An Empirical Assessment of the European Leniency Notice

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Abstract: A study of DG Competition's 1996 'Notice on the non-imposition or reduction of fines in cartel cases' suggests that it largely failed to induce members of active cartels to self-report. Instead, immunity and fine discounts were predominantly awarded in cases where cartels were failing, or had already failed. A majority of leniency cases followed (or were broadly contemporaneous to) equivalent investigations by the US Department of Justice. All but one EU only leniency case had failed before self-reporting occurred. Moreover, nearly half of leniency cases concerned closely related infringements in the chemicals industry. The majority of these US-EU leniency cases had failed (or were failing) at the time of self-reporting. A preliminary analysis of the revised 2002 notice suggests less reliance on US successes, but still more cartels connected to previous infringements in the chemicals industry. A central challenge is preventing the leniency programme from providing a way for failed cartelists to tame the end game, or to use leniency as a strategic tool in order to put former cartel members (now competitors once more) at a disadvantage. Such cases risk overwhelming DG Competition with leniency applications that do little to enhance deterrence.

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I. Introduction

Cartels are typically aware that their conduct is illegal and will go to great lengths to avoid detection. As the OECD notes, 'the challenge in attacking hard-core cartels is to penetrate their cloak of secrecy'[1]. This defining characteristic makes their detection

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difficult for competition authorities, whose investigatory powers are limited by resource constraints. Although something is known about the industry characteristics that make collusion more likely, it is not cost effective for authorities to police industries for price fixing in the conventional way. Investigations may be guided by complaints from aggrieved buyers who suspect they are the victims of cartels, but many cartel practices can be effectively disguised as rising costs or improved quality. Many buyers will either be unaware they are the victims of a cartel, or may simply choose to pass on its over-charges – particularly if they are in a long term business relationship with one of the cartel members.

Leniency programmes promise to be instrumental in uncovering infringements that would otherwise have gone undetected. The offer of immunity to the first cartel member to self-report undermines an infringement by inducing what has been described as a 'race to the competition authority'[2]. A key characteristic of such programmes is that the immunity 'prize' is only available to one party, and that party cannot generally be the instigator of the infringement.[3] Where leniency discounts are available beyond immunity for the second and third firm to come forward, more parties will admit guilt and present evidence.[4]

The Antitrust Division of the US Department of Justice (DOJ) has for some years been at the forefront of cartel enforcement efforts. Its innovative 'Corporate Leniency Policy'[5] was first introduced in 1978, but it did not yield significant successes before important reforms were made in 1993.[6] The US experience

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[1] OECD 'Fighting Hard Core Cartels: Harm, Effective Sanctions and Leniency Programmes' (2002) Reports to the Organization for Economic Co-Operation & Development

[2] J Vickers, 'Competition Economics' (2003) Speech delivered to Royal Economic Society annual public lecture. Royal Institute, London. 4 December.

[3] If immunity were available to more than one undertaking, parties to a cartel might rely on leniency to assist them in punishing firms that deviate from the collusive agreement. Firms might also wait until an investigation has been opened into their industry before self-reporting. See for example findings in: J Chen and J E Harrington 'The impact of the corporate leniency program on cartel formation and the cartel price path' (2005) unpublished paper CIRJE Discussion Paper 358. August.

[4] Although some argue that providing leniency discounts to subsequent parties who come forward will dilute the incentive for the first firm to come forward, because the second and third firms to come forward do not face the full fine. See for example: CJ Ellis and WW Wilson, 'Cartels, Price-Fixing and Corporate Leniency Policy: What doesn't kill us makes us stronger' (2003) unpublished paper. University of Oregon.

[5] Available: [WWW] <http://www.usdoj.gov/atr/public/guidelines/lencorp.htm> (accessed 10 Nov 2007)

[6] Immunity under US leniency normally extends to the company's employees. Unlike the EC where only administrative fines in a civil process can be imposed on companies, in the US criminal sanctions can be imposed on both firms and individuals.

suggested that an effective leniency programme could dramatically increase the rate at which cartels were detected, escalating the rate of punishment and enhancing deterrence.[7] Encouraged by this purported success of the US leniency programme, the European Commission, D-G Competition adopted the 1996 'Notice on the non-imposition or reduction of fines in cartel cases'[8] (henceforth 'the 1996 leniency notice'). The majority of member states have since adopted leniency programmes on the national level, modelled on the Commission's leniency notice, and now on the European Competition Network's 'Model Leniency Programme'. In the UK, a leniency programme was adopted under the Competition Act 1998.[9]

By April 2007, the European Commission's leniency notice had yielded 23 cartel cases under the 1996 notice and 8 under the reformed 2002 notice[10]. The total amount of fines imposed in these 31 cases was in excess of €6 billion. In light of these figures, it is unsurprising that the European Commission has considered its leniency programme to be a resounding success in its ultimate objective of unveiling and eradicating cartels.[11] As early as July 2001, the then Competition Commissioner, Mario Monti stated, 'The Leniency Notice has played an instrumental role in uncovering and punishing secret cartels'[12]. In a 2002 EC Competition Newsletter article announcing the revised notice, the Commission branded the 1996 leniency notice as an 'indisputable success' and stated that 'Statistics data highlight the considerable level of success that the 1996 leniency notice has had… [this] represents a very significant increase of the Commission's anti-cartel activity'[13]. Such upbeat assessments of the notice have been echoed in numerous speeches by the current Commissioner, Neelie Kroes.[14]

[7] SD Hammond, 'Cornerstones of an Effective Leniency Program' Speech delivered to ICN Workshop on Leniency Programs, Sydney. November 2004.
[8] 'Commission notice on the non-imposition or reduction of fines in cartel cases' OJ [1996] C 207
[9] See 'OFT's Guidance as to the appropriate amount of a penalty' (2004) OFT423 and 'Leniency in cartel cases' (2005) OFT436
[10] 'Commission notice on immunity from fines and reduction of fines in cartel cases' OJ [2002] C 45/3. For a list of all Commission decisions in this period, see Appendix A.
[11] DG Competition Press Release, MEMO/02/23 (13 Feb 2002).
[12] DG Competition Press Release, IP/01/1011 (18 Jul 2001)
[13] F Arbault and F Peiro, 'The Commission's new notice on immunity and reduction of fines in cartel cases: building on success' (2002) EC Competition Policy Newsletter, No 2, 15 June.
[14] Most recently: N Kroes 'Reinforcing the fight against cartels and developing private antitrust damage actions: two tools for a more competitive Europe' Speech delivered to Commission/IBA Joint Conference on EC Competition Policy, Brussels. March 2007.

The aim of this paper is to test the purported effectiveness of the European Commission's leniency programme, by determining the extent to which self reporting firms were *induced* to do so by the incentives created by the European leniency notice itself. If the notice is indeed deterrence enhancing, we would expect leniency applications largely from members of profitable cartels that were active at the time of self-reporting. Instead, this paper finds that the majority of applications involve infringements which were: previously/simultaneously revealed in the US; closely linked to each other in the chemicals industry; and which had largely failed or ceased operating before a leniency application was made. These suggests that firms may be using the leniency notice to deflect or discount their liability once a cartel has failed, seeking to put their former cartel members (now again competitors) at a disadvantage. The findings of this paper draw from a database compiled by the author of information from every horizontal cartel decision delivered by the European Commission, from the introduction of leniency in 1996 to April 2007.

Section II of this paper identifies that the majority of successes enjoyed under the 1996 leniency notice are likely to have resulted from prior or simultaneous US policy success. Section III outlines how most of the cases revealed under the 1996 notice concerned closely related cartels operating in just the chemicals industry. Employing information primarily contained in Commission decisions and industry literature, it is shown that by the time these cartels were revealed to the European Commission, most had already failed or ceased to operate. This was because of market conditions and/or because of their connection to cartels already under investigation; in particular the Vitamins cartel. Section IV makes a preliminary assessment of the reformed 2002 and 2006 leniency notices. These reforms addressed a number of important criticisms made of the 1996 notice and are thought to have brought the notice in line with the DOJ's 1993 leniency policy. However, the findings show a similar proportion of cases involving the chemicals industry; linked to previous infringements. There also continues to be cases (although a smaller proportion) which have previously or simultaneously been pursued by the DOJ.

II. The 1996 notice: distinguishing the effect of US enforcement activities

If the 1996 leniency notice did indeed play a central role in inducing firms to come forward and reveal cartels, then it is important to rule out other reasons why a cartel member would apply for leniency. As the most serious Article 81 infringements concern international cartels, one of the most important external factors is the policy success of other jurisdictions, in particular the DOJ. Most successful EC cartel investigations prompted by leniency applications to date, concerned international infringements and had an equivalent US investigation which either preceded – or was broadly simultaneous to – that of the European Commission.[15]

A. Prior and simultaneous US policy successes

Where US investigations preceded those of the European Commission, applications under the 1996 leniency notice were a natural consequence of the cartel being initially cracked either by US investigations or through the corporate leniency policy. Many jurisdictions have had to play 'catch-up' with the US, initiating investigations that by and large mirror those of the DOJ. This has been helped by increasing cooperation between the DOJ and other competition authorities. Even where US investigations were contemporaneous to those of the EC, it is the former that will have played the central role in inducing firms to reveal. This is likely to be the case even after the design of the leniency notice was brought closer into line with that of the US through the reforms in 2002 and 2006.

This assertion is justified by the fact that US cartel policy offered (and continues to offer) stronger incentives for firms to come forward, in a number of respects: Firstly, the DOJ frequently prosecutes individuals in criminal law for their role in the infringement, and secures custodial sentences[16]. This means that senior individuals within a company making the decision to collude or reveal, *personally* stand to lose financially and (more importantly) in terms of their personal freedom. With the availability of immunity to individuals as well as corporations, infringing

[15] This has also been observed by S Arlman 'Crime but no punishment: An empirical study of the EU's 1996 Leniency Notice and cartel fines in article 81 proceedings' (2005) Masters Thesis. Universiteit van Amsterdam.

[16] See for example: SD Hammond, 'When Calculating The Costs and Benefits of Applying For Corporate Amnesty, How Do You Put A Price Tag On An Individual's Freedom?' Speech delivered to Fifteenth Annual National Institute on White Collar Crime, San Francisco. March 2001.

firms are not only in a race to self-report with their fellow cartel members, but potentially with their own employees as well. Secondly, the US leniency policy provides some level of anonymity for revealing firms; this means that their identities and any evidence of their role in the infringement are not made available to claimants of private damages by the DOJ.[17] By contrast, the role of the revealing firm in Europe is still discussed at detail in the Commission's final decision. Finally, the US has a plea-bargaining system[18] whereby firms negotiate the exact level of fines they will face, and company directors agree to go to jail for certain lengths of time without the case ever seeing the inside of a court room (other than to approve the plea-bargain). Plea-bargaining strengthens the corporate leniency policy by providing a quick and certain way for a firm to settle its public liabilities, rather than waiting in limbo for a number of years, overshadowed by the possibility of having fines imposed of an uncertain magnitude. Other features of the US enforcement regime which make self-reporting more likely include the availability of amnesty plus, and some protection from treble damages for revealing firms.

In relation to the 1996 leniency notice, the DOJ's first mover advantage in uncovering infringements was compounded by inherent uncertainties which existed before the 2002 and 2006 reforms. For example, firms could not benefit from immunity in Europe where an investigation had already been opened – by contrast, this was possible in the US.[19] The incentives to reveal have been that much stronger in the US that foreign company directors have voluntarily travelled there to serve jail time as part of plea bargains, often from countries where extradition would not otherwise be possible.[20] Moreover, according to Wils[21] a number of companies who have colluded in Europe, say they would never have done so in the USA because of fear of the heavy sanctions that would result.

Table 1 below lists thirteen European Commission decisions involving horizontal cartels which have equivalent cases in the US. Unfortunately, due to the

[17] R Hewitt Pate, 'International Anti-Cartel Enforcement' Speech delivered to ICN Cartels Workshop, Sydney. November 2004.
[18] The prospect of adopting a system of negotiated settlement in EC cartel cases is discussed in: A Stephan, 'The Direct Settlement of EC Cartel Cases' Competition' Public Consultation on Cartels Settlements (January 2008)
[19] This was amended in the 2002 notice.
[20] See Hammond, above n 16.
[21] WPJ Wils, 'Is Criminalization of EU Competition Law the Answer?' Speech delivered to ACLE Conference on Remedies and Sanctions in Competition Policy, Amsterdam. February 2005.

secretive nature in which the DOJ operates its leniency policy and plea bargains (in particular the anonymity of revealing firms), it is not possible to determine exactly when all their investigations were opened or how. Some, like Lysine, Citric Acid and Vitamins clearly started well before their European counterparts, others like Methylglucamine appear to have started simultaneously in both jurisdictions. However, it is clear from when the first US fine in each case was announced that the US equivalent investigations either preceded or were broadly contemporaneous to those in Europe.

Table 1: US-EC parallel investigations

Cartel	**When first US Fine Announced by DOJ**	**EC investigation ending in Commission decision & fines.**
Amino Acids – Lysine*	Oct-96	1996-2000
Citric Acid	Jan-97	1997-2001
Sodium Gluconate	Sep-97	1997-2001
Graphite Electrodes*	Feb-98	1997-2001
Choline Chloride	May-99	1999-2004
Sorbates	May-99	1998-2003
Vitamins	May-99	1999-2001
Christie's & Sotheby's	Oct-00	2000-2002
MCAA Chemicals	Jun-01	2000-2005
Food Flavour	Aug-01	1999-2002
Organic Peroxides	Mar-02	2000-2003
Carbon & Graphite	Nov-02	2001-2003
Methylglucamine	Sep-03	2000-2002

* The Methionine and Specialty Graphites cartels, not listed in the table, were both investigated by the EC between 1999 and 2002. These do not have exact US parallel investigations but were both revealed as a direct consequence of the investigations into Amino Acids (Lysine) and Graphite Electrodes.

To make a more accurate assessment of how successful the 1996 leniency notice was, we must distinguish those leniency cases with a US equivalent. Since the

introduction of the 1996 leniency notice in July of that year, Commission decisions were delivered in 34 cases (to April 2007) involving horizontal cartels[22], where the investigation was opened after the introduction of leniency but prior to the introduction of the reformed 2002 leniency notice. These 34 decisions imposed a total of €4.5 billion in fines[23].

Of the investigations into those 34 cases, 23 were opened as a result of leniency notice applications, with a total of €3.46 billion imposed in fines. In 19 of those, immunity or a leniency discount in excess of 75 per cent was granted because a revealing firm satisfied the Section B requirements of the 1996 leniency notice – in particular, the requirement that information about the infringement be provided before the Commission had undertaken an investigation or had enough evidence to establish the existence of a cartel. The other four were revealed to the Commission as a result of the leniency notice, even though Section B leniency was not awarded. In Amino Acids (2000), the revealing firm (Ajinomoto) was only granted the maximum 50 per cent discount under Section D of the notice because it held back documents after coming forward[24], thus failing to satisfy the requirement that it maintain continuous and complete cooperation throughout the investigation. In Belgian Brewers, the revealing firm, Interbrew (now InBev NV after its merger with AmBev), only received a 50 per cent Section D leniency discount because its determining role in the cartel meant it was not eligible for a higher discount.[25] The French Brewers[26] cartel did not involve a leniency discount, but was revealed to the Commission through the leniency notice due to Interbrew's cooperation in the Belgian Brewers case.[27] Finally, the Choline Chloride cartel was revealed through a leniency application by a US supplier called Bioproducts Inc. in 1999. No leniency discount was given because no fine was imposed on the revealing firm.[28]

[22] A leniency discount has never been granted in a case primarily involving vertical collusion
[23] All figures of fines contained in this section are at the levels imposed by the European Commission before appeal to the Court of First Instance and Court of Justice, many of which are still pending.
[24] *Amino Acids* – Commission Decision of 7 June 2000. (Case 36.545) OJ [2001] L 152, 412
[25] *Interbrew and Alken-Maes* – Commission Decision of 5 Dec 2001. (Case 37.614) OJ [2003] L 200 at 356
[26] *Brasseries Kronenbourg, Brasseries Heineken* – Commission Decision of 29 Sept 2004. (Case 37.750) OJ [2005] L 184
[27] Interbew went on to receive immunity for revealing the Dutch Brewers case: DG Competition Press Release, IP/07/509 (18 April 2007).
[28] *Choline Chloride* – Commission Decision of 9 Dec 2004. (Case 37.533) OJ [2005] L 190 at 3

Table 2 below summarizes what proportion of the leniency success (23 cartels punished, €3.46 billion imposed in fines as result of leniency notice applications), followed, or was broadly in parallel to US successes.

Table 2: Proportion of US leniency success (Jul 1996 – Apr 2007)

	No of Cases	**Fines (€ million)**	**Proportion of Total Fines % (€4.5 billion)**
Cases Triggered By Leniency Applications	**23**	**3,459**	**76.9**
But where International Cartels with prior/simultaneous US policy success	15	2,179	48.5
EC Only Leniency Investigations	8	1,279	28.4

If we are to assume that the level of fines imposed in cartel cases reflects the severity of each infringement, then as much as 63 per cent[29] of 1996 leniency notice success in uncovering cartels, may have been on the back of the success of DOJ investigations and of the corporate leniency policy. Only just over a third of EC leniency success was independent of US investigations, which means that only just over a quarter of total prosecutions (in terms of fines imposed) came about as a result of the 1996 leniency notice only.

B. A closer look at EU only leniency success: failed cartels

Under closer scrutiny, there is reason to believe that the eight 'EU only leniency investigations' did not come about primarily due to the existence of the leniency notice, despite the fact that US cartel policy was not relevant to them (as they operated principally within the EU and members of the European Economic Area).

[29] As indicated in Table 2, of the €3.459bn imposed in cases triggered by leniency applications, €2.179bn was imposed in cases involving international cartels with prior/simultaneous US investigations.

Four of these cartels involved brewers[30] in a number of European markets for beer, and were revealed as a result of Interbrew's cooperation with the Commission. The first of these three cartels (Belgian Brewers) had failed in January 1998 as a result of falling demand, overcapacity, pressure from retailers and because the cartel had become too risky.[31] This last factor may have reflected the presence of the leniency notice, however the fact that the Commission's investigation did not open until the following summer casts doubt over notions that the cartel was 'disrupted' primarily by the leniency notice. Similarly, the Carbonless Paper cartel failed in September 1995 because the market for self-copying paper was in decline in the face of new technology, and the cartel had failed to raise prices.[32] However, the revealing firm (Sappi) did not approach the Commission until January 1997, more than two years later. The Needle Cartel, affecting the European market for haberdashery, was revealed by Entaco, the smallest of the three cartel members, whose actions are likely to have been motivated by the fact that Coats, one of the main offenders, had forced Entaco to join the cartel.[33] Finally, the Copper Plumbing[34] cartel (which led to Copper Fittings)[35], affecting the market for water, heating and gas tubes, was the only case where a cartel member approached the Commission while the cartel was still operating. The cartel had formed in June 1988 and the revealing firm, Mueller, had only joined the cartel in 1997 and so was not one of the main offenders when it approached the Commission in January 2001.

III. 1996 notice: cartels in the chemicals industry

While firms may have applied for leniency in the EU as a result of investigations in the US, their decision to self-report may also have been a result of the cartels failing due to the conditions of the markets in which they operated, as appears to have been the case in all but one of the EU only leniency cases. This section of the paper reviews cartels uncovered by the 1996 leniency notice which operated in the chemicals industry, looking at reasons why they failed. To understand the importance of the chemicals industry to European cartel enforcement, Table 3 breaks down cartels

[30] See *Interbrew and Alken-Maes*, above n 25; *Luxembourg Brewers* – Commission Decision of 5 Dec 2001. (Case 37.800) OJ [2002] L 253; *French Brewers*, above n 26; and *Dutch Brewers* – Commission Decision of 18 April 2007. unpublished. DG Competition Press Release IP/07/509.
[31] See *Interbrew and Alken-Maes*, above n 25, at 157 and 321.
[32] *Carbonless Paper* – Commission Decision of 20 Dec 2001. (Case 36.212) OJ [2004] L 115 at 430
[33] DG Competition Press Release, IP/04/1313 (26 Oct 2004).
[34] DG Competition Press Release, IP/04/1065 (3 Sept 2004).
[35] DG Competition Press Release, IP/06/1222 (20 Sept 2006).

revealed by 1996 leniency notice applications, in terms of the industries in which they operated[36].

Table 3: 1996 Leniency Success Industry Breakdown (Jul 1996 – Apr 2007)

Industry	No of Cartels	Fines (€ million)	Proportion %
Fine Arts	**1**	**20.4**	**0.6**
Chemicals	**11**	**1,778.6**	**51.4**
Beer	**4**	**368.4**	**10.7**
Metals, Carbon & Metal Manufacturing	**6**	**977.8**	**28.3**
Other Manufacturing	**1**	**313.7**	**9.1**

Approximately half of the cartels revealed through the 1996 leniency notice operated in the chemicals industry. Indeed 51 per cent of leniency success in uncovering cartels, in terms of the subsequent fines imposed, involved this industry. By April 2007, there had been eleven Article 81 Commission decisions involving horizontal cartels in the chemicals industry, which were revealed to the European Commission by leniency applications through the 1996 notice. All eleven were international cartels involving DOJ equivalent or related investigations.

Significantly, in all eleven cases leniency applications were made in Europe after the cartel ceased to operate.[37] This was due to conditions in the chemicals market and due to the close links between the cartels, in terms of common membership by infringing firms. This suggests that the leniency notice did not disrupt the cartels, but that they had already failed for other reasons. The applications for leniency were a natural consequence of firms once more looking to their own interests, rather than those of the cartel.

[36] This includes only completed cases, where the Commission has delivered its decision.
[37] In the case of Vitamins, three sub-cartels were still operating but the other six had collapsed.

Even before US investigations were opened, many of these cartels were failing for reasons which included: gross overcapacity, new competition from Asia (in particular China), distrust, environmental regulation[38], arbitrage and the unexpected Asia crisis of the late 1990s. Some of these pressures had existed since the 1970s and resulted in extensive mergers, acquisitions and restructuring[39] which made the industry more concentrated in the late 1980s, with collusion more likely as a result – but they also posed a problem to the operation of cartels as the identities and capacities of the players were constantly changing. These factors are discussed at detail in part B of this section.

A. Links between the chemicals cartels

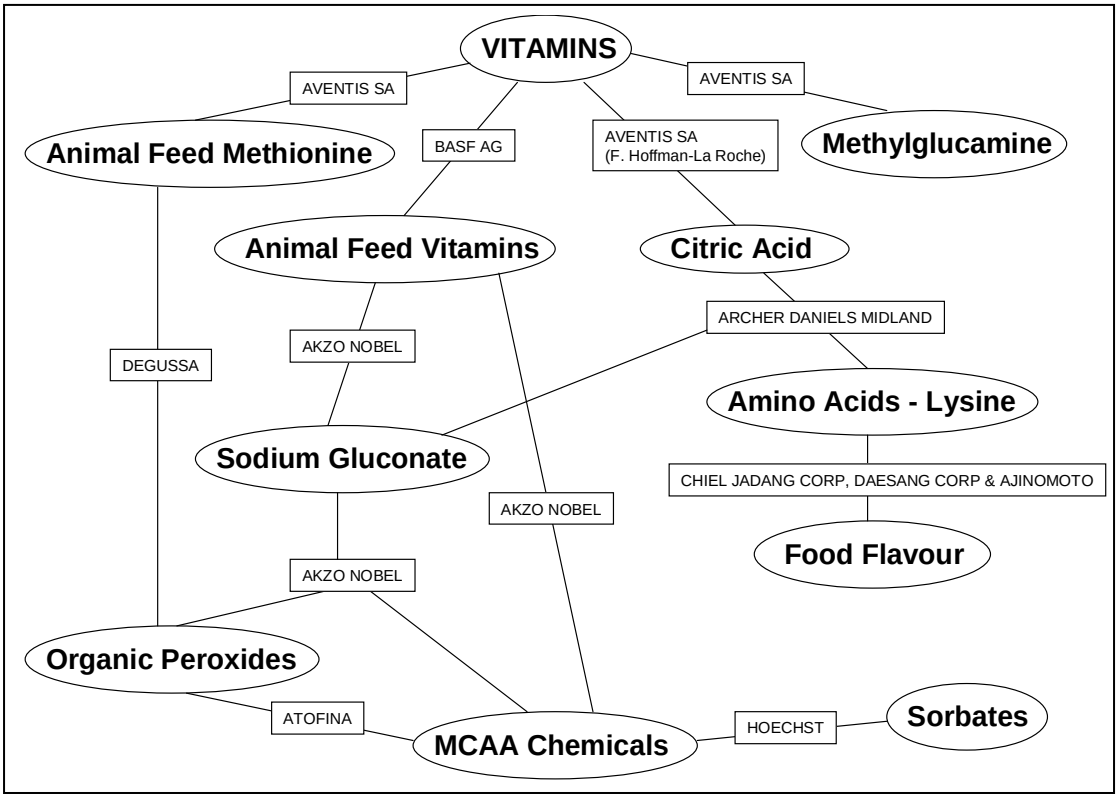
It is significant that all eleven cartels could be linked to Vitamins by virtue of the fact that a number of firms in the industry were involved in more than one infringement. The discovery of the Vitamins cartel was preceded by the discovery of Amino Acids (Lysine) thanks to the Archer Daniels Midland (ADM) whistleblower Mark Whitacre. We know from Eichenwald's book *The Informant* that the FBI were made aware of ADM's involvement in the price fixing of Citric Acid and Sodium Gluconate at an early stage of their investigation.[40] Also, close links between infringements (in terms of common membership) suggest that the uncovering of the Lysine cartel made the detection of the other chemicals cartels inevitable. Investigations into one would certainly be expected to exert destabilising pressure on other infringements, inducing a race to the competition authority. US investigations into Lysine and Vitamins clearly preceded leniency applications in Europe, pursuant to those infringements. The Lysine investigation preceded even the introduction of the 1996 leniency notice.

The diagram below (Figure 4) illustrates the close links that existed between the eleven cartels in the chemicals industry, with the Vitamins cartel being of particular importance. The diagram was drawn using the database compiled for the

[38] S Mahdi *et al*, 'A Review of the Impact of Regulation on the Chemical Industry' (2002) Final Report to the Royal Commission on Environmental Pollution.
[39] K Chapman and H Edmond, 'Mergers / Acquisitions and Restructuring in the EU Chemical Industry: Patters and Implications' (2000) Regional Studies Vol 34.8, pp 753-67.
[40] K Eichenwald, *The Informant* (New York: Broadway 2000)

purposes of this paper. Note the widespread involvement of Aventis S.A. (formerly F.Hoffman-La Roche) and Akzo Nobel, in particular.

Figure 4: Links between cartels in chemicals industry



As stated above, US investigations into both Vitamins and Amino Acids preceded those in Europe. The close links with the other cartels will have exerted destabilising pressure on them, making self-reporting by one member more likely. An example in point: unlike the failing cartels discussed in part B of this section, Methylglucamine (1990-1999) and Animal Feed Methionine (1986-1999)[41] were reasonably unaffected by competition from China or by the Asia crisis. This was in part due to the strong growth of the poultry industry. The Commission decisions reveal that these infringements were disrupted in 1999 primarily by the investigations into the Vitamins cartel.[42] There was a worry amongst members of both infringements

[41] *Methionine* – Commission Decision of 2 July 2002. (Case 37.519) OJ [2003] L 255
[42] *Methylgucamine* – Commission Decision of 27 Nov 2002. (Case 37.978) OJ [2004] L 38, 153

that detection was inevitable given that Aventis SA was party to all three cartels. This ultimately resulted in Merck KgaA and Aventis SA approaching the Commission to self-report the infringements. Similarly, the decision to end the Choline Chloride (1994-1998) cartel was strongly influenced by the Vitamins investigations, and in particular by the fact that BASF AG was under investigation for its involvement in the Vitamins cartels and was also party to Choline Chloride. Indeed the overlap between firms and different infringements was such that decisions to cease colluding might have been additionally driven by close relationships to cartels other than Vitamins. As illustrated in Figure 4, three of the firms involved in the Food Flavouring (1989-1998) cartel[43] (involving nucleic acid) were also involved in Amino Acids. Archer Daniels Midland was involved in Amino Acids (1990-1995), Organic Peroxides (1971-1999)[44] and Sodium Gluconate (1987-1995)[45] cartels contemporaneously.

As well as close links with the US driven investigations into Amino Acids and Vitamins, there is also evidence that most of the chemicals cartels largely failed prior to self-reporting in Europe, because of conditions in the chemicals market.

B. The failing chemicals cartels

A close examination of the Commission's decisions and industry literature reveals a number of difficulties which had largely undermined the chemicals cartels prior to self-reporting. These included: new entry from China; arbitrage; decline, overcapacity and rising costs; barriers to entry, substitutability and distrust; the Asia crisis of the late 1990s; and the effect of mergers and acquisitions.

1. New entry from China

The massive export-driven growth of the Chinese chemicals industry in the 1990s meant that international cartels (including Vitamins) were undermined by Chinese products flooding the market, causing cartels to collapse well before the investigations into the Vitamins cartel were opened.

The Citric Acid (1991-1995) cartel (involving one of the most common preservatives) enjoyed healthy demand in the early 1990s thanks to strong growth in

[43] *Food Flavour Enhancers* – Commission Decision of 17 Dec 2002. (Case 37.671) OJ [2004] L 75
[44] *Organic Peroxides* – Commission Decision of 10 Dec 2003. (Case 37.857) OJ [2005] L 110
[45] DG Competition Press Release, IP/01/1355 (19 March 2002).

the European soft drink market. However, this coincided with the emergence of a substantial Chinese citric acid industry which increased its production levels threefold between 1990-1994.[46] The Chinese domestic market only accounted for 20-25 per cent of Chinese production and so the rest swamped the global market, helped by low transport costs.[47] The cartel succeeded in raising prices at first, but this was due to abnormally low prices in 1990[48] and the prices achieved, in any case, were nowhere near the levels reached during the ten years preceding the cartel. Subsequently, the cartel steadily lost control of the market to the Chinese producers as its share dropped from 70 per cent in 1991 to 52 per cent in 1994. Attempted concerted practices against the Chinese achieved very little and the cartel members were forced to stop colluding and start competing.[49] Chinese entry into the citric acid market was so aggressive that Turkey, for example, had to take anti-dumping measures against Chinese citric acid producers between 1995-2000.[50]

The Vitamins cartel (1989-1999) actually consisted of nine sub-cartels operating in parallel to each other and involving the same firms. Of these, only three (vitamins A&E, B5 and D3) were operating when the DOJ opened its investigations into the vitamins industry in late 1997. The other six had by this time failed. The main reason for their failure was the emergence of new Chinese producers which, as early as 1992, were preventing the cartels from reaching their target prices – purportedly going as far as to sell at below production cost in order to break the cartels.[51] The Vitamin B1 (1991-1994), B6 (1991-1994), C (1991-1995) and Folic Acid (1991-1994) cartels all failed because Chinese producers (not party to the cartels) increased their capacity in the early 1990s to levels that the cartels could not absorb. By 1995 all five cartels had collapsed, as firms were forced to stop colluding and reduce prices to competitive levels. The opening of new and more efficient facilities in China in 1992/3 meant that their costs of production were lower than the cartel producers', and their products were of high quality. Indeed, one of the cartel members (Takeda C. I.

[46] *Citric Acid* – Commission Decision of 5 Dec 2001. (Case 36.604) OJ [2002] L 239, 35
[47] Id., at 38
[48] Id., at 223
[49] Id., at 118
[50] Id., at 62
[51] *Vitamins* – Commission Decision of 21 Nov 2001. (Case 37.512) OJ [2003] L 6, 342

Ltd) noted that it was very hard to recover customers after they started buying from the new Chinese producers.[52]

The speed with which Chinese competition grew in these markets was such that the Chinese share of the vitamin B6 global market increased from 3 per cent in 1989 to 16 per cent in 1997, with an interim high of 48 per cent in 1993 when the cartel was still operating at uncompetitive prices.[53] In the case of vitamin C, the cartel tried to raise prices by buying up the excess Chinese output but could not keep up with the pace at which Chinese production was increasing[54]; by 1995 prices of vitamin C had fallen by a third, forcing the cartel to cease.[55] In the market for Folic acid, the increased Chinese capacity coincided with a substantial fall in demand in Europe, forcing the cartel to disband.[56] The vitamin B2 (1991-1996) cartel, on the other hand, failed in 1996 when cartel members could not agree on a collusive agreement following arguing and distrust with regard to capacity and the exact details of the agreement.[57] Similarly, the vitamin H (1991-1994) cartel failed due to a combination of disagreement and new competition from Korean entrants to the market.

2. Arbitrage

Contending with international arbitrage was a challenge for all the cartels, but it placed particular pressure on the management of the Vitamins cartel. As the cartels operated globally, the price-fixing process was constantly undermined by currency fluctuations. Sharp changes in currency values would result in brokers purchasing in low currency markets and selling in high currency markets at prices that undercut the cartel. [58] Frequent meetings attempted to counter this effect, but only with limited success. For example, arbitrage problems meant that in 1994 there was a 10 per cent price gap between Europe and the US for vitamins A & E. [59]

[52] Id., at 253
[53] Id., at 46
[54] Id., at 348
[55] Id., at 448
[56] Id., at 46
[57] Id., at 490
[58] JM Connor, 'Extraterritoriality of the Sherman Act and Deterrence of Private International Cartels' (2004) unpublished paper. ExpressO Preprint Series, Paper 263.
[59] See *Vitamins*, above n 51, at 223

3. Decline, overcapacity, rising costs

Decline and overcapacity are frequently cited as reasons why many cartels form in the first place. However, coupled with rising costs, these also serve to frustrate attempts at raising prices. The extent to which the Sorbates (1978-1996)[60] industry suffered from overcapacity is demonstrated by the exit from the market in 2000 of two major players (Eastman & Nippon Goeshi). Overcapacity during the late 1990s was estimated at 10,000 tons of Sorbates, with the result that prices were kept low, despite the presence of a cartel.[61] In the case of the Organic Peroxides (1971-1999) cartel, the market grew steadily throughout the 1990s but overcapacity prevented prices from increasing. Indeed it was only after the cartel ceased that prices began to rise, as the industry finally shed some of its overcapacity[62]. These problems coincided with the increasing cost of environmental regulation, making investment and development difficult. The Sodium Gluconate (1987-1995) cartel also suffered escalating production costs throughout the 1990s, and from the fluctuating prices of the main raw material used in the production process: dextrose from corn.[63] Where there is gross overcapacity and a cartel is failing to raise prices, it may be in the interest of the most efficient firms to leave the cartel and compete for a greater market share. A more concentrated industry following the exit of inefficient firms is not undesirable, so long as the efficiency gains are substantial enough to outweigh any unilateral effects. Cartels simply serve to prolong the life of firms that are not competitive.

4. Barriers to entry, substitutability and distrust

Surprisingly, relatively poor barriers to entry and unforeseen substitutability contributed to the failure of some of the cartels. The Amino Acids (1990-1995) cartel is an example of this. In the late 1980s/early 1990s there was healthy demand growth in amino acids, prompting the incumbent producers (Ajinomoto, Daesang, Kyowa and Sewon) to increase capacity and form the cartel. However the market growth attracted new entrants ADM and Cheil who already had substantial operations in other parts of the chemicals industry, and so could easily switch to the production of amino acids.

[60] *Sorbates* – Commission Decision of 1 Oct 2003. (Case 37.370) OJ [2005] L 182
[61] L Jarvis, 'Sorbates Could Stabilize with Exit of Two Players' (2000) *Chemical Market Reporter*, Vol. 260, 10.
[62] C Boswell, 'Upward Pricing Pressure for Organic Peroxides;' (2000) *Chemical Market Reporter Focus*, May 15, 29.
[63] F Mirasol, 'Gluconate Prices moving up steadily as production costs continue escalating' (1998) *Chemical Market Reporter*, Vol. 254, Issue 3, 5.

The entrance of ADM alone doubled capacity.[64] Amino acids suffer sharp demands shocks mainly because of their reliance on one industry: cereals. Once prices of amino acids started rising, the feed industry adjusted its production processes to accommodate less amino acids and more affordable substitutes, but keeping the same sets of nutritional values.[65] This was helped by the increasingly cheap availability of soybean meal and corn. ADM joined the cartel so as to avoid a price war but continued to increase its capacity. The cartel collapsed soon after the meeting of 19 May 1994 when the firms failed to reach agreement amid suspicions that ADM had been cheating the cartel.[66] Prices of amino acids had actually fallen during the cartel due to the increases in capacity and fall in demand. The demise of the Organic Peroxides cartel was also in part due to buyers slowly displacing its product with substitutes.[67] Growing distrust was also an important factor. In the cases of Citric Acid and Food Flavouring the pressures of Chinese competition and the Asia crisis forced firms to start cheating the cartel with its collapse occurred amidst distrust and resentment.[68]

5. Asia crisis

Many of the problems outlined above were compounded by the Asia crisis in the late 1990s. The Choline Chloride cartel was particularly affected, as it already suffered from substantial overcapacity.[69] The Sorbates (1978-1996) cartel was coping with Chinese competition until a downturn in the market in 1996 coincided with the Asia crisis. This meant that Chinese sorbates originally destined for Asian markets were now flooding Europe and America at very low prices. Sorbates prices dropped from $4.25 per pound in 1995 to less than $2 per pound in 1999.[70] Similarly the Food Flavouring (1989-1998) cartel collapsed because poor demand growth and increased capacity, when there was already overcapacity, coincided with the Asia crisis. As a

[64] See *Amino Acids*, above n 24, at 32
[65] Id., at 45
[66] Id., at 360
[67] B Shearer, 'Organic Peroxides growing with the plastics industry' (1996) *Chemical Market Reporter*, Vol. 249, Issue 17, p5.
[68] E.g. see *Citric Acid*, above n 46, at 118
[69] L Jarvis, 'Choline Chloride Producers Attempt to Recapture Margins' (2001) *Chemical Market Reporter*, 2 February.
[70] L Jarvis, 'Sorbates Could Stabilize with Exit of Two Players' (2000) *Chemical Market Reporter*, Vol. 260, 10.

result, prices fell from €22-27 in 1997 to €12-16 in 1999 and eventually €8-12 in 2000.[71]

6. Mergers acquisitions and restructuring

The chemicals industry has a long history of mergers and acquisitions, many of which broadly created a more concentrated industry more conducive to collusion. However, continued merger activity during the cartels, coupled with industry restructuring, put pressure on cartels, as the identities and capacities of the players constantly changed. An example of this is MCAA Chemicals (1984-1999)[72]. This cartel involved monochloracetic acid, the market for which was in steady decline, but no serious competition existed from Asia. The cartel ended when an outside firm, Clariant, acquired Hoechst's MCAA business in 1997, and blew the whistle on that cartel in return for immunity.[73]

The findings of this section cast doubt over the effectiveness of the 1996 leniency notice. Half of the cases uncovered by the notice operated in just one industry. The infringements were closely linked to one another, and can all be traced back to the Vitamins and Amino Acids cases, investigations into which were both initiated in the US before leniency applications were made in Europe. These links may have strongly influenced a firm's decision to self-report. There is also evidence that these infringements had largely failed before leniency applications were made, because of prevailing conditions in the market. Rather than inducing the self-reporting of successful cartels, the notice may have largely attracted leniency applications from firms seeking to put their competitors at a disadvantage following the failure of a cartel. Even in the US, although some investigations (e.g. Lysine and Auction Houses[74]) were opened well before the cartels ceased operating, we know that in others (such as Methylgucamine and Sorbates) the investigation was opened after the cartels failed.

[71] See *Food Flavour Enhancers*, above n 43, at 37
[72] *MCAA* – Commission Decision of 19 Jan 2005. (Case 37.773) OJ [2006] L 353
[73] A Wood, 'Getting in a Fix' (2005) *Chemical Week*, Vol. 167, Issue 4, p5.
[74] *Fine Art Auction Houses* – Commission Decision of 30 Oct 2002. (Case 37.784) OJ [2005] L 200

IV. The revised 2002 Leniency Notice

The findings in sections II and III relate to the 1996 leniency notice. As cartel investigations in Europe typically take at least three to four years to complete (before appeals), we can only make a preliminary assessment of the revised 2002 notice, and it will be some years before a study of the latest 2006 notice[75] can be carried out. A key question is whether the findings above, which cast doubt over the effectiveness of the leniency notice, persist beyond the significant 2002 reforms.

A. Important changes made in the 2002 leniency notice

It was widely acknowledged that despite its purported successes, the 1996 leniency notice suffered certain flaws which limited its effectiveness.[76] The main criticisms of the notice were that it lacked clarity and certainty. Its lack of clarity was mainly due to its subjective wording; in particular in stating that an 'instigator' or firm with a 'determining role' could not be granted full or very substantial immunity, and that leniency would only be granted if the applicant was the 'first to adduce decisive evidence of the cartel's existence'. There was no guidance as to when these conditions were satisfied. Secondly, there was an inherent lack of certainty as to how a firm would be treated once it had approached the Commission; full or very substantial immunity was only available if the Commission had not already opened an investigation into the cartel, or already had enough evidence to prove its existence. This was problematic because prospective applicants could not be sure whether this was the case, and because firms might be more likely to cooperate and produce evidence once an investigation had been opened.

There were also two further problems. First, leniency applicants were unsure of the level of leniency granted to them before the Commission delivered its final decision, several years later. Secondly, they were required to 'put an end to [their] involvement in the illegal activity no later than the time at which [they disclosed] the cartel'. This requirement was flawed in that the revealing firm's immediate withdrawal from a cartel agreement would have alerted the other cartel members that

[75] 'Commission notice on immunity from fines and reduction of fines in cartel cases' OJ [2006] C 298/17

[76] S Gale, 'The Leniency Regime and the Fight Against Cartels by the Directorate General for Competition' (2004) *Company Lawyer* 25(11) 324-30; M Jephcott, 'The European Commission's New Leniency Notice – Whistling the Right Tune' (2002) ECLR 23(8) 378-87; J Carle, 'The New Leniency Notice' (2002) ECLR. 23(6), 265-72

something was awry, allowing them time to destroy evidence before the Commission could launch an investigation. This last problem was not remedied until the 2006 leniency notice.[77]

The 2002 leniency notice made immunity available after an investigation was opened. It also removed the 'decisive evidence' requirement, but replaced it with an equally subjective test of 'evidence which in the Commission's view' will enable it to carry out a targeted investigation. It replaced 'instigator' and 'determining role' with the clearer '[to] coerce other undertakings to participate in an infringement'. It also provided written confirmation of immunity once the required criteria was deemed to have been met. The 2006 leniency notice has furthered these changes with the inclusion of guidance as to the information required to secure immunity, which can initially be in 'hypothetical terms'. It introduced a marker system, making it easier for leniency applicants to secure their place in the queue in lieu of providing more detailed evidence. Leniency applicants are also no longer required to end their involvement in the infringement immediately where that might jeopardize the integrity of investigations.[78] Table 5 illustrates the differences between the 1996, 2002 and 2006 EC leniency notices and also compares them to the 1993 US corporate leniency policy, which is frequently cited as the model of effective leniency design.

[77] For a more detailed discussion of the 2002 reforms, and the trend of convergence with the US leniency, see: DJ Arp and CRA Swaak, 'A Tempting Offer: Immunity from Fines for Cartel Conduct under the European Commission's New Leniency Notice' (2003) ECLR, 24(1), 9-18.

[78] For a discussion of how the 2006 notice has addressed some issues, and for an overview of some procedural issues that remain, see: JS Sandhu 'The European Commission's Leniency Policy: A Success' (2007) ECLR 28(3), 148-57.

Table 5: Comparison of leniency programmes

	1996 EC	2002 EC	2006 EC	1993 US
Immunity available after investigation is open	NO	YES	YES	YES
Standard necessary to qualify for immunity	'first to adduce decisive evidence of a cartel's existence'	'first to submit evidence which in the Commission's view may enable it to… carry out an investigation' or 'which… may enable it to find an infringement'	Guidance is provided as to what information needs to be provided. 'first to submit information and evidence which in the Commission's view will enable it to carry out a targeted inspection in connection with the alleged cartel' or 'find an infringement'. Can be in 'hypothetical terms' initially.	First to 'report illegal antitrust activity'
When applicant must end its involvement in the infringement	'no later than the time at which it discloses the cartel'	'no later than the time at which it submits evidence'	'immediately following its application except for what would, in the Commission's view, be reasonably necessary to preserve the integrity of the inspections'	'prompt and effective action to end its participation in the activity'. Participation can continue with DOJ's approval.[79]
Exceptions for Immunity	'compelled another… to take part'…. 'instigator' or 'played determining role'	'take steps to coerce other undertakings to participate in the infringement'	'took steps to coerce other undertakings to join the cartel or to remain in it'	'coerced another party to participate in the illegal activity or clearly was the leader in, or originator of, the activity'
When party learns level of leniency granted	Final Decision	Immunity confirmed in writing once it has been determined that evidence submitted meets conditions	Marker protects place in the queue. Can be 'hypothetical' to initially secure marker. Immunity confirmed in writing once it has been determined that evidence submitted meets conditions	Marker protects place in the queue. Assistant Attorney General makes final decision once application has been considered
Discount available to subsequent firms?	YES – up to 50%	YES – up to 50%	YES – up to 50%	NO – but reductions for cooperation can in effect be negotiated at plea bargain

[79] GP Spartling, 'The Corporate Leniency Policy: Answers to Recurring Questions' Speech delivered to ABA Antitrust Section, Spring Meeting, Washington DC. April 1998.

The European Competition Network (ECN) has also drafted a 'Model Leniency Programme' to encourage harmonization of national leniency programmes[80], with the view to creating a one-stop-shop[81] for leniency. This contains the main characteristics of the 2006 notice and includes a system of summary applications[82] to alleviate some of the burden on firms making multiple simultaneous applications. We would hope that the significant changes made to the notice in 2002 and 2006 (as reflected in the Model Leniency Programme) would increase the proportion of active cartels that are uncovered and punished, and result in less reliance on the US.

B. More of the same?

By April 2007, nine cartel decisions were delivered in cases opened after the introduction of the revised 2002 leniency notice. €3.6 billion was imposed in fines. Leniency was invoked in all nine cases. Eight were revealed by cartel members who received immunity and one (Lifts & Escalators[83]) was uncovered by a Commission investigation. Only three cases were previously or simultaneously investigated by the DOJ. Table 6 gives a break down of cases with a prior or simultaneous US equivalent investigation, in the style of Table 2 in section II.

[80] For a discussion on the problem of multiple filings on the national level see: N Levy and R O'Donoghue, 'The EU Leniency Programme Comes Of Age' (2004) World Competition 27(1): 75-99

[81] For a discussion on a one-stop-shop for leniency see: C Gauer and M Jaspers, 'Designing a European Solution for a "one stop leniency shop"' (2006) ECLR 27(12), 685-92

[82] Under such a system, applicants need only provide the relevant national competition authorities with a brief description of the infringement to secure their place in the queue with that authority for immunity or a leniency discount.

[83] DG Competition Press Release, IP/07/209 (21 Feb 2007).

Table 6: 2002 Leniency Success: Fines (to April 2007)

	No of Cases	Fines (€ million)	Proportion of Total Fines (%)
Cases Triggered By 2002 Leniency Applications	**8**	**2,692**	**74.8**
But where International Cartels with prior/simultaneous US policy success	3	983	27.3
EC Only Leniency Investigations	5	1,709	47.2

Ostensibly the figures illustrated in Table 6 above suggest a maturing of the European Leniency notice, with less dependence on the US and greater independent success at uncovering infringements. However, a breakdown of cartels by industry in Table 7 reveals that almost half of the cartels punished continue to be in the chemicals industry.

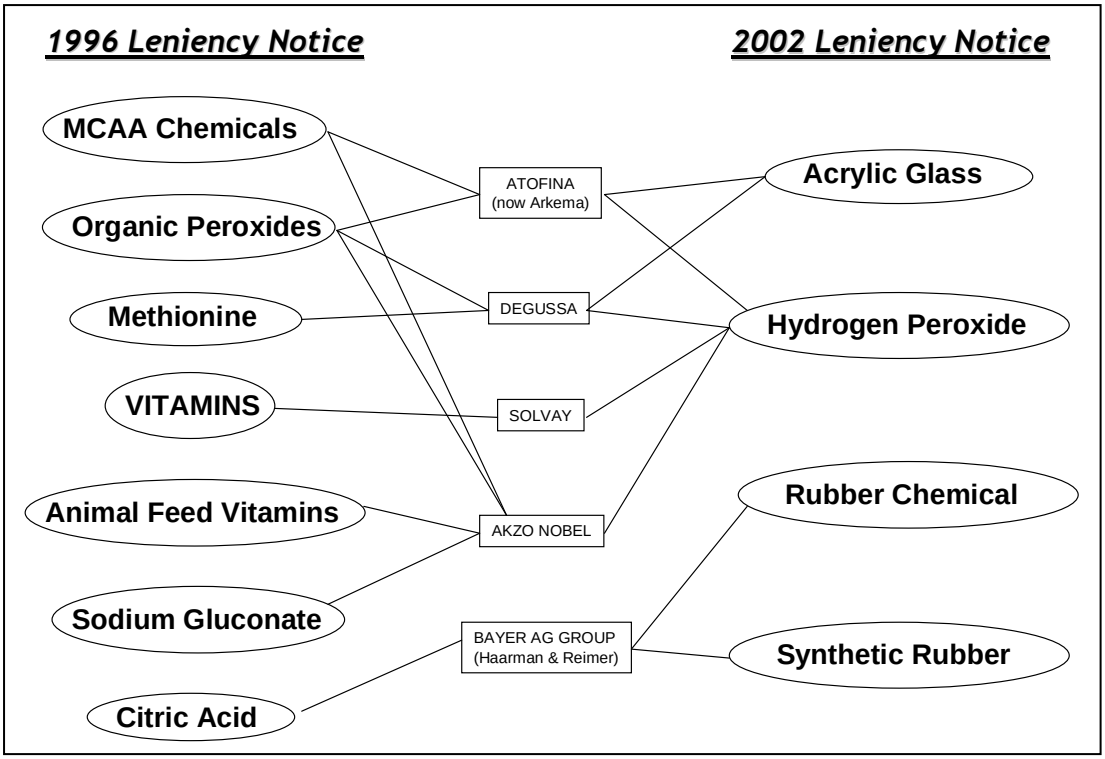
Table 7: 2002 Leniency success industry breakdown (to Apr 2007)

Industry	No of Cartels	Fines (€ million)	Proportion %
Chemicals	**4**	**1,327.6**	**49.3**
Petrolium	**1**	**266.7**	**9.9**
Metal Manufacturing	**2**	**1,041.4**	**38.7**
Agriculture	**1**	**56**	**2**

In addition, the firms involved in these four infringements link them to earlier cartels in the chemicals industry, revealed under the 1996 leniency notice. These links are illustrated in Table 8. For example, while under investigation for Organic

Peroxides and Animal Feed Methionine, Degussa revealed Acrylic Glass[84] and Hydrogen Peroxide[85] cartels, and was granted immunity in both. Bayer AG, whose subsidiary (Haarman & Reimer) was involved in Citric Acid, was granted immunity for revealing the Synthetic Rubber cartel.[86] All four of these infringements came to an end shortly before they were revealed to the European Commission.

Table 8: Continued links between cartels in the chemicals industry



V. Concluding Remarks

Leniency programmes constitute a central policy tool of cartel enforcement. An effective leniency programme will enhance deterrence by inducing members of active cartels to self-report in return for immunity, thus breaking the infringements' veil of secrecy.

[84] *Methacrylates* – Commission Decision of 31 May 2006. (Case 38.645) OJ [2006] L 322
[85] *Hydrogen Peroxide and Perborate* – Commission Decision of 3 May 2006. (Case 38.620) OJ [2006] L 353
[86] DG Competition Press Release, IP/06/1647. (29 Nov 2006)

This paper has revealed that the majority of cartels uncovered under the 1996 leniency notice were already (or broadly contemporaneously) under investigation in the US, where the incentive to self-report is much stronger. All but one of the EU only leniency cases had failed before self-reporting occurred. Moreover, approximately half of the infringements ostensibly uncovered by the notice (all of them US-EU leniency cases), were linked to each other by virtue of common membership. All had ceased before leniency applications were made in Europe. Evidence from Commission decisions and industry literature suggest that this was largely due to the prevailing conditions in the market; in particular new entry from China, the Asia crisis and industry crises. A preliminary look at infringements revealed through the reformed 2002 notice suggest that there is now less reliance on prior US success. However, half of the cases continue to involve cartels in the chemicals industry, closely related to those uncovered under the 1996 notice.

The fact that many of the cartels revealed through leniency applications had already failed at the time, is of particular concern. In this respect the leniency notice may have simply provided some firms with a way to: (i) discount the cost of committing the infringement in terms of the sanctions they would face, thus benefiting collusion by taming the end-game; (ii) provide a way for those firms to put their former cartel partners (now once again competitors) at a competitive disadvantage, by ensuring that they face fines of up to 10 per cent of their annual turnover (as is allowed under Regulation 1/2003) while they themselves benefit from immunity. In none of the cases involving leniency do we see clear evidence of an active, profitable cartel being disrupted solely by the incentives provided by the European leniency notice. That is not to say, however, that the presence of a leniency programme did not speed up the demise of some of these infringements.

To a lesser extent it may be that the leniency notice, despite the 2002 reforms, suffers from inherent uncertainties for the firm wanting to reveal. It has been described by some commentators as a 'one-sided poker game'[87]. The 2006 notice may mark the coming of age of the European Leniency programme in terms of its design. In particular with the inclusion of guidance as to what must be provided in order for

[87] D Henry, 'Leniency Programmes: An anaemic carrot for cartels in France, Germany and the UK' (2005) ECLR 26(1), p13-23; JM Joshua and PD Camesasca, 'Where angels fear to tread: the Commission's 'new' leniency policy revisited (2005) The European Antitrust Review *2005*, 10.

immunity to be secured, and the introduction of a marker system. Table 5 certainly suggests that it is now on a par with the US Corporate Leniency Policy. Unfortunately on the national level, some member states still do not have a leniency programme in place, and others are slow at reforming their programmes, keeping out of pace with developments on the Community level.[88] Of course, the Model Leniency Programme should encourage harmonization.

However the main reason why the European leniency programme has shown little sign in enhancing deterrence by uncovering active cartels, may be inadequate sanctions. The US first mover advantage in many cartel cases indicates that the incentives to reveal are stronger than in Europe. It has already been noted that the potential penalties are higher in the US: with the presence of a criminal offence for individuals; protection from treble damages; the existence of 'Amnesty Plus'[89] and the use of the plea-bargaining system. By contrast in EC competition law, the only available sanction for cartels on the Community level is fines of up to 10 per cent of an undertaking's worldwide turnover. The greater the difference between the leniency prize (immunity) and the level of sanction otherwise faced, the greater the incentive to reveal an infringement.[90] This would explain disappointing results from a leniency programme even if it is of optimal design. In addition to the severe threat of sanctions for those who fail to self-report, a perception that detection is likely, and a high level of transparency and predictability within the system as a whole, can also be identified as important to achieving deterrence. [91]

One further challenge facing the European leniency programme is tensions with efforts to encourage private enforcement for damages. A firm contemplating revealing an infringement in return for immunity from a Commission fine will be less likely to do so if private actions for damages of an uncertain magnitude are likely to follow. Private enforcement is currently perceived as weak in the EU as compared to

[88] See for example: Id., 20-3.
[89] Under 'Amnesty Plus' a firm negotiating a fine at plea bargain can obtain a further discount by providing information that relates to a different infringement. For arguments as to why this should be adopted in the EC, see: D McElwee, 'Should the Commission adopt 'Amnesty Plus' in its fight against Hardcore Cartels' (2004) ECLR 29(5), 558-65
[90] e.g. J Hinloopen, 'An economic analysis of leniency programs in antitrust law' (2003) DE ECONOMIST 151. No. 4.
[91] JM Joshua, 'That Uncertain Feeling: The Commission's 2002 Leniency Notice' in C-D Ehlermann and I Atanasiu (eds), *European Competition Law Annual 2006: Enforcement of Prohibition of Cartels* (Oxford: Hart Publishing 2007)

the US, although it is unclear how many out of court settlements occur. Despite this, it has been suggested that leniency applicants may be reluctant to approach the European Commission with evidence of an infringement which might later be discoverable in the context of a US civil action claim where up to treble damages can be awarded. The Commission has made efforts to prevent this from happening; it has shown some willingness to accept oral rather than written submissions[92], and has explicitly recognized that the tension can be detrimental to the effectiveness of leniency.[93]

As the reforms to the leniency programme take effect, and as sanctions increase, the Commission is likely to receive greater numbers of leniency applications. Priority should be given to cases involving active cartels, as these are more likely to be deterrence enhancing than punishing cartels which have failed. It also makes it less likely that firms will gain from the leniency programme – or use it as a strategic tool – after collusion has ceased. Given the resources needed to effectively act on leniency applications, the Commission is already finding it difficult to prevent a backlog of leniency applications. There is a danger that cases will start being turned away; an outcome that does not lend itself to increased deterrence.

[92] MJ Reynolds, 'Immunity and leniency in EU cartel cases: current issues' (2006) *ECLR* 27(2), 82-90 at 83; K Nordlander, 'Discovering discovery – US discovery of EC leniency statements' (2004) *ECLR* 25(10) 646-59

[93] See 2006 Leniency Notice, above n 75, at 6.

Appendix A: EC Cartel Cases (2000-April 2007)

YEAR	CARTEL	DETECTION METHOD	PRIOR/SIMULT. US INVESTIGATION
2007	DUTCH BREWERS	1996 LEN. NOTICE	NO
2007	LIFTS & ESCALATORS	INVESTIGATION	NO
2007	GAS INSULATED SWITCHGEAR	2002 LEN. NOTICE	NO
2006	SYNTHETIC RUBBER	2002 LEN. NOTICE	YES
2006	COPPER FITTINGS	1996 LEN. NOTICE	NO
2006	ROAD BITUMEN	2002 LEN. NOTICE	NO
2006	ACRYLIC GLASS (Methacrylates)	2002 LEN. NOTICE	NO
2006	HYDROGEN PEROXIDE	2002 LEN. NOTICE	YES
2005	RUBBER CHEMICAL	2002 LEN. NOTICE	YES
2005	INDUSTRIAL BAGS	2002 LEN. NOTICE	NO
2005	ITALIAN RAW TOBACCO	2002 LEN. NOTICE	NO
2005	INDUSTRIAL THREAD	INVESTIGATION	NO
2005	MCAA CHEMICALS	1996 LEN. NOTICE	YES
2004	CHOLINE CHLORIDE	1996 LEN. NOTICE	YES
2004	NEEDLE CARTEL	1996 LEN. NOTICE	NO
2004	SPANISH RAW TOBACCO	INVESTIGATION	NO
2004	FRENCH BREWERS	1996 LEN. NOTICE	NO
2004	COPPER PLUMBING TUBES	1996 LEN. NOTICE	NO
2003	INDUSTRIAL COPPER TUBES	INVESTIGATION	NO
2003	ORGANIC PEROXIDES	1996 LEN. NOTICE	YES
2003	CARBON & GRAPHITE	1996 LEN. NOTICE	YES
2003	SORBATES	1996 LEN. NOTICE	YES
2003	FRENCH BEEF FEDERATIONS	INVESTIGATION	NO
2002	ITALIAN CONCRETE REINFORCED BARS	INVESTIGATION	NO
2002	FOOD FLAVOUR	1996 LEN. NOTICE	YES
2002	SPECIALITY GRAPHITES	1996 LEN. NOTICE	YES
2002	METHYLGLUCAMINE	1996 LEN. NOTICE	YES
2002	PLASTERBOARD	INVESTIGATION	NO
2002	CHRISTIE'S & SOTHEBY'S	1996 LEN. NOTICE	YES
2002	DUTCH INDUSTRIAL GASES	INVESTIGATION	NO
2002	ANIMAL FEED - METHIONINE	1996 LEN. NOTICE	YES
2002	LOMBARD CLUB	INVESTIGATION	NO
2001	CARBONLESS PAPER	1996 LEN. NOTICE	NO
2001	ZINC PHOPSHATE	INVESTIGATION	NO

2001	GERMAN BANKS	INVESTIGATION	NO
2001	CITRIC ACID	1996 LEN. NOTICE	YES
2001	BELGIAN BREWERS	1996 LEN. NOTICE	NO
2001	LUXEMBOURG BREWERS	1996 LEN. NOTICE	NO
2001	VITAMINS	1996 LEN. NOTICE	YES
2001	SODIUM GLUCONATE	1996 LEN. NOTICE	YES
2001	GRAPHITE ELECTRODES	1996 LEN. NOTICE	YES
2001	SAS/MAERSK AIR	INVESTIGATION	NO
2000	AMINO ACIDS - LYSINE	1996 LEN. NOTICE	YES