

# ANTITRUST SANCTION POLICY IN THE PRESENCE OF LENIENCY PROGRAMS

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Fighting cartels requires the design of an effective and efficient sanction policy. The debate around this issue has mainly focused on the choice between imprisonment and pecuniary sanctions and has highlighted the pros and cons of both types of sanctions. The prominent reason for introducing criminal sanction in the form of imprisonment is that the optimal fine computed according to the standard “Beckerian” approach is likely to be above the firms’ ability to pay so that, without imprisonment, either sanctions are too low or they are likely to yield the undesirable outcome to force some firms out of the market, maybe bringing a reduction in the degree of competition. This argument has some merits although, in this simple form, overlooks some important facets. In this short paper we can not discuss the many subtle issues that need to be addressed for a comprehensive analysis of the optimal choice between imprisonment and pecuniary sanctions<sup>1</sup>.

We limit ourselves to discuss one important and too often neglected issue that has a dramatic impact on the whole debate: how the introduction of leniency programs and, a fortiori, of whistleblower protection and reward schemes, changes the way an optimal sanction policy has to be designed<sup>2</sup>. To get the reader straight to the main point of our paper, we clarify that leniency programs introduce and exploit a new form of deterrence which is completely different from that associated to all the other sanctions both pecuniary or non-pecuniary. In a nutshell: the latter aim at deterring an illegal conduct by modifying the “participation constraint” of the potential offender, that is they increase the (expected) cost of behaving illegally; leniency programs, on the contrary, may prevent the formation of a cartel (or of any multi-agent crime) by modifying the “incentive constraint” of the potential offender; that is, they increase the (opportunity) cost of sticking to the “agreement” that keeps together the criminal team by tempting them with better conditions in case they betray their partners. Although this distinction may seem obvious at first glance, the legal and economic literature has failed to understand its profound implications until some very recent work, showing how deeply misleading could be to continue using the “Beckerian” method to calculate an optimal fine in presence of leniency programs. When leniency programs are in place, as they are in most advanced jurisdictions, the whole debate need to be revised in the light of the results of these recent contributions.

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<sup>1</sup> The interested reader can consult Buccirossi and Spagnolo [2007a, 2007b] for richer discussions of this and related issues.

<sup>2</sup> In the reminder of the paper we will often talk generically about leniency programs, meaning also whistleblower protection and reward schemes.

The paper is organized as follows. In Section 2 we summarize the relevant features of a fining policy when leniency programs are absent. We also report the main results of a numerical simulation we have run to identify the value of the optimal fine in such a setting. In Section 3 we discuss in some details the novel deterrence effects brought about by leniency programs. We describe the potential magnitude of these effects by showing how they change the level of the optimal fine as computed in our simulations. In Section 4 we conclude with some words of cautions.

## I. Fines in the Absence of a Leniency Policy

The modern economic literature on optimal law enforcement starts with the seminal work of Becker [1968], and almost entirely shares its original focus on single, isolated criminal acts undertaken by single, isolated individuals (see Policky and Shavell, [2000], for a recent and comprehensive survey). One of the main points made by this literature is that not all crime should be deterred. “Efficient deterrence” requires not to deter crimes that produce more benefits than harm (a highly questionable conclusion in our view), nor crimes whose harm is not much larger than benefits, so that the cost of deterring them (police, judges, etc.) is higher than its benefit for society. Landes [1983] applies first these ideas to cartel deterrence, where the benefits from the crime are collusive profits plus any cost saving or quality improvement generated by the cartel, net of any cartel enforcement expenditure; while the harm is the consumer surplus lost because of the higher price.

As for the choice between monetary fines and imprisonment, in this literature fines are regarded as transfers that – apart from minor administrative costs – do not reduce social welfare, while imprisonment directly reduces social welfare by the cost of prisons and the lost production from the imprisoned individuals. Because of this, the general policy implication of these analyses is that administrative enforcing mechanism like fines should be exploited as much as possible, and only when this is done and there is still under-deterrence one should consider whether costly imprisonment should also be introduced (see e.g. Werden and Simon, [1987]). An analogous “fines first” argument made in Becker [1968], is that since crime

deterrence depends on expected sanctions – the sanctions multiplied by the probability of being convicted – and increasing the probability of conviction is more costly to society than increasing fines, then fines should always be set maximal. This basic argument, that goes back at least to Beccaria [1763], has been qualified in several ways by researchers working in this field, most fundamentally in relation to law enforcement errors, but it rightly remains a robust pillar for any debate on optimal law enforcement.

Many antitrust commentators appear convinced that the harm caused by ‘hard core’ cartels is always greater than the benefits they may induce. If, for simplicity, we accept this view and the conventional assumptions that fines are socially costless, in contrast to imprisonment, then the only implications for antitrust sanction policy would be that i) costly imprisonment should not be introduced before having exploited all the potential of fines (and other purely administrative mechanisms), and ii) antitrust fines should be set at the maximal level to save on inspection costs.

While i) is a robust indication, an implication of ii) is that the fines for firms that engage in cartels need not be related to their illicit gains or to the harm they caused, they just need to be maximal to foster cartel deterrence at minimum investigation and prosecution cost. This implication contrasts with the actual fining policy in most jurisdictions, which typically sets exogenous ceilings to maximum fines and tries to relate fines to the consequences of the cartel. This contrast may be explained by two additional concerns, related to the firms’ ability to pay and to the presence of legal errors and of positive costs of fines.

Caps on maximal fines are commonly justified by the concern that firms may go bankrupt and disappear from the market because of antitrust fines. Too high fines that put at risk firms ability to continue produce and (hopefully) compete in the future may be seen as against the very objective of antitrust, ensuring lively competition among a sufficient number of operators.

Stated in this general way, which is how it is usually put forward in the antitrust debate, this argument is more wrong than right. Here are a number of qualifications that must be taken into account.

First, if fines are too low they have no deterrence effect at all, and it is not clear whether risking to drive some firms bankrupt with a fine, which does not imply that the firm will exit the market (see below), is more or less costly than an antitrust law enforcement activity that brings no benefit to society.

Second, for political reason no existing jurisdiction sets fines that could affect firms’ survival possibilities, and this may be a big problem as we explain at the end of this list<sup>3</sup>.

Third, antitrust law exists to deter cartels in all industries. If fines with deterrence effects provoke the bankruptcy of some members of a convicted cartel that were in a particularly bad financial situation, they may temporarily decrease the number of firms in that particular industry, at the same time, they may have increased competition through *ex ante*, general deterrence in many other industries.

Fourth, if bankruptcy procedures are efficient, and they can be efficient if the legislation is designed and enforced in the proper way, the impact on competition of the bankruptcy of convicted cartel members may be small, or even positive, as the firms driven bankrupt by a fine are economically sound and can therefore be sold to new owners who can use the same assets to compete<sup>4</sup>.

Finally, linking the fine to a firm’s ability to pay to avoid bankruptcy entails the risk of inducing firms to issue more debt, so that the level of the apparent ability to pay and expected fines fall, and so does deterrence. This policy would add to the social costs of allowing cartels to be sheltered from serious antitrust sanctions, those stemming from firms’ inefficient financial structure.

Of course, given that bankruptcy is typically a costly procedure, all this does not implies that bankruptcy costs should not be appropriately taken into account as a reducing force in the calculation of optimal antitrust fine.

The second feature of the current fining policy, i.e. the principle of proportionality, has a clear economic explanation if one rejects the assumption that fines are socially costless and takes into account that legal errors cannot be completely eliminated. Fines coupled with legal errors deter to some extent socially desirable behavior, like forms of cooperation with other firms whose object and effects are pro-competitive and may be misjudged as collusive. Increasing fines behind what is strictly necessary to deter an illegal conduct when a legal error does not occur, reduces social welfare whenever an error does occur. The optimal level of the fine and of deterrence depends then on the extent to which the expected fine is likely to discourage efficient conducts, and therefore on the frequency with which courts commit errors (“type I” errors, false convictions). If these costs are taken into consideration, the relation between the optimal fine and the harm caused by the illegal behavior reappears.

Given these considerations the optimal fine can be considered the minimum fine with deterrence effects, that is the fine such that the expected gain from participating in the cartel, given by the increase in profits minus the expected fine, is zero. In order to find such optimal fine, one should have information about the competitive price-cost margin, the collusive mark-up, the elasticity of demand and the probability of detection. In Buccicrossi and

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<sup>3</sup> For the US, Craycraft et. al [1997] find evidence that courts reduce fines when a firm’s ability to pay appears low (which makes caps redundant), and that in most cases convicted firms could have easily paid an optimal cartel-detering Beckerian fine from their normal cash flow, while they were imposed fines that were only a fraction of that.

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<sup>4</sup> A good bankruptcy procedure would not lead to the exit of a bankrupt firm from its industry if it is an efficient firm; it would only lead to a change of financial and ownership structure, which may be good new from the consumers’ point of view given that previous owners were directly or indirectly involved in a cartel (or at least were unable to prevent their managers forming it).

Spagnolo [2007b] we have run simple numerical simulations considering some plausible ranges of values for these variables, as suggested by other economic researches (Werden and Simon [1987]; Bryant and Eckard [1991]; Levenstein and Suslow [2002]; Connor [2004]). We found that in the absence of a Leniency Policy, with a demand elasticity between 0.1 and 2 the optimal fine amounts to a value between the 60% and the 40% of the sales made by a firm in the relevant market over the entire period in which the cartel operated successfully. This level of the optimal fine without leniency is likely to be well above the fines normally imposed in most jurisdictions.

## II. Leniency Policies and Optimal Antitrust Fines

Leniency programs reduce sanctions against the first firm or individual that reports information on a cartel he took part to, and goes on cooperating with the law enforcers during prosecution<sup>5</sup>. Typically, only the first party that self reports is eligible to full immunity; the second parties to self-report may still obtain some limited form of leniency; and that the benefits from reporting are higher if the report occurs before an investigation started.

These policies may increase cartel deterrence directly, by inhibiting cartel formation or disrupting an already formed cartel with the fall in “trust” determined by the advantageous conditions they offer to a party that betrays its cartel and reports it to the antitrust authority (Rey [2003]; Spagnolo [2000a, 2004]). It may also deter cartels indirectly, by allowing the antitrust authority to obtain better information from a member of an already detected cartel, increasing the probability of conviction at the cost of a small fine reduction to the party that collaborates (Motta and Polo [2003]). The direct deterrence effects of these programs can be substantially reinforced by offering rewards to the wrongdoer or witness that first blows the whistle<sup>6</sup>.

The presence of a well designed leniency program has a profound and generally overlooked impact on the optimal design and real effectiveness of fines. The most noted consequence of adopting a leniency program is probably the likely increase in the probability of detection and conviction, which has the immediate effect of reducing the optimal fine. This is not, however, the most important effect of a leniency program on fines.

The current debate on the optimal antitrust fines in the US and EU appears still based on the old assumption that, to

have deterrence effects, the sanction should be such that the expected gains from participating to a cartel net of the expected antitrust sanctions are not positive, *i.e.* that the “participation constraint” is violated. This assumption was correct in 1987, when Werden and Simon wrote their excellent piece, but it is fundamentally incorrect today, after effective leniency programs have been introduced, first in the US (in 1993) and then in a number of other jurisdictions.

From the modern theory of oligopoly and collusion, starting with Stigler’s [1964] seminal analysis, we know that cartels are successful in restricting competition only if participants can be monitored and deterred from stealing each other’s business by violating the collusive agreement and secretly undercutting the agreed cartel price. To enforce the collusive agreement a cartel must threaten credible retaliation against “betrayers” that undercut it, typically the starting of a price war or the exclusion from valuable common resources. Cartel members will stick to the agreed collusive price or market allocation division only if the expected loss from being punished by partner cartel members in the future is larger than the gain from cheating/secretly undercutting the agreed cartel price and stealing others’ customers today. This condition, called “incentive compatibility” or “self-enforcing” constraint, must necessarily be satisfied for a cartel to be sustainable. Several recent papers on optimal fines against cartels overlook this crucial novel aspect, by large the most important aspect when one wants to deter oligopolies and similar forms of multi-agent crime<sup>7</sup>. Both members’ participation and incentive constraints must be satisfied for a cartel to be viable, and the cartel is deterred if at least one of the two is violated. However, the “incentive constraint” requires net expected profits from participating to the cartel to be sufficiently large to outweigh the temptation to undercut the cartel today. The “participation constraint” on which the traditional theory of law enforcement focuses, instead, only requires that the net expected profits from entering a cartel are positive. This means that the “incentive constraint” is always more stringent than the “participation one”, and that only the “incentive constraint” matters for both, cartel stability and cartel deterrence. When the “incentive constraint” is satisfied, the “participation constraint” is also automatically satisfied, and when the “incentive constraint” is violated the cartel is deterred, independent of the “participation constraint”, that becomes therefore irrelevant.

Given that the “incentive constraint” is the relevant one, a cartel can be deterred by increasing expected fines, as usual, but also by increasing individual members’ incentives to undercut/betray their cartel. One can increase the fines on firms that respect the collusive agreement, but not on a firm that “betrayed” its cartel by secretly undercutting the agreed price; or, one can lower the sanction on cartel “cheaters”, but not that on other cartel members.

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<sup>5</sup> See Spagnolo [2007] for history and details on leniency policies in antitrust and on similar policies in other fields of law enforcement.

<sup>6</sup> As proposed in Spagnolo [2000a, 2004], Buccirossi and Spagnolo [2001], Kovacic [2001], and Aubert et al. [2004], and successfully done for other forms of multi-agent crime, like government fraud under the US False Claim Act. We believe that the main efficiency enhancing potential of *well designed and implemented* leniency and whistleblower programs is not in terms of improved prosecution, but in their ability to *directly* deter, prevent cartel formation – avoiding costly prosecution altogether – by “undermining trust” among would be conspirators with the threat that one of them could then cheat on partners and self-report, turning the others in.

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<sup>7</sup> Leniency programs were first formally analyzed within an appropriately dynamic model that endogenizes effects on the self-enforcing incentive constraint by Motta and Polo [2003], who focus mainly on their ability to facilitate prosecution.

This novel type of deterrence introduced by leniency programs is not considered in the existing literature on optimal antitrust law enforcement, which typically maintains Becker's [1968] static perspective, with the exception of Camilli [2005]. Optimal fines calculated taking appropriately into account this novel type of deterrence are different and lower than the optimal "Beckerian" fines mistakenly calculated or simulated by most other recent papers on the subject.

This conclusion is confirmed by some numerical simulations. If the leniency program simply waves the fine for the first firm that cheats on the cartels and provides the law enforcer with sufficient information to uncover the infringement, the minimum fine with deterrence effect (that exploits the incentive compatibility constraint) may be about 20% lower than the optimal Beckerian fine.

Leniency policies may be further improved. Following the proposal of Spagnolo [2000a, 2004], Buccirosi and Spagnolo [2001], Kovacic [2001], and Aubert et al. [2005], we could reward the first firm or employee that blows the whistle bringing sufficient hard information to convict a previously undetected cartel with a substantial fraction of the fines levied on all other cartel members. Table 1 below shows the values of the ratio between the minimum fine given the incentive constraint, and the minimum fine given the participation constraint, that we obtain if we reward the whistleblower with the fine imposed on all the other cartel members. This ratio depends on the number of cartel members,  $n$ , and on the proportion in which a firm increases its short run profit in case it deviates,  $d$ . The first row describes a limit case which occurs if the deviation profit are the same as the collusive profits ( $d = 1.0$ ). This case is only theoretical since, by definition, at a collusive profile of strategies (at least some) firms gain from deviating. However it shows that the incentive constraint can be effectively exploited by a properly designed sanction policy even in the (limit) case in which firms do not have any incentive to deviate to start with. The second and the third row describes the cases in which deviation profits are respectively 50% ( $d = 1.5$ ) and 100% ( $d = 2.0$ ) higher than collusive profits. To help the reader interpret the table, consider that the first value of .603 ( $n = 3$  and  $d = 1.0$ ) indicates that the optimal fine with the whistleblower program described above is just 6.3% of optimal fine without any whistleblower or leniency program. The reader can check that the impact of such a novel deterrence mechanism is huge.

**Table 1 -- Ratio between the minimum fine with and without leniency/whistleblowing programs**

d	n = 3	n = 4	n = 5
1.0	.063	.043	.033
1.5	.059	.040	.031
2.0	.056	.038	.029

The values in Table 1 are a valid measure of how effective the policy we described – if well designed and managed – could be relative to standard law enforcement, *i.e.* of how much they could reduce the minimal fine that must be imposed on non-reporting firms to deter cartel formation.

The stunning reduction in the optimal fine comes from the strong, multiplicative effect fines have when they are also used as "carrot", *i.e.* to provide incentives for an individual wrongdoer to "betray" partners undercutting the agreement and reporting it the antitrust authority. The results from these simulations are striking, and yet this is not the end of the story.

These values underestimate the reduction of the optimal fine that is brought about by an efficient use of rewarding whistleblowers because the most publicized effects of leniency programs mentioned at the beginning, the increase (real or perceived) in the probability of getting caught, was not considered in the simulation.

Moreover, besides the deterrence effects included in the simulations linked to the "protection from fines" and "reward" effects (pointed out in Spagnolo, [2000a and 2004]), and the increase in the probability of conviction (pointed out in Kaplow and Shavell, [1994]) not included in the simulation, recent research has identified at least four other types of potential deterrence effects brought about by leniency and whistleblower programs that we did not consider in our simulations, linked to easier prosecution, softer punishments to support cartels, increased "riskiness" of entering cartels, and the possibility that any individual employee could report the cartel (See Spagnolo [2007] for a thorough discussion). Taking these additional effects into account would reinforce the one in our simulation, ensuring that our numbers above are far from being unrealistic in terms of potential relative reduction of the optimal fine.

## Conclusion

Our simulations do not imply that current fines are too large: in fact, we feel that antitrust fines could and should be raised above current levels, though there exist no serious evidence in support of this feeling. Our numbers, however, certainly show that the current legal and economic debate on whether imprisonment is necessary to obtain deterrence in antitrust is grounded on deeply wrong premises, and as any other policy debate grounded on wrong premises risks to be misleading in terms of pointing at the wrong policy (unless the premises are revised).

We would like to conclude with some words of caution. We have been assuming that leniency and whistleblower policies are well designed and well implemented, and this does not come automatically and imply costs. However, careful design and implementation is feasible at limited cost, as the US experience with the Leniency Policies in antitrust and with the Qui Tam reward scheme for whistleblowers of the False Claim Act demonstrate.

Legal errors cannot be eliminated, and with legal mistakes increasing deterrence of illegal acts, however it is done,

may have the undesired effect of deterring firms from undertaking efficient practices that could be mistakenly judged as illegal.

Leniency and whistleblower programs are “high powered” incentive schemes, and as such they must be designed and implemented with great care by expert individuals to produce the dramatic effects on optimal sanctions discussed above. Poorly designed and implemented leniency and whistleblowers’ reward programs, as poorly administered criminal sanctions, have instead the potential to substantially harm welfare.

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