



Oligopoly

- An oligopolist is one of a small number of producers in an industry.
- The industry is an *oligopoly*.
 - □ All oligopolists produce a standardized product.
 - (If producers in an industry produce differentiated products, the industry is *monopolistically competitive*.)
 - ☐ We're eliminating the assumption of small market share, and of free entry and exit.
- Barriers to entry: similar to monopoly.



Oligopoly

- How much should a firm produce?
- Up to this point we have said to maximize profits simply set MR=MC.

 Oligopolist's decision is best described in the context of a puzzle or game.



Duopoly

- We will study the case of two duopolists in a duopoly.
- Example:
 - □ ADM and Ajinomoto are the two producers of lysine.
 - □ Assumption (for simplicity): both producers have zero marginal cost.

In	Incentives to cheat							
	Price of lysine	Quantity of lysine	Total revenue					
	\$12	0	\$0					
	11	10	110					
	10	20	200					
	9	30	270					
	8	40	320					
	7	50	350					
	6	60	360					
	5	70	350					
	4	80	320					
	3	90	270					
	2	100	200					
	1	110	110					
	0	120	0					

Incentives to cheat Cooperative outcome: The two duopolists collude and form a cartel. They act like a monopolist. (Cartel agreements are illegal.) Noncooperative outcome:

Incentives to cheat								
		Quantity of lysine	Total revenue	In a cartel, each				
	\$12	0	\$0	producer makes \$6 · 30 million =				
	11	10	110	\$180 million revenue.				
	10	20	200	φτου million τονοπαο.				
	9	30	270					
	8	40	320					
	7	50	350					
	3	90	270					
	2	100	200					
	1	110	110					
	0	120	0					

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Incentives to cheat

- Why do oligopolists, unlike monopolists, have an incentive to cheat (increase output)?
- □ Producing an additional unit has two effects:
 - Positive quantity effect
 - Negative price effect
- The oligopolist in our example only produced half of the total output in the industry



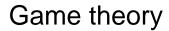
Price versus quantity competition

- Oligopolists can either choose a quantity of output and sell at market price (lysine)
- Or, they can choose a price and sell as much as they can at that price
- The type of competition matters because whether or not a rival can undercut depends on how difficult it is to increase output

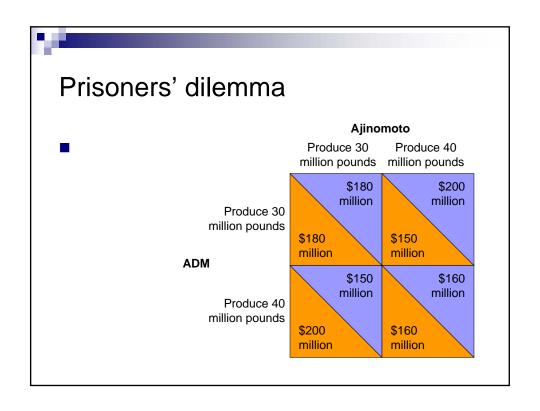


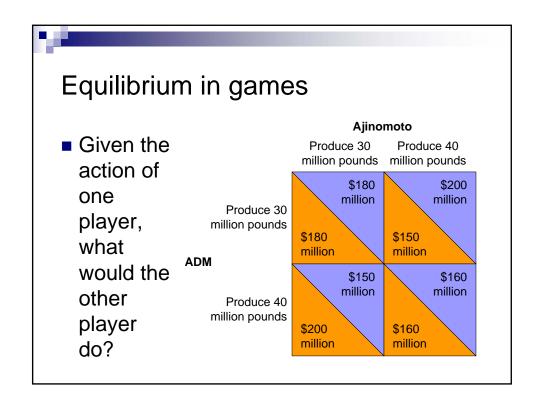
Price versus quantity competition

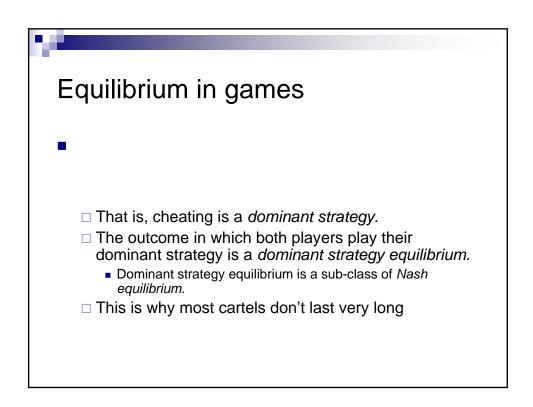
- "Cournot" quantity competition
 - □ Firms' output capacity is constrained
- "Bertrand" price competition
 - If firms have excess capacity they will engage in price competition



■ The study of how economic actors (producers, consumers) make decisions when the "payoff" depends not just on what they do, but also what someone else does, is called game theory.









Tacit collusion

- Oligopolists may, however, be able to collude "tacitly".
 - ☐ This is especially true when they interact repeatedly, not just once as in the prisoners' dilemma.
- Example, suppose that ADM and Anjinimoto play the prisoner's dilemma game several times



"Tit for tat"

- The firms will likely take into account the effect of their actions this year on future outcomes
- Sure ADM can increase production to 40 million pounds this year but Ajinimoto will likely also respond by increasing production next year



The assessment

- When oligopolists manage to collude overtly or tacitly – they create the same inefficiency as a monopolist.
- But oligopolists may not be able to collude.
- We don't know a whole lot about this (yet).