

Inside a
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Objectives of
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Behavioral
Biases of a
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Measuring the
Performance
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Research and
Policy Agenda

Investigating the Investigators: What Does a Competition Authority Maximize?

Joe Harrington (Johns Hopkins University)

"Advances in the Analysis of Competition Policy"
Fourth International Conference on Competition and Regulation (CRESSE)

July 3-5, 2009

Introduction

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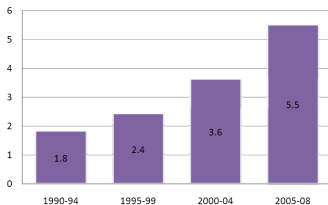
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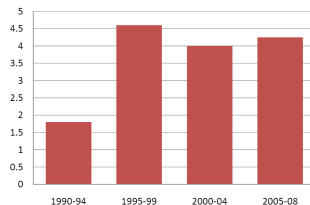
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Who is doing a better job? European Commission or U.S. Dept of Justice/Canadian Competition Bureau?

Rates of Discovery by the
European Commission Rise Steadily



Cartel Detections by the
US and Canada Are Stalled



Source: Connor (2008)

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- Is the lack of increase in the number of cartel cases evidence of failure?
 - *Because detection is weak.*
- Is the lack of increase in the number of cartel cases evidence of success?
 - *Because deterrence is strong.*
- If we can't measure the cartel rate, how do we know whether a competition authority is performing well?

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- 1 What is the objective of a competition authority?
- 2 What might be the implications of a competition authority that does not maximize welfare?
- 3 How can we better measure performance and thereby improve accountability?

Objectives of a Competition Authority

- What determines the behavior of a competition authority?
 - Career concerns
 - Limited information about performance
- A competition authority maximizes its performance as perceived by its constituencies.
- Who are the CA's constituencies?



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Objectives of a Competition Authority

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- What information is available for measuring performance?



ANTITRUST DIVISION
WORKLOAD STATISTICS
FY 1999 - 2008



INVESTIGATIONS

Total Investigations Initiated, by Primary Type of Conduct ¹	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Sherman §1 - Restraint of Trade	74	85	84	95	137	79	118	104	77	76
Sherman §2 - Monopoly	6	10	10	13	11	7	8	3	6	-
Clayton §7 - Mergers	287	221	178	127	124	106	138	114	117	106
Others	6	10	10	8	11	19	9	24	19	26

FINES IMPOSED ²	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Individual: Total Individual Fines (\$000)	12,273	5,180	2,019	8,685	470	644	4,483	3,650	15,109	1,485
Number of Individuals Fined	50	43	20	19	16	15	22	17	25	23
Corporate: Total Corporate Fines (\$000)	959,866	303,241	270,778	93,826	63,752	140,586	595,966	469,803	615,671	695,042
Number of Corporations Fined	25	26	14	17	17	13	18	18	12	12
Total Fines Imposed (\$000)	972,138	308,421	272,797	102,511	64,222	141,230	600,449	473,455	630,780	696,527

INCARCERATION	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of Individuals Sentenced	54	47	24	36	30	28	27	28	39	31
Number of Individuals Sentenced to Incarceration Time	28	18	11	19	15	20	18	19	34	19
Total Number of Actual Days of Incarceration Imposed by the Court	6,662	5,584	4,800	10,501	9,341	7,334	13,157	5,383	31,391	14,331

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Behavioral Biases of a Competition Authority

Desistance over Deterrence

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Observation Shutting down a cartel is observed, deterring a cartel is not.

Question How might a bias for desistance and against deterrence manifest itself?

- 1 CA may avoid difficult cases that, if pursued, could promote deterrence
 - For example, focusing on leniency cases.
- 2 CA may settle for lower penalties.
 - Settlement allows resources to shift to prosecuting another case.
 - But larger penalties deter cartel formation.

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Desistance over Deterrence

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- Vitamins case: Hoffman LaRoche
 - DOJ penalty guidelines: US\$1.3 to \$2.6 billion.
 - Actual fine: \$500 million.
- What was behind the penalty decision?
 - Was the DOJ content to have the largest fine in history?
 - Did the DOJ inadequately value deterrence?
 - Was avoiding a court case the proper use of limited DOJ resources?

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Prosecution over Discovery of Cartels

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Observation Most competition authorities do not actively screen for cartels.

- Until the leniency program, the DOJ was passive: "As a general rule, the [Antitrust] Division follows leads generated by disgruntled employees, unhappy customers, or witnesses from ongoing investigations. As such, it is very much a reactive agency." (Antitrust Bulletin, 1991)
- OFT may not be sufficiently pro-active: "The OFT has been too reliant on complaints as a source of its competition enforcement work. The OFT should start a greater proportion of investigations on its own initiative." (Committee of Public Accounts Report, 2006)

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Is Screening Too Difficult?

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Question Why might there be insufficient resources expended in discovering cartels?

- DOJ economist: "We already have too many cases to handle."
 - Is performance based on the number of successful cases, and not on how many cartels are discovered?
- Cases identified through screening may be more difficult (and would reduce the success rate).
 - But screening and a leniency program are complements.
- Bureaucratic politics - screening increases the status of economists.

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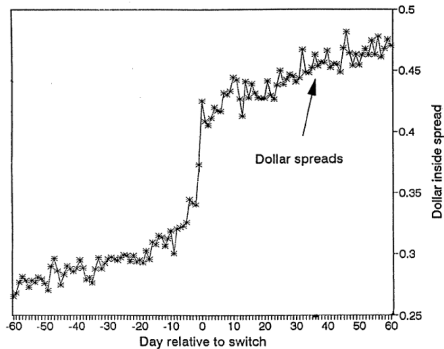
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- Collusion in Nasdaq markets (W. Christie and P. Schultz, 1999)



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- Collusion in Portuguese bread market
- 30% rise in the price of bread was reported in the press.
- Ministry of the Economy requested the CA to investigate.



Press Release No. 11/2005

- **A marked rise in the price of bread leads to detection of an upstream cartel (milling activities)**
- **Concerted pricing by the undertakings from 2000 to 2004**
- **A fine of 9 million euros imposed on 10 undertakings**

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Case Selection

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Question Is there a bias in favor of cases that draw public attention?

- Cartels in retail markets: consumer benefits are more transparent.
 - Effect is amplified by the media.
 - Political pressures
 - Bread (Portugal)
 - Petrol pricing (Portugal and other countries)
 - Chile: Pharmacies

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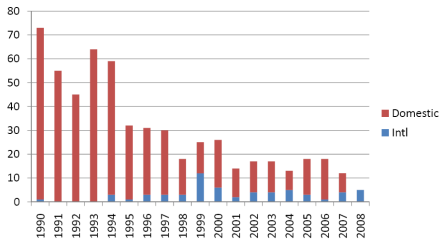
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- International cases over domestic cases.

Number of Corporations Fined,
U.S. Dept. of Justice, 1990-2008



- Are there no longer any domestic cartels?

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- Locking up foreign nationals plays better in the press.



- Thomas Barnett, Assistant Attorney General -
Congressional Testimony (Sept. 25, 2007):

"The Division set a record for the most jail time imposed (almost 30,000 jail days), obtained the second highest amount of fines in the Division's history (over \$630 million) and ... succeeded in obtaining the longest jail sentence for a foreign national charged with an antitrust offense (14 months)."

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Ex post evaluation of CA actions and programs

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- Is a CA biased against investigating the impact of their policies?
 - Is the DOJ content to highlight the number of leniency applications as a measure of the leniency program's success?
 - Why did the EC not support conducting post-mortems on convicted cartels?
- General reluctance to engage in ex post evaluation?
 - Absence of post-mortems for mergers.
 - Absence of post-approval studies by the Food & Drug Administration.
- Is it about process not outcomes?

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Chang and Harrington (2008)

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M. Chang and J. Harrington (2008) - "The Impact of a Corporate Leniency Program on Antitrust Enforcement and Cartelization"

- Cartel birth and death
 - Birth: Firms form a cartel when given the opportunity and collusion is stable.
 - Death: Cartels internally collapse and/or are caught.
- Competition policy
 - Leniency program (used only by dying cartels).
 - Enforcement policy: fraction of non-lenieny cases that are prosecuted.
 - Resource constraint: The bigger is the CA's caseload, the lower is the probability of winning a case.
 - Objective: CA chooses enforcement policy to maximize the number of successful cases.

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- Are non-leniency cases pursued less aggressively after the introduction of a leniency program?
- Yes? Fewer resources to prosecute non-leniency cases.
 - "DG Competition is now in many ways the victim of its own success; leniency applicants are flowing through the door of its offices, and as a result the small Cartel Directorate is overwhelmed with work." (Riley, *Competition Law Review*, 2007)
- No? There might be fewer non-leniency cases to prosecute.
 - If a leniency program reduces the number of cartels, there will be fewer non-leniency cartel cases

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Results

- 1 Holding fixed the competition authority's enforcement policy, the introduction of a leniency program reduces the cartel rate.
- 2 Generally, the introduction of a leniency program results in the competition authority pursuing a less aggressive enforcement policy.
- 3 The introduction of a leniency program can either lower or raise the cartel rate.

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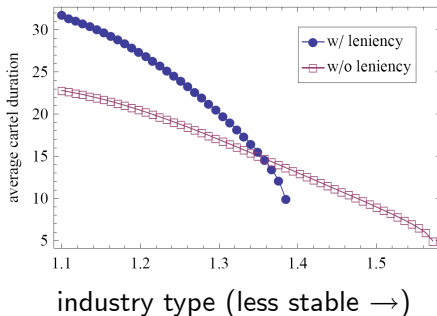
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ρ	Optimal Enforcement Policy		Cartel Rate	
	w/o leniency	w/ leniency	w/o leniency	w/ leniency
1.0	.9	.8	.280756	.198025
1.1	1. (*)	.9	.265363	.173012
1.2	.5	.9	.240116	.133414
1.3	.6	.4	.202972	.100516
1.4	.8	.3	.138895	.0938382
1.5	.6	.3	.0913201	.0810545
1.6	.5	.2	.0870105	.106969
1.7	.4	.2	.0986173	.104659
1.8	.4	.2	.092889	.101227
1.9	.4	.2	.0907345	.100516
2.0	.4	.2	.0886194	.10009

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Chang and Harrington (2008)

- How can a leniency program raise the cartel rate?
 - Less stable cartels no longer form because of the leniency program.
 - More stable cartels have a smaller chance of detection because non-leniency enforcement is weaker.
- Fewer cartels form but they last longer.



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Question How can we measure the impact of competition policy on cartel activity?

- 1 Survey of companies and law firms.
- 2 Estimate the effect of enforcement activity on price-cost margins.
- 3 Estimate the effect of policy on the population of cartels by drawing inferences from the population of discovered cartels.

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Deloitte Survey of the OFT

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- OFT commissioned Deloitte to measure the deterrent effect of its competition work.
- Method
 - Telephone survey of 234 senior competition lawyers in the UK and Brussels, Sept-Nov 2006.
 - Telephone survey of 202 UK companies, Feb-Mar 2007.

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Deloitte Survey of the OFT

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- Respondents were asked:

"Are you aware of any instances in which an existing or proposed collusive agreement was abandoned because of the risk of an OFT investigation?"

- For 2000-06, calculated:

$$\frac{\text{number of agreements impacted by the OFT}}{\text{number of agreements that resulted in an OFT decision}}$$

- Lawyers: 5 to 1
- Company executives: 16 to 1

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	Executive	Lawyer
Suggestion for improving deterrence	ranking	ranking
Increased publicity & education	1	3
Greater enforcement activity	2	5
Larger fines/tougher penalties	2	6
Faster decision making	4	4
Greater clarity in the law	5	9
More resources at OFT	6	7
Improved incentives for whistleblowers	7	12
Encourage private damage actions	8	2
More criminal prosecutions	9	1

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	Executive ranking	Lawyer ranking
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Impact of Prosecutions on Cartel Activity

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- Consider a collection of related markets
 - Retail gasoline markets
 - Road construction procurement auctions
 - Chemicals
- Does antitrust enforcement in one of these markets reduce price-cost markups in related markets?

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- Block, Nold, and Sidak (JPE, 1981)
- Regional markets for white pan bread, 1965-76.
- Observe price and construct marginal cost to estimate $\frac{P-MC}{MC}$.
- Dependent variable is the change in $\frac{P-MC}{MC}$.

Measuring the Performance of a Competition Authority

Impact of Prosecutions on Cartel Activity

- DOJREG = 1 when the DOJ filed an action in another city in that region in that year.
- DOJREM = 1 for the city in which an action was filed in the preceding year.

ESTIMATED EFFECTS OF CHANGES IN DOJ ENFORCEMENT ON
CHANGES IN MARKUPS IN THE BREAD INDUSTRY, 1965-76

Independent Variables				
Δ BUDGET	-.015* (-2.74)†	-.015 (-2.68)	-.024 (-4.06)	-.020 (-3.65)
DOJREG	-.025 (-2.05)	-.026 (-2.21)	-.025 (-2.09)	-.027 (-2.26)
DOJREM		-.046 (-2.32)	-.046 (-2.41)	-.044 (-2.32)
Δ FOODM			+.058 (2.33)	...
Δ GENM				-.010 (-1.60)
Constant	.011	.013	.014	.017
R ²	.055	.082	.113	.101
F-statistic	5.93 (2,205)	6.04 (3,204)	6.47 (4,203)	5.68 (4,203)

NOTE.—Each regression is based on 208 observations.

* This coefficient is estimated per million dollars.

† The value of the estimated coefficient divided by its estimated standard error.

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Impact of Policy on the Cartel Rate

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- How do changes in the *observable* population of discovered cartels relate to changes in the *latent* population on discovered cartels?
- Build a model that endogenizes the stochastic process producing a population of cartels.
- Derive how a policy change impacts
 - population of discovered cartels
 - population of cartels.
- Chang and Harrington (JEEA, forthcoming)

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- Proxy for the cartel rate: Average duration of discovered cartels.
- Consider a policy that is intended to make detection more likely.
- If the policy is working then the average duration of discovered cartels rises because
 - the least stable cartels shut down (and exit the cartel population)
 - surviving cartels are relatively stable (and thus have longer duration).
- If the policy is ineffective then there is no impact on the average duration of discovered cartels.
- Implication: If a new anti-cartel policy is working then the average duration of discovered cartels should rise (in the short-run).

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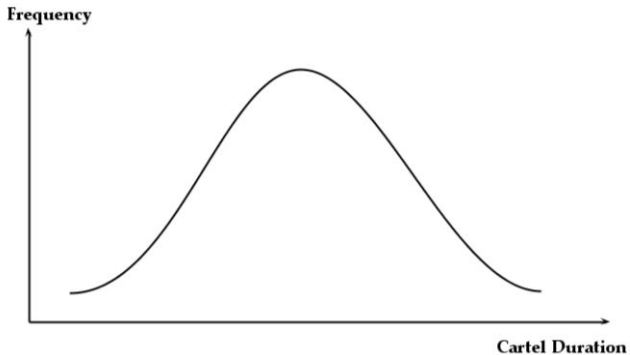
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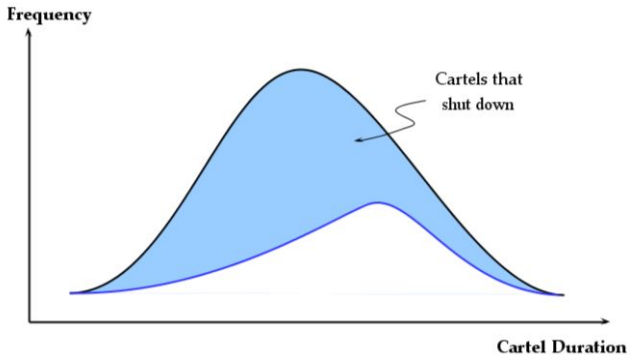
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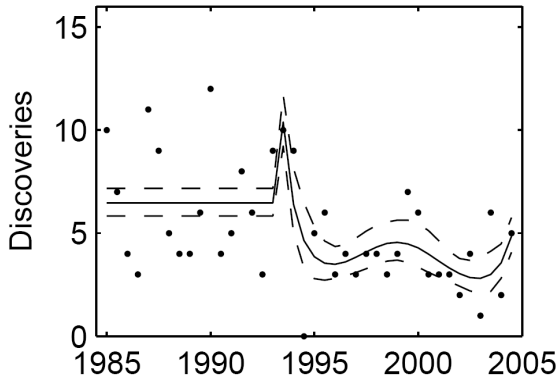
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- N. Miller, “Strategic Leniency and Cartel Enforcement” (AER, forthcoming)
- Data: 1985 - 2005
- Focus on the short-run vs. long-run adjustment of the discovered cartel rate.
- Hypothesis #1: *If the 1993 revision resulted in an increase in the probability of discovery then there is an immediate rise in the number of discovered cartels.*
- Hypothesis #2: *If the 1993 revision resulted in a decrease in the rate of cartel formation then the number of discovered cartels should adjust to a lower steady level.*

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Impact of Policy on the Cartel Rate

- Actual and estimated number of DOJ cartel cases (over a six-month interval).



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Concluding Remarks

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- Competition authorities have significantly increased anti-cartel activities.
- Develop empirical methods for estimating the impact of a policy change on the cartel rate.
 - Leniency program
 - Increased penalties
 - Higher government fines
 - Instituting customer damages (EU)
 - Incarceration (UK - Marine Hose)

Concluding Remarks

Inside a
Competition
Authority

Joe
Harrington

Objectives of
a Competition
Authority

Behavioral
Biases of a
Competition
Authority

Measuring the
Performance
of a
Competition
Authority

Research and
Policy Agenda

- Better documentation of how cartels are discovered. (How many cartels are truly discovered due to the leniency program?)
- Conducting more surveys
 - Are more companies adopting antitrust compliance programs?
 - Are companies disciplining employees caught price-fixing?
- Better educate the public about the detrimental effects of cartels.