

## Cartels

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- More likely to occur when only a few firms => in an oligopoly
- There are two kinds of oligopolies we will study:
  - **Cooperative oligopolies** in which a small number of firms coordinate their efforts to maximize joint cartel profits – today's lecture.
  - **Non-cooperative oligopolies** in which the firms act as rivals – next couple of lectures.
    - If they decide independently to behave as if they have a cartel arrangement this is called **tacit collusion**

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## Cartels

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- Cartel members benefit from coordinating their decisions by restricting output and therefore increasing price **BUT**
- Each cartel member has incentives to **cheat** on the agreement by increasing output.
- Some cartels tend to break apart even without government intervention.
- Are the cartels we know of the “unsuccessful” ones or the “unlucky” ones?

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## Collusion Experiment

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- Isn't the verbal agreement enough among cartel members?
- We are now 3 firms part of the EEP cartel and each of us has to choose between two options X and Y.
- Here are the payoffs given our choices:

# who chose X	0	1	2	3
X	0	20	40	60
Y	25	35	45	-
EEP profits	75	90	125	180

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## Collusion Experiment

- How would you choose now?

# who chose X	0	1	2	3
X	0	20	40	60
Y	25	61	65	-
EEP profits	75	101	145	180

- Does the cartel maximize joint profits?
- How could the cartel reach agreement that all choose X?

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## Detection of cartels – Antitrust laws

- Cartels are illegal – compare gains with probability of being caught and paying a fine
- All OECD countries have some antitrust authority
  - European Commission enforces antitrust sections of the Rome Treaty
  - Member countries have own competition commissions
- As do non-OECD countries like Brazil, Argentina, India
- The US Department of Justice and the Federal Trade Commission "promote and protect the competitive process"
  - Price-fixing Laws: (Sherman Act of 1890, section 1)
  - Monopolization: (Sherman Act of 1890, section 2)

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## Determinants of successful cooperation

- Ability to price-fixing:
  - Cartel produces a large share of market
  - Faces inelastic demand (little substitutes outside cartel or little entry by firms outside cartel)
  - Low probability of detection from anti-trust authorities
  - Low organizational costs
- Easy detection & quick and severe punishments if cheating:
  - Little changes in market demand,
  - Little uncertainty about firms' costs,
  - Fewer and similar firms with little product differentiation

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### Making it difficult for a member to cheat (cont)

- Market allocation schemes (e.g. distribute geographical areas to each member, so that cheating is easily detected)
- Distribute a priori market shares (like the "Electrifying conspiracy, General Electric had 42 % of market, Westinghouse had 38%, etc.)
- Most-favored nation clause
- Meeting competition clause
- Trigger price reference

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### Deadweight loss of cartel

- Consumers gain when cartel fails
- The larger the market share of the cartel the greater the efficiency cost of the cartel (see next slides cartel with 50, 30 and 10 firms and in the limit no firms cases)
- A partial cartel is like the dominant firm with competitive fringe

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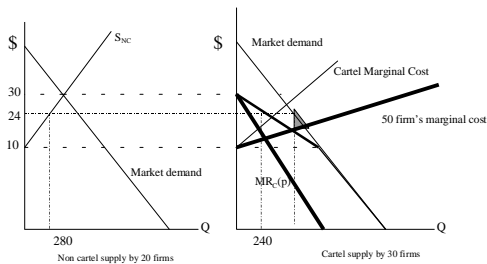
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### Deadweight loss of cartel with 30 firms



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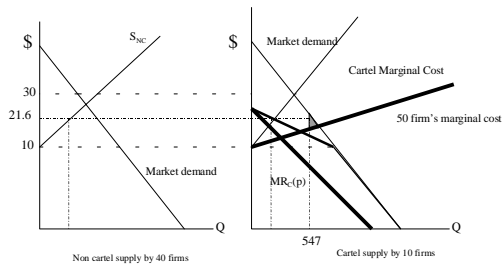
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### Deadweight loss of cartel with 10 firms




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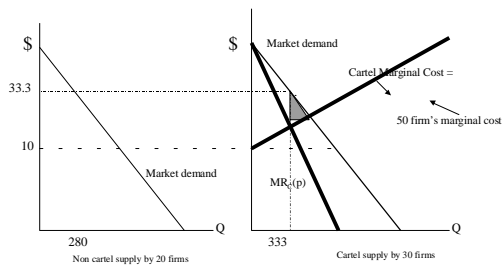
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### Deadweight loss of cartel with 50 firms = monopoly DWL




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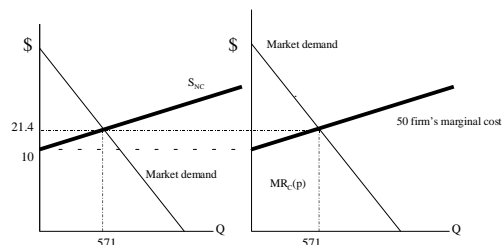
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### In the limit if cartel gets no firms = competition




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## Example OPEC

- Organization of Petroleum Exporting Countries
- Quadrupled the world price initially
- Had 2/3 of world oil reserves and non-communist world production => large market share
- OPEC faces a relatively inelastic fringe supply curve, that is despite oil price increases non-OPEC producers have not managed to increase production substantially

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## Example CIPEC – different story in terms of market power relatively OPEC

- International Council of Copper Exporting Countries
- has been unable to raise copper prices significantly
- Had 1/3 of world non-communist copper production => small market share
- CIPEC faces a relatively elastic fringe supply curve, that is when copper price increases non-CIPEC producers are able to increase production substantially (produced from scrap)

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## Next lecture we'll study non-cooperative oligopolies & Game Theory:

- A small and fixed number of firms meet (there is no entry and no repeated interactions)
  - Later in semester: repeated interactions
- All sell identical products (homogeneous)
  - Later in semester: differentiated products
- Each firm in an oligopoly thinks the following every time it decides its action: *"Since I know my competitors will respond to my action and since I know that they know that I will respond to their response rather than be passive, how should I act in the first place?"*
- Confused? It is easy to get confused without using **Game Theory** ...
- Game theory : *lets us go beyond this double guessing, formalizes the fundamental strategic aspects and allows us to get an equilibrium*

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