Working Group on Cross-Border Cartels
UN Trade and Development

Screening for bid rigging in road construction

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Screening for bid rigging in road construction

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1. Introduction

Fighting bid rigging[1] is a top priority in many countries and has been added as a topic to the Working Group on Cross-border Cartels in 2023:

- ➢ "elimination of bid rigging could help reduce procurement prices by 20% or more" (OECD)

- ➢ in Switzerland:
  - – The price-increasing effect of uncovered bid rigging cartels is also remarkably high (e.g. Ticino cartel: price-increasing effect on average 35%)
  - – Expenditure on public procurement amounts to 8% of GDP

[1] **Bid rigging** *involves groups of firms conspiring to raise prices or lower the quality of goods or services offered in public tenders* (OECD)

2. Background Information

Screening Project of COMCO

In 2008, COMCO decided to launch a screening project to reinforce the fight against bid rigging

Objective:

- Development of a (statistical) screening tool based on data that is available without the cooperation of possible cartel participants (<u>no prior leniency</u>).

Complexity: A simple process for analysing large data sets, easy to understand

Result

- A statistical screening tool (See: Imhof D., Y. Karagök and S. Rutz (2018) Screening for bid rigging: Does it Work? Journal of Competition Law & Economics, Vol. 14(2), 235-261.)

- Opening of the investigation "*See-Gaster*"

2. Background Information

The Case "See-Gaster"[1]: The investigation was triggered by the results of a statistical analysis of bidding data (Screening).

- ➤ "See-Gaster" is a region in the east Switzerland

- ➤ Investigation of the COMCO in the region "See-Gaster": April 2013 - July 2016

- ➤ It is about road construction sector

- ➤ COMCO uncovered a bid rigging cartel and fined eight firms

Hereafter:

Presentation of two screens: **Variance screen** and **Relative Distance screen**

[1] Road construction cartel in See-Gaster, published decision (German): RPW 2020/3a, pp. 880-1143 (www.weko.admin.ch > Praxis > Recht und Politik des Wettbewerbs)

3. Tools to detect bid rigging

Overview of tools used to detect bid rigging

- Complaints
  - Procurement agencies
  - Whistleblowers
  - Competitors

- Leniency applications

- Analysis of publicly available information
  - Newspaper articles
  - Market data (e.g., price indices)
  - Individual bids in public procurement auctions

Analysis of publicly available information

➢ **Goal:** Identify patterns in publicly available data that are

–   consistent with collusion

–   inconsistent with competition

➢ **Hypothesis**:

⇒ Bid rigging affects the distribution of bids!

⇒ The distribution of bids will differ between collusive tenders and competitive tenders

⇒ **"Screens" (statistical markers)** aim to capture these differences in the bidding process

Examples of bid rigging from Switzerland:

Communication between cartel members

Von: [redacted] Rocca + Hotz AG [redacted] @roccahotz.ch]
Gesendet: Freitag, 3. Oktober 2008 10:00
An: [redacted] @lenatti.ch; Foffa + Conrad [redacted]
Betreff: [redacted]

Hallo [redacted]
Beiliegend meine Offerte mit Berücksichtigung der S-chanfer Konkurenz rel- scharf gerechneten Preisen.
Ich bitte Euch um Anhebung Eurer Offerte um 5 – 10 %
Gruss und Dank
[redacted]
Rocca + Hotz AG

Enclosed is my bid…
I kindly ask you to set your bid about 5 - 10 % higher.

Von: [redacted] Rocca + Hotz AG [redacted] @roccahotz.ch]
Gesendet: Montag, 21. Dezember 2009 10:49
An: Foffa + Conrad [redacted]
Betreff: [redacted]
Hallo [redacted]
Beiliegend meine Offerte.
Mit der Bitte um Anpassung und Änderung der Preise um 4 - .. %.
Besten Dank und schöne Festtage
Gruss

Dorta 74
www.roc[redacted]
Tel
Fax
Natel

Enclosed is my bid.
Please adjust and change the prices by 4-..%.

Case Engadin II (2019), *Law and Policy on Competition (LPC)* 2020-4a, p. 1673 and 1677.

Bidding markets: Examples of bid summaries

VDOT (Virginia Department of Transportation):

As-Read Bid Letting Results for September 22, 2021

Order No.	UPC No.	Project Number	Route No.	District	County	Vendor Code	Contractor	Contractor's Bid
F70	118463	9999-961-685, B620	VARIOUS	Bristol	BRISTOL	M683	M. D. MILLER CO., INC.	$2,491,660.76
						E155	ELK KNOB, INC.	$2,762,200.00
						L005	LANFORD BROTHERS COMPANY, INCORPORATED	$3,154,260.00
F72	117211	9999-962-681, N501	VARIOUS	Salem	HENRY	P1103	PERFORMANCE SIGNS, LLC	$552,738.00
						R691	RAMIREZ CONTRACTING, L.L.C.	$658,076.00
						C1407	CES CONSULTING, LLC	$660,676.65
F73	119577	9999-964-F21, P401	VARIOUS	Richmond	AMELIA	S026	SLURRY PAVERS, INC.	$779,101.00
F81	119382	9999-966-365, N501	VARIOUS	Fredericksburg	FREDERICKSBURG	L159	L. S. LEE, INC.	$599,380.64
						C333	CURTIS CONTRACTING, INC.	$872,832.00

➢ **The data (bid summaries) contain all information you need to screen procurement markets!**

4. Descriptive statistics as screens

Variance screen:

In collusive bids, the variance of bids is lower than in non-collusive bids:

➢ Investigation «Canton Ticino»[1] (*see next slide*)

➢ Empirical and theoretical evidence[2]

Calculation

Coefficient of variation (CV) of the bids ($CV_j = s_j / \mu_j$) (for each tender in data set)
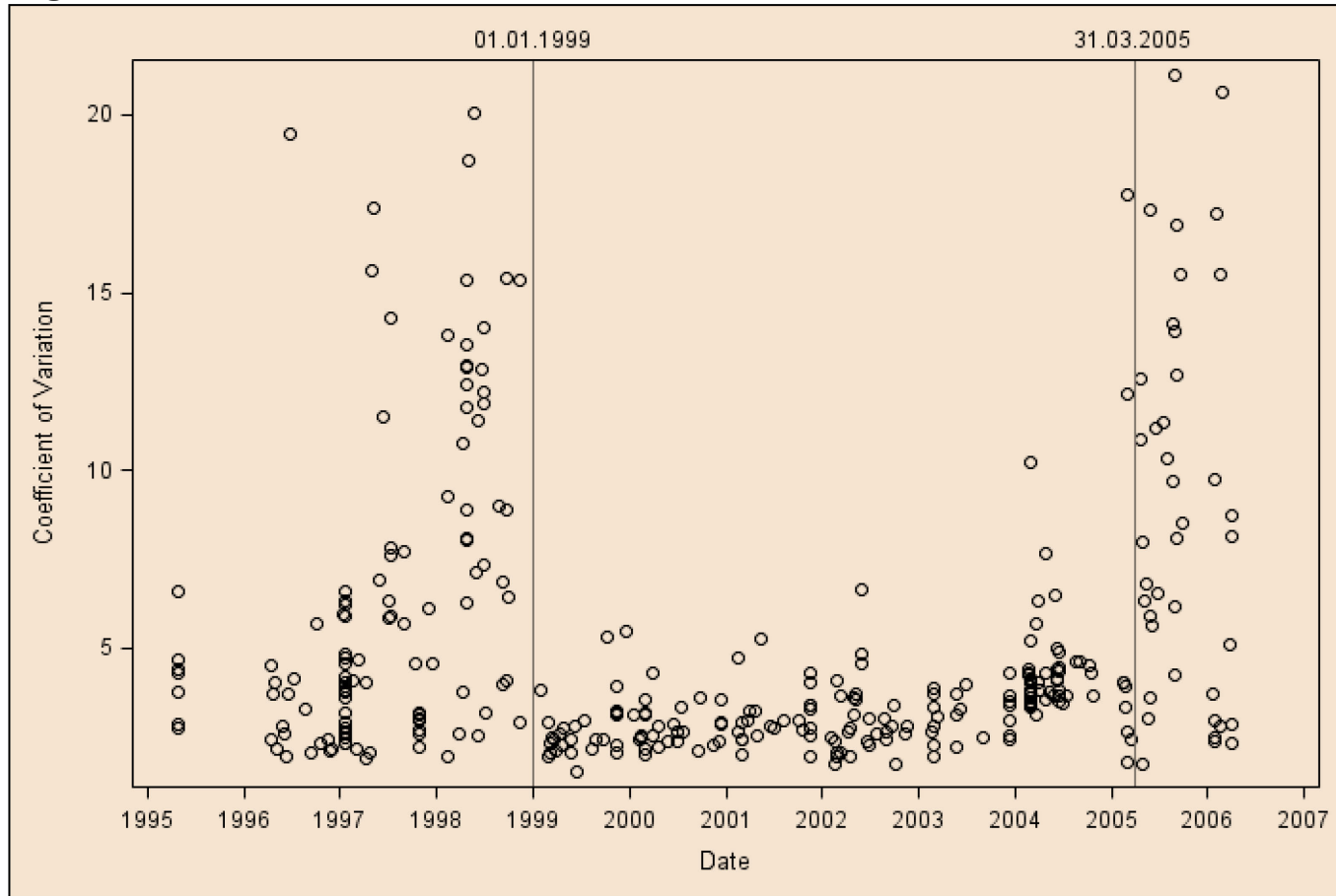
Hypothesis

The smaller the variance the more likely is the collusion

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1) Road construction cartel in Ticino, published decision (Italian/German): RPW 2008/1, pp. 50-112 (www.weko.admin.ch > Praxis > Recht und Politik des Wettbewerbs) Recht und Politik des Wettbewerbs (RPW) (admin.ch)
2) Abrantez-Metz et al. (2006), Jimenez / Perdiguero (2012), Athey et al. (2004), Harrington / Chen (2006).

Does the variance screen work?

Figure 1: Coefficient of Variation, Canton of Ticino, Market-wide cartel

Imhof (2019), LPC (2008/1, p. 103)

- ➢ The Ticino cartel rigged every tender during January 1999 to the end of March 2005 (vertical lines).

- ➢ Each circle in the figure represents the value of the CV for a tender.

- ➢ In the cartel phase, the CV was lower, while in the competitive phase the CV was higher.
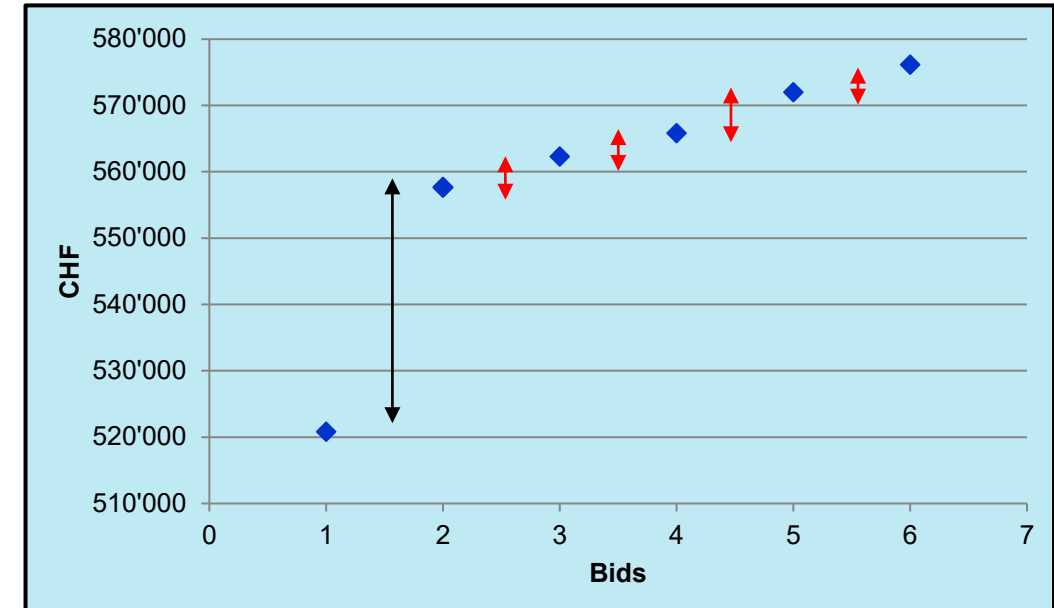
- ➢ **Clear-cut findings!**

Relative distance screen (RD):

➤ Bid riggers manipulate the auction by creating a significant difference between the winning bid and the losing bids.

➤ However, the gaps between the losing bids are very small (see **red arrows** in the figure).

Figure 2: Typical Pattern

Challenge: Operationalization! How can we quantify this pattern?
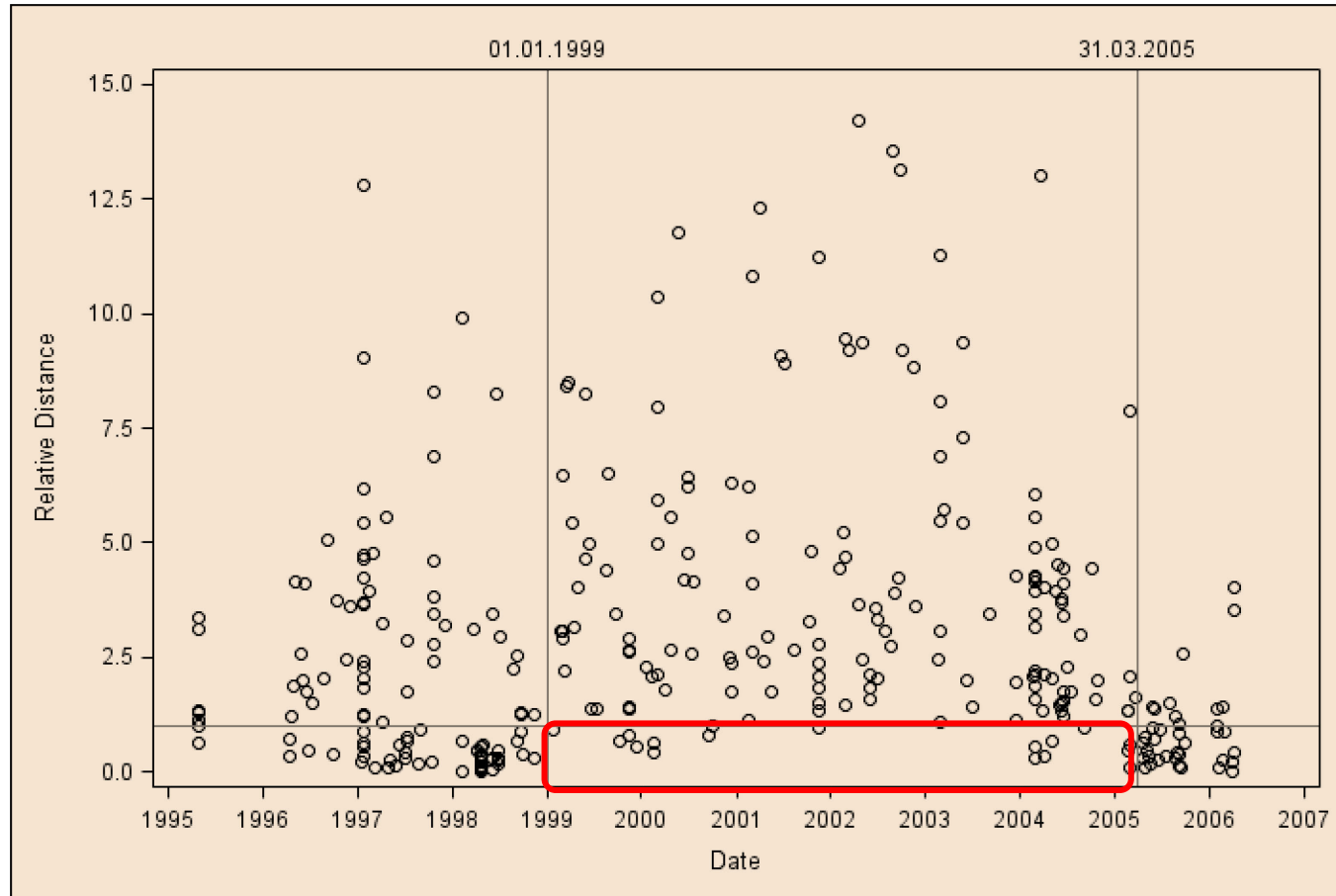
Solution:

$$RD = \frac{\text{Difference between the two lowest bids}}{\text{Standard deviation of the losing bids (OR mean of the differences of losing bids)}}$$

Hypothesis: If «relativ distance ratio» > 1 ==> pay attention! (indication for bid rigging)

Does the relative distance screen work?

Figure 3: The Relative Distance, Canton of Ticino, Market-wide cartel

Imhof (2019)

- Each circle in the figure represents the value of the RD for a tender.

- In the cartel phase, the RD was in most cases greater than one.

- **Clear-cut findings!**

5. Conclusion

➢ Availability of the data is the basis for such methods as screening

➢ In the fight against cartels, the application of screening is very useful for the competition authorities around the world

- constitutes an **additional tool** to fight against bid rigging

- enables the authorities to mitigate the dependency on external sources and to detect cartels **proactively**

- has high **deterrence** effect, increases the incentive for leniency applications

➢ The primarily aim of screening methods is to provide reasonable grounds of suspicion **to launch an investigation**

- Efficient use of authorities' limited resources

- Avoid unnecessary intervention in firms' activity

➢ In the last couple of years, many machine learning methods have been published (high data requirements)

Thank you!

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