

Agenda

Advancing economics in business

Truth or dare: leniency and the fight against cartels

In 2007 one firm involved in the gas-insulated switchgears cartel escaped a potential fine of €215m by alerting the EU's competition authority to the cartel's existence.¹ Leniency programmes, where cartel participants that inform and assist the authorities are granted immunity from fines, are a central part of cartel enforcement in competition policy around the world. However, despite having led to many successful cartel investigations, there are still questions concerning their effects. Can the new approach of experimental economics provide some insights?

Cartels are arguably the most serious form of anti-competitive activity, and leniency plays a prominent role in the fight against them, as in, for example, the EU's leniency programme.² However, aside from the many successful cartel prosecutions involving leniency, there is limited systematic evidence on the detailed effects of leniency programmes on company behaviour. Indeed, there are also theories that suggest that leniency may potentially have some adverse effects. It would therefore be useful to consider more evidence in order to assess the optimal structure of the rules of leniency

programmes. Economic research has begun to investigate the effects of leniency—however, the covert nature of cartels makes the practical effectiveness of leniency programmes difficult to assess. This article examines what the research has found, and considers a fresh approach based on experimental economics.

The rationale for leniency arises from the incentives on firms to collude and the resource constraints of competition authorities. Firms contemplating involvement in cartels implicitly face the same set of questions.

The EU leniency programme

In 2007 the European Commission fined companies €3.3 billion for cartel activities. However, a number of firms received full or partial leniency from fines under the EU leniency programme.

To obtain full immunity from fines under EU leniency policy, a firm participating in a cartel must, along with cooperating with the authorities' wishes:

- be the first to inform the Commission of an undetected cartel by providing evidence sufficient to allow the Commission to carry out an inspection of the companies allegedly involved; or
- if the Commission has sufficient information to carry out an inspection, or has already undertaken one, the firm must provide evidence that enables the Commission to prove cartel infringement.

Firms not qualifying for immunity may obtain a fine reduction under leniency if they provide information of 'significant added value' to the Commission's existing

evidence for proving infringement. This reduction is a maximum of 50% for the first firm to come forward, and declines for subsequent firms to a maximum of 20%.

In 46 announcements of cartel fines imposed from 2001 to 2007, approximately:

- 9% of cases involved full immunity for one party only;
- 50% of cases involved full and partial immunity;
- 35% of cases involved only partial immunity;
- 7% of cases involved no fine reductions from leniency at all.

Although some form of immunity was granted in most cases, this does not mean that all cartel participants in a case involving leniency benefited from it. Furthermore, full exemption may apply in some instances to a sub-set of the cartel charges faced by an individual firm. (A number of cases are omitted from these calculations due to lack of information, or due to their relating to older fine announcements.)

Sources: European Commission, 'About the Leniency Policy', DG Competition website, accessed January 16th 2008: <http://ec.europa.eu/comm/competition/cartels/leniency/leniency.cfm>; DG Competition press releases and publications of summary decisions on fines in cartel cases; and Oxera analysis.

1. What is the gain for me in colluding?
2. What is the likelihood of being caught and convicted?
3. If convicted, what punishment will I face?

There is an incentive to collude if firms think that the benefit of doing so is greater than the risk and severity of punishment. This has implications for competition authorities wishing to deter collusive behaviour.

Since cartels tend to be covert by nature, the risk of immediate detection may be perceived as low, and an implication may be that punishment for participants should therefore be much greater than the benefits of colluding. In practice, under UK and EU legislation, fines are set at up to 10% of turnover. There is also the potential for damages claims from private actions and, in some jurisdictions, the risk of a custodial sentence for employees participating in cartel activities.³

Authorities can also devote more resources to anti-cartel activities to increase the probability of bringing them to justice. However, the covert nature of cartels, and their multiple members, makes them resource-intensive to detect, investigate, and successfully prosecute. This is a significant issue, since authorities have finite resources, and time and effort devoted to cartels could be spent combating other anti-competitive behaviour.

There is therefore a role for a policy that is able to increase the probability of successful cartel detection, and hence deterrence, while simultaneously helping the competition authority make the best use of its resources. It is this that leniency seeks to achieve, as illustrated in Figure 1.

To survive, cartels have to overcome the natural instability that arises from each member's incentive to

undercut the cartel's price in order to increase sales, and leniency helps introduce an additional destabilising dynamic. Where the first cartel members to admit, and provide evidence of, involvement are able to avoid part, or all, of the punishment, leniency gives each cartel member an incentive to be the first to inform the authorities.

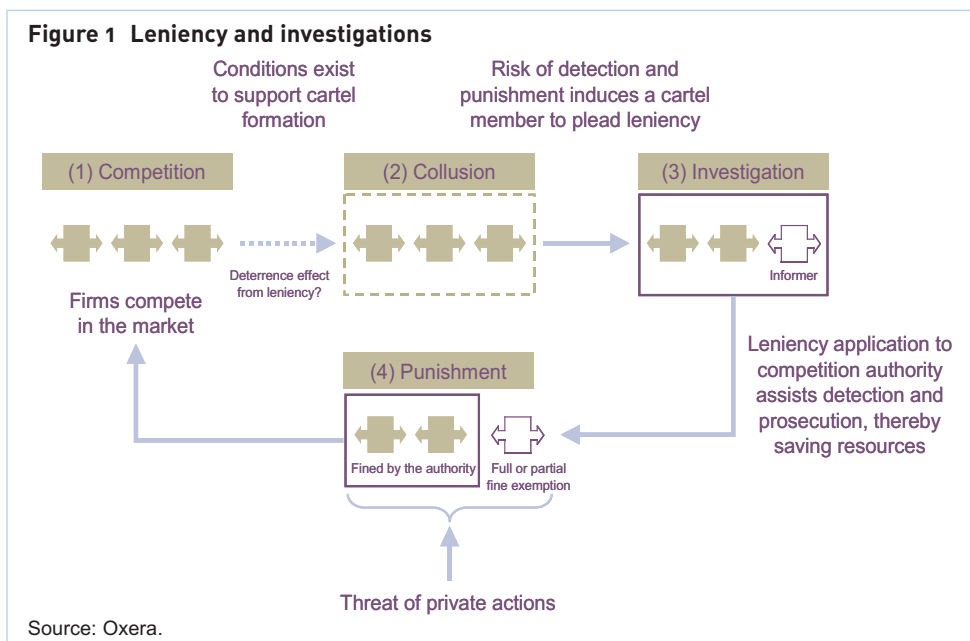
As leniency applications provide the authority with the information to help prove cartel activity, they have the benefit of reducing the cost of investigation and successful prosecution. This is also an argument for allowing leniency applications *after* investigations have started, as occurs in the EU, if it enables the authority to achieve a successful outcome more efficiently.

Leniency also encourages companies to keep evidence of cartel involvement that they might otherwise be tempted to destroy. A firm with limited documentation of its cartel participation will risk being unable to secure leniency, or obtaining it on less favourable terms, and therefore, to keep its options open, will be more likely to retain incriminating material.

Ultimately, these factors should increase the probability of cartel detection and hence deter cartel formation in the first place.

Insights from game theory

Supplementing the intuitive arguments for the use of leniency, economists have been developing mathematical models of the strategic interactions between cartel members, using game theory. These are simplifications of reality, but have an advantage over intuitive explanations in that their logic is very explicit and can therefore clarify thinking and expose hidden assumptions. In addition to providing support for some of



the intuition behind cartel leniency, this work has led to a number of findings.

- Even if a leniency programme fails to deter cartel formation, it may still be beneficial through lowering the price that it is possible for cartels to sustain above a normal competitive level without collapsing.⁴ Achieving this may lower the detriment of cartels for consumers.
- There is an argument that the first party applying for leniency should be rewarded from the fines collected.⁵ The intuition for this is that such rewards make leniency applications particularly attractive and hence undermine cartel stability to a greater extent than fine exemptions. In the case of encouraging individual whistle-blowers, this may be particularly relevant given the potentially detrimental effects that it can have on their careers. However, aside from the ethical questions that may arise as a result of rewarding collusive activities, there is also seen to be a risk of encouraging speculative applications that could waste authorities' time.
- There is a risk that leniency can result in undesirable effects. Since it may lower the expected costs to firms of participating in cartels, leniency may, under certain economic assumptions, lead to an increased probability of cartel formation.⁶

Theory aside, leniency policies ultimately have to work in the real world. However, there are practical difficulties in assessing their effectiveness.

From theory to empirical analysis

A challenge facing the assessment of any policy is the analysis of what would have happened in its absence. For example, with government schemes to get the unemployed into work, the question is whether a successful jobseeker would have got a job anyway without assistance. With anti-cartel policies, however, there is the more fundamental problem that, not only is the counterfactual not directly observable, but the policy's detection and deterrence effects are on the unknown number of current and prospective cartels. What is observed are investigations, the cartels that are discovered, and the punishments imposed.

The assessment of evidence is directly related to the interaction of detection and deterrence effects. If only a few cartels are discovered this could be due to effective deterrence; however, it is also consistent with poor detection and a large number of undiscovered cartels. One hypothesis might be that, following the introduction of leniency, the number of cartels detected will rise and then fall, as the increased detection rate leads to

eventual deterrence. Alternatively, if leniency has perverse effects, the number of cartels detected may increase, but will not fall subsequently due to the failure of deterrence. However, as the number of cartels is unknown, it is difficult to adjust for factors driving cartel formation and detection independently of the competition framework, in order to distinguish between these two scenarios.

In assessing the detection effect there is also a self-selection issue to disentangle. Cartel members are more likely to make pre-investigation leniency applications if detection is probable, and therefore may belong to cartels that are close to discovery anyway. For example, with international cartels, their discovery in one jurisdiction can lead to them pleading leniency in another. However, even if this effect were pronounced, there is still an argument for a leniency policy on the basis that it helps save resources in investigations.

Empirical studies have focused on how cartel investigations have differed according to the extent to which they involved leniency, and the effects of a change in leniency policy. There have been few empirical studies to date on EU cartel leniency.⁷ These focus on the effects of the introduction of the leniency programme by the Commission in 1996.⁸

The studies find some evidence that duration of investigations, which is a proxy for their cost, has been reduced as a result of leniency.⁹ Fines in cartels that made use of the leniency programme have been found to be higher, which, Brenner (2005) argues, could be because leniency allows DG Competition to construct a more robust case. However, once the fine reductions for leniency are applied, this effect is much less pronounced. Arlman (2005) found that the duration of cartels involving full immunity leniency was longer than those involving partial immunity, suggesting that leniency helps uncover hard-core cartels. The number of cartels uncovered per year increased substantially after the introduction of leniency in 1996, although neither Brenner nor Arlman, using different methods to proxy for it, finds conclusive evidence of a deterrence effect. However, this may reflect the difficulty of assessing this issue. Stephan (2005) finds that nearly three-quarters of cartel cases that the Commission opened between 1996 and early 2005 as a result of leniency applications under the 1996 Notice were also, or had been, under investigation in the USA, which may indicate that a significant proportion were already discovered or close to detection.

Arguably, the party best placed to analyse the effectiveness of a leniency programme is the competition authority itself, given its overview of the relevant

information on the programme and cost of cartel investigations. However, no in-depth public study of leniency has yet been produced, or commissioned, by an authority, at least at the UK and European Commission level.

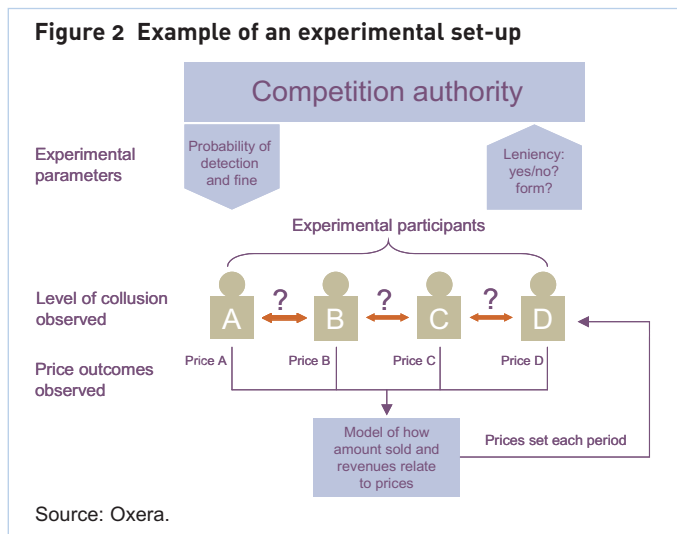
Back to the laboratory?

Given the difficulties of analysing anti-cartel policies, a tool that is increasingly used by economists—the experimental study—is being applied to provide new insights. Participants of experimental studies make decisions in a controlled setting in return for rewards. The results are monitored electronically and the controlled environment enables multiple trials of the same scenario, allowing a picture of typical behavioural responses to be built up. The participants (usually students) are tested to ensure that they understand the rules of the experiments, and results may be linked to a financial reward, ensuring that they have a stake in the outcome. This kind of approach is growing in popularity in economics, and there are a number of laboratories that are dedicated to undertaking such research.

An experimental setting allows the creation and stability of cartel behaviour to be known and monitored under different anti-cartel policies. In experimental cartel studies, participants usually take the roles of firms setting prices at intervals over time, as shown in Figure 2. The revenues received are determined according to economic models of how sales by competing firms respond to the prices they set. Participants are given the ability to discuss price-setting among themselves in a structured way so as to allow the possibility of collusion. The role of the competition authority is introduced by having a certain probability of detection and fine imposition. This can be supplemented by offering the opportunity of leniency, where a proportion of fines will be waived. Over many experimental trials this allows a picture to be built up of how prices and cartel formation differ according to the probability of detection and the scale of the fine, with or without different forms of leniency.

Although a relatively new methodology in economic research, experimental studies have found the following.

- Introducing leniency has the effect of reducing cartel stability and prevailing prices.¹⁰ Hinloopen and Soetevent (2006) found prices to be lower as leniency reduced cartel formation, increased defection by cartel members, and an increased price cut implemented by them on leaving the cartel. Apestegua, Dufwenberg and Selten (2006) observed that prices under leniency



did not differ significantly from those measured when price collusion was impossible.

- Hinloopen and Soetevent (2006) found that leniency did not reduce the probability of previously broken-up cartels reforming; however, increasing the probability of cartel detection did have that effect.
- A strategy that has not been found to perform well is that of rewarding the first leniency applicant, which, when studied, was shown to lead to the largest number of cartels being formed of any of the anti-cartel policies examined (Apestegua, Dufwenberg and Selten, 2006). The prices observed were higher than those with normal leniency, but not significantly different from those in the scenario without a leniency policy.
- Cartels involving seven players (the estimated average cartel size is six firms) have been found to be unstable when there is an anti-cartel regime with a leniency policy.¹¹
- Changing whether the fine reduction was available to the first firm coming forward, or to many, was not found to affect the stability of cartels (Hamaguchi and Kawagoe, 2005).

Summary and conclusions

The rationale for leniency is that it allows competition authorities to use their resources most effectively in detecting and prosecuting cartels, which would otherwise be resource-intensive to pursue due to their covert nature. In the EU, leniency is an important part of many successful investigations of cartels. The research findings on leniency programmes are as follows.

- Theoretical analysis indicates that a potential benefit of leniency is that it reduces the prices that cartels can sustain. However, it also suggests that there may be a risk of perverse effects from leniency, and raises the question of whether there is a role for rewarding the first leniency applicant in a cartel from the fines collected (the ‘reward hypothesis’).
- Empirical assessment of cartel leniency is difficult owing to the policy affecting the unknown pool of current and potential cartels. The few empirical studies of the EU leniency programme indicate benefits from its use. However, they have found it hard to establish a deterrence effect.
- Experimental economics helps to address the policy-assessment problem caused by cartel behaviour being unobservable. To date, its findings are broadly supportive of the effectiveness of leniency against cartels. It indicates that leniency undermines

cartels and reduces prices, but has not supported the reward hypothesis.

The assessment of leniency policies raises challenging questions, and further research in this area would be beneficial. One question in this regard concerns the effects of the interaction of leniency with private competition enforcement. Although leniency may allow cartel participants to escape fines from competition authorities, it does not immunise them against the risk of follow-on private damages actions. Virgin Atlantic recently escaped a fine for its part in a fuel price-fixing arrangement with British Airways (BA) through pleading leniency, while BA was given a £121.5m fine from the UK Office of Fair Trading and a \$300m fine from the US Department of Justice.¹² However Virgin, along with BA, is now facing the risk of a private damages action.¹³ It remains to be seen how the effectiveness of leniency programmes will be affected by the risk of follow-on damages claims.

¹ Commission Decision relating to a proceeding under Article 81 of the EC Treaty and Article 53 of the EEA Agreement, Case COMP/F/38.899 – Gas Insulated Switchgear (2007).

² In the USA leniency is also referred to as an amnesty policy.

³ See, for example, *Agenda* (2007), ‘Coup de Grâce? Private Actions for Damages in Europe’, May. Available at www.oxera.com.

⁴ Chen, J. and Harrington, M. (2005), ‘The Impact of the Corporate Leniency Program on Cartel Formation and the Cartel Price Path’, in V. Ghosal and J. Stennek (eds) (2007), *Political Economy of Anti-trust*, Elsevier.

⁵ Spagnolo, G. (2004), ‘Divide et Impera: Optimal Leniency Programmes’, working paper 4840, Center for European Policy Research.

⁶ Motta, M. and Polo, M. (2003), ‘Leniency Programs and Cartel Prosecution’, *International Journal of Industrial Organisation*, **21**; and Chen, J. and Harrington, M. (2005), *op. cit.*

⁷ Arlman, S. (2005), ‘Crime but No Punishment’, Masters thesis, Universiteit van Amsterdam; Brenner, S. (2005), ‘An Empirical Study of the European Corporate Leniency Program’, Humboldt University; and Stephan, A. (2005), ‘An Empirical Assessment of the 1996 leniency Notice’, Centre for Competition Policy working paper 05-10.

⁸ Since the introduction of Leniency by the European Commission’s 1996 Notice, there have been two further Notices clarifying and amending parts of the scheme: in 2002 and 2006. 1996 Commission Notice on the non-imposition or reduction of fines in cartel cases, OJ C 207, 18.07.1996, pp. 4–6; 2002 Commission Notice on immunity from fines and reduction of fines in cartel cases, OJ C 45, 19.02.2002, pp. 3–5; and 2006 Commission Notice on immunity from fines and reduction of fines in cartel cases, OJ C 298, 8.12.2006, p. 17.

⁹ Arlman, S. (2005), *op. cit.*, and Brenner, S. (2005), *op. cit.*

¹⁰ Apesteguia, J., Dufwenberg, M. and Selten, R. (2006), ‘Blowing the Whistle’, *Economic Theory*, **31**, 143–166; and Hinloopen, J. and Soetevent, R. (2006), ‘Trust and Recidivism: The Partial Success of Corporate Leniency Programmes in the Laboratory’, Tinbergen Institute Discussion Paper.

¹¹ Hamaguchi, Y. and Kawagoe, T. (2005), ‘An Experimental Study of Leniency Programs’, RIETI discussion paper.

¹² Office of Fair Trading (2007), ‘British Airways to Pay Record £121.5m Penalty in Price Fixing Investigation’, press release, August 1st; and Department of Justice (2007), ‘British Airways plc and Korean Air Lines co. Ltd. Agree to Plead Guilty and Pay Criminal Fines Totaling \$600 Million for Fixing Prices on Passenger and Cargo Flights’, press release.

¹³ *Gornik v. British Airways PLC, Virgin Atlantic Limited and John Does I–X*; Class Action Complaint, Case No. 1:06CV03139 (SLT) (E.D.N.Y) 2006.

If you have any questions regarding the issues raised in this article, please contact the editor, Derek Holt: tel +44 (0) 1865 253 000 or email d_holt@oxera.com

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