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## Introduction

This paper will assess the strength of the statement 'Offering leniency to companies reporting price-fixing cartels has been a success. Corporate leniency has been the main factor behind the end of price-fixing cartels which caused significant harm to society. Corporate leniency has also stopped new cartels from forming.' Finding that it is correct. The paper will do this by assessing the three components of the statement. Finding that corporate leniency has been successful in fighting cartels, that corporate leniency is the most important tool to be used by antitrust authorities and that it has been successful in stopping cartels forming.

## Theory behind leniency programmes

Leniency programmes aim to destabilise a cartel by providing incentives for participants to reveal the cartel. The idea is that there is a certain probability of detection irrelevant of policy and that there are large fines for cartelisation. Under a leniency programme, the first firm to reveal the cartel will be immune from fines. A cartel is an explicit agreement where firms agree to cooperate over prices (this is known as collusion)<sup>1</sup>. This essay will use collusion with communication, where firms have to enforce the agreement on themselves. Due to the nature of a cartel, they cannot rely on a court so the cartel is self-enforcing and requires communication between firms. OPEC is an example of this<sup>2</sup>. The reason leniency programmes are thought to be useful is because they change the payoffs in the prisoner's dilemma<sup>3</sup>. Under the prisoner's dilemma before leniency the payoffs are:

	Keep Quiet	Reveal
Keep Quiet	$(1-p)\pi - pF, (1-p)\pi - pF$	$-F, -F$
Reveal	$-F, -F$	$-F, -F$

Where  $p$  is the probability of detection,  $\pi$  is the profit gained from collusion and  $F$  is the Fine.

If a firm reveals the cartel all firms will receive a fine of value  $F$ . As  $-F$  is less than a firm receives by colluding, the cartel would continue with a probability  $(1-p)$ . You know that the firm will not reveal itself and can only be discovered by chance. Under a leniency programme the incentives change:

	Keep Quiet	Reveal
Keep Quiet	$(1-p)\pi - pF, (1-p)\pi - pF$	$-F, 0$
Reveal	$0, -F$	$-1/2F, -1/2F$

Assuming simultaneous applications for leniency are allowed and both would be given leniency, this is what the new incentive would look like. Assuming  $F$  should be correctly related to  $\pi$  and  $p$ , you can assume that the incentive to keep quiet should still be less than 0,  $(1-p)\pi - pF < 0$ . Following on from these assumptions, a firm would now have the incentive to reveal. The result would lead to both firms revealing the cartel, and the antitrust authority would now collect fines, albeit reduced, with much greater certainty. This demonstrates why leniency programmes are thought to be useful.

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<sup>1</sup> Deller, David. "EC365 Theory of Monopoly and Regulation Topic 3: Collusion" University of Essex. Spring 2013. 5.

<sup>2</sup> Aubert, C., P. Rey, and W. Kovacic. "The Impact of Leniency and Whistle-blowing Programs on Cartels." *International Journal of Industrial Organization* 24.6 (2006): 1241-266.

<sup>3</sup> *Ibid* 1. 17-18.

## Has offering corporate leniency been successful in catching cartels and reducing trial length?

Corporate leniency programmes encourage firms to retain evidence making prosecution quicker. The reason for this is that although the evidence they are keeping is incriminating, it will allow the firm to gain leniency in the event that they want to deviate from the cartel or believe that the cartel is likely to be discovered, thus decreasing the expected costs of collusion<sup>4</sup>. Having this evidence available makes prosecution easier as it reduces prosecution time and the costs of prosecution. It has been found in the European empirical data that following the introduction of corporate leniency the length of trials significantly reduced as a consequence of better information. The data showed that after 1996, the year the corporate leniency programme was adopted, the average duration of an investigation into a cartel decreased by almost one and a half years<sup>5</sup>. This demonstrates a way that corporate leniency has been successful.

Another effect is that cartels become less stable because a firm that benefits from collusion can apply for leniency and as a result achieve a higher payoff<sup>6</sup>. This means that firms now have an incentive to inform the authorities of the cartel and receive leniency, leaving the other firms with fines, while they only forgo the benefit of selling at the cartel price. A firm would forgo the cartel price if they suspect the cartel may end soon anyway and that if they do not inform the authorities first they will have to pay the fine. An example of this is the Virgin Atlantic and British Airways case, in which Virgin Atlantic received no fines, while British Airways originally received fines totalling £270million from both the US and UK authorities<sup>7</sup>. Although this may be used to benefit one company over the others<sup>8</sup>, it does demonstrate how corporate leniency has incentivised firms to seek leniency, and has made cartels less sustainable. Theory suggests that the way to identify whether cartels have become less stable is that there will be a sharp increase followed by a long term decrease in the number of cartels detected<sup>9</sup>. This assumes that discovered cartels inform us about undiscovered cartels in that they must be somehow representative of cartels in general. The empirical data for the US, from 1985 to 2005, shows that following the introduction of corporate leniency there was a 60.66 % increase in discovery, which is statistically significant at the one percent level<sup>10</sup>. The European data from the period 1996-2002 does not support that corporate leniency has been successful in this regard. The data indicates that the leniency programme does not destabilise cartels as there is no significant change after adopting the new policy instruments. However, it is important to note that in 2002 the EU reformed their leniency programme, which meant that the first firm to report would face no fine at all and that potential reductions after that

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<sup>4</sup> Ibid 2.

<sup>5</sup> Brenner, Steffen. "An Empirical Study of the European Corporate Leniency Program." *International Journal of Industrial Organization* 27.6 (2009): 643.

<sup>6</sup> Harrington, Joseph E., and Myong-Hun Chang. "Modeling the Birth and Death of Cartels with an Application to Evaluating Competition Policy." *Journal of the European Economic Association* 7.6 (2009): 1419.

<sup>7</sup> "BA's Price-fix Fine Reaches £270m." *BBC News*. BBC, 08 Jan. 2007. Web. 14 Apr. 2013.

<sup>8</sup> Ellis, Christopher J., and Wesley W. Wilson. 2003. "Cartels, Price-Fixing, and Corporate Leniency Policy: What Doesn't Kill Us Makes Us Stronger." <http://darkwing.uoregon.edu/~wwilson>

<sup>9</sup> Miller, Nathan H. "Strategic Leniency and Cartel Enforcement." *American Economic Review* 99.3 (2009): 753.

<sup>10</sup> Ibid 9. 760.

were significantly reduced<sup>11</sup>. This is closer to the US system leading to the idea that the new data would draw similar conclusions as the US data.

Furthermore, when leniency programmes exist the probability of paying fines will actually increase<sup>12</sup>. Also, the fines have become much higher under corporate leniency programmes. This is because in the past when a cartel was failing no firms had the incentive to tell the authorities that the cartel had taken place because if they did they would be faced with significant fines. Under corporate leniency firms now have an incentive to tell the authorities and force their fellow cartel members to incur the penalties. For instance, in the European Union the European Commission (EC) has been giving an average decision of one a month on cartels, and that in 2002 the EC fined firms in excess of €1.1billion, a significant increase. Furthermore, in the period 2000-2004 the United States has sentenced more individuals to prison for cartel involvement than in the entire period 1990-2000 and the level of fines has been increased to as high as \$500million<sup>13</sup>. The scale of fines now being experienced by firms as a consequence of corporate leniency can be demonstrated in the following example. The EC recently imposed its largest ever cartel fine at £1.2 billion for a cartel on the now outmoded cathode ray tubes which were used in televisions and monitors, the companies which were fined include Philips, Samsung SDI, Panasonic Toshiba and Technicolor while Chunghwa, a Taiwanese company, blew the whistle on the cartel and avoided being fined<sup>14</sup>. This demonstrates how corporate leniency can lead to massive fines on companies operating in cartels even long after the cartel had ended.

What other policies have fought price-fixing cartels?

#### Individual leniency

Offering individual leniency to people working in firms who operate in cartels is one policy that can be used to fight cartels. The idea is that offering leniency to individuals would encourage them to report incriminating evidence to the authorities; taking advantage of firms' inability to control their own employees. A firm may then try to convince their employees to stay loyal; such action would require firms to compensate informed employees so they do not tell the antitrust authorities. This increases the cost of collusion, thus reducing profitability and stability of cartels<sup>15</sup>. This policy is strengthened if only the first employee is given leniency and the amount offered is substantial. This would require the firm to compensate all informed employees, making collusion even less profitable and more fragile. Even if a firm leaves a cartel it would still need to compensate informed employees. This policy is a natural complement to corporate leniency as it encourages firms to inform the authorities rather than paying their employees to keep quiet. If there was no corporate leniency a company may never be discovered because they bribe their employees. The combination effect with corporate leniency enables cartels to be discovered and prosecuted with a much greater effect. Authorities may reap higher rewards by offering individual leniency as opposed to corporate leniency as the leniency offered to an individual would be significantly less than to a firm. Individual

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<sup>11</sup> Ibid 5. 644.

<sup>12</sup> Ibid 6. 1419.

<sup>13</sup> Baird, Bruce A. "Corporate Leniency Applications." *The Antitrust Review of the Americas 2004* (2004): 21.

<sup>14</sup> Garside, Juliette. "Samsung, Philips and Panasonic Hit with Record £1.2bn Cartel Fine." *The Guardian*. Guardian News and Media, 12 June 2012. Web. 22 Apr. 2013.

<sup>15</sup> Ibid 2.

leniency may help in catching cartels; but there is not significant evidence or literature to indicate that it is more effective than corporate leniency, although it can act as a compliment.

### Increasing Penalties

Another policy is to simply increase the fines that cartels pay once they are discovered. The reasoning behind this is that a more severe penalty will reduce the stability of cartels; this is because any given industry will be in a situation to sustain and form a cartel for a smaller amount of time. Furthermore, theory suggests that fewer industries will ever be able to form cartels in the first place<sup>16</sup>. Thus increasing penalties will act as both prevention and a partial cure. The least stable cartels will collapse immediately (perhaps undetected) causing the average duration of discovered cartels to increase in the short run<sup>17</sup>. It is important to note that the fines must exceed the firm's expected profit from operating in the cartel. If substantial enough it will both deter entry into cartels and destabilise the current cartels. The expected cost for the cartel member depends on the chance they will be caught. If the chance of being caught is quite low, say just twenty percent, the fine would have to be five times higher than the payoff from being in the cartel. In the absence of an effective leniency programme, it was estimated that the chance of detection and punishment was as little as one in six or seven in the United States<sup>18</sup>. A problem is that it is difficult to know before catching the cartel what the cartel's profit is and what the fine should be. In reality, it has been shown that many cases have inadequately squeezed cartels and almost never reached 100 percent of the extra revenue generated by a cartel<sup>19</sup>. Hence, fines are an important policy, particularly in conjunction with leniency as leniency provides better information about the real profits, but fines are relatively ineffective in catching and deterring cartels unless more is known about the revenue of cartels.

### Funds available to Antitrust Authorities

It is suggested that an antitrust authority with sufficient resources would be more effective than corporate leniency. The argument is leniency programmes reduce expected fines and may induce a pro-collusive reaction. Policies that would have prevented collusion are now ineffective and in fact encourage firms to collude. Increasing the resources to an antitrust authority using full fines would enable them to better combat cartels<sup>20</sup>. The reasoning behind this is that an antitrust authority would then be able to afford lengthy and expensive trials in order to prove guilt, but also to spend large amounts of resources monitoring markets and investigating firms. However, the antitrust authorities will probably have limited resources and therefore will not be able to act in the way prescribed above. A leniency programme is the optimal policy when unlimited resources are not available to the antitrust authority. The reasons for this are the same as mentioned in the section about why corporate leniency has been successful; better information is provided, firms are less likely to continue to operate in cartels due to stability issues and the costs to an antitrust authority are greatly reduced.

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<sup>16</sup> Ibid 6. 1412.

<sup>17</sup> Ibid 6. 1415.

<sup>18</sup> "Fighting Hard-Core Cartels: Harm, Effective Sanctions and Leniency Programmes", OECD, 2002. 85.

<sup>19</sup> Ibid 18. 88.

<sup>20</sup> Motta, Massimo and Michele Polo. 2003. "Leniency Programs and Cartel Prosecution." *International Journal of Industrial Organization*, 21(3): 375.

### What the data says

Many organisations have come out in support of corporate leniency programmes describing it as “the single greatest investigative tool available to anti-cartel enforcers”<sup>21</sup>. It has been suggested that it is in the interest of the authority to give the impression that the corporate leniency programme is more effective than it really is. Using the data for the United States only, it was found that even controlling for the funds available to the antitrust authority and the level of fines that were imposed corporate leniency had a strong and significant effect on the number of cartels that were discovered and successfully prosecuted. This effect was found to be significant at the one percent level<sup>22</sup>. This would imply that the statement was correct on this level and that although other policies are useful and work well with corporate leniency in catching cartels, it is the corporate leniency element which has had the biggest impact.

### Has corporate leniency stopped new cartels from forming?

The final component of the statement was that corporate leniency has stopped new cartels from forming. I argue that on the whole this is the case and that the data which implies otherwise is due to mitigating circumstances. Theory states that if a policy is effective in reducing cartels formation, the average duration of cartels which are caught should be higher<sup>23</sup>. The reasoning behind this is that under the increased chance of being caught due to corporate leniency, the weaker cartels that would have formed will no longer form as their cost-benefit analysis indicates that their expected profit is diminished. Theoretical models have predicted that a leniency programme would be effective in reducing cartel formation<sup>24</sup>. The empirical data for the United States provided support for the conclusion found in theory. The data showed that the deterrence capability of a corporate leniency programme was strong causing a 41.61 percent reduction in the formation of cartels; this was significant at the one percent level and importantly remained significant even when including the funds available to antitrust authority, the level of fines and changes in Gross Domestic Production<sup>25</sup>. This would suggest that the statement was correct and that the introduction of corporate leniency has had a significant effect on the formation of new cartels.

The literature is not universal in this view, and some empirical evidence also finds that corporate leniency does not stop cartel formation. It is argued corporate leniency has weakened the policies that would prevent collusion, increasing the incentive to form cartels<sup>26</sup>. Furthermore, a ‘partial leniency’ programme could have negative effects on cartel formations (in that it increases it<sup>27</sup>). This means if full leniency is not provided by the antitrust authority, it can work to promote collusion by reducing the payoff from leaving the cartel, allowing it to continue. This may help explain why the

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<sup>21</sup> Hammond, Scott D. 2001. “When Calculating the Costs and Benefits of Applying for Corporate Amnesty. How Do You Put a Price Tag on an Individual’s Freedom?” Speech, Fifteenth Annual National Institute on White Collar Crime, San Francisco, CA, March 8, 2001.

<sup>22</sup> Ibid 9. 760.

<sup>23</sup> Ibid 6. 1416.

<sup>24</sup> Ibid 6. 1419.

<sup>25</sup> Ibid 9. 761.

<sup>26</sup> Ibid 20. 375.

<sup>27</sup> Chen, Joe, Joseph E. Harrington Jr. 200. “The Impact of the Corporate Leniency Program on Cartel Formation and the Cartel Price Path.” *The Political Economy of Antitrust*, ed. Vivek Ghosal and Johan Stennek, 59-80. Oxford: Elsevier.

European empirical data indicated that there was not sufficient evidence that corporate leniency deterred cartel formation<sup>28</sup>. It is important to note that between 1996 and 2000, which this paper addressed, the EC had only adopted a partial leniency programme. Also, the same literature that indicated partial leniency policy had negative effects indicated that on balance, corporate leniency programmes do make collusion more difficult.

### Conclusion

To conclude, this paper finds support for the statement. Offering corporate leniency has been successful in finding price-fixing cartels. This paper has identified the three key reasons for this; by encouraging firms to keep evidence, by reducing the stability of cartels and by increasing the probability of paying higher fines. Other policy tools available to antitrust authorities have been assessed, finding that although they are useful, particularly in conjunction with corporate leniency, corporate leniency is the most important tool available to antitrust authorities. Finally, the paper has found that corporate leniency has indeed stopped new cartels from forming and thus support for the statement has been established through assessment of the three components of the statement.

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<sup>28</sup> Ibid 5. 644.

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- <sup>5</sup> "BA's Price-fix Fine Reaches £270m." *BBC News*. BBC, 08 Jan. 2007. Web. 14 Apr. 2013.
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