The use of reactive tools to detect cartels

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Structure of the Presentation

• The OECD work on cartels
• Cartel detection tools
  – Reactive and pro-active
• Cartel Screens
  – Structural and behavioral
• Limits with the use of screens
• Examples of screens
Key Messages

• Relying on reactive detection tools exclusively is not a sound cartel detection policy.

• Among pro-active detection tools, the use of economic analysis to detect markets structures, behavioural pattern and outcomes which can be consistent with collusion can prove promising.

• The use of economic screens should include both structural and behavioral analysis.

• However, competition authorities should be aware that screens are subject to a number of limitations.
The OECD Work on Cartels

- Best practices on Information Exchange in 2005
- The Recommendation on Fighting Bid Rigging in Public Procurement in 2012
- A Roundtable on Ex-officio cartel investigations and the use of screens to detect cartels in October 2013 Competition Committee and so on…

http://www.oecd.org/daf/competition/roundtables.htm
Cartel Detection Tools - Two types

• Reactive methods
  – based on information or evidence brought before the competition agency by third parties

• Proactive methods
  – occurs when competition agencies engage in cartel detection on their own initiative, i.e. pro-active methods of cartel detection are initiated from within the agency and do not rely on an external triggering event

• Today, most competition authorities rely heavily on reactive detection methods - especially on leniency/amnesty programmes
Cartel Detection Tools - Two types

Leniency/ amnesty programs offer amnesty or a more lenient treatment to conspirators who cooperate with a competition agency.

Success of Leniency/ amnesty programs
- Vitamin case in 1990s: a company paid a $500 million criminal fine while another paid a $225 million fine in the U.S. (and the case was investigated in other jurisdictions)- only one example!

History
- US: its program was originally adopted in 1973 and revised in 1993. The 1993 reform made it effective.
- EU: It adopted the program in 1996. The commission received many leniency applications (approximately 188 between 1996 and 2002) since then.
- Today: all OECD Member countries have adopted the program.
Progress of Leniency/ Amnesty Programmes - 2

… however:

- They do not work effectively in every country (e.g. small economies)
- They detect mostly mature and dying cartels
- They are effective only in a limited set of industries

What about incentives to enter into the program?

- Level of sanction
- Rate of detection

Importance of ex-officio investigations!
Cartel screens are “economic tools” to help competition authorities to detect cartels. Two types of cartel screens- “structural” and “behavioral”

<table>
<thead>
<tr>
<th>Focus of the analysis</th>
<th>Structural Screens</th>
<th>Behavioral Screens</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Structural characteristics of markets</td>
<td>behaviors of participants in the market</td>
</tr>
<tr>
<td>Difficulty</td>
<td>Rather straightforward and relatively simple. Less data intensive (or need data which is easier to collect)</td>
<td>Need econometric analysis or extensive staff training. Rather data intensive.</td>
</tr>
<tr>
<td>Outcome</td>
<td>Find out markets in which cartels are more likely to form. Useful to develop an initial list of industries that are worthy of further scrutiny</td>
<td>Find our firms behaviors which are more likely to be consistent with collusions.</td>
</tr>
</tbody>
</table>
• Structural screens identify markets which exhibit a propensity for collusion.

• Structural factors used in this type of screen
  – Structural factors
    • e.g. the number of competitors, entry barriers, interaction between firms, market transparency
  – Demand-related factors
    • e.g. demand volatility, demand elasticity, buying power, club and network effects
  – Supply-related factors
    • e.g. speed of innovation, product homogeneity, contractual relationship between firms
The NMa developed the “Competition Index” methodology, in which the agency looked at:

- the number of trade associations, the product prices in the Netherlands vs. EU, the HHI, the number of firms, the import rate, market growth, churn rate, survival rate and the R&D rate…

- In order to address several problems identified in the earlier screens, they applied different weightings, tested the results of the CI against detected cartels in other countries (“practical test”), and compared the results with other measures of competition.
Other Examples of Structural Screens

- The paper “predicting cartels” in March 2005 for the OFT in the UK

- The Cartel Intelligence Project by ACCC in Australia
Behavioral screens are designed to indicate whether or not collusive behavior has in fact affected a specific market.

They are applied to assess whether the observed behavior is more or less likely to be consistent with a collusion or competition.

Its focus is on firms’ behaviors, including their pricing
- e.g. pricing in the face of cost shocks
The design of behavioural screens affects their ability to flag situations where possible manipulations or conspiracies have taken place.

Two main steps:

– To identify **collusive markers** which allow to distinguish behaviour consistent with competition from the one consistent with collusion.
  - Can be based on price factors (e.g. parallel pricing, price variance) and non-price factors (e.g. quantity).

– To look for **structural breaks** or **exogenous shocks**
  - Markers will be compared with an appropriate reference point to see how the markets would perform “but for” collusion.
    e.g., different timeframes, different product markets
## Collusive Markers for Behavioral Screens

<table>
<thead>
<tr>
<th>Type of collusive marker</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>1. A higher list (or regular) price and reduced variation in prices across customers</td>
</tr>
<tr>
<td></td>
<td>2. A series of steady price increases is preceded by steep price declines</td>
</tr>
<tr>
<td></td>
<td>3. Price rises and imports decline</td>
</tr>
<tr>
<td></td>
<td>4. Firms’ prices are strongly positively related</td>
</tr>
<tr>
<td></td>
<td>5. A high degree of uniformity across firms in product price and other dimensions including the prices for ancillary services</td>
</tr>
<tr>
<td></td>
<td>6. Low price variance</td>
</tr>
<tr>
<td></td>
<td>7. Price is subject to regime switches</td>
</tr>
<tr>
<td>Quantity</td>
<td>8. Market shares are highly stable over time</td>
</tr>
<tr>
<td></td>
<td>9. There is a subset of firms for which each firm’s share of total supply for that subset of firms is highly stable over time</td>
</tr>
<tr>
<td></td>
<td>10. A firm’s market share is negatively correlated over time</td>
</tr>
</tbody>
</table>

Collusive Markers for Bid Rigging

Two types of intuitions underlying bid rigging screens:

• First, that in a competitive tender process, bids should be submitted independently. If a cartel is at work, bids will show signs of co-ordination between the bidders. If bids are “too correlated” this can be explained by collusion.

• Second, bids submitted by independent competitors should reflect appropriately the costs of each bidder in a competitive market.

Improbable events:

• identical bids
• high correlation between bids
• a “disconnect” between bids and underlying costs of the bidder
• unexpected and significant differences between the winning and the loosing bids
An Example of Behavioral Screen in Bid Rigging Cases (1)

Frozen perch prices and cost: Jan. 6, 1987 - Sept. 26, 1989

An Example of Behavioral Screen in Bid Rigging Cases (2)

Means and standard deviations for perch price and cost (S/pound)

<table>
<thead>
<tr>
<th>Statistics</th>
<th>Collusion</th>
<th>Competition</th>
<th>Differences across regimes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>3.544</td>
<td>2.97</td>
<td>-16.2</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0.078</td>
<td>0.283</td>
<td>263</td>
</tr>
<tr>
<td>CV=standard deviation/mean</td>
<td>0.022</td>
<td>0.095</td>
<td>332</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>0.722</td>
<td>0.771</td>
<td>6.8</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0.114</td>
<td>0.173</td>
<td>51.8</td>
</tr>
<tr>
<td>CV=standard deviation/mean</td>
<td>0.158</td>
<td>0.224</td>
<td>41.8</td>
</tr>
</tbody>
</table>

An Example of Behavioral Screens – LIBOR (1)

LIBOR 1 month, Federal Funds Effective Rate and Treasury Bill 1 month

Source: Abrantes-Metz and Bajari (2011)
An Example of Behavioral Screens – LIBOR (2)

LIBOR 1 month: cross-sectional coefficient of variation for banks’ quotes

An Example of Behavioral Screens –
LIBOR (3)

Individual quotes from early August 2006

<table>
<thead>
<tr>
<th>Bank</th>
<th>August 3</th>
<th>August 4</th>
<th>August 7</th>
<th>August 8</th>
<th>August 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTMU</td>
<td>5.410</td>
<td>5.430</td>
<td>5.370</td>
<td>5.370</td>
<td>5.330</td>
</tr>
<tr>
<td>Bank of America</td>
<td>5.400</td>
<td>5.420</td>
<td>5.380</td>
<td>5.370</td>
<td>5.325</td>
</tr>
<tr>
<td>Barclays</td>
<td>5.410</td>
<td>5.420</td>
<td>5.370</td>
<td>5.370</td>
<td>5.340</td>
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<tr>
<td>JPM Chase</td>
<td>5.410</td>
<td>5.420</td>
<td>5.380</td>
<td>5.370</td>
<td>5.330</td>
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<tr>
<td>Citi Bank</td>
<td>5.405</td>
<td>5.420</td>
<td>5.360</td>
<td>5.370</td>
<td>5.330</td>
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<tr>
<td>CSFB</td>
<td>5.405</td>
<td>5.420</td>
<td>5.360</td>
<td>5.370</td>
<td>5.330</td>
</tr>
<tr>
<td>Deutsche Bank</td>
<td>5.405</td>
<td>5.415</td>
<td>5.365</td>
<td>5.365</td>
<td>5.325</td>
</tr>
<tr>
<td>HBOS</td>
<td>5.410</td>
<td>5.420</td>
<td>5.350</td>
<td>5.370</td>
<td>5.330</td>
</tr>
<tr>
<td>HSBC</td>
<td>5.400</td>
<td>5.420</td>
<td>5.370</td>
<td>5.370</td>
<td>5.330</td>
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<tr>
<td>Lloyds</td>
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<td>5.420</td>
<td>5.360</td>
<td>5.370</td>
<td>5.330</td>
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<tr>
<td>Norinchukin</td>
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<td>5.420</td>
<td>5.370</td>
<td>5.370</td>
<td>5.340</td>
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<tr>
<td>Rabobank</td>
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<td>5.415</td>
<td>5.370</td>
<td>5.370</td>
<td>5.330</td>
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<tr>
<td>Royal Bank of Canada</td>
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<td>5.420</td>
<td>5.370</td>
<td>5.368</td>
<td>5.330</td>
</tr>
<tr>
<td>Royal Bank of Scotland</td>
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<td>5.420</td>
<td>5.370</td>
<td>5.370</td>
<td>5.330</td>
</tr>
<tr>
<td>UBS AG</td>
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<td>5.420</td>
<td>5.370</td>
<td>5.370</td>
<td>5.330</td>
</tr>
<tr>
<td>West LB</td>
<td>5.405</td>
<td>5.460</td>
<td>5.360</td>
<td>5.370</td>
<td>5.330</td>
</tr>
</tbody>
</table>

Source: Abrantes-Metz and Metz, “How Far Can Screens Go in Distinguishing Explicit from Tacit Collusion? New Evidence from the Libor Setting”, in CPI Antitrust Chronicle, 2012, 1. Highlighted are the quotes that were excluded from the calculation of LIBOR.
The distribution of “middle 8” quotes

<table>
<thead>
<tr>
<th></th>
<th>August 3</th>
<th>August 4</th>
<th>August 7</th>
<th>August 8</th>
<th>August 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value 1</td>
<td>5.405</td>
<td>5.420</td>
<td>5.360</td>
<td>5.370</td>
<td>5.330</td>
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<tr>
<td>Count</td>
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<td>Value 2</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value 3</td>
<td></td>
<td></td>
<td>5.370</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Screens do not distinguish explicit cartels from tacit collusion.
  – A collusive equilibrium may be a result of an explicit agreement, but, at the same time, it may come from a tacit arrangement or conscious parallelism.
  – Screens can generate false positives (flagging cases which do not merit further scrutiny) or false negatives (failing to identify collusion)
Economic screens are usually both data intensive and resource intensive.

– Data intensive
  • Sufficient relevant and accurate information and data are necessary from screen design, to the implementation of the screen, up to the interpretation of its results.

– Resource intensive
  • Econometrics for data collection and processing, training personnel, running the screen, interpreting results…
Other Proactive Methods

- Media monitoring
- Market studies
- Informant reward program
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