



Recent Developments in Cartel Detection

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Bid-Rigging in a New Era
CPRC and JFTC
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Introduction

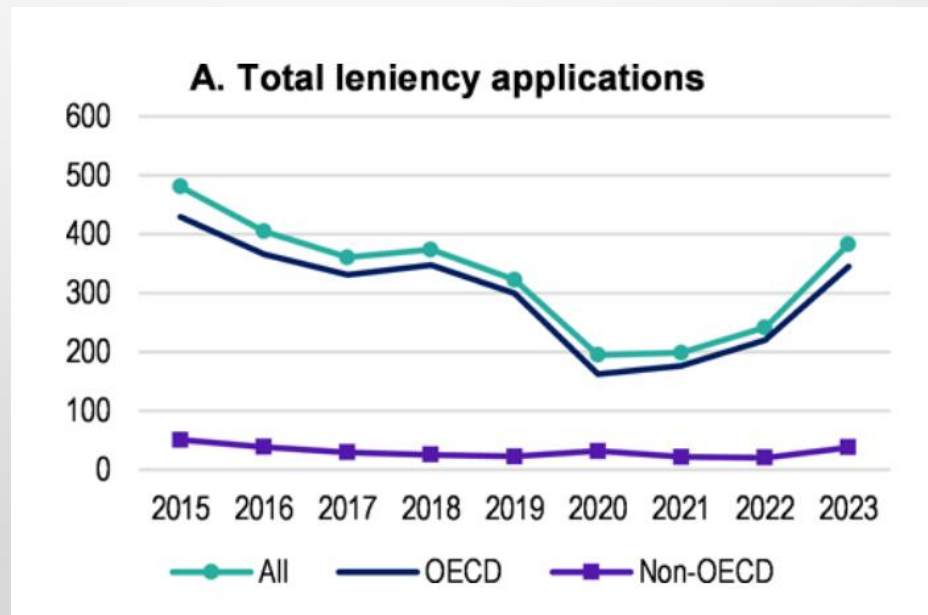
- An effective enforcement policy requires
 - Detection
 - Prosecution and conviction
 - Penalization
- Overview
 - General developments in detection in the last 30 years.
 - Leniency programs
 - Whistleblower rewards
 - Data screening
 - New detection method: Text screening

Development #1: Leniency

- Corporate leniency program
 - A cartel member who comes forward and cooperates can receive full or partial reduction in government penalties.
- History
 - 1993 – U.S. Department of Justice revised its program
 - Amnesty is automatic if there is no current investigation.
 - 1996 – European Union introduced its program
 - Later applicants can receive partial reduction in penalties.
 - 2006 – Japan introduced its program.
 - More than 50 jurisdictions have a leniency program.

Development #1: Leniency

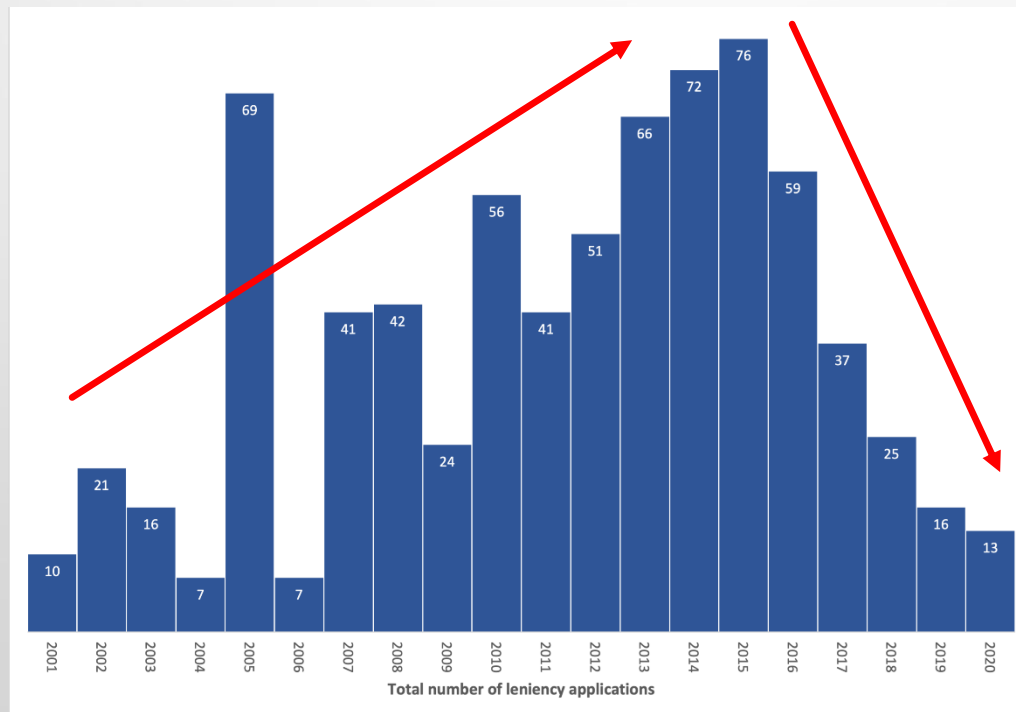
- Leniency programs have been a success
 - Many applications → critical evidence → cartels convictions.
- But leniency applications began declining about 10 years ago.
 - Global - down 65% from 2015 to 2021.
 - OECD - down 58% from 2015 to 2021.
- Post-pandemic recovery but still below high.



Development #1: Leniency

German Competition Authority

- 2010: "The first version of the Leniency Program was already a success. This can be seen by the number of leniency applications filed."
- 2020: "As the numbers of leniency applications decrease, we are exploring [other] innovative investigation methods."



2001-2020
Number of
Leniency
Applications

Development #2: Whistleblower Rewards

- Rewards are provided to individuals for reporting cartels.
 - Example: uninvolved employee of a cartel member.
 - Example: purchasing agent of a company who is buying from a cartel.
- Countries with whistleblower rewards
 - South Korea (2005) – up to ₩3 billion (≈ ¥300 million)
 - Reward of ₩1.75 billion for reporting a scrap steel bid-rigging cartel.
 - United Kingdom (2008) – up to £250,000 (≈ ¥5 million)
 - Hungary (2010), Taiwan (2015), Pakistan (2019)

Development #2: Whistleblower Rewards

- U.S. Department of Justice – Antitrust Division introduced a program this year.
- Rewards
 - Up to 30 percent of the first \$100 million (≈ ¥1.5 billion) collected from convicted cartel members.
 - Up to 5 percent of collection between \$100 million and \$500 million.

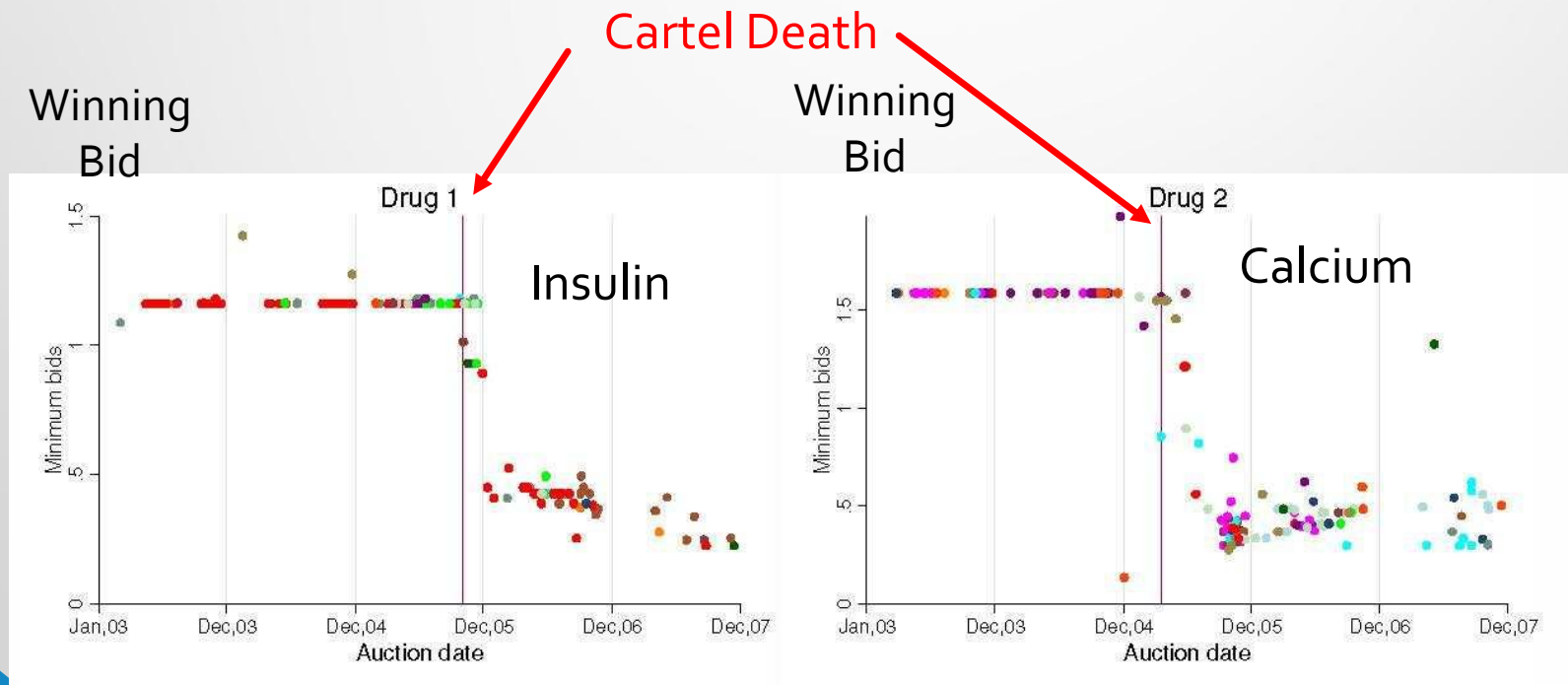


Development #3: Cartel Screening

- Screening is examining market data for evidence of a cartel.
- Screening requires
 1. Data – typically, prices or bids.
 2. Knowing what to look for in the data.
- What to look for in the data: **collusive markers**
 - Collusive marker is patterns in prices or bids more consistent with collusion than competition.
- What to look for in the data: **change in firms' conduct**
 - Collusion means a change in the data-generating process for prices or bids.
 - Associated with cartel birth, death, or temporary disruption.

Development #3: Cartel Screening

- Example: generic drugs procurement auctions (Mexico)
- Cartel death led to
 - lower bids
 - more dispersion of bids.



Time: January 2003 to December 2007

Development #3: Cartel Screening

- Government procurement auctions are especially suitable for screening because
 - bidding rings are common
 - data is available
 - detection methods have been developed.
- Increased use of screening by competition agencies.
 - 2005 - Very few agencies were doing screening.
 - 2016 – At a meeting of chief economists, 15 out of 27 agencies were doing at least some screening.
 - Today – Screening is very common with some agencies heavily engaged in it.

Screening of Public Announcements

- A company's *public announcements* include
 - Press releases
 - Earnings calls
 - Speeches at semi-public industry meetings
 - Financial reports
 - Interviews in trade journals
- Focus: public announcements for the purpose of coordinating to restrict competition.

Screening of Public Announcements

Harrington, *Antitrust Law Journal* (2022)

- Public announcements that *refer to rival firms' conduct* can facilitate coordinated conduct.
 1. A firm announces how it will behave in response to rival firms' conduct.
 2. A firm announces how rival firms (or the industry) *should* behave.
 3. A firm announces how rival firms (or the industry) *will* behave.
- Documented cases of collusion with public announcements
 - Airlines, chicken processing, generic drugs, mobile telecom, pork, steel, truck rental

Screening of Public Announcements

Airlines

Public announcements of a collusive (“capacity discipline”) plan.

Air Tran (CEO): *“The only certain way to get the average prices up is to accompany it with capacity adjustments.”*

Delta Airlines (President): *“Not enough capacity has been cut. While they have made some significant announcements, everybody is watching each other in terms of capacity.”*

Delta Airlines (Vice President): *“I think Delta cannot do it alone. I would say if the industry could achieve a 10% reduction in capacity that we would be in good shape.”*

Screening of Public Announcements

Airlines

Public announcements confirming effect of collusive plan.

United Airlines (Chief Financial Officer): *"What we have seen so far is very good overall behavior in terms of capacity discipline on the part of the industry."*

American Airlines (CEO): *"There are hopeful signs that the industry has learned its lesson about keeping capacity growth in line with demand."*

Delta Airlines (President): *"We are doing our share at maintaining the overall discipline and we would expect our competitors to do the same."*

Screening of Public Announcements

Airlines

Empirical analysis confirming effect of collusive plan.

Aryal, Ciliberto, and Leyden, *Review of Economic Studies* (2022)

- Data: all earnings calls for 11 airlines, 2002-2016.
- Earnings call was classified as "referring to capacity discipline" when they used "capacity discipline" or "capacity" with other terms such as "demand".
- When all airlines operating on a route communicated "capacity discipline" in their earnings calls, capacity (average number of seats) **decreased** in the next quarter by 1.45%.

Public announcements $\Rightarrow$ capacity reduction $\Rightarrow$ higher prices

Screening of Public Announcements

- Fact: Firms can collude by coordinating their conduct using public announcements.
- Objective
 - Develop a software program that can detect public announcements that facilitate collusion.
 - Apply program to large volume of public announcements.
- Data (Capital IQ)
 - 350,000-500,000 public announcements (mostly earnings calls)
 - 15,000-18,000 companies
 - 2002-2025

Screening of Public Announcements

Joint work with Tomaso Duso (DIW Berlin), Carl Kreuzberg (DIW Berlin), and Geza Sapi (European Commission)

- Method: dictionary of keywords and phrases
- Unigrams (examples)
 1. Strategy: "price", "capacity"
 2. Competition: "competitor", "industry"
 3. Future intent: "should", "will"
 4. Action: "increase", "reduce"
 5. Qualifier: "rational", "discipline"
- Bigrams
 - Strategy bigrams: "strategy" with (3)-(5) - 93 bigrams
 - Competition bigrams: "competition" with (3)-(5) - 508 bigrams

Screening of Public Announcements

- A company is “flagged” by the screen when it has
 - high number of strategy bigrams
 - high number of competition bigrams
 - competitors also have high numbers.
- Top industries flagged
 1. Paper products
 2. Paper packaging
 3. Building products
 4. Household products
 5. Tires and rubber

Screening of Public Announcements

Building products - Allegion (company A) and Assa Abloy (company B)

- Company A (May 8, 2018): *"We announced a price increase which is the largest in the last 15 years, and I know that the industry is disciplined."*
- Company B (July 18, 2018): *"We definitely are not a company that buys market share with reducing the price."*
- Company A (July 26, 2018): *"This industry is disciplined."*
- Company B (November 14, 2018): *"What is good in our industry is that it is an industry where you can increase prices. Being the market leader, we are the first one with a price increase, and we see that the market follows."*

Screening of Public Announcements

- Screening method led to an investigation of the tire industry by the European Commission.

AI-assisted analysis of companies' public communications triggers EU Commission's antitrust Dawn Raids

Noerr

European Union, Germany | August 26 2025

- MLex (March 5, 2025): *"At the heart of the investigation is the novel claim that the tiremakers may have used 'public communications,' in particular earnings calls, as part of a strategy to collude over prices."*

Screening of Public Announcements

Joint work with Eduardo Azevedo (University of Pennsylvania) and Ioan Rusu (Drexel University)

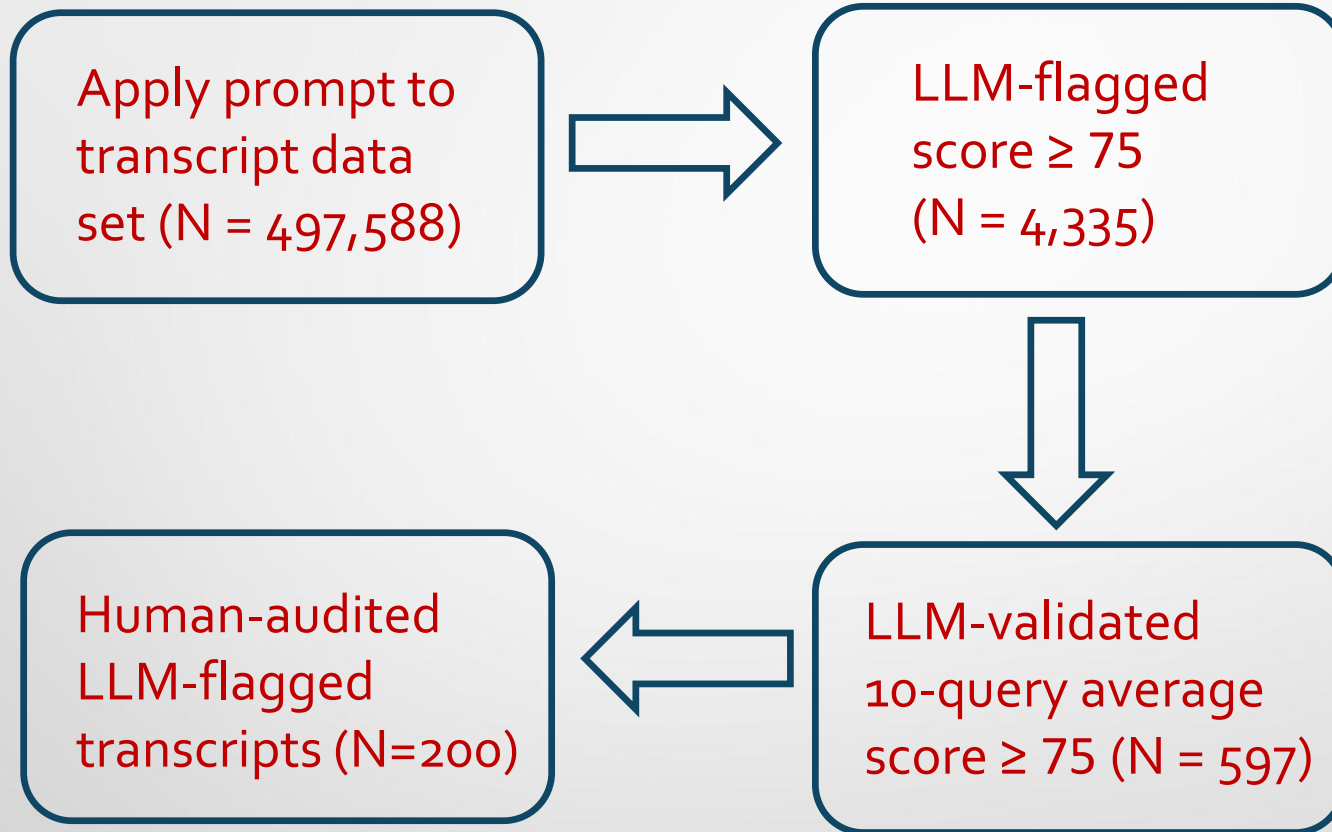
- Natural language processing: large language model (ChatGPT)



- Develop “prompt” for LLM to identify collusion-facilitating content in public announcements. Excerpt from prompt:

Analyze the following transcript of a public company communication and identify any signs that the company is trying to coordinate with competitors to limit capacity or keep prices high. Provide a score from 0 to 100, where 0 means no evidence of collusive intent and 100 means strong evidence of collusive intent.

Screening of Public Announcements



Screening of Public Announcements

- LLM is selective: flagged only 597 out of 497,588 earnings calls.
- LLM is reasonably effective at flagging previously documented episodes (such as airlines).
- Examining the top 200 of those 597 earnings calls, a human auditor found
 - 29 percent are true positives.
 - 71 percent are false positives.
- LLM can be effective in narrowing down the set of public announcements for human auditors to examine.

Screening of Public Announcements

Coca-Cola Bottlers Japan Holdings – flagged earnings calls

Earnings Call	Collusive Intent Score
February 2023	78/100
November 2023	68/100
May 2024	72/100
February 2025	68/100

LLM explanation for November 2023 earnings call:

This transcript contains multiple signals consistent with coordination or leadership intent regarding industry-wide price increases. Executives stress Coca-Cola's leadership in raising prices and describe price hikes as a tool to maintain a "healthy competitive environment". The framing suggests an attempt to justify and normalize further coordinated price increases across the beverage market in Japan. Although the statements are couched in legal language and lack over solicitation of competitor cooperation, the repetition and phrasing align with practices associated with tacit collusion.

Screening of Public Announcements

Coca-Cola Bottlers Japan Holdings - Example of LLM output

Theme	Evidence (excerpts from earnings calls)
Promoting price increases as a new norm	<i>This price increase should not be a onetime event. That is a recipe for failure for the industry.</i>
Commitment to leadership	<i>We were leading price increases and we will continue our efforts.</i>
Reassurance against competitive undercutting	<i>We are not going to be the one which is going to drag the industry back. We believe this pricing is healthy for the industry.</i>
Expectation of competition alignment	<i>This will be our sixth price increase. Competitors play into the decision of the pricing strategy.</i>
Advocating collective price discipline	<i>I'm very pleased to see that the entire industry acted responsibly. We were able to put the prices up, and that's a great thing for our industry.</i>

Concluding Remarks

- Public announcements can be a means for firms to coordinate to reduce competition.
- Plan for a competition agency.
 1. Develop **screening program** for public announcements.
 2. Design **legal strategy** based on public announcements.
 - Content refers to rival firms' conduct.
 - Multiple companies are making announcements.
 3. Publish **guidelines** for companies' public announcements.
 - Companies need to know they should not be talking about rival firms' conduct.
 - Lays groundwork for legal cases.



Thank you

ありがとうございます