Outline

1. Introduction

2. Economic analysis of collusion: Some general considerations

3. Collusion in public procurement

4. Conclusion
Adam Smith

People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or some contrivance to raise prices.
Collusion defined

Collusion → When firms in a market/industry decide to (secretly) cooperate in order to make supra-normal profits than they could have otherwise if they compete against each other

- Cooperation among firms to lessen the competitive pressure
  - Competition tends to drive prices, and profits, down
  - By avoiding competition, higher profits, but consumers are overcharged
  - Beyond prices, quality may be affected, incentives to innovate over the longer run

- Cooperation among firms are not always undesirable. Examples?

- 2 forms of collusion
  - Explicit collusion: when there is explicit coordination among firms to fix prices, quantities, production capacity, etc. in order to avoid competition
  - Tacit collusion: No explicit agreement/coordination to make higher profits
Examples of collusion

The most famous (and legal) cartel – OPEC (in French OPEP)

- Cartel of petroleum exporting countries
  - A institutionalized form of collusion
  - Cooperation is explicit
- 14 members (today)
- In 2007, 13 members account for 44.9% of the world’s production in petroleum
- 11 members are subject to a system of quota (restriction of quantity)
- Le Monde, 28/09/2016:
  “Les membres de l’Organisation des pays exportateurs de pétrole (OPEP) sont parvenus, mercredi soir 28 septembre Alger, à un accord ‘historique’ pour limiter leur production. (…) ”
Examples of collusion

A recent case in France: Home care and personal care products in France (decision 14-D-19)

- Between 2003 and 2006, manufacturers on both markets (e.g. Colgate-Palmolive, Henkel, Unilever, L’Oréal etc.) coordinated their commercial policy, in particular price increases, towards distributors (supermarkets)
- French Competition Authority was informed of the practice through its leniency program, leading to raids
- The first raid occurred during a lunch at the “Le Royal Villier”, firms were caught in the act
- Evidence of price increases (minutes, used as evidence)

- It was found that the real price increases obtained by manufacturers were close to the levels announced
- Total fines of 345 millions in the market for home care products, and 605.9 millions in the market for personal care products
Is collusion a problem?

Assume perfect competition
Is collusion a problem?

Social surplus from the competitive equilibrium
Is collusion a problem?

In case of perfect collusion, participating firms behave as a monopolist
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Is collusion a problem?

In case of perfect collusion, participating firms behave as a monopolist
Why is collusion not widespread?

- Collusion is beneficial to the firms, to the detriment of society

- If collusion generates higher profits for firms, why don’t we see collusion everywhere? Or at least, in all concentrated industries?
  - Prisoners’ dilemma problem
    - Collectively, firms have an incentive to cooperate (win-win for all)
    - Individually, each firm has an incentive to go solo knowing that other firms’ cooperate
  - To see this, an example
    - 2 identical firms competing in price, (marginal) cost of 5, no fixed cost
    - Assume demand is \( q = 20 - p \)
    - If firms behave competitively, \( p = 5 \), quantity per firm = 7,5, profit per firm = 0
    - If firms behave cooperatively, \( p = 10 \), quantity per firm = 5, profit per firm = 25
    - If one firm charges a price of 10, and the other firm decides to charge 9
      - All demand goes to the firm charging the lower price
      - The firm with the lower price sells 11, and profit becomes 55
      - Profit is higher for the defecting firm!
Why is collusion not widespread?

- From our previous example, payoffs according to the firms’ strategic choices

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- Outcome: no collusion!
  - Each firm, anticipating that its competitor will have a strong incentive to undercut its price, prefers to compete rather than to collude

- Two types of obstacle to overcome in order for collusion to be successful
  - How to collude?
  - How to make sure that firms’ behave accordingly?
Why is collusion not widespread?

- To successfully collude, firms have to agree on how to collude
  - Collude on price? Quantity? Market shares? etc.
  - Which level?

- Difficult to get to an acceptable agreement for all
  - Number of firms involved
  - Information asymmetries
  - How to manipulate price in collusion (in case of market entry, change in market conditions etc.)?
  - How to detect defection/know if everyone is complying?
Why is collusion not widespread?
Even if an agreement can be reached, the agreement cannot be enforced as a formal contract

- Collusion is generally illegal
  - Sherman Act in the USA
  - Treaty of Rome (1957) in the EU / Treaty on the Functioning of the European Union, article 101:
    "The following shall be prohibited as incompatible with the internal market: all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the internal market, and in particular those which: (a) directly or indirectly fix purchase or selling prices or any other trading conditions; (b) limit or control production, markets, technical development, or investment; (c) share markets or sources of supply; (...)"
  - In France: Article L420-I of the Code de Commerce
    "Sont prohibées même par l’intermédiaire direct ou indirect d’une société du groupe implantée hors de France, lorsqu’elles ont pour objet ou peuvent avoir pour effet d’empêcher, de restreindre ou de fausser le jeu de la concurrence sur un marché, les actions concertées, conventions, ententes expresses ou tacites ou coalitions, (...)"

- This prohibition raises the cost for firms to collude
  - More complicated to meet and to negotiate a collusive agreement
  - Fines in case of detection by competition authorities
  - Reliance on alternative mechanism to ensure compliance with an collusive agreement → the collusive agreement has to be self-sustainable
Sustainability of a collusion

Given the impossibility of firms to organize their collusion formally, a collusion can happen only if firms have an intrinsic incentive to respect a collusion agreement implicitly.

- Collusion has to be self-enforceable
- Issue of sustainability of a collusion
- Each firm must consider that the collusion is the best strategy for her → incentive to respect a collusion “deal” because it is profitable for her, individually
- ... but, prisoners’ dilemma game!
- However, firms will adopt a more cooperative attitude towards collusion if they have a longer perspective over the gains and costs
  - Basic toolbox of economists to analyze the issue of sustainability of collusion: infinitely repeated game
  - Firms trade off
    - long run discounted gains from repeated collusion into the future
    - gains from short run defection and competition after defections
  → Collusion is sustainable when longer run gains from collusion ≥ short run gains from defection
    - Incentives to implicitly respect a collusive “agreement”
Sustainability of a collusion
An illustrative example

- From our previous example, payoffs according to the firms’ strategic choices

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- Discount factor of \( \delta < 1 \)
- Assume that firms may instantaneously revert to the competitive strategy after a defection
- Gains from collusion: \( 25 + \delta 25 + \delta^2 25 + ... \)
- Gains from defection: \( 55 + \delta 0 + \delta^2 0 + ... \)
- A collusion is sustainable when

\[
25 + \delta 25 + \delta^2 25 + ... \geq 55
\]

\( \rightarrow \) when the discount factor is sufficiently high
- When firms value future payoff sufficiently
- A general insight that helps to identify factors that are propitious to facilitate collusion (sustainability)
Factors that facilitate collusion
Number of firms

- A smaller number of firms in a market makes collusion easier
  - Easier to coordinate on a collusion strategy
  - Higher share of gains for each firm within a collusion strategy
    → Easier to sustain without a formally enforceable agreement
    → When the number of firms are high, a higher discount factor is necessary to sustain collusion

- Example: Of all the cartel cases handled by the US DoJ between 1963 and 1972:
  → 48% involve 6 firms or less
  → 6.5% involve more than 50 firms
  → Average number of firms participating in a cartel: 7.25

- Collusion is also facilitated when participating firms are more similar with each other
  - Lower informational asymmetries to agree on a collusive strategy
  - Easier to detect defection
Factors that facilitate collusion
Evolution of the demand

• Demand conditions have an impact on firms capacity to successfully collude
  → Impact on firms’ payoff from collusion/defection/competition, hence on the sustainability of collusion

• In markets with growing demand,
  • Future gains are important
  • Collusion will deliver higher future gains
  • Lower discount factor is needed to make collusion sustainable

• When market demand is decreasing,
  • Higher gains from defection today, compared to future decreasing gains from collusion
  • Collusion is harder to sustain
Factors that facilitate collusion

Market transparency

- Sustainability of collusion can also depend how easily a defection may be detected
  - Higher gains from defection in future periods when detection is slow
    -> Stronger incentive to defect from a collusive agreement
    -> Collusion is harder to sustain

- Detection and punishment of a defection may be harder when markets are less transparent:
  - Goods are not homogeneous
  - Strong variation in market shares of firms
  - Variations in demand (market demand is unstable)
  - Entry barriers are low
  - Price revisions take a longer time span (prices are rigid)
  - Commercial policy, e.g. policies to reimburse price differences
  - Sector specific regulations

- Collusion is also likely top be more stable with multiple market contacts
Factors that facilitate collusion
Market transparency

Example of a collusion facilitated by commercial policies that reimburse price difference

- Some distributors guarantee that their prices are the lowest on the market by agreeing to reimburse any the price difference if consumers find the same product sold at a lower price
- Helps to police defection, and therefore, discourage defections
  - Customers are given an incentive to inform cartel members of prices that are lower
  - Customers helped to detect any defection and participates in price policing by the cartel
- The policy was signals a commitment by some cartel members to detect any deviation from a collusive agreement

- In a toy cartel in France, Carrefour promises to reimburse 10 times the difference in price if customers can find the same toy sold at a lower price elsewhere
Factors that facilitate collusion

Market transparency

An example of sector specific regulation to increase transparency in the market... leading to stable collusion
Factors that facilitate collusion

Market transparency

An example of sector specific regulation to increase transparency in the market... leading to stable collusion
There is no kind of dishonesty into which otherwise good people more easily and frequently fall than that of defrauding the government.

Benjamin Franklin
Is collusion an issue in public procurement?

- Public procurement (broadly defined) accounts for a large part of government expenditure and an economy’s GDP

- Theoretically, compare to any generic market (competition in the market)...
  - winner takes all in a tender (-), but repeated and frequent tenders (+)
  - bids are usually evaluated along price dimensions (+)
  - firms participating in a tender can be more homogenous (+)
  - firms may be more experienced with coordination (presence of joint-bidding, subcontracting, consortium etc.) (+)
  - winner of an auction/winning bid are often disclosed for the sake transparency (+)
  - The public buyer is usually not buying on his own behalf (+/?)
    - less vigilant/suspicious/familiar with collusion
    - sometimes places more importance on quality aspects/completion of a project than price
    - ... but (more?) oversight
  - often free entry, firms outside a cartel may participate (-)
Collusion in public procurement

- In the facts
  - In France, 221 decisions concerning collusion in public procurement from 1990-2010 (135 decisions in construction contracts, of which 85 were proven)
  - In the US, roughly 1/2 of private antitrust price fixing cases prosecuted by the DoJ

- However, to successfully collude, 3 requirements
  - To maximize the value of the cartel, a contract should go to the cartel member who values it most (internal efficiency)
  - Cartel members have an incentive to abide by the collusive agreement (stability of the cartel)
  - Cartel member have to avoid raising suspicions that there is a cartel
Cartels in public procurement

• How to share rents?
  • Bid rotation: each cartel member takes turn in winning different markets
  • Geographical market sharing
  • Sub-contracting
  • Consortia/joint ownership
  • Informal cash transfers (but very rare in any modern economies)

• How to collude and avoid suspicions?
  • Bid suppression → cartel members do not participate to avoid competing with a designated winner
  • Cover bidding
    • Cartel members submit “false” and much higher bids than the bid by the designated winner
    • Cover losing bids usually have small variation, and they are far apart from the designated winner’s bids
    • E.g. covers bids as x.0% or x.5% of the winning bid (Sweden)
Cartels in public procurement
Example: Historical monuments in France (11-D-02)

• Between 1997-2002, 14 firms have colluded to share contracts for monument restoration in Normandy and Picardie regions (and other adjacent regions, sometimes). The case involve 10 of the 20 largest firms in the sector.

• Firms share different contracts in a region, firms was assured to have a share of the total contracts awarded.

• The winner designated mainly according to 2 criteria
  • the firm nearest to the work site has an advantage → lower costs due to transportation
  • the firm having worked on a site in the past has an advantage + activity of the firms and future projects

• Information exchange before submitting their proposals
  • ... help from firms operating in external regions

• Fines of 9.8 millions, average decrease of 20% in bids after exposure of cartel
Conclusion

- Collusion allows firms to avoid competition, leading to better performance but to the detriment of consumers and buyers.

- To collude, firms have to get organized and to cooperate to ensure internal cohesion and stability.
  - Illegality make it hard for firms to resort to formal contracts.
  - Sustainability of the collusion.

- Economic analyses rely on the trade-off between long-run gains that result from cooperation and short-run gains from defection to understand/identify factors that may facilitate collusion.

- In public procurement, collusion
  - may be more prevalent.
  - takes the form of market sharing/bid rotation, with cover bids or non-participation to avoid suspicions.
  - must find ways to share rents to ensure cooperation.