Cartels and Public procurement II

Master of Public Affairs
Public Procurement

Classe 10
Sciences Po
1. Introduction

2. Proving collusion in public procurement markets

3. The main policy tool to fight collusion

4. Screening methods in general

5. Applying screening methods in public procurement?
Introduction

- Cartels and collusion is detrimental to society because competition is lessened
  - higher prices
  - lower quality
  - lower variety
  - lower incentives to innovate

- Useful to fight collusion and cartels
  - Collusion is illegal and is prosecuted
  - ... only explicit collusion is concerned
  - burden of the proof
Presentation of a case of cartel in public procurement: Eiffage Group and Vilmor in the procurement for the reconstruction of watchtowers at the prison of Perpignan
Public policy towards collusion

- To prosecute cartel/collusion, need for proof
  - only explicit collusion can be prosecuted

- Since 1996 in the USA and 1999 in the EU → leniency program
  - Encourage participants to come forward and to denounce illegal behavior
  - No fine for the first firm to denounce
  - Also a deterrence effect by creating uncertainty to destabilize cartel formation

- In the USA and EU, leniency programs have been a success
  - In the US, over 90% of fines imposed for Sherman Act violations since 1996 can be traced to investigations assisted by leniency applicant (Werden et al., 2012)
  - In the EU, approximately 188 leniency applicants between 1996 and 2002, and 46/52 cartel decisions between 2002 and 2008 were triggered by a leniency application (EC, 1996, 2002, 2006; Riley, 2010)
Cartel cases decided by the EU (DG Comp), from 1990

<table>
<thead>
<tr>
<th>Period</th>
<th>Cases decided</th>
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<tbody>
<tr>
<td>1990 - 1994</td>
<td>10</td>
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<td>1995 - 1999</td>
<td>10</td>
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<td>2000 - 2004</td>
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<td>2005 - 2009</td>
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<td>2010 - 2014</td>
<td>30</td>
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<tr>
<td>++2015 - 2016++</td>
<td>9</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td><strong>122</strong></td>
</tr>
</tbody>
</table>

Note: Statistics were last update on July 2016
Public policy towards collusion

Fines imposed by the EU in the 1990s-2008 (Source: DG Comp)
Public policy towards collusion

Fines imposed for cartel infringements in the EU during recent years (Source: DG Comp)

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount in €*</th>
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<tbody>
<tr>
<td>2012</td>
<td>1,875,694,000</td>
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<tr>
<td>2013</td>
<td>1,664,809,000</td>
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<tr>
<td>2014</td>
<td>1,689,497,000</td>
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<tr>
<td>2015</td>
<td>364,531,000</td>
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<td>++2016++</td>
<td>3,075,679,000</td>
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<tr>
<td>total</td>
<td>8,670,210,000</td>
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</table>

Note: Information updated on July 2016. Fines not adjusted for court judgements.
10 highest cartel fines by the EU since 1969 (Source: DG Comp)

<table>
<thead>
<tr>
<th>Year</th>
<th>Case name</th>
<th>Amount in €*</th>
</tr>
</thead>
<tbody>
<tr>
<td>++2016++</td>
<td>Trucks</td>
<td>2 926 499 000</td>
</tr>
<tr>
<td>2012</td>
<td>TV and computer monitor tubes</td>
<td>1 409 588 000</td>
</tr>
<tr>
<td>2008</td>
<td>Carglass</td>
<td>1 185 500 000</td>
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<tr>
<td>2014</td>
<td>Automotive bearings</td>
<td>953 306 000</td>
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<tr>
<td>2007</td>
<td>Elevators and escalators</td>
<td>832 422 250</td>
</tr>
<tr>
<td>2013</td>
<td>Euro interest rate derivatives (EIRD)</td>
<td>824 583 000</td>
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<tr>
<td>2001</td>
<td>Vitamins</td>
<td>790 515 000</td>
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<tr>
<td>2013/2015</td>
<td>Yen interest rate derivatives (YIRD)</td>
<td>684 679 000</td>
</tr>
<tr>
<td>2007/2012</td>
<td>Gas insulated switchgear (incl. re-adoption)</td>
<td>675 445 000</td>
</tr>
<tr>
<td>2009</td>
<td>E.ON/GDF collusion</td>
<td>640 000 000</td>
</tr>
</tbody>
</table>

Note: Information updated on July 2016. Fines adjusted for court judgements.
Public policy towards collusion

France

In France

- Leniency program since 2001

- Used for the first time in 2006 in the cartel of wooden doors manufacturers (decision 06-D-09)
  - 2 cartels were exposed thanks to France Portes through the leniency program

- The number of leniency program applications in France between 2007 and 2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of applications</th>
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<tbody>
<tr>
<td>2006</td>
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<td>2014</td>
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<td>2015</td>
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</tbody>
</table>

- Some recent important cartel cases triggered by leniency program:
  Personal and home care products (2016), milk products (2015), transport and delivery of parcels (2015) ...
Leniency programs

- Leniency programs are widely used by competition authorities with important results
  - identify cartels
  - but also, help competition authorities to have access to evidence

- However, over-reliance on leniency programs may raise concerns
  - Leniency programs may help to detect and prosecute cartels that are no longer successful or stable (cartels that are about to collapse)
    → no incentive for members of sophisticated/profitable cartel to apply for leniency program
  - In smaller economies and markets with few competitors, firms may also fear commercial retaliation when they apply for leniency programs
  - For leniency program to be effective, in theory, leniency should only be granted to the first applicant
    - Sometimes competition authorities grant leniency to a number of cartel members, in order to have access to evidence and to secure conviction

→ Explore alternative options to fight cartel
Alternative ways to detect cartels

- Leniency programs are not the only tool of cartel detection

Source: Huschelrath (2010), based on ICN (2010)

- An proactive option under exploration/debate: screening tools
What is cartel screening?

- Cartel screening refers to the analysis of market data for the purpose of discovering collusion
  - An active stance towards cartel detection
  - Identify “suspicious” market behaviour from data analysis

- Purposes of screening
  - Flags market worthy of investigation (because market behaviour is not what can be expected)
  - Induce cartel members to apply for a leniency program
    - Both methods can be complementary
  - Deters cartel formation

- Screening methods by itself cannot provide evidence for collusion

- Screening methods can be broadly grouped in 2 categories (Harrington, 2008)
  - Structural screening
  - Behavioral screening methods
• Structural screening methods identifies markets conducive to collusion
  • small number of firms
  • homogeneous products
  • demand characteristics
  • excess capacity
  • ...

• Structural screening methods tend to lead to high risk of false positives in general
  • Markets with characteristics that make collusion easier to sustain do not necessarily imply that there is collusion
  • Theory is not sufficiently advance on cartel formation, many omitted/unmeasured factors that determine whether a cartel forms

• ... but, there may be a role for structural screening in public procurement
  • Public procurement are highly regulated (rules on the market design)
  • Some rules may be conducive to collusion
  • These methods can be more helpful (see, e.g., Conley and Decarolis, 2015)
Behavioral screening

- Behavioral screening tries to identify patterns from market data (firms’ conduct, market outcomes such as prices, sales etc.) that may be consistent with collusion.

- Difference with structural screening methods
  - A structural approach would amount to identifying markets for which it is more likely that a cartel will form.
  - A behavioral approach would amount to identifying markets for which a cartel has formed.
    - based on observed behavior of firms or market outcomes.

- Behavioral screening can work because
  - collusion means a change in the price-setting process which, in principle, can be identified.
  - collusion is difficult and imposes a unique set of challenges and constraints, which could show up in firms’ behavior.
  - existing literature shows that such trails can be picked up.
  - it has worked (later).
How to screen?

Requirements

- Need data

- Need to know what to look for in the data
  - Structural breaks → change in the data-generating process due to cartel birth/disruption
  - Patterns more consistent with collusion than competition
  - Patterns inconsistent with competition
How to screen?
Structural breaks

- A change in the data-generating process that can be due to the cartel birth or disruption
  - These transition phases are difficult to manage for cartels, which can mean sharp changes
  - Transiting into a collusive regime $\rightarrow$ e.g. sharp increase in price
  - Coming out of a collusive regime $\rightarrow$ e.g. sharp decrease in price

- Example from public procurement of generic drugs in Mexico from 2003-2008
  - 2002-2006
    - High fragmentation during the period of 2002-2006 (decentralized procurement at the regional level)
    - Standardized product
    - Concentrated markets
    - Restriction on international competition
    - ...
    $\rightarrow$ Conditions favorable to sustain collusion
  - Changes in the market that could make collusion harder from 2006
    - Consolidation of the procurement by the public buyer (large national contracts)
    - Entry by competitors for some drugs
  $\rightarrow$ These changing conditions may disrupt cartel stability ...
How to screen?

Structural breaks

- Example from public procurement of generic drugs in Mexico from 2003-2008
  - All bids from a given drug market, from May 2003 to December 2007

Sharp decrease in bids after the break
- ... but also, change in the variance of bids before and after the break
- Formal investigation in 2 drugs markets and conviction

Source: Presentation by Dr Fiorenzo Bovenzi, 2012
How to screen?
Simple patterns

- Behavioral approach to screening usually looks at two types of data, can be complimentary
  - Price patterns
  - Quantity patterns (market shares)

- For approaches based on quantity, we know from the economic literature that
  - firms’ market shares are more stable under collusion
  - firms’ market shares may be more negatively correlated over time under a collusive regime than under a competitive one (think of bid rotation schemes in public procurement)

- For approaches based on price, we know from the economic literature that
  - low price variance
  - high mean price and low price variance
  - A cartel can be thought of as a filter that attenuates costs costs → leading to more stable prices (lower price variations)
How to screen?
Simple patterns

- A famous example on price variance in the procurement of frozen perch by the US Defense Personnel Support Center during 1987-1989
- Pricing patterns and costs after report of an investigation

Source: Abrantes-Metz, Froeb, Geweke and Taylor (2008, IJIO)
The formation (birth) of a cartel can lead to a V-shaped pricing pattern (Harrington and Chen, 2006)

- Cartel formation is often preceded by a price decline phase
- Transiting into collusion means price must gradually increase
- Example from a cartel in graphite electrodes (Levenstein and Suslow, 2001)
Screening in public procurement?

- Why screening may be useful in public procurement
  - Bidding rings are well documented for procurement auctions
  - Higher chance of illegal explicit collusion
  - Data is recorded/available (in an easily exploitable form?)
  - Developed set of empirical methods
  - Potentially large reputation effects

- Anomalies in bid data can be exploited, some known empirical regularities in bids include
  - Rounded figures for cover bids
  - Cover bids as a markup of x.0% or x.5% of the winning bids
  - Covers bids with a constant difference in levels
  - (Digit distribution compared to Benford’s law)
  - ...

Screening in public procurement?
Example of an anomaly in a single auction

- Spectrum auctions in Germany for GSM licenses in 1999 (Grimm, Riedel and Wolfstetter, 2003)
- 4 incumbent firms
- 10 lots of GSM frequencies to be sold
- A simultaneous ascending-bid auction was used
- Results:

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Table 1: The GSM Spectrum Auction in Germany, October 1999. (Frequencies 1-9 were endowed with a bandwidth of $2 \times 1$, frequency 10 with $2 \times 1.4$ MHz.)
Screening in public procurement?
Some issues with simple patterns

- Simple patterns may be consistent with cartel activity... or competition in some cases

- For instance, rotating bids may be generated in a competitive setting, when firms are constrained in capacity
  - More costly for firms that are already involved in a previous project
  - Bid for these firms are higher
  - Firms with larger available capacity bid lower
  → Negative correlation of bids in time

- Reliance on simple patterns may be insufficient
  - investigations are costly and resource demanding!

- Cartel activities may not generate simple patterns
An example on a more sophisticated method to screen in public procurement:

Screening in public procurement?
Feedback from an experience by the Swiss Competition Authority

• Background
  • No leniency program
  • Development of a screening project that should be simple enough

• The SCA developed several indicators and applied them to road construction procurement data from St Gallen canton
  • Choice of canton/sector was motivated by the availability of data
  • No a priori suspicion on cartel activity in the sector/canton (no investigation/complaint)

• A simple screen based on variance was first used
  • Idea that bids vary less when there is collusion
  • Simple statistics on bid variation: coefficient of variation
  • Test on data where there is known cartel activity in Switzerland → ok
  • ... but reveals nothing when applied to the St Gallen data
Screening in public procurement?
Feedback from an experience by the Swiss Competition Authority

- Results from the simple variance test

Proven cartel

St Gallen
Screening in public procurement?
Feedback from an experience by the Swiss Competition Authority

- A second indicator: relative distance between the winning bid and the cover bids
  - Bidders tend to manipulate bids to create a clear cut winner

- Again, test on the cases where cartel was found → ok
- but inconclusive for when applied to the St Gallen data
Screening in public procurement?
Feedback from an experience by the Swiss Competition Authority

- The SCA wishes to leave no stones unturned → entertain the possibility of "partial" collusion

- To do this
  - Attempt to identify sub-groups of firms that participate together repeatedly in procurement auctions in St Gallen canton → the relative distance indicator and the variance indicator
  - A group of firms was identified with indicators + repeated interactions
  - A analysis of the firms show that they share a common geographic denominator (region See Gaster)

- The SCA then computes an indicator of cover bidding behavior
  - pairwise comparison
  - cover bidding → low bids by one firm "covered" by high bids of another firm (rotational pattern)
  - Indicator shows suspicious bidding pattern

- Based on these statistical study, the SCA file an application for dawn raids
  - authorization was granted
  - presence of a cartel was confirmed by investigation → cartel members were fined

- Details can be found in Imhof, Karagok and Rutz (2015, WP)
Screening in public procurement?
Unresolved issues

- Access to data
  - quality, availability in an exploitable form?
  - willingness of public procurers to share data
  - let public procurers screen for suspicious behavior?

- Risk of false positives
  - Screening can fail
  - Raids and investigations are costly
  - Robustness of simple methods
  - More sophisticated methods are complicate to manipulate/communicate

- Resources by competition authorities

- Cartel members adapting their behavior to screening
  - Cartel members can submit false bids by simulating competitive bids
  - ... but more coordination will be needed → raising the cost of cartels? Dissuasion effect?
To go further on these issues