

Research Project Dnr 119/2006 project
"Experimental Analyses on cartel deterrence"

SUMMARY

The current debate on Anti-trust policy. An efficient and successful antitrust policy against cartels should have *ex ante deterrence effects* that keep low both the costs of prosecution and those of price fixing activities. Leniency programs that reduce sanctions for cartel members that self-report to the competition authority have been introduced in most OECD countries and have become the main tool for cartel discovery and prosecution. Such programs have increased dramatically the number of cartels detected and convicted, and this is why they are considered a tremendous success. A higher number of detected and prosecuted cases, however, is not always a good indicator of the effectiveness of Anti-trust policy. For example, an extremely lenient policy that reduces fines to almost all parties of discovered cartels in exchange for information will enormously facilitate prosecution and generate many spontaneous reports. Such a policy is likely to heavily damage society by at the same time (i) encouraging cartel formation through the drastic reduction in expected fines that such a overly lenient policy generates, and (ii) increasing the cost of prosecution (by the higher number of prosecuted cartels, given that prosecution costs are a pure deadweight losses for society).

Purpose. This research project examines the deterrence effects of antitrust fines, leniency programs, and reward schemes for whistle-blowers. In particular we focus on how monetary fines, leniency programs, and reward schemes against price fixing cartels affect market participants' decision to form cartels (cartel deterrence) and their price choices. We also analyse how different design of antitrust policy may affect firms' ability to enter in tacit collusive agreements. The main questions raised in this research project are, therefore, the following:

1. What are the effects of traditional antitrust law enforcement, fines following successful investigations of the competition authority but no leniency, on cartel formation and on pricing behaviour in and outside the formed cartels?

2. What are the effects of introducing a leniency program when reporting the cartel? Does it make a difference if the report is secret or not? Do things improve when expected fines are higher, or when the ringleader is banned from leniency as in the US (but not in the EU)? Is the possibility to report used as improved opportunity to undercut the cartel, or as a threat to punish defectors and thereby stabilize cartels, or both?

3. What are the effects of rewarding the first party that applies for leniency with a bonus equal to the fines paid by the co-conspirators in that cartel? Also, do agents exploit the reward scheme taking turn in reporting and cashing the reward when the scheme is too generous and makes this a profitable option?

4. What are the effects of these different law enforcement instruments on agents' choice of collusive price and on their ability to sustain tacit collusion, given the importance of this issue in the recent debate?

5. What are the interaction between fines' stake and probability of being caught? In particular do higher fines increase the effectiveness of leniency policies by increasing strategic risk?

Approach. Only discovered and prosecuted cartels are usually available for analysis and many design features of the proposed and theoretically analyzed schemes have never been implemented in reality. This intrinsic lack of observability and the possibility to compare different law enforcement policies in the same setup justify our experimental approach. We consider an experimental framework, as close as possible to the agents' strategic situation in an oligopolistic industry subject to current antitrust laws. Subjects play a repeated Bertrand price game with differentiated goods and can decide to coordinate on price (and thus they form a cartel). We consider several treatments different in the probability of cartels being caught, the level of fine, the possibility of self-reporting (and not paying a fine), the existence of a reward for reporting, the option to communicate, and cartel leaders access to leniency. Our experiment took place in March, April, May, November and December 2007 at the Stockholm School of Economics (Sweden) and at Tor Vergata university (Rome, Italy). *817 students* (as subjects) participate.

Summary of the results.

(1) We find that *traditional antitrust law enforcement*, fines following successful investigations of the competition authority and no leniency, has a deterrence effect (reduces the number of cartels formed) but also has a pro-collusive effect (increases collusive prices).

(2) *Leniency programs* might not be more efficient than standard antitrust enforcement, since they do deter a significantly higher fraction of cartels from forming, but they also induce higher prices in cartels that are not reported.

(3) With *rewards for whistle blowing*, instead, cartels are systematically reported, disrupting completely subjects' ability to form cartels and to sustain high prices.

(4) Also, we find that when the *reward scheme is 'wrongly designed'* in the sense that can be exploited, in our case by completely eliminating the risk of being fined at no cost, subjects do not recognize the possibility to manipulate and gain from the scheme, a result in line with recent experiments in other fields.

(5) If the *ringleader* is excluded from the leniency program, as under the US leniency policy, the deterrence effect of leniency falls and prices are higher than otherwise.

(6) We also analyze *tacit collusion*, and find that under standard antitrust enforcement or leniency programs, subjects who do not communicate (do not go for explicit cartels) choose significantly higher prices than where there is no anti-trust enforcement whatsoever. This is not the case anymore when reward schemes are introduced.

(7) We also find results about the *conditions to have a cartel to be formed*. The sum of the fines paid and participants' willingness to cooperate are negatively correlated. Moreover communication rates drop after conviction.

(8) Finally we show that *strategic risk* and *availability heuristic* play a role in explaining our results.

Contribution. Only few studies have looked at these issues experimentally. Moreover, this research project is the first one to cover the important policy issues that mentioned above. In particular we find new results on secret reports, reward schemes, the interaction between fines, leniency and deterrence and tacit collusion. Moreover such results appear to be also relevant to the analysis of many other forms of multi-agent organized crime -- corruption, auditor-manager collusion, corporate crime in general -- which share with cartels some crucial features that well designed law enforcement programs may exploit.

Output. Two papers have been written in collaboration with Maria Bigoni, Sven-Olof Fridolfsson and Giancarlo Spagnolo

1. "Fines, Leniency, Rewards and Organized Crime: Evidence from Antitrust Experiments"
2. "Risk Aversion, Prospect Theory, and Strategic Risk in Law Enforcement: Evidence From an Antitrust Experiment"