

Fines, Leniency and Rewards in Antitrust an Experiment

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The Leniency “revolution”

- Leniency programs introduced in most advanced countries
 - Reduced fines if self report
 - “Normal way” to detect cartels changed, from buyer complaints, audits, and dawn raids, to Leniency Policies (LPs) ⇒ almost no resources left for inspections
- Consequence: increase in
 - number of convicted cartels
 - size of imposed fines
- Are these elements a good indicator of the effectiveness of Antitrust policy?

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What is a success in law enforcement?

- Main objective of law enforcement: crime **deterrence**
 - *ex ante* deterrence, i.e. **preventing** cartels
general (no detection needed) \Rightarrow no prosecution costs
 - *ex post* deterrence, or **desistance**
specific (only if detection) \Rightarrow high prosecution costs
- **Problem:** *ex ante* deterrence not observable (victims not aware)
 - Empirical research difficult
 - Experimental research particularly important

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What we did

- Implemented a **repeated duopoly game in the lab**, framing it in different law enforcement environments:
 - 'traditional' antitrust law enforcement policies
 - leniency programs
 - rewards to whistleblowers
- Looked at the **effects** these alternative policies have on:
 - Cartel deterrence/formation, cartel prices and duration
 - Self reporting behavior
 - Post detection behavior
 - Tacit collusion

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Main Results

① **Current antitrust policies** (with and without LPs)

- deterrence effect BUT
- increase surviving cartels' stability + overall prices

② **Leniency programs**

- strongly increase cartel detection BUT
- do not reduce prices

③ **Rewards for whistleblowers**

- strong deterrence effects AND reduction in prices

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Outline

- 1 Theoretical and Empirical Background
- 2 Experimental Design and Related Studies
- 3 Theoretical Predictions
- 4 Results
- 5 Summary

Theoretical background I

Theory and policy:

- Motta and Polo (2003) and Motta (2004): Leniency have **limited ex ante deterrence** effects. But they assume away the possibility of deviating from the cartel agreement and simultaneously report.
- Rey (2003), Spagnolo (2004), Aubert, Rey, and Kovacic (2006) and Harrington (2008) show that if that **crucial assumption is removed**, leniency can have general deterrence effects.
- Spagnolo (2004) also shows that **rewards** could in principle deliver the first best.

Theoretical background II

Empirical evidence:

- Brenner (2009) and Miller (2009) **empirically test for the deterrence effects** of leniency programs.
- Whinston (2006) stresses that the final goal of competition policy is not a reduction in the number of cartels, but **low prices**.
- Sproul (1993) finds that prices rise during the years following an indictment.

Outline

- 1 Theoretical and Empirical Background
- 2 Experimental Design and Related Studies
 - treatments
 - stage game
 - payoffs
 - related studies
- 3 Theoretical Predictions
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Experimental design

- **Differentiated Bertrand duopoly**
- Possibility to **form a cartel** by discussing the lowest acceptable price before setting the price
- Possibility to **report** the cartel **before (secretly)** and **after** the chosen prices become public information
 - consequences of reporting: treatment variable
- **in(de)finitely repeated game:**
 - **15% of probability of being re-matched** at each period
 - at least 20 periods, then **15% probability of termination**.

Treatments

Treatment	fine (F)	probability of detection	report	report's effects
L-Faire	0	0		
Fine	200	0.10		
Leniency	200	0.10		
Reward	200	0.10		

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Stage Game

- ① Communication decision (Yes/No): *simultaneous*
- ② Communication: *exchange price signals for 30 secs.*
- ③ Pricing (0-12): *simultaneous*
- ④ First possibility of reporting (Yes/No): *before knowing competitor's price*
- ⑤ Information about prices and 2nd possibility of reporting (Yes/No)
- ⑥ Detection
- ⑦ Summary

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treatment L-Faire: steps 4, 5, 6 missing.

Payoff table and myopic best replies

		your competitor's price												
		0	1	2	3	4	5	6	7	8	9	10	11	12
your price	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	29	38	47	56	64	68	68	68	68	68	68	68	68
	2	36	53	71	89	107	124	128	128	128	128	128	128	128
	3	20	47	73	100	127	153	180	180	180	180	180	180	180
	4	0	18	53	89	124	160	196	224	224	224	224	224	224
	5	0	0	11	56	100	144	189	233	260	260	260	260	260
	6	0	0	0	0	53	107	160	213	267	288	288	288	288
	7	0	0	0	0	0	47	109	171	233	296	308	308	308
	8	0	0	0	0	0	0	36	107	178	249	320	320	320
	9	0	0	0	0	0	0	0	20	100	180	260	324	324
	10	0	0	0	0	0	0	0	0	0	89	178	267	320
	11	0	0	0	0	0	0	0	0	0	0	73	171	269
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Bertrand

Joint profit maximizing

Related Studies

Apesteguia-Dufwenberg-Selten (ET 2007)

- one-shot Bertrand game with homogeneous product. Fine 10% of revenues → standard antitrust is only a useful threat

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- repeated version of Apesteguia et al.'s game, no Bonus/Rewards.

Three main differences in our experiment

- differentiated good and fixed fine → reporting w.o. leniency is costly
- effects of rewards in the repeated game
- stochastic rematching → ex-ante vs ex-post deterrence
- “secret” reporting allowed

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 - secret vs. public reporting
 - reporting, deterrence and prices
- 4 Results
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Secret vs. Public reporting

The IC constraint depends on when reporting can take place

- IC constraint with **public** reporting **only**:

$$\text{collusive profits} \geq \text{deviation profit} + \text{price war profits}$$

- IC constraint with **secret** reporting:

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Secret reporting: protection from fines

Public reporting: punishment/threat

Theoretical Predictions

Reports:

- First (**secret**) reports: simultaneous to deviations in *Leniency* and *Reward*
- Second (public) reports: never used

	L-faire	Fine	Leniency	Reward
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IC-constraint:
 stability:
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detection:			- - -more frequent-	- - - >

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- 2 Experimental Design and Related Studies
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- 4 **Results**
 - experimental procedure
 - deterrence
 - prices
 - enforcement effect
- 5 Summary

Experimental Procedure

Computerized Experiment, programmed and conducted with Z-tree.

- run at the Stockholm School of Economics and at the University of Tor Vergata (Rome)
- **326** undergraduate students from the Faculties of Economics and Engineering.
- sessions lasting on average **2 hours**, including instructions and payment.
- average payment: about **24 Euro**

Before starting the real game, subjects were allowed to play **5 practice rounds**.

Reports, Deterrence and Detection

- **Reports:**

- ① subjects understood incentives linked to rewards
- ② but public reports used in *Fine*

- **Deterrence:** *Fine* and *Leniency* increase deterrence; *Reward* seems to reduce deterrence r.t. *Leniency*.

- **Detection:** significant increase in *Leniency* and *Reward*

	Fine	Leniency	Reward
Rate of First Reports <i>given own price deviation</i>	0.002	0.704	0.905

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	Fine	Leniency	Reward
Rate of First Reports <i>given own price deviation</i>	0.002	0.704	0.905
Rate of Second Reports <i>given only rival deviated</i>	0.286	0.481	0.333

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Rate of:	L-Faire		Fine		Leniency		Reward
Comm. att.	0.835	>***	0.566	>***	0.377	<***	0.484
Cartel form.	0.716	>***	0.315	>***	0.178	≈	0.220
Reporting	—	—	0.092	<***	0.507	<***	0.937
Succ. cartel form.	0.226	>***	0.112	>*	0.053	>***	0.017

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- **Average prices:** highest in *Fine*. Only in *Reward* prices are lower than in *L-faire*.
- **Cartel prices:** *Fine* and *Leniency* increase cartel prices.
- **Price deviations:**
 - ① *Fine* and *Leniency* reduce the frequency of price deviations
 - ② *Reward* increase it

	L-Faire		Fine		Leniency		Reward
Average price	4.917	<*	5.349	>***	4.845	>*	3.973
Cartel price	4.971	<***	6.144	<***	7.024	>***	5.339
Rate of price dev.	0.564	>***	0.424	≈	0.373	<***	0.782

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Enforcement effect

High prices in *Fine* and *Leniency*. Three explanations:

- ① **selection** → defectors deterred
- ② **coordination** → higher agreed upon price
- ③ **enforcement** → fear of harsh punishment ↓ deviations

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- Additional treatment: *Fine* with no reporting:
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In *Leniency*: threat of price wars (profits: 118.8 vs. 159.5)

- Strong post conviction desistance [▶ plot](#)

Wrap-up

Bertrand price game with

- differentiated goods
- uncertain end and stochastic rematching
- “illegal” communication + alternative antitrust schemes

We find that:

- **antitrust w.o. leniency** → deterrence + high cartel prices. Reporting used as a punishment device.
- **leniency** → higher deterrence but surviving cartels more stable, and higher cartel prices.
- **leniency with rewards** → cartels systematically reported and low prices.
- **enforcement** effect → most plausible cause of high prices in *Fine* and *Leniency*

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- uncertain end and stochastic rematching
- “illegal” communication + alternative antitrust schemes

We find that:

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- **leniency** → higher deterrence but surviving cartels more stable, and higher cartel prices.
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Wrap-up

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Thank You

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Bibliography I

Apesteguia, J., M. Dufwenberg, and R. Selten (2007).
Blowing the Whistle.
Economic Theory 31(1), 143–166.

Aubert, C., P. Rey, and W. Kovacic (2006).
The impact of leniency and whistle-blowing programs on
cartels.
International Journal of Industrial Organization 24(6),
1241–1266.

Bibliography II

Brenner, S. (2009).

An Empirical Study of the European Corporate Leniency Program.

International Journal of Industrial Organization 27(6), 639–645.

Dal Bó, P. (2005).

Cooperation under the Shadow of the Future: Experimental Evidence from Infinitely Repeated Games.

American Economic Review 95(5), 1591–1604.

Dal Bó, P. and G. Fréchette (2011).

The Evolution of Cooperation in Infinitely Repeated Games: Experimental Evidence.

American Economic Review 101, 411–429.

Bibliography III

Harrington, J. E. (2008).

Optimal Corporate Leniency Programs.

Journal of Industrial Economics 56(2), 215–246.

Hinloopen, J. and A. Soetevent (2008).

Laboratory Evidence on the Effectiveness of Corporate Leniency Programs.

The RAND Journal of Economics 39(2), 607–616.

Miller, N. (2009).

Strategic Leniency and Cartel Enforcement.

American Economic Review 99(3), 750–768.

Bibliography IV

Motta, M. (2004).

Competition Policy: theory and practice.

Cambridge,UK: Cambridge University Press.

Motta, M. and M. Polo (2003).

Leniency Programs and Cartel Prosecution.

International Journal of Industrial Organization 21(3),
347–379.

Rey, P. (2003).

Toward a Theory of Competition Policy.

In M. Dewatripont, L. Hansen, and S. Turnovsky (Eds.),
*Advances in Economics and Econometrics: Theory and
Applications: Eighth World Congress*, Chapter 3, pp.
82–132. Cambridge University Press.

Bibliography V

Spagnolo, G. (2004).

Divide et Impera: Optimal Leniency Programs.

CEPR Discussion Paper No. 4840.

Sproul, M. (1993).

Antitrust and Prices.

The Journal of Political Economy 101(4), 741–754.

Whinston, M. (2006).

Lectures on antitrust economics.

MIT Press.

Recidivism

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% of cartels re-established after conviction

