

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

References

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

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

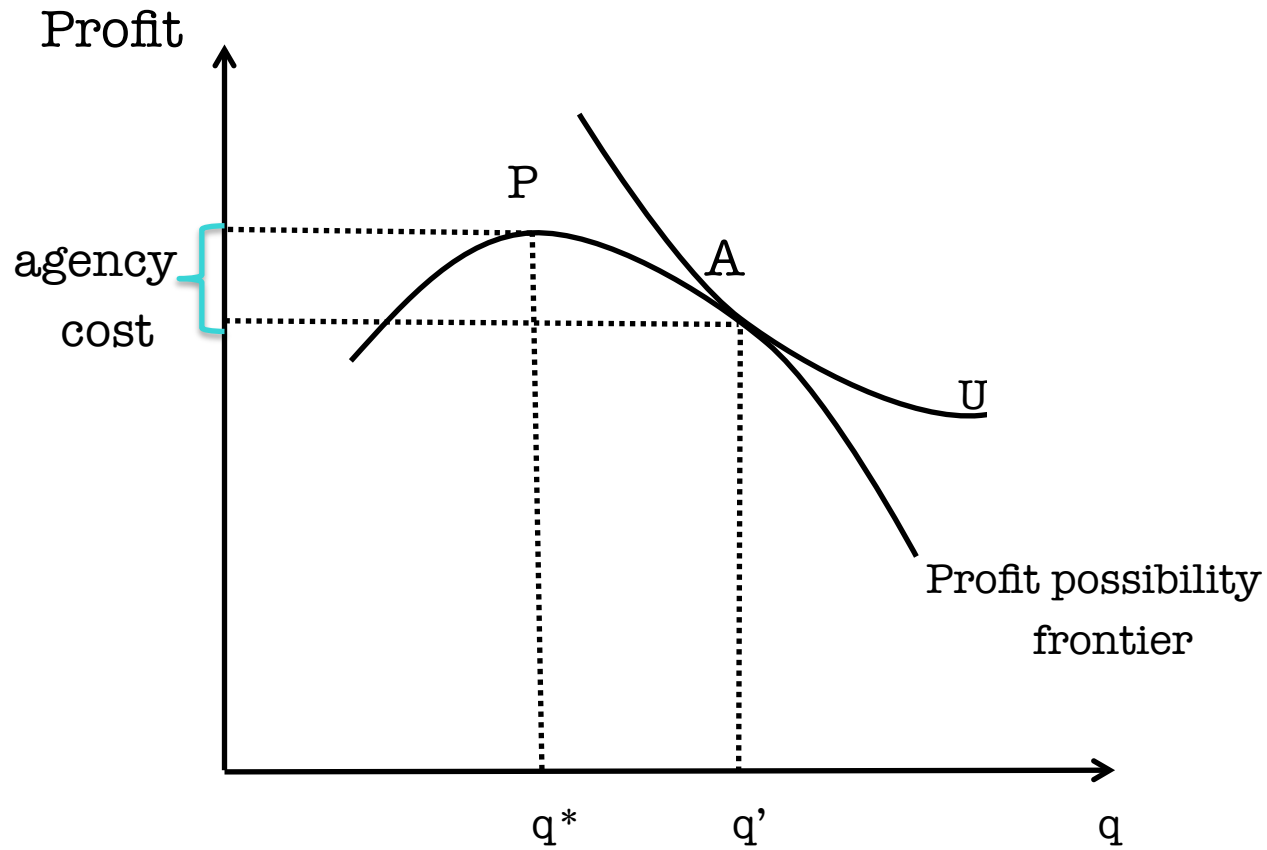
Horizontal mergers

(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 effects/shared input
 - In production, but also in marketing, in finance, in R&D,...
- Reducing management inefficiencies: moral hazard problem

Horizontal mergers

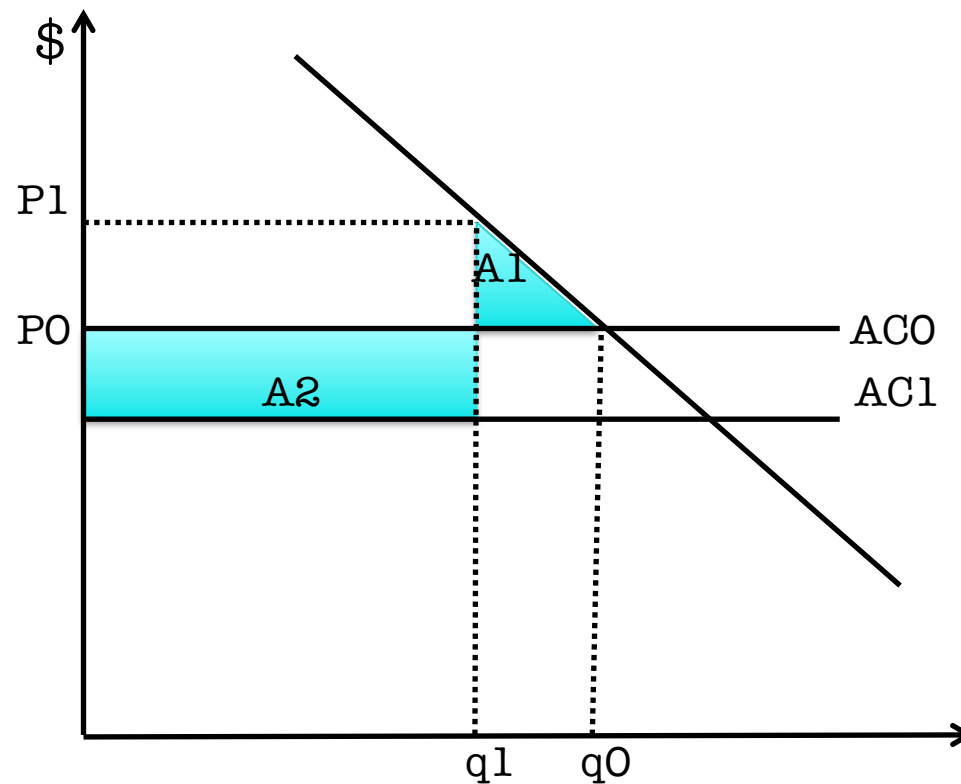
(some) reasons



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

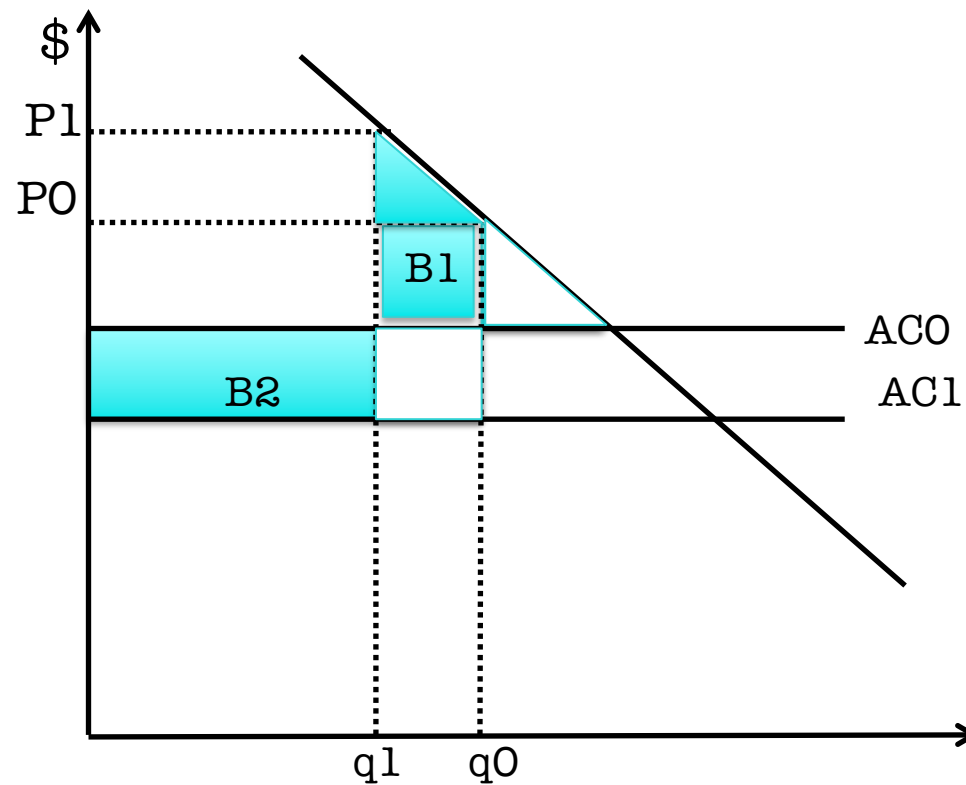
Percentage cost reduction sufficient to offset percentage price increases for some values of the elasticity of demand:

$\Delta P/P$	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: $q_1 = 20 - p_1 + p_2$; $q_2 = 20 - p_2 + p_1$
- Assume $MC = 0$
- Price reaction functions:

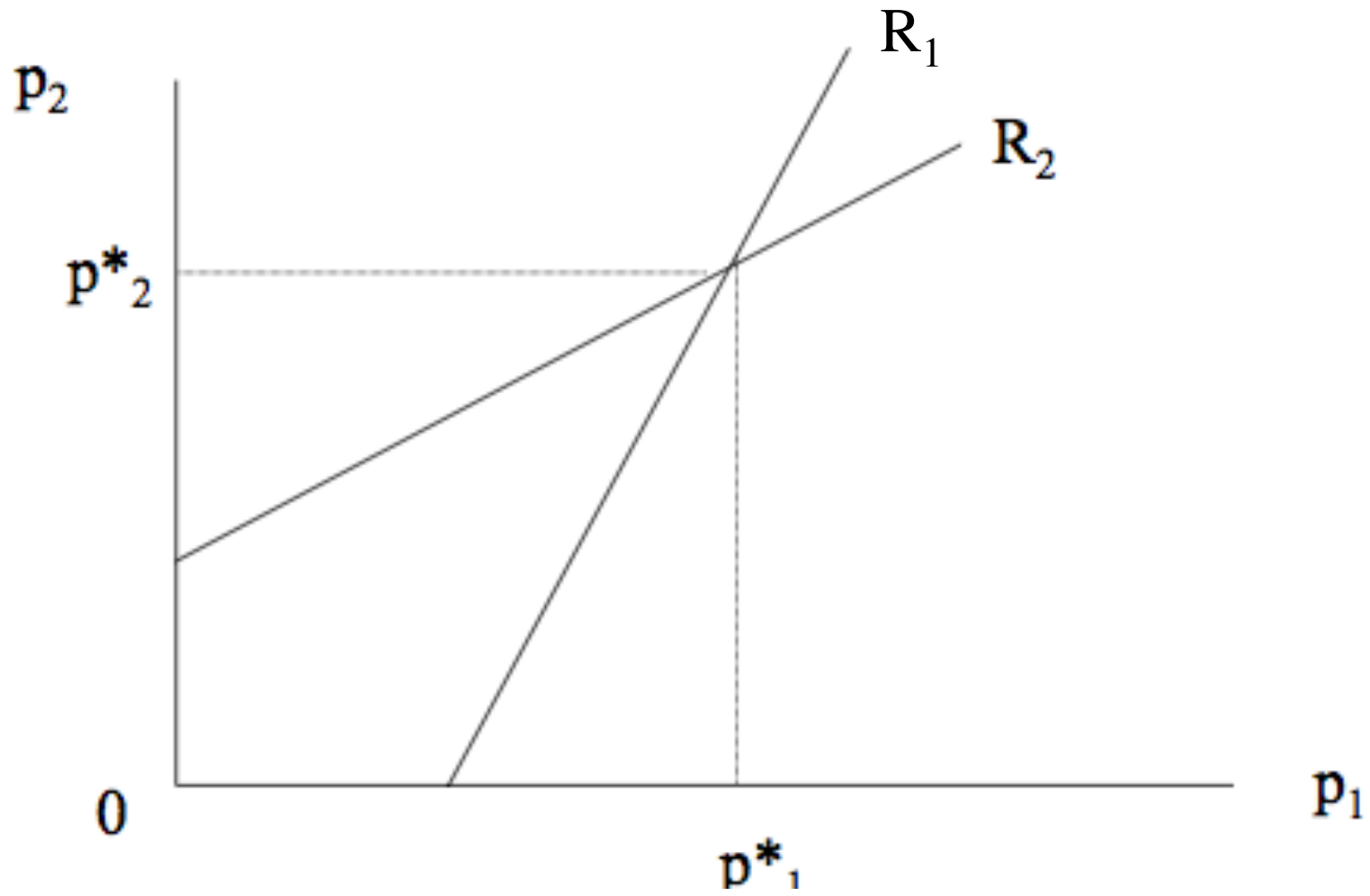
$$p_1 = (20 + p_2)/2; p_2 = (20 + p_1)/2$$

$$p_1 = p_2 = 20; \Pi_1 = \Pi_2 = 400$$

- If firm 1 is leader,

$$p_1 = 30; p_2 = 25; \Pi_1 = 450; \Pi_2 = 625$$

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

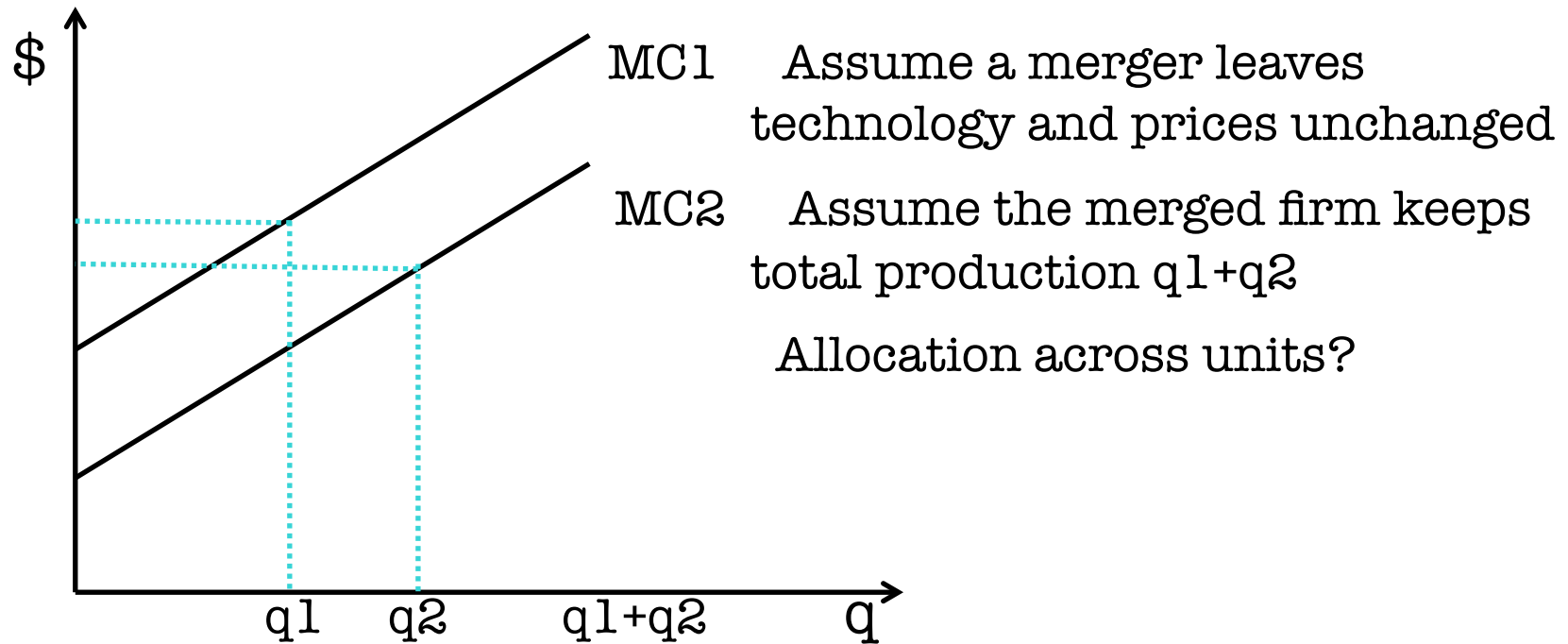
Unilateral effects

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

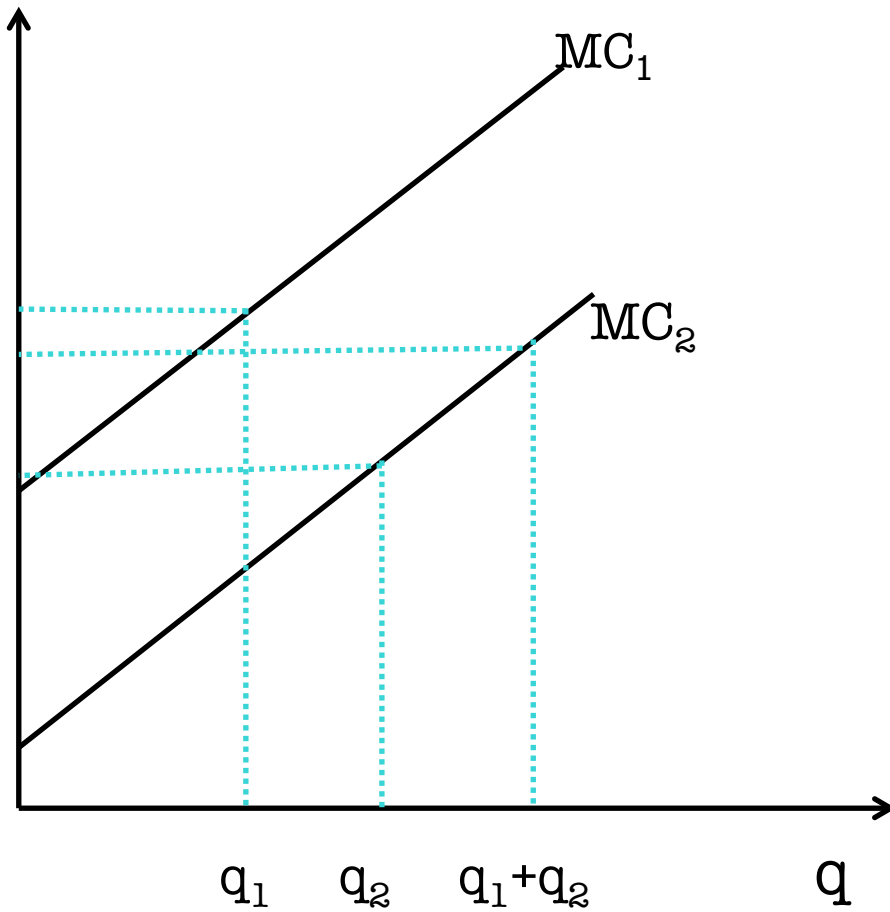
Unilateral effects

2. when efficiency gains exist



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 first effect is stronger, so that mergers make collusion easier!

“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 $\geq 50\%$ no mercado nacional de determinado bem ou serviço, ou numa parte substancial deste;

2 - Crie ou reforce uma quota $\geq 30\%$ 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;

www.concorrencia.pt

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.

Conglomerate mergers

- Potential benefits:
 - 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 and a constraint on price in bleach market disappeared)
 - reciprocal dealing: buying from a supplier only if the supplier buys from you
 - predatory pricing: pricing below cost to drive out competitors

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

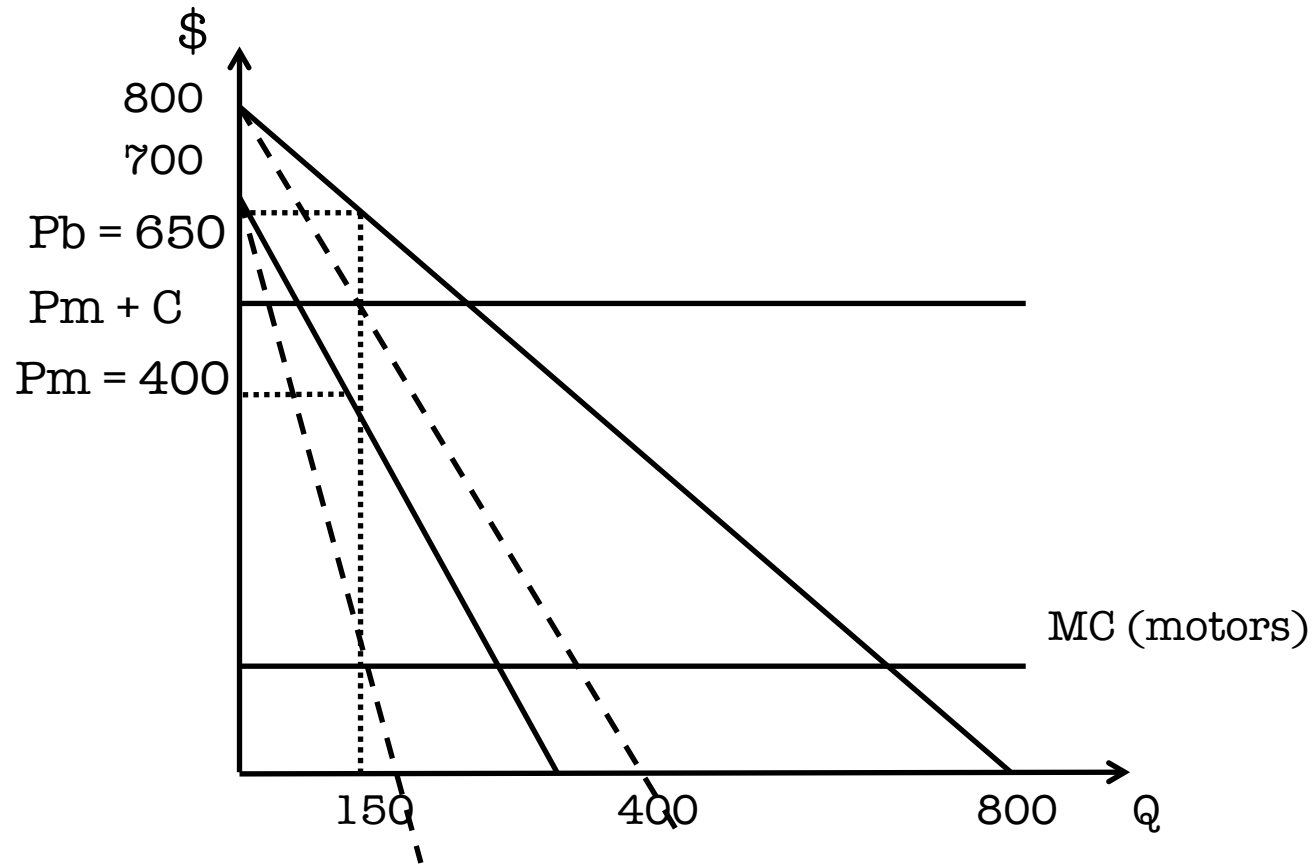
Vertical mergers

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; $MC_m=100$
 $D_b = 800 - P_b$ implying $D_m = 350 - P_m/2$

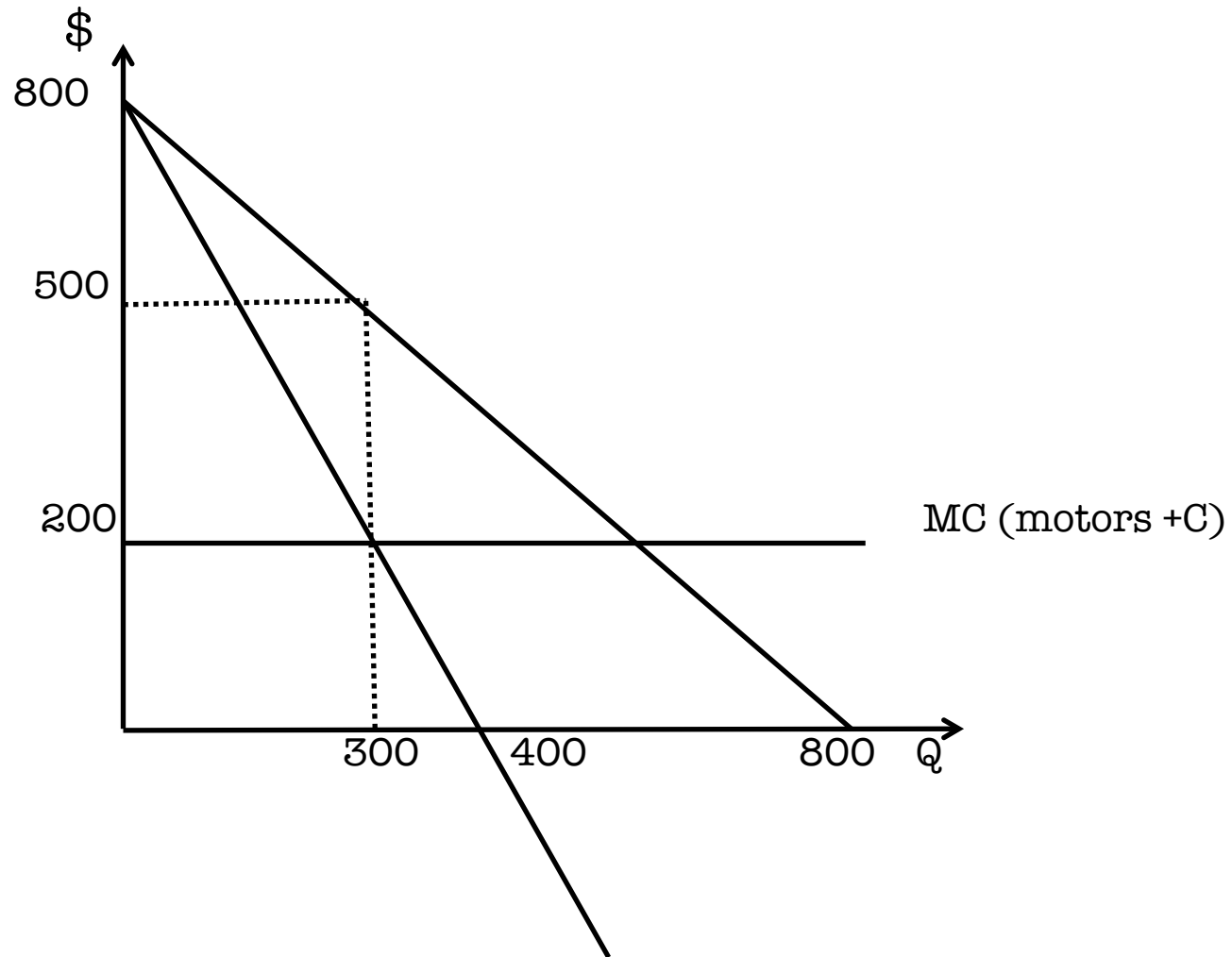
Vertical mergers

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 more realistic case of successive oligopolies, double marginalization is also reduced
- 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

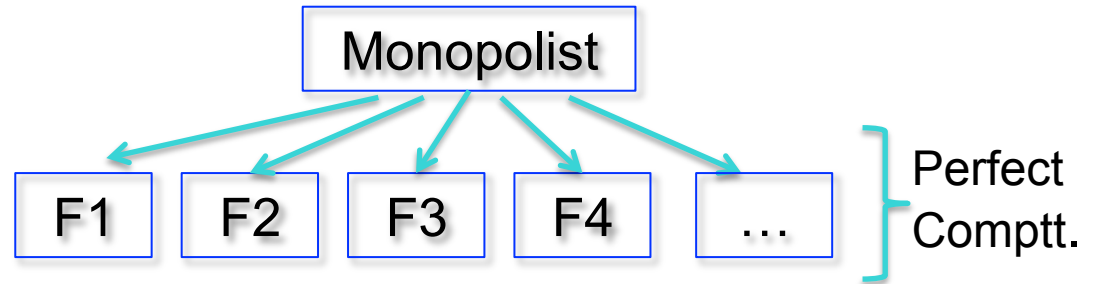
anticompetitive effects

- The Chicago school showed in the 80s that market foreclosure does not happen; recently, GT identified situations in which foreclosure can have anticompetitive effects
- Ex: the acquisition of ready-mixed concrete firms by a cement supplier forecloses the market for cement to nonintegrated cement suppliers (some demand is taken out of the market)
- 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?

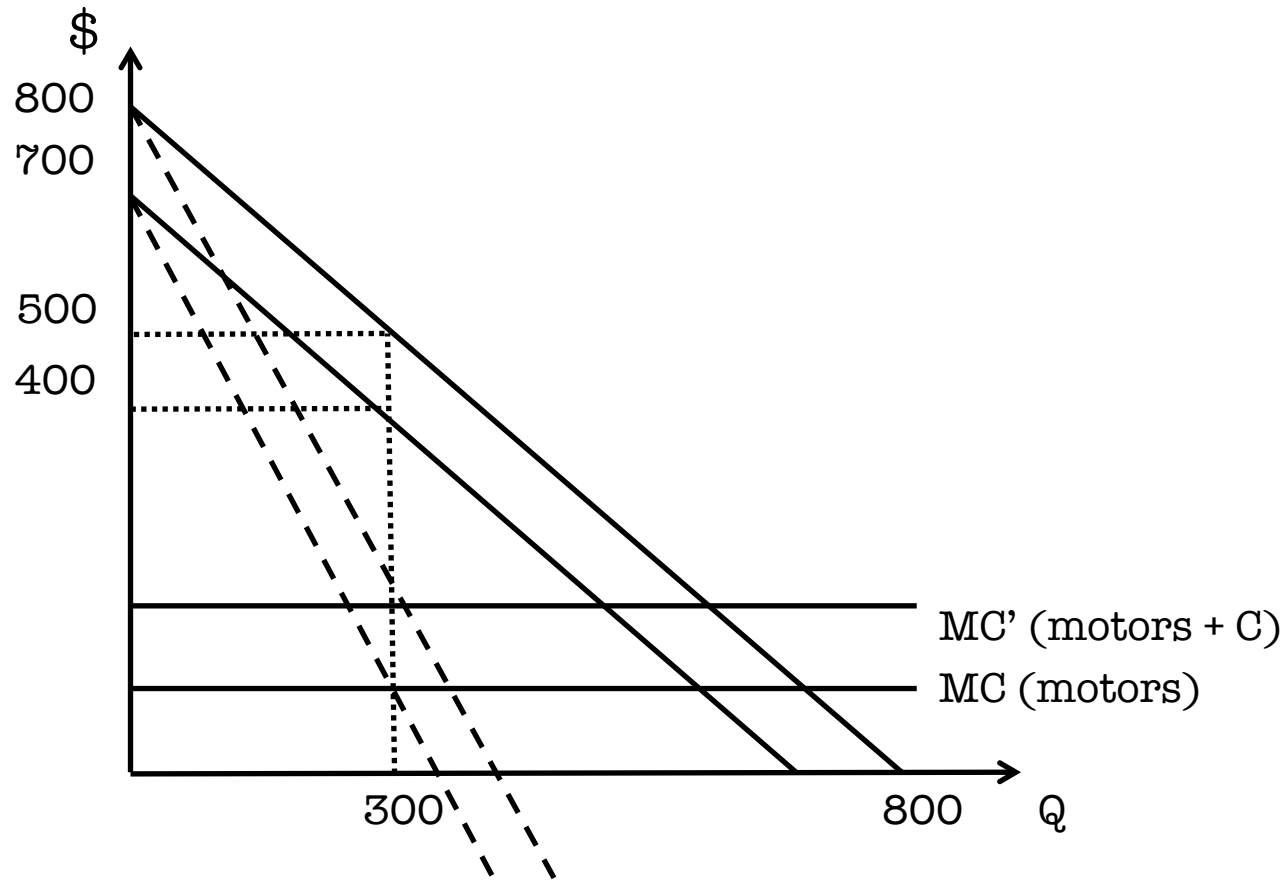
Vertical mergers

anticompetitive effect - 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)

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?)

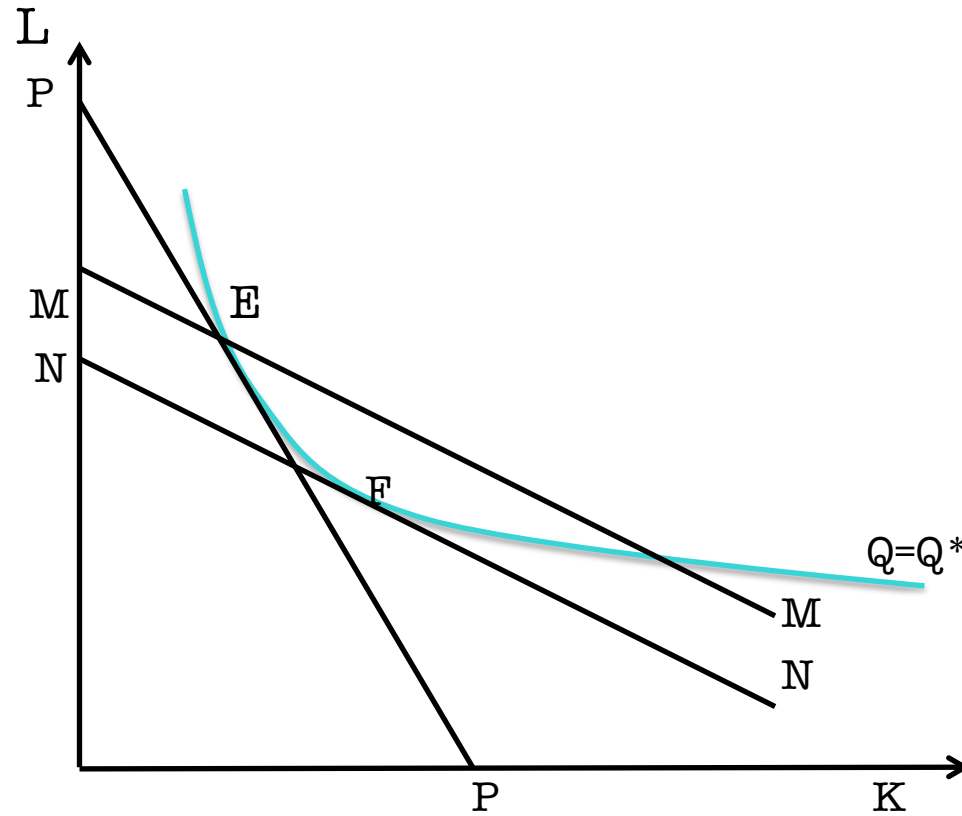
Vertical mergers

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 MC_k to wage; so, F: least cost input mix
- Since $P_k > MC_k$, 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
 - *Customer foreclosure*: upstream suppliers are denied access to selling to the downstream division of an integrated firm; this can result in exit

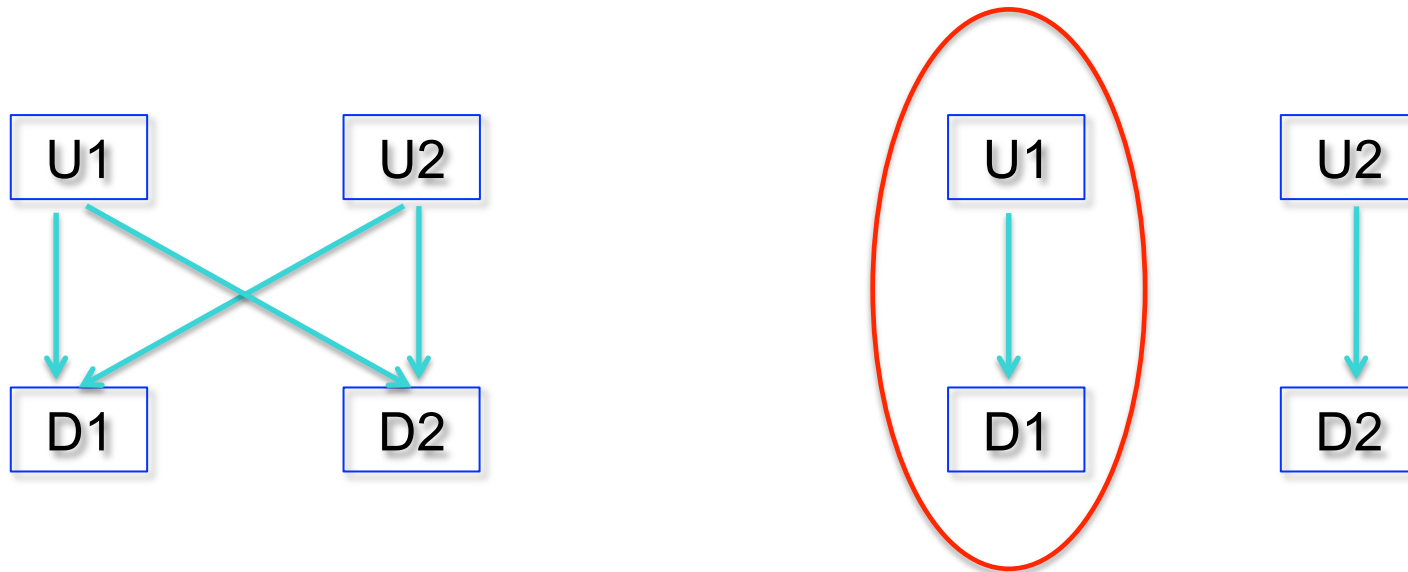
Vertical mergers

anticompetitive effects - oligopolies

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Vertical mergers

anticompetitive effects – oligopolies – input foreclosure



Vertical mergers

anticompetitive effects – oligopolies – input foreclosure

- U^i offer a homogeneous product and have marginal cost of production of 10; U^i price is w_i , $i=1,2$
- D^i offer differentiated products and require 1 unit of the upstream commodity to produce 1 unit of output; D^i 's cost is w_i if it buys from U^i plus 15
- Let $D^1(p^1, p^2) = 100 - p^1 + 0.5p^2$ and $D^2(p^1, p^2) = 100 - p^2 + 0.5p^1$
- If downstream firms compete in prices, the NE prices are (w^i is price paid by D^i)

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

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

Vertical mergers

anticompetitive effects – oligopolies – input
foreclosure

- In the absence of a merger, the upstream firms compete in prices; in NE, they charge $w_1 = w_2 = 10$, so that $P^1 = P^2 = 83.34$
- If U^1 and D^1 merge, the lone supplier of D^2 is U^2 ; what price will U^2 set?
- The monopoly price of $w_2 = 72.45$, so that D^2 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 U^1 may prefer to actually supply D^2 ...
 - U^2 and D^2 may integrate themselves too