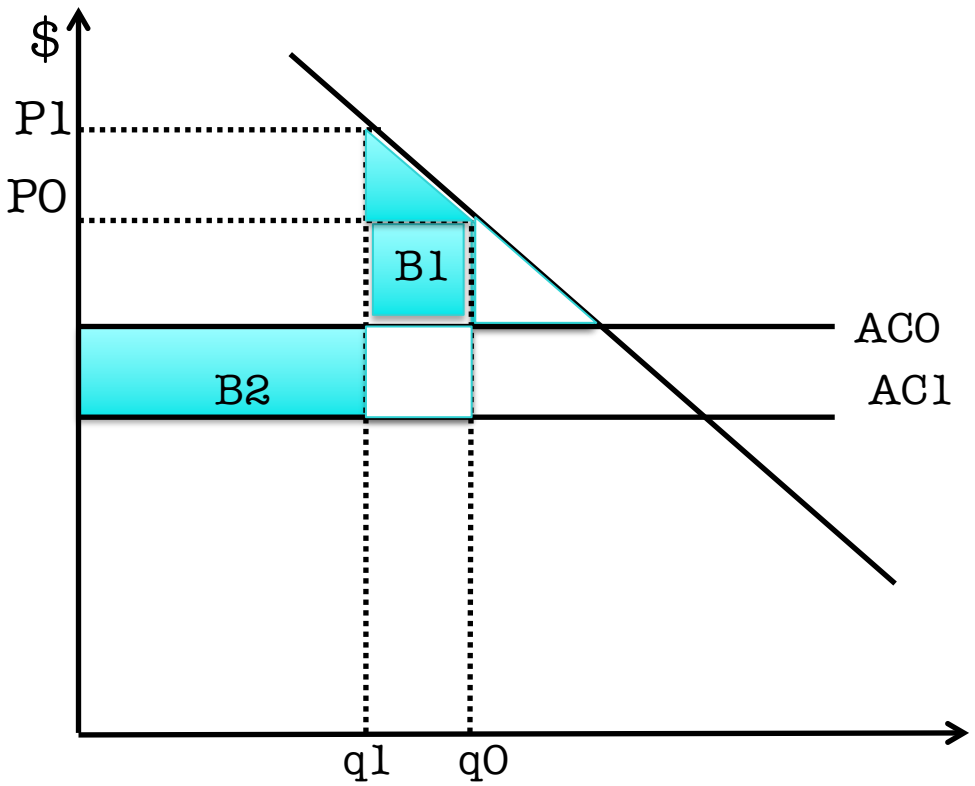
Percentage cost reduction sufficient to offset percentage price increases for some values of the elasticity of demand:

ΔP/P	Elasticity of Demand η			
	3	2	1	0.5
5	0.43	0.28	0.13	0.06
10	2.00	1.21	0.55	0.26
20	10.37	5.76	2.40	1.10

Horizontal mergers

benefits and costs

- But! This conclusion is weakened if before the merger, the industry is not competitive:



Horizontal mergers

benefits and costs

- Moreover, other firms' reactions to the merger have to be taken into account

- **If** the merged firm prices higher, the other firms in the market should also price higher as their demand curves shift outwards (Bertrand model with differentiated products)

- The rivals' response increases the welfare loss

Bertrand with differentiated products

- Firms 1 and 2 produce similar but not identical products and compete on price
- Demands: $q1 = 20 - p1 + p2$; $q2 = 20 - p2 + p1$
- Assume MC = 0
- Price reaction functions:

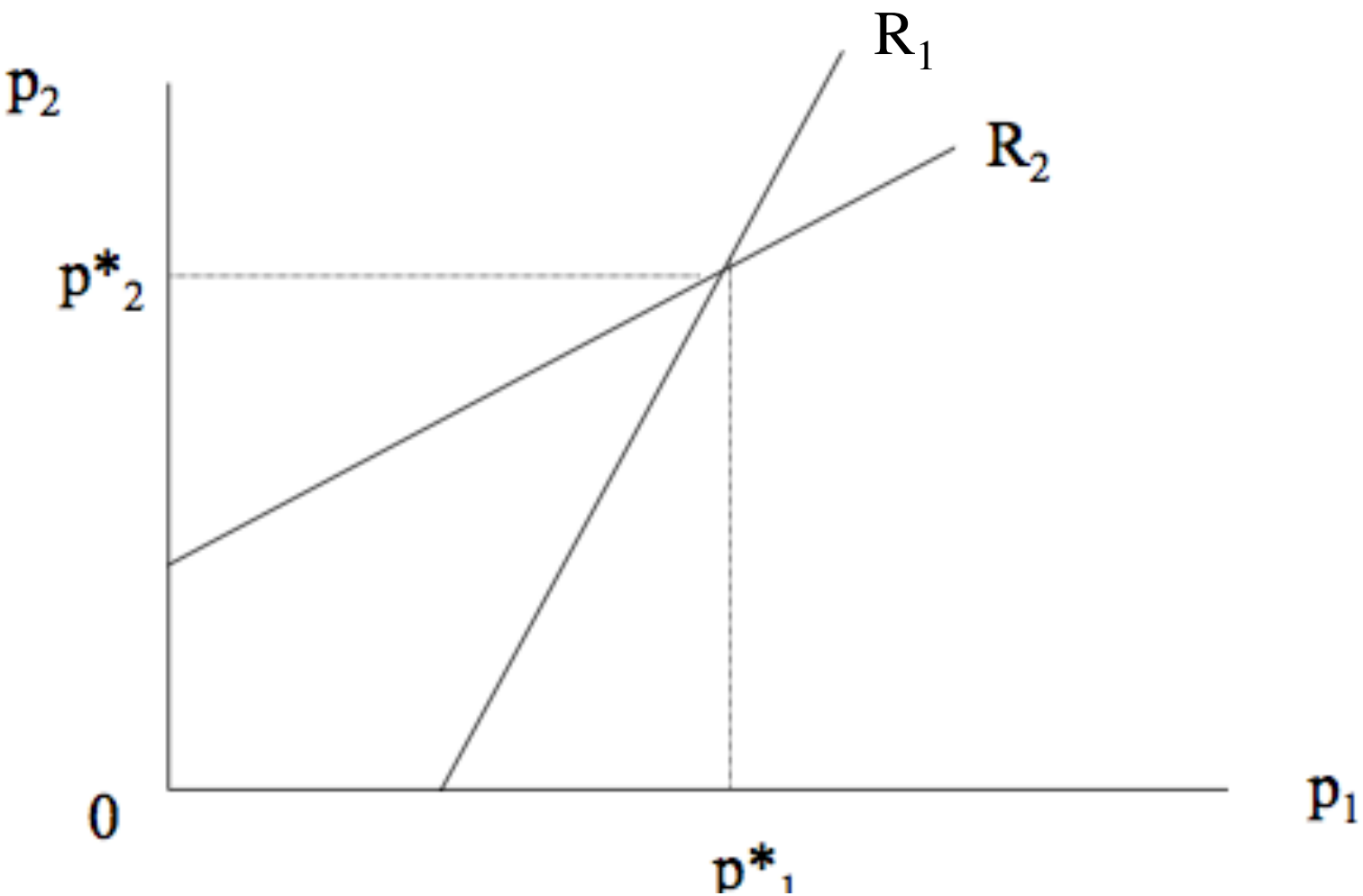
$$p1 = (20 + p2)/2;\ p2 = (20 + p1)/2$$

$$p1 = p2 = 20;\ \Pi 1 = \Pi 2 = 400$$

- If firm 1 is leader,

$$p1 = 30;\ p2 = 25;\ \Pi 1 = 450;\ \Pi 2 = 625$$

Bertrand equilibrium



Horizontal mergers
benefits and costs

- How does the merger lead to a rise in price?

  Two cases:

  - Merger allows the merged firm to unilaterally exercise market power and raise prices

  - Merger favors collusion in the industry thus raising prices

Unilateral effects

1. The merger may increase market power ➔ decrease welfare

2. May increase efficiency ➔ reduce price ➔ effect on welfare is ambiguous

Unilateral effects

1. increase in market power

- Ex: grocery stores

- Effects (absent efficiency gains):

  - Increase in prices and/or reduction in quantities
  - Reduction in consumer surplus
  - Increase in outsiders' profit (!)

Unilateral effects

1. increase in market power

- Using the Cournot model, prices are set so that:

$$\frac{P - MC}{P} = \frac{1}{n\eta},$$

where n is the number of firms in the market.

- The lower the n, the higher the price-cost margin

Unilateral effects

factors

- Concentration: < number of firms ➔ > probability of efficiency loss
- Market shares: < market shares of merging firms ➔ less detrimental (and a merger btw small firms might even increase welfare!)
- Rivals' capacities: > productive capacities of rivals ➔ less detrimental
- Entry: < barriers ➔ less detrimental
- Demand variables: > elasticity of demand ➔ less detrimental
- Buyer power: < number of buyers ➔ less detrimental
- Failing firm defence: if the merger had not occurred, a firm might have failed

Unilateral effects

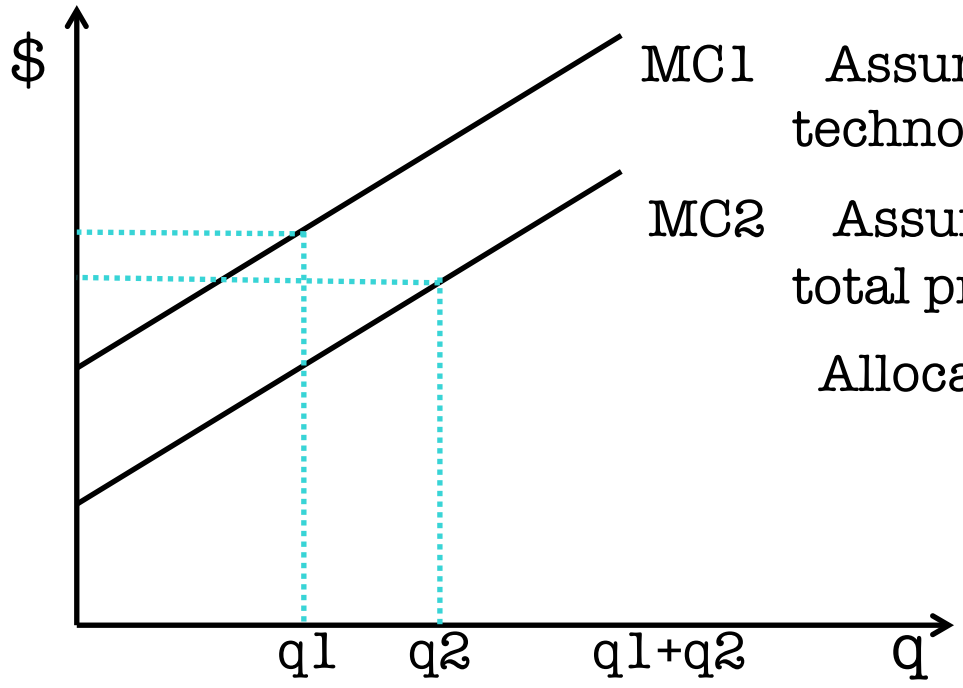
2. when efficiency gains exist

- The source of cost savings is idiosyncratic for each merger

- But, in general, it leads to a more efficient allocation of industry supply: a merged firm can coordinate output across production units so as to reduce total cost

Unilateral effects

2. when efficiency gains exist



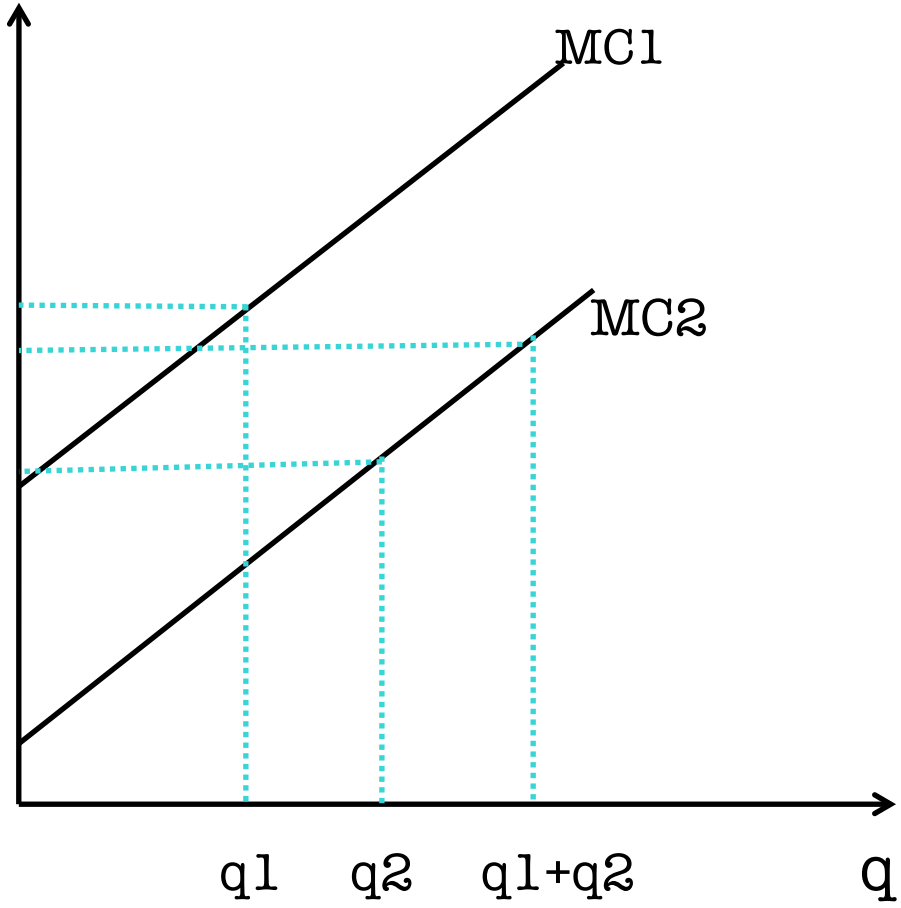
Assume a merger leaves technology and prices unchanged

Assume the merged firm keeps total production q1+q2

Allocation across units?

Unilateral effects

2. when efficiency gains exist



Favouring collusion

- In the Cournot model, this means rising the price-cost margin above $1/n\eta$

- Collusion is sustained by the threat of punishment in case a firm cheats

- The short-run gain from cheating is lower when there are fewer firms (because each firm's share is higher); but, if punishment is the return to Cournot, it is less strong when there are fewer firms (price-cost margin is higher)

- In general the second effect is stronger, so that mergers make collusion easier!

www.concorrencia.pt

"Compete à Autoridade da Concorrência, no uso dos seus poderes de supervisão, o controlo prévio de operações de concentração que cumpram os limiares de notificação estabelecidos na Lei da Concorrência (Lei n.º 19/2012, de 8 de maio).

São sujeitas a notificação prévia, nos termos do artigo 37.º da Lei da Concorrência, as operações de concentração de empresas que preencham uma das seguintes condições:

1 - Crie ou reforce uma quota ≥ 50% no mercado nacional de determinado bem ou serviço, ou numa parte substancial deste;

2 - Crie ou reforce uma quota ≥ 30% e < 50% no mercado nacional de determinado bem ou serviço, ou numa parte substancial deste, desde que o volume de negócios realizado individualmente em Portugal, por pelo menos, 2 das empresas que participam na operação de concentração seja superior a 5 milhões de euros, líquidos dos impostos com este diretamente relacionados;

3 - O conjunto das empresas que participam na concentração tenha realizado em Portugal, no último exercício, um volume de negócios superior a 100 milhões de euros, líquidos dos impostos, desde que o volume de negócios realizado individualmente em Portugal por pelo menos 2 dessas empresas seja superior a 5 milhões de euros.

Other horizontal agreements

Joint-ventures (JVs)

- Horizontal agreement (non-collusive) creating a new entity to carry out some activity instead of the partners (btw cartel and merger)

- Exs: research JVs, production JVs, marketing JVs, ...

- Economic analysis similar to that of a merger
  - Trade-off btw market power and efficiency

Research JVs

- R&D features spillovers: know-how flows from one firm to another through imitation and worker mobility; this reduces incentives to invest in R&D!

- R&D is non-rival: it can be used by other parties without having its value decreased (thus, diffusion avoids duplication of costs)

- R&D JVs may help to cope with these problems!

- But, spillovers should be important enough + such agreements should be limited in scope (not far into the product market) not to harm competition

Other forms of cooperation regarding technology

- Cross-licensing
  - Two firms allow each other to use technology protected by patents
    - Competition suffers when patents are substitutable and contact has per-unit royalties that reduce incentive to market aggressively
    - When patents are complementary, cross-licensing allows for technological advance
- Patent pool
  - A firm holds patent rights of two or more firms and licenses them to a third party as a package
    - If patents are essential, package is desirable
    - If complementary, pooling keeps royalties lower
    - Decrease transaction costs

Other forms of cooperation regarding technology

- Cooperative standard setting
  - Firms competing in the development of a new technology set common standards
  - Exs: compact discs, tv, web protocols, telephone,...
  - Adv: consumers will all belong to same network (e.g., can exchange computer files,...), enjoy variety in indirect networks, safety (standard will not be abandoned later), fiercer (ex-post) competition
  - But: no competition for the dominant standard (ex-ante competition), so that there is no guarantee that the best will be chosen
  - Thus, caution!

Conglomerate mergers

- Potential benefits:
  - some conglomerate organizations are better than capital market in allocating investment funds: top management has better information than banks and stockholders
  - managers are constantly under pressure to be efficient by the takeover of another firm

- Anticompetitive effects:
  - eliminating a potential competitor (ex: Procter & Gamble removed itself as a potential competitor by buying Clorox in 67)
  - reciprocal dealing: buying from a supplier only if the supplier buys from you
  - predatory pricing

Vertical mergers

- Merger of firms with actual or potential buyer-seller relationship

- Coase: there are transaction costs in performing operations inside the firm and in the market, so that firms develop to minimize such costs

- Mergers not only impact costs, but also increase market power and influence price; welfare change is *ex ante* ambiguous!

Vertical mergers

benefits

- Lower costs through (efficiency gain!):
  - Technological economies: joint production may decrease costs because part of technological process is common (ex: integration of ironmaking and steelmaking)
  - Decrease in transaction costs:
    - Coordination costs: in activities such as determining price and bringing sellers and buyers together
    - Motivation costs: cost in inducing people to behave in a manner necessary for trade; examples:
      - Costs may be due to asymmetric information – a firm may not hire another to perform some service because of the inability to measure performance
      - In manufacturer-retailer relationship: a manufacturer may want the retailer to offer services (sales people explaining virtues); some retailers free-ride on the services of the others

Vertical mergers

benefits

- Double marginalization: the price of the input is marked up twice when the supplier and the downstream firm have market power

Vertical mergers

benefits

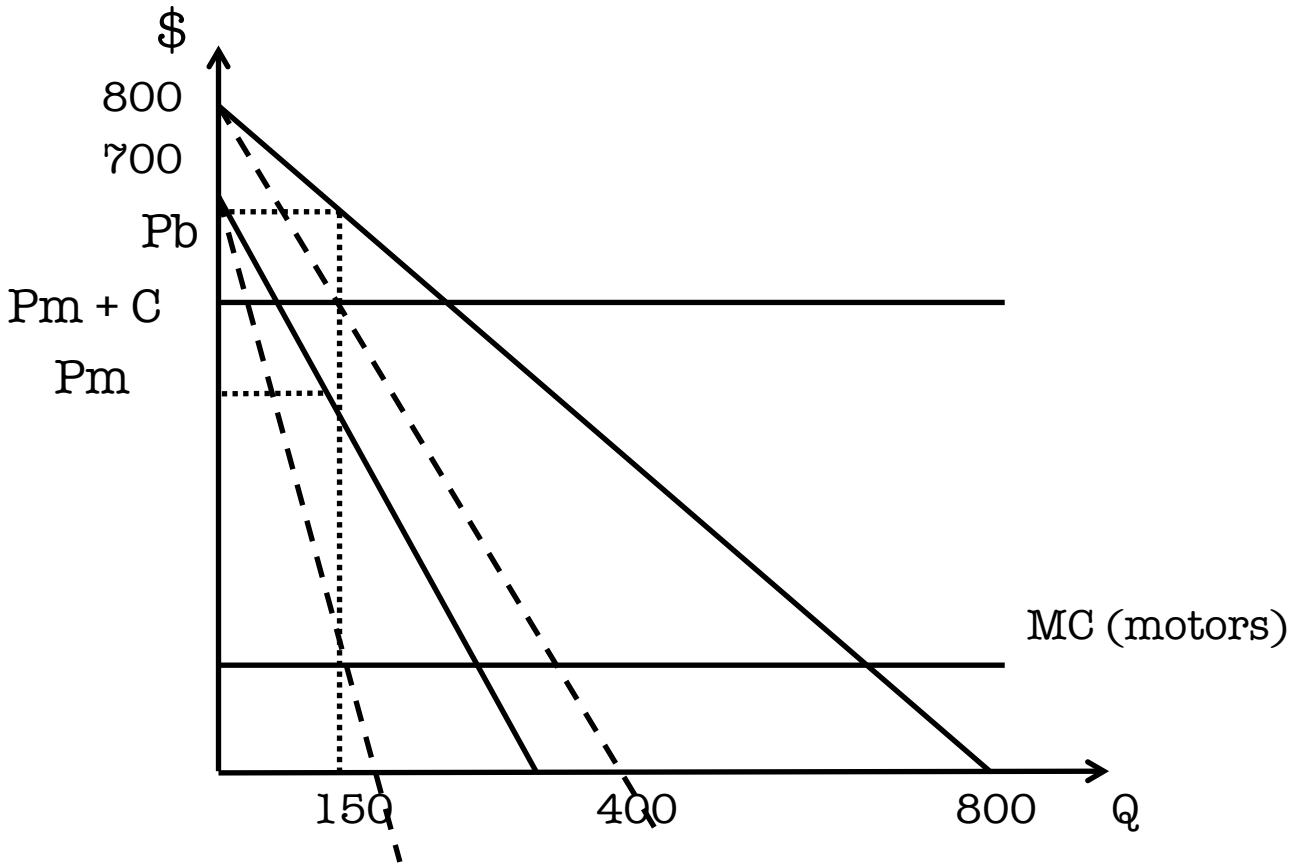
- Double marginalization: the price of the input is marked up twice when the supplier and the downstream firm have market power

- Example: boat monopolist buys motors from motor monopolist and produces boats at a constant conversion cost of C=100 per unit; the boat monopolist accepts price set by motor firm; MCm=100

  Db = 800 – Pb implying Dm = 350 – Pm/2

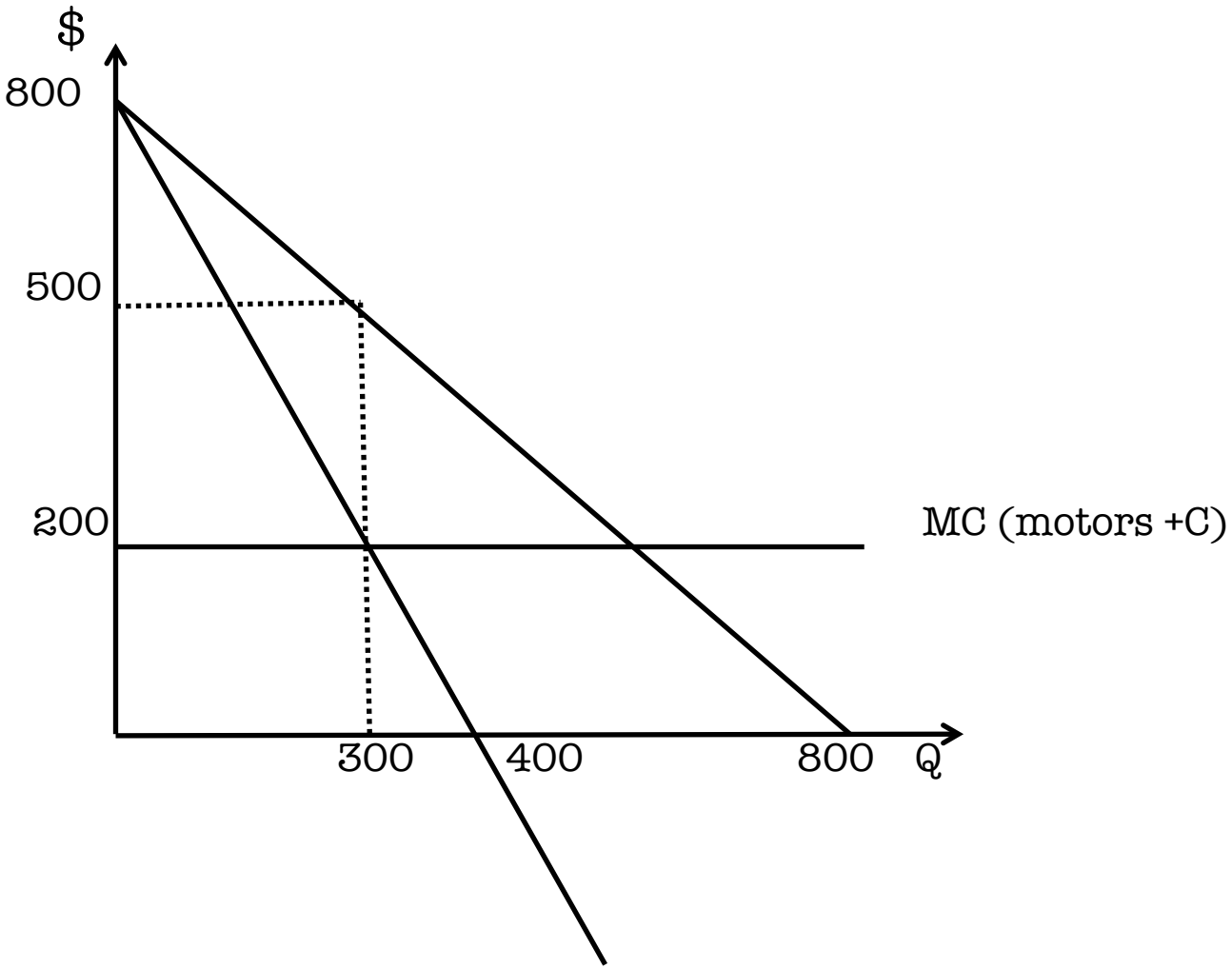
Vertical mergers

double marginalization – example (before merger)



Vertical mergers

double marginalization – example (after merger)



Vertical mergers

benefits

- Double marginalization: the price of the input is marked up twice when the supplier and the downstream firm have market power

- In the case of successive monopolies, a merger will increase both profit and welfare; in the case of successive oligopolies, anticompetitive effects may appear

- Another efficiency gain: when the downstream firm uses multiple inputs and all but one is supplied competitively, an inefficient input mix is used; vertical integration can eliminate it!

Vertical mergers

anticompetitive effects

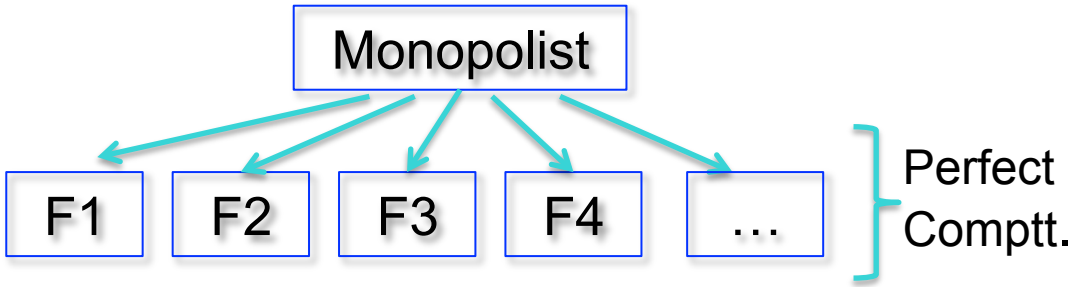
- The Chicago school showed in the 80s that market foreclosure does not happen; recently, GT identified situations in which foreclosure can have anticompetitive effects

- It is necessary for a vertical merger to have anticompetitive effects that there is market power in one or both markets

Vertical mergers

anticompetitive effects - monopolization

- Extreme example:



the upstream monopolist acquires one downstream firm (in a perfectly competitive industry) and does not provide input to competing firms, so that the downstream industry becomes a monopoly

Is this anticompetitive?

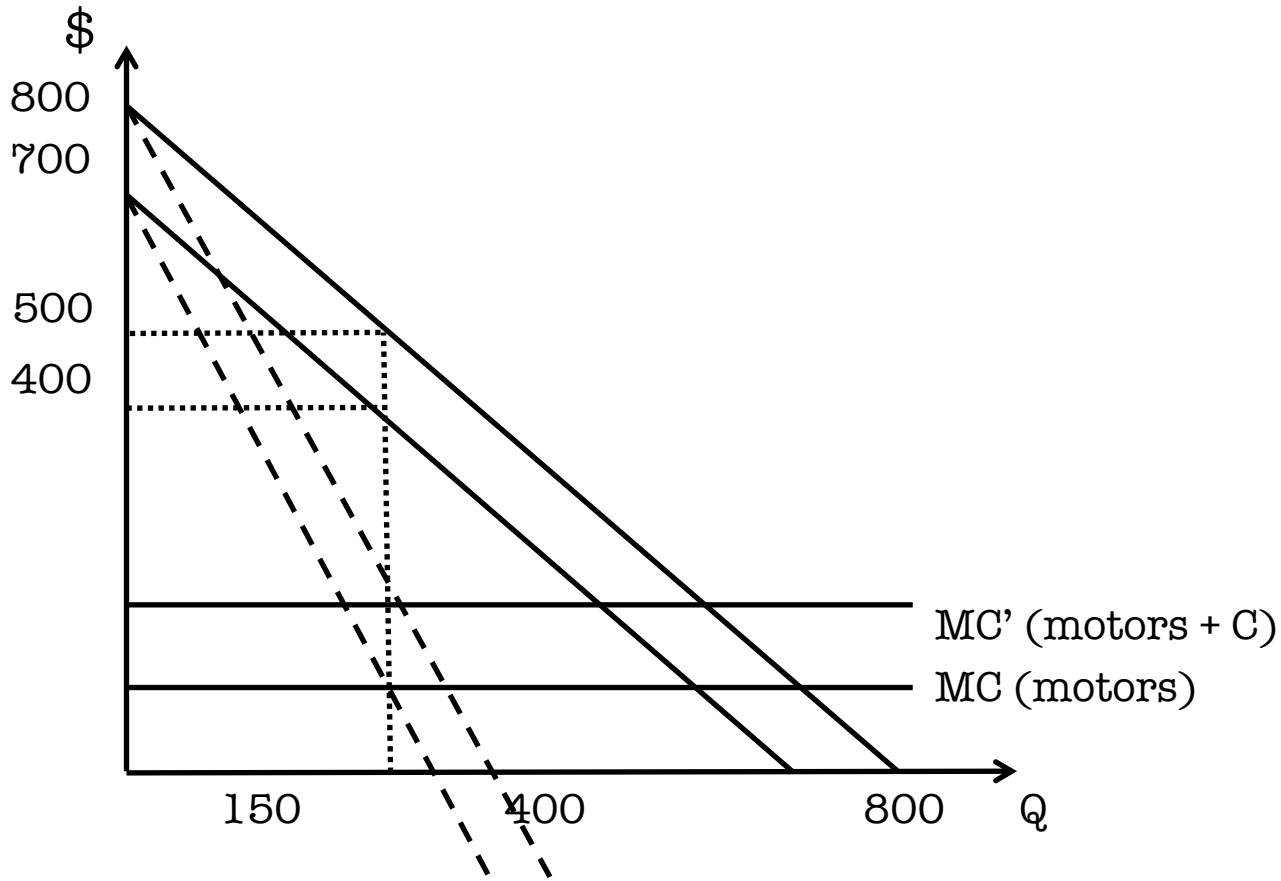
Vertical mergers

anticompetitive effect - monopolizations

- Not according to the Chicago school: the final product's price is unaffected in case of a **fixed-proportions** production technology (one unit of output requires a fixed proportion of various inputs)

Vertical mergers

vertical monopolization with fixed proportions production



Vertical mergers

anticompetitive effects - monopolization

- Not according to the Chicago school: the final product's price is unaffected in case of a fixed-proportions production technology (one unit of output requires a fixed proportion of various inputs)

- Here, the monopolist gains nothing by monopolizing downstream (same profit)

- (So, what's the motivation for a merger here?)

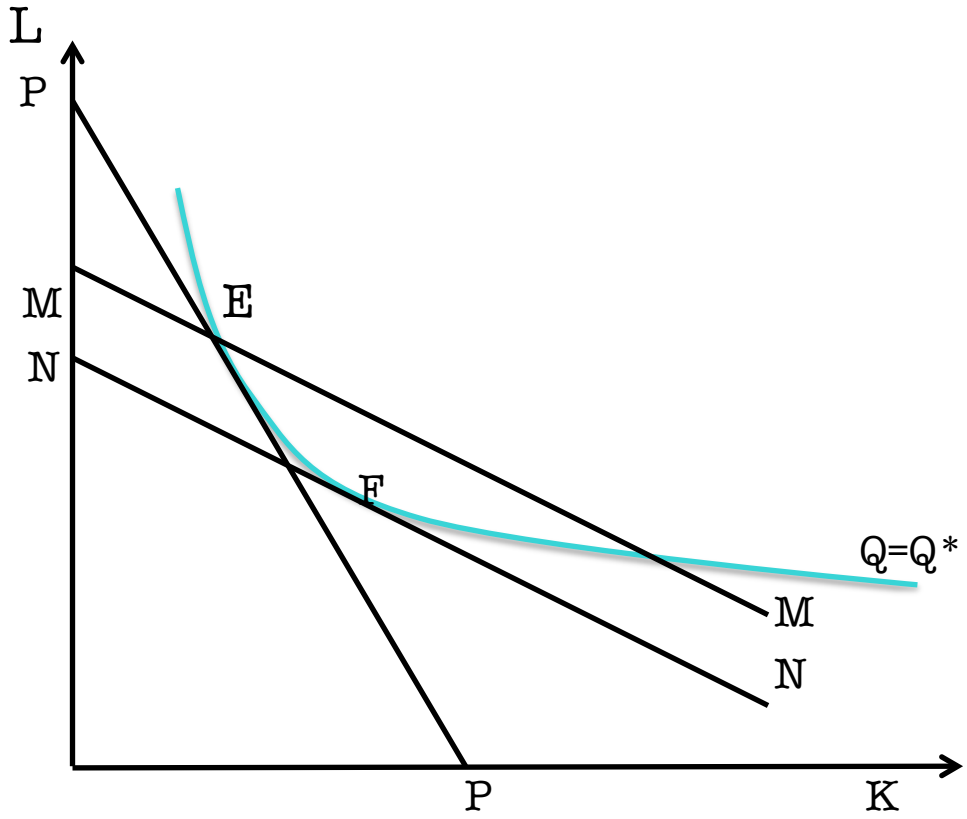
Vertical mergers

anticompetitive effects - monopolization

- Now assume variable proportions
- Example: capital (K) and labor (L) are needed to produce shoes; K is produced by a monopolist

Vertical mergers

variable proportions – example



Vertical mergers

anticompetitive effects - monopolization

- Here, as the price of K is increased, the shoe industry substitutes K for L!!
- Slope of isocost NN = ratio of MCk to wage; so, F: least cost input mix
- Since Pk > MCk, actual pre-merger isocost is PP; so, E is chosen, resulting in loss of MN in units of L
- If the upstream firm monopolizes forward, the production of shoes shifts to F; so, cost saving = MN (merger is profitable)
- But the price can rise or fall due to monopoly pricing... there may be deadweight loss!

Vertical mergers

anticompetitive effects - oligopolies

- When both upstream and downstream markets are oligopolistic, vertical integration can be profitable and raise the final price by causing downstream competitors to have higher costs

- This is the effect "raising rivals' costs;" two types:
  - *Input foreclosure*: the upstream division of an integrated firm does not sell input to other firms, who have to face higher price/inferior quality suppliers
  - *Costumer foreclosure*: upstream suppliers are denied access to selling to the downstream division of an integrated firm; this can result in exit

Vertical mergers

anticompetitive effects - oligopolies

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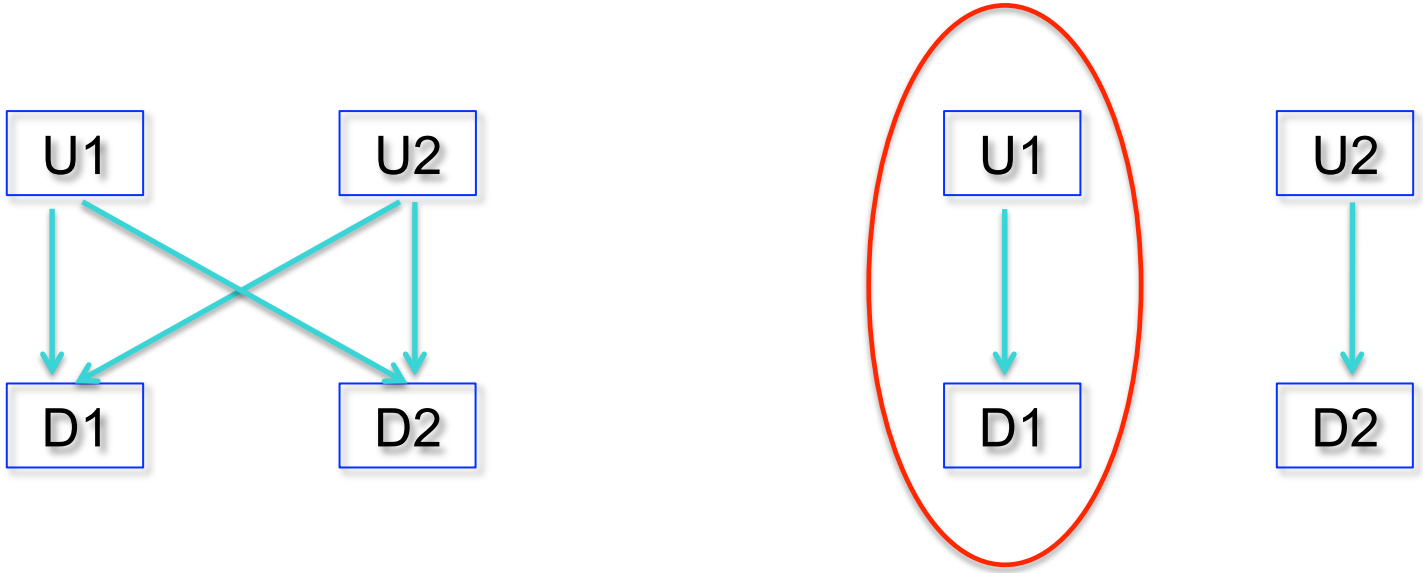
Vertical mergers

anticompetitive effects – oligopolies – input foreclosure



Vertical mergers

anticompetitive effects – oligopolies – input foreclosure

- Ui offer a homogeneous product and have cost of production of 10; Ui price is wi

- Di offer differentiated products and require 1 unit of the upstream commodity to produce 1 unit of output; Di's cost is w^i plus 15

- Let D1(p1,p2)=100-p1+0.5p2 and D2(p1,p2)=100-p2+0.5p1

- If downstream firms compete in price, the NE prices are

$$P1 = 76.67 + 0.534w^1 + 0.133w^2$$

$$P2 = 76.67 + 0.534w^2 + 0.133w^1$$

Vertical mergers

anticompetitive effects – oligopolies – input foreclosure

- In the absence of a merger, the upstream firms compete in prices; in NE, they charge w1=w2=10, so that P1=P2= 83.34

- If U1 and D1 merge, the lone supplier of D2 is U2; what price will U2 set?

- The monopoly price of w2=72.45, so that D2 ends up with a much higher MC

- Thus, both firms' prices will be higher; the merged firm profits are higher and social welfare is reduced

Vertical mergers

anticompetitive effects – oligopolies – input foreclosure

- But! There are assumptions:

  - Upstream firms produce homogeneous products
  - Compete in prices
  - If not, reducing double marginalization through a merger increases welfare
  - And U1 may prefer to actually supply D2...
  - U2 and D2 may integrate themselves too