ENFORCEMENT OF CARTELS' EFFECTS ON CHEMICAL INDUSTRY COMPLIANCE

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Abstract

The relationship between EU cartel enforcement in the chemical industry from 1997 to 2022 and the compliance measures mentioned in the annual reports of the concerned undertakings is qualitatively analysed in this research. The article then focuses on Akzo Nobel NV's distinctive use of an internal amnesty program and the level of industry compliance after this time of enforcement. Its conclusions are consistent with the idea that antitrust enforcement drives significant investment in compliance measures, with some evidence suggesting that these measures led to cartels reporting earlier in exchange for concessions and only one hard core cartel facing enforcement action in the decade that followed.

Keywords: Competition, Cartel, Chemical, EU.

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1. INTRODUCTION

Cartel behaviour was historically closely associated with the chemical industry; some of these behaviours extend back to the early 1900s. Chemical products are extremely vulnerable to collusive behaviour, regardless of whether cartels were publicly supported or outlawed. This is because chemicals often have minimal product distinction and are homogeneous as products. Additionally, consumers are often price-sensitive, and the high overhead costs associated with producing chemicals make it challenging for new players to enter the market. The industry also had a very strong culture of cartelization among US, European, and Japanese corporations prior to the antitrust enforcement operations of the 1990s and early 2000s. So much so that the undercover FBI tape of chemical corporations setting the price of lysine has largely influenced how we view cartels. In the film, executives make fun of competition authorities and their clients, famously saying, "Our clients are our enemies." Even if there had already been some enforcement in the chemical sector prior to this time, this was the case.

The Lysine cartel led to the world's largest-ever wave of international cartel enforcement. Due to the difficult collaboration of Mark Whitacre, an executive with Archer Daniels Midland, the Lysine case's initial focus on corporate espionage evolved into a covert price-fixing operation. We know that the FBI was made aware of rival cartels in citric acid and sodium gluconate at an early stage of their inquiry from Eichenwald's book The Informant, which was converted into a Hollywood film starring Matt Damon. Lysine was ultimately the first of 28 cartels in the chemicals sector to be discovered and penalized in Europe between 1997 and 2010 thanks to the US Department of Justice's (US DOJ) use of leniency and "amnesty plus," which was replicated by the European Commission's own leniency program. Six of these were directly tied to the Lysine or Vitamins cartels, and many more were similarly linked to one another due to shared membership among chemical companies.

Contrary to prior eras of cartel enforcement in the chemical industry, the new era of global enforcement and the expansion of countries actively enforcing competition law demanded a fundamental shift in compliance culture. Chemical companies began to take seriously the need to manage and prevent potential violations of competition law due to the availability of immunity to the first firm to report, the active imprisonment of executives by the US DOJ, the threat of significant exposure to follow-on actions for damages, and other factors. Additionally, there was a greater need to concentrate on efficiency and competition in reaction to Chinese entry into the market, which resulted in capacity expansions. The use of leniency applications to reduce exposure to fines was prompted by this new entry, which indicated that many cartels were already in trouble by this time.

Using the Annual Reports and related public statements of the 107 corporate groups mentioned as addressees in the 28 chemical cartel decisions issued by the European Commission between 2000 and 2010, this paper conducts a qualitative analysis of the compliance measures implemented by the chemical industry during the period of EU cartel enforcement in the late 1990s and early 2000s. Due to the nature of the data and the difficulties in controlling for variables that might have motivated investment in compliance other than enforcement, a thorough empirical investigation was not feasible. For instance, firms are not required to disclose specifics of their compliance practices in annual reports; as a result, they are free to decide when and how much information to provide. In fact, just 26 larger undertakings—out of the 107 corporate groups examined—made any mention of compliance procedures in their annual reports. There is also no other source of information or way to corroborate the facts in Annual Reports other than any public declarations made by the enterprise, as compliance is a wholly internal matter for the undertaking. As a result, the data provided in annual reports are inconsistent and incomplete and should be read with care. Though we find evidence of a causal link between the two in relation to 16 of the undertakings by comparing enforcement against undertakings with the timing and content of compliance announcements in their Annual Reports, there is a strong likelihood that this is also true of the remaining ten undertakings and broader industry trends. The unique perspective we offer on AlczoNobel NV's experience and its distinctive usage of an internal amnesty program supports this. The remainder of the article discusses how early reporting to the leniency program can assist corporations in decreasing their liability and the immediate benefits of compliance. There was leniency used in all 28 chemical cartel investigations (although immunity was not granted in one case), and evidence suggests that investing in compliance may have helped companies get immunity in relation to eleven of the investigations. Finally, we talk about potential long-term gains from the reported compliance activities throughout this time.

Quantum of Cartel In The Chemical Industry

Information for this article was first gathered from the decisions, statements, and data made by the European Commission and posted on its website and in the Official Journal. According to them, 28 of the 69 cartel judgements the Commission issued between 2000 and 2010 covered products from the

chemical industry. They amount to slightly under a third of the total cartel penalty levied by the EU throughout this time period, or just over €5 billion in fines before appeal. The chemical cartels have dominated a considerable portion of the Commission's activity over the past ten years and have also contributed significantly to the success of its leniency program, which was originally implemented in 1996 and revised in 2002.

The 28 chemical cartels that were the subject of this investigation are listed in Table 1 below, along with information about which company reported each cartel first and whether it was granted immunity. It is noteworthy that under the original 1996 leniency notice, companies who approached the Commission first after an inquiry had been begun were not entitled for immunity.

Table 1. EU Chemical Cartel Cases, 2000-2020.

Cartel (year of Commission decision)	Number of Undertakings	Fine (€)	First to Report	Immunity / Leniency	Immunity triggered by Compliance
1. Lysine / Amino Acids (2000)	5	109,900,000	Ajinomoto / Sewon	50%	N/a
2. Zinc Phosphate (2001)	6	11,950,000	Waardals	50%	N/a
3. Citric Acid (2001)	5	135,220,000	Cerestar	90%	N/a
4. Vitamins (2001)	8	855,230,000	Aventis	Yes	No
5. Sodium Gluconate (2001)	5	37,130,000	Fujisawa	80%	N/a
6. Food Flavour Enhancers (2002)	4	20,560,000	Takeda	Yes	No
7. Methylglucamine (2002)	2	2,850,000	Merck	Yes	No
8. Methionine (2002)	3	127,000,000	Aventis	Yes	No
9. Industrial and Medical Gases (2002)	7	25,720,000	None	No	N/a
10. Speciality Graphites (2002)	7	60,600,000	GraphTech UCAR	Yes	No
11. Organic Peroxides (2003)	5	70,000,000	AkzoNobel	Yes	Yes
12. Sorbates (2003)	5	138,400,000	Chisso	Yes	No
13. Choline Chloride (2004)	6	66,340,000	Bioproducts	30%	N/a
14. Rubber Chemical (2005)	4	75,860,000	AkzoNobel / Flexsys	Yes	Yes
15. MCAA Chemicals (2005)	4	216,910,000	Clariant / Hoechst	Yes	No
16. Synthetic Rubber (2006)	2	519,050,000	Bayer	Yes	~Yes

17. Methacrylates (2006)	5	344,562,500	Degussa	Yes	Yes30
18. Hydrogen Peroxide (2006)	8	388,128,000	Degussa	Yes	Yes
19. Dutch Bitumen (2006)	14	266,717,000	BP	Yes	Yes
20. Chloroprene Rubber (2007)	9	243,210,000	Bayer	Yes	~Yes
21. Spanish Bitumen (2007)	5	183,651,000	BP	Yes	Yes
22. Paraffin Wax (2008)	10	676,011,400	Shell	Yes	Yes
23. Aluminium Fluoride (2008)	6	4,970,000	Boliden Odda	Yes	No
24. Sodium Chlorate (2008)	4	73,401,000	AkzoNobel	Yes	Yes
25. Nitrile Butiadene Rubber (2008)	2	34,230,000	Bayer	30%	N/a
26. Heat Stabilisers (2009)	8	173,860,400	Chemtura	Yes	No
27. Calcium Carbide (2009)	8	61,120,000	AkzoNobel	Yes	Yes
28. Animal Feed Phosphates (2010)	6	175,647,000	Kemira / Yara	Yes	No

Leniency was effective in getting the corporations concerned to cooperate very well and in making it easier to report cartels other than the ones the Commission was already looking into. Companies were in a good position to identify additional infringements because of the substantial membership overlap mentioned above. When these businesses were able to immediately spot other possible infractions, this level of reporting might also be seen as a success in compliance. A further motivation to fully collaborate would have been the possibility that many of these cartels were already crumbling. The fact that the chemical businesses involved in several cartels during this time did not all share the same first-to-report firm during the course of the linked investigations is telling. This trend is a sign that businesses are having trouble using internal compliance tools to determine the scope and extent of their potential responsibility because there is no evidence to support any suggestion that this was somehow coordinated (addressed later in this paper). The fact that many of these companies have complicated international operations and several divisions and subsidiaries would have made matters worse: while the 28 chemical cartel verdicts impose fines on 107 distinct enterprises, a total of 236 legal entities were identified in the proceedings.

Measures Taken For Compliance in Response to Enforcement

Information was mostly acquired from Annual Reports in order to analyze how enforcement affected these 107 different undertakings' compliance efforts. We began by looking at the Annual Reports that were released for each company in the same year as the pertinent Commission decision, on the theory that this would be the first chance to discuss compliance in the public sphere after the Commission's inquiry was over. Then, we examined the reports from previous and earlier years, paying particular attention to those that were released in the same year that the company requested leniency or was the first to be the focus of an EU antitrust investigation. The study was unable to separate the specific incentives produced by the EU

leniency program at this time from the pro-compliance effect of enforcement. Additionally, it doesn't account for the efforts of businesses that invested in compliance but opted not to make them public. Nevertheless, it is plausible to believe that undertakings saw leniency as a feature of enforcement in addition to other features that made it even more important to treat antitrust compliance seriously. Better compliance, in particular, makes it easier for a company to spot violations internally and gain early collaboration. It is also logical to suppose that businesses would want their investment in compliance to be known, particularly to shareholders and clients whose perception of the company will have been damaged as a result of enforcement action.

We discovered that 26 (or just under a quarter) of the 107 undertakings or groups (out of 236 legal entities) involved in the 28 EU chemical cartel judgements between 2000 and 2010 reported investment in antitrust-specific compliance measures. Significantly, during this time, 65% of the fines against chemical cartels were paid by these 26 companies. Additionally, businesses who received higher fines seem to have invested the most in such safeguards. These included Hoffman La-Roche (fined twice in 2001: €462 million for the Vitamins cartel and €63.5 million for the Citric Acid cartel), Sasol Wax (fined €318,2 million in 2008 for the Paraffin Wax cartel), BASF (fined €296 million in 2001 for the Vitamins cartel), and BASF (fined €296 million in 2008 for the Paraffin Wax cartel).

As was mentioned in the introduction, it is challenging to show empirically a causal relationship between enforcement and particular antitrust compliance actions. This is because enterprises are not required to publicly publish their compliance efforts. In example, there is no mechanism to record compliance actions taken before the initial antitrust investigation was launched that were not made public. However, by taking into account the following factors, we can make some progress in examining the relationship between enforcement and compliance:

(i) the timing of first public announcements on antitrust compliance initiatives and whether they coincided with the start of an investigation or a decision on infringement;
(ii) where an explicit link between the two is identified by the undertaking, for example as part of an admission of wrongdoing; and
(iii) whether there were any specific antitrust compliance initiatives that were announced prior to the first European cartel investigation.

We are more interested in antitrust-specific compliance procedures than more generic assurances of legal compliance for these reasons. The fact that many annual reports from the chemicals sector previous to 1999 are unavailable is a significant drawback of relying on them. The Annual Reports that we do have, however, typically make it obvious whether antitrust-specific compliance activities were being introduced for the first time and how they built on prior regulations. Other than broad codes of conduct, we were unable to locate many references to antitrust-specific compliance procedures that predates the time of enforcement. However, we were able to identify one antitrust effort that took place before this period but was not publicized in the year it was introduced: There has been a "globally coordinated antitrust training program since 2000," according to Shell's 2010 Annual Report.

Whether the claims made in annual reports should be taken at face value or if they amount to little more than token efforts to allay shareholders' concerns or minimize the reputational harm brought on by enforcement without offering any real and substantial commitments to follow competition law in the future, is a related question. The announcement of objectively major sets of compliance activities, however, that would have needed a large degree of investment, involvement, and dedication inside the undertakings, has made this time stand out. Furthermore, it is less plausible that these were purely showy gestures, given the temporal similarity between the adoption of such compliance programs and the leniency requests in later cartels.

Following the implementation of a formal code of conduct or compliance program, staff education was the most often identified investment, with 14 of the 26 citing specialized competition compliance training. Hoffman La Roche reported in its Annual Report of the same year that, following enforcement action that started in 1999, "Over a four-month period... Roche's corporate principles and a range of issues relating to behaviour in the competition were explained and discussed in a Groupwide programme attended by a total of about 7500 management-level employees from all four divisions and Roche's central corporate departments." In order to familiarize staff with the Code of Conduct, BASF, for instance, developed a Legal Compliance Education Centre (LCEC) in the United States, according to a 2001 study by BASF. Additionally, it stated that more than 200 antitrust training sessions for staff members in marketing and sales had been completed in 2003. It engaged more than 25,000 employees in compliance training in 2009, and

41,000 did so in 2010. Additionally, it stated that all new hires were required to complete basic training, which was followed by refresher courses on specialized subjects like competition law. A comprehensive Business Principles training program was launched by AkzoNobel in 2003. It was "based on everyday life experiences, [and involved] all levels in the organization through a top-down approach." Along with that, they stated that "the Board of Management will not hold Management accountable for any loss of business resulting from compliance with Akzo Nobel's Business Principles." This was a recognition that profit had to come after competition compliance. A statement from the Chairman saying that "any and all compliance violations are totally unacceptable within this company and will not be tolerated" was released in response in 2004. In our corporate company Principles, we have a very tight code of ethics that we will adamantly work to uphold in all of our company interactions and daily operations. Senior executives from other companies, such as the President of the Nippon Soda Company in 2003, made similar claims.

AkzoNobel presented a thorough framework for complying with competition law in 2009, noting that it had implemented "a new company-wide corporate complaints procedure called Speak Up! which enabled[ed] all our employees to report irregularities in relation to our Code of Conduct," and that approximately 95% of staff members had undergone Code of Conduct Training. All personnel exposed to competition law issues (about 10,000 in 2009) were "trained annually and sign a declaration to confirm adherence to the Competition Law Compliance Manual," according to the Competition Law Compliance Manual. Other focused competition law training was developed for specific high-risk groups. Other businesses also implemented similar programs; Sasol Wax, for example, announced in 2010 that "more than 13 000 employees certified that they had received and read the guideline." Additionally, we have given approximately 4000 staff in-person training on pertinent topics related to compliance with competition legislation. The thorough in-person training supplemented the online instruction that was conducted the year before. In most cases, it was noted that the implementation of training programs was crucial to the success of the compliance program; in the instance of Le Carbone Lorraine (later Mersen), it was noted that these programs were paired with "written undertakings by senior executives and external audits." Furthermore, it is evident from a review of more recent Annual Reports that several of these businesses now view training as a long-term commitment. For instance, SGL Carbon details how company "introduced its comprehensive worldwide antitrust law compliance program already in 2001" in its 2019 Annual Report. Regular obligatory training that is provided as in-person and online courses is a crucial component. Additionally, Kemira, Tosoh, Solvay, Fujisawa, Degussa (later Evonik), Arkema, Shell, Total, and H&R reported major staff training initiatives.

The next most common investment was the appointment of a dedicated person or team to monitor competition compliance. This was reported by 13 of the 26 companies. Hoffman La Roche, for example, reported in 1999 how a team whose main job will be to monitor compliance with Group principles and guidelines worldwide was set up in the internal auditing unit'. In 2006, BASF reported having become one of the first German companies to appoint a Chief Compliance Officer. While in 2002, Eisai described how an executive was appointed in October 1999 to lead a new corporate ethics department. It also 'created a compliance committee involving external legal experts from Japan and overseas to give specialist guidance on these issues', adopted a Charter of Business Conduct and a Code of Conduct in April 2000, and established a point of contact for staff with compliance queries. Solvay, who had relaunched their compliance programme in 2005, reported two years later the setting up of a network of compliance officers to better monitor the group, 'given the problems recently encountered again with regard to compliance with competition rules'. In some of the firms the dedicated person's responsibility was not exclusive to competition. For example, in 2002 Merck reported the appointment of a compliance officer responsible for 'high-risk sectors of law, such as antitrust'. In others, the monitoring was a more complicated global arrangement, for example Degussa (later Evonik) set up 'a global compliance organization headed by a Chief Compliance Officer'. In 2012, Total announced, ...over 350 Compliance Officers have been appointed and trained at the business segments, subsidiaries and entities. Their role is to ensure that the program is implemented at the local level'. The appointment of the dedicated person or team was sometimes closely linked to systems of reporting. For example, in response to the investigations into Dutch Bitumen and Synthetic Rubber, Shell announced a review of its overarching compliance programme: 'A Group Compliance Officer, reporting to the Group's Legal Director and with direct access to our Group Chief Executive, has been appointed Royal Dutch Petroleum Company also launched its global whistleblowing procedure to protect employees who report any breach or suspected breach of any law, regulation or company policy or guideline, including the Shell General Business Principles'. In 2005, Shell successfully applied for immunity in return for disclosing the Paraffin Wax cartel to the Commission. Other companies that reported the appointment of a dedicated person or team to

monitor competition compliance included: L'Air Liquide, H&R, AlczoNobel, The GEA Group91, Tosoh, Sasol Wax, and Tessenderlo.

As a conclusion, we note that 26 of the 107 undertakings (often the largest) subject to EU cartel enforcement action between 1997 and 2010 revealed major antitrust compliance measures that appeared to be a response to that enforcement action. For 16 of these undertakings, antitrust compliance initiatives are specifically linked to enforcement action, or are strengthened in the year the first investigation opened, or when the first decision was adopted, with no mention of antitrust specific compliance in the previous Annual Reports available. This gives us confidence that there is some causal relationship between enforcement and compliance. There is also grounds to think that these procedures were being implemented for the first time for the remaining 10 undertakings, although it is impossible to prove this since prior Annual Reports were not accessible. Table 2 also demonstrates how, in some instances, the investment in compliance corresponded with the start of a new investigation in which the corporation was granted immunity. We now turn to the particular case of AkzoNobel and its use of an internal amnesty program to see how investment in compliance helped corporations to successfully ask for leniency and lessen their cartel culpability.

Akzonobel's Use Of An Internal Amnesty Programme

AkzoNobel participated in nine cartels and was granted immunity from punishment for four distinct cartel violations. These were Calcium Carbide (2009), Sodium Chlorate (2008), Rubber Chemical 2005, and Organic Peroxides (2003). In the other five cartels, it was defeated to immunity, but in the hydrogen peroxide (40%), MCAA Chemicals (25%), choline chloride (30%), and sodium gluconate (20%) cartels, it received discounts in exchange for its cooperation. It disputed the Commission's treatment of AkzoNobel subsidiaries as part of the same enterprise as the rest of the business in some instances. The Court of Justice of the European Union (CJEU) confirmed that undertakings are to be understood as economic units, even if they consist of multiple legal entities, and that the fact that AkzoNobel owned the subsidiary in its entirety was sufficient to presumptively establish that AkzoNobel exercised decisive control over the subsidiary without the need for additional proof. The need for businesses to ensure that their compliance efforts cover all aspects of the project is increased by this approach to parent liability, but it also ignores the challenges of risk management across intricate and varied corporate structures that are all treated as one economic unit under competition law.

More cartel infringement cases involving AkzoNobel than any of the other 107 corporations were decided between 2000 and 2010. The company's immediate task was to properly identify its exposure to competition law sanctions and do so in a timely manner in order to take advantage of the European Commission's leniency program. All nine of the violations were ones that were already in place at the start of the decade. While some of these violations were already the subject of investigations in the US, others were just becoming known. Securing immunity in four investigations and considerable fine reductions in all but one of the others was a successful outcome from a compliance standpoint, given the circumstances. This was accomplished by using an original internal strategy to find probable cartel involvement. This involved implementing an internal employee amnesty program for the entire business population.

In accordance with this plan, all AkzoNobel employees were offered a single opportunity (within a set timeframe) to come forward with information regarding potential violations of competition law in exchange for a promise that the business would not act in a manner that would be detrimental to them. This novel strategy was brought about by US enforcement and a later settlement of a related US civil suit. The threat of increased exposure to treble damages served as an effective deterrent, if not more so, than corporate fines. A multi-million-dollar settlement in the Choline Chloride case at the end of 1999 persuaded the AkzoNobel board to create an internal amnesty program at the start of 2000. They were motivated by the guiding principles of the EU leniency program, which the European Commission had just four years previously created. The internal amnesty was similar to leniency in that it was contingent on ongoing, total cooperation and protected the employee from any internal negative effects of participating in the cartel, but it was also open to all employees, not just those who were the first to report. However, it amounted to putting a line in the sand because it made clear that all future cartel activities would not be accepted in addition to the amnesty for past violations.

There were three essential components to the internal amnesty. To prevent competitors from beating AkzoNobel to immunity or customers from learning about potential cartel responsibility, the first need was absolute confidentiality. If this requirement had been violated, it may have had an immediate detrimental impact on business. The second was that outside legal counsel had to be involved in order to uphold the legal professional privilege. Communications between employees and

in-house lawyers are not shielded by legal professional privilege under EU competition law, as the CJEU would rule ten years later in a landmark decision involving AkzoNobel. As part of AkzoNobel's continuous cooperation with the authorities, the third step was to discuss the internal amnesty with the US Department of Justice and the European Commission to make sure it would be useful to their upcoming investigations.

The strategy, which amounted to suspending the implementation of business rules in order to protect the interests of stakeholders in the company, including all employees and stockholders, was not without controversy- even at the time. From the perspective of compliance, it amounted to a no-fault approach to changing employee behavior on the theory that using both a carrot and a stick risked deterring some employees from coming forward, potentially postponing or jeopardizing the prospect of AkzoNobel obtaining immunity in relation to as-yet-undisclosed cartel arrangements. It implied that the amnesty would also apply to employees who had organized, inspired, or persuaded others to take part. For instance, a senior executive from AkzoNobel who participated in the internal amnesty program in connection with the MCAA Chemicals cartel entered a guilty plea in the US and was sentenced to three months in jail. This executive stayed with AkzoNobel until his retirement in order to uphold the integrity of the internal amnesty program and deliver on the promised lack of penalties.

AkzoNobel argued that this was no different from the competition authority giving immunity or mild treatment in exchange for cooperation, even though some observers may consider this runs strongly opposed to the requirement for deterrence. Both were practical solutions to put an end to competition law violations on the grounds that this interest trumped the requirement to hold those individuals accountable. As a matter of fact, the amnesty merely shielded the employees from internal repercussions of their behavior, not from any specific penalties imposed by competition authorities. Furthermore, it should be emphasized that internal amnesty programs, while uncommon in the field of competition law, are more frequent in the context of ensuring compliance with anti-bribery and anti-corruption laws. There has been ongoing discussion regarding the extent to which effective compliance methods should be reflected in competition law sanctions. Different jurisdictions have taken varying approaches, and some people contend that the fear of significant fines should be sufficient to promote excellent compliance.

If we believe that the major goal of compliance is to prevent and minimize the company's exposure to corporate fines, then one potential criticism of (or limitation on) an internal amnesty program is that it could be overshadowed by the amount of its success. Indeed, while making sure employees report infractions will undoubtedly give the company a leg up in any leniency applications, it also runs the risk of bringing to light old infractions that might not have been discovered otherwise, particularly in relation to those that have been hidden for a while despite the existence of the EU's leniency program.

The Repercussion of Stronger Compliance

The different compliance activities and procedures that are discussed in sections III and IV of this study had a significant influence on the chemical industry's culture as well as subsequent enforcement that took place following the 2000–2020-time frame. We now move to a crucial last query: what effect did compliance have on further anti-competitive behaviour in the sector?

A. Increased leniency applications in the short term

The research in section III makes it evident that at least some compliance initiatives took place in response to enforcement actions taken by the European Commission (and in some cases, parallel actions taken by the US DOJ as well). The risks of failing to receive immunity or a significant reduction in penalties in exchange for being the first to notify the cartel or for supplying crucial new evidence made investing in these compliance efforts all the more essential. Chemical sector dominance in EU cartel enforcement from 2000 to 2010 can be attributed to the industry's extensive cartelization and overlapping membership, which caused a domino effect when cartels were enforced. There were numerous cartels that would shortly be reported to, or discovered by, the government, which meant numerous opportunities to reduce liability, in contrast to cartel infringements in other industries. The high level of merger and acquisition activity in the sector, as well as the common membership in these cartels, increased the scope for compliance efforts to uncover unreported infringements. For instance, Clariant revealed the existence of the MCAA Chemicals cartel shortly after acquiring the MCAA business.

In a number of cases by the year 2000, AkzoNobel was assisting the competition authorities. Only a few months after beginning its internal amnesty program, it petitioned for leniency in Organic Peroxides, receiving immunity from fines as a result. Applications for leniency for Calcium Carbide at the same time as Rubber Chemical in 2002 all led to immunity and were specifically attributed to AkzoNobel's internal compliance program and amnesty. Despite losing the race to report the five other infractions it was a part of, compliance nevertheless assisted them in four of those cases in

receiving a reduced penalty. Since Heat Stabilisers had contested the Commission's inspection decision in court, the company did not receive any leniency in the final 2009 judgement despite its request for mercy. Although each undertaking is of course free to defend its rights as it sees appropriate, the Commission came to the conclusion that the actions for annulment were at the heart of the delay in this case. As a result, it is inappropriate for [AkzoNobel] to gain from the aforementioned reduction.

Another company that benefited from compliance while seeking for leniency was Dow Chemical, which boosted compliance (by adopting a code of ethics, see above) and responded to enforcement in a prior cartel (Synthetic Rubber) by filing for leniency in a subsequent case (Chloroprene Rubber). After increasing its compliance in response to its involvement in the Dutch Bitumen case from 2002 and the Synthetic Rubber case from 2003, Shell won the race for leniency in the Paraffin Wax cartel in 2005. Even though it was probably because of heightened attention as a result of enforcement in a non-chemical industry, the corporation Odda Boliden asked for immunity in a chemical cartel. Boliden requested for immunity in the Aluminium Fluoride cartel in 2005 after the Commission punished the business in 2004 for its involvement in the Copper Tubing cartel (a sentence of €32.6 million). Additionally, we discovered instances of businesses that separately requested immunity from any prior involvement in a chemical cartel inquiry between 2000 and 2010. Chisso, Cerestar Bioproducts, Chinook, and Graftech were a few of them. Another intriguing case in point is BP plc (formerly BP Amoco), which, despite disclosing the existence of these cartels to the Commission in 2002, was granted exemption from sanctions in the Dutch and Spanish bitumen markets in 2006 and 2007, respectively. It is noteworthy that BP responded to past enforcement in other industries by implementing measures focused on compliance in competitiveness. This also shows how, at least in some instances, the EU's leniency program combined with cartel enforcement led to business compliance activities that spread beyond of the specific market or industry under examination.

Levenstein and Suslow bring up the crucial question of whether leniency was intentionally utilized to exclusively expose less lucrative cartels. The majority of cartels, according to certain empirical research, are only discovered by the leniency program after they have failed for other reasons. While any such strategy would not be easily discernible from the materials we engaged with, our investigation did not turn up any evidence that corporations in the chemical industry were strategically using leniency throughout the enforcement period. Instead, at least in some instances, our findings are consistent with huge firms suffering with insufficient knowledge about what is happening within each of their divisions and subsidiaries while seeking to build substantial compliance activities in response to a significant wave of enforcement. In some cases, the corporations claimed that a preliminary probe completely caught them off guard. Sasol Wax declared in its first Annual Report following a sanction for its role in Parafin Wax,

"Sasol was completely oblivious to these activities." They were immediately stopped when we got aware of them in 2005. We regret that this has happened in one of Sasol's subsidiaries and that, both when we purchased the company 13 years ago and afterward, our compliance and due diligence programs failed to spot this anti-competitive behaviour.

In the same year, the Chairman made a statement that alluded to the challenge of identifying cartels within intricate corporate organizations given their covert nature. In the report from the following year, a thorough examination of compliance was described. It was acknowledged that "The review has revealed and still may reveal competition law contraventions or potential contraventions in respect of which we have taken or will take appropriate remedial and/or mitigating steps, including lodging leniency applications. In order to overcome this difficulty, several of the businesses invested in compliance as a means of assuring efficient cooperation with the European Commission in exchange for indulgence and in an effort to identify any further liability exposure. It is clear from the way that investments in compliance sometimes appear to have corresponded with the start of a subsequent investigation by the European Commission, in which the company was granted immunity for being the first to report. Even if they were defeated to immunity, others, like Dow Chemical, appear to have benefited from investments in compliance made in response to a first antitrust inquiry by obtaining less fines in later cases. Whether senior managers within the company were aware of cartel conduct (and thus readily had the information needed to apply for leniency) or relied on compliance tools to find that conduct within their organizations is an important factor that is generally not clear from the Annual Reports. However, given the clear domino effect mentioned above and the high degree of collaboration with the European Commission, it is difficult to see why these companies would have thought it was profitable to try to deny the existence of a cartel. This is not to say that strategy did not play a role in leniency applications.

B. Does compliance over time result in fewer infractions?

A sector with a high rate of cartel recidivism is sometimes used as an example, such as the chemicals industry. However, considering that these cartels and the investigations that pertain to them were typically contemporaneous to one another, this is not a completely true description. If we contrast the 2000–2010 enforcement era with the 2011–2020 enforcement period, we find that only one of the 107 undertakings (or 236 legal entities) that received EU infringement judgements throughout the relevant period was subject to a further antitrust investigation and fine by the Commission. The Ethylene cartel was represented by Clariant (2020). As previously reported, this was the business that, after buying an MCAA company in 1999, obtained amnesty for MCAA Chemicals (2005). Despite having started a compliance program in 2007, Clariant appears to have been the third company to assist with the Commission's investigation and receive a discount of 30%. They claimed in a press release that their involvement in the violation had been caused by a "single former employee" and that, in response to the Commission's investigation, they had increased their compliance efforts in 2017.

Aside from this, it appears that there has been a major increase in market compliance because, out of about 40 cartel rulings made between 2011 and 2020, only the ethylene cartel was found in the chemical industry. As a result, just 3% of EU cartel enforcement involved chemical cartel cases, down from over a quarter. The ethylene case was unique since it included a buying cartel as opposed to the 28 cases before it, which all mostly involved selling cartels. It is also noteworthy that Westlake, the applicant for immunity in this instance, established a competition compliance program that may have assisted in identifying the infringement despite having no prior history of violating anti-cartel laws. A search of the OECD International Cartel database reveals no international chemical cartels since 2012 (the latest year for which data is available), spanning about 50 jurisdictions, indicating that the necessity for cartel enforcement in the industry has reduced recently.

Although this is a good picture, there are some significant limitations. The first is that after such a vigorous decade of enforcement, extremely large corporate fines, and the existence of an effective leniency program, we would naturally assume (and hope) there would be a high level of compliance. The second is that the nature of cartel risk is probably different now than it was earlier. The Lysine cartel's smoke-filled meeting rooms reflect a time when leniency programs were either non-existent or in their infancy, competition enforcement was viewed as weak, and chemical companies had not yet made significant investments in compliance and gotten rid of their culture and legacy of cartelization. Today's cartel danger is more likely to exist on the periphery of cartel regulations or among select personnel who either purposefully neglect compliance training or are not sufficiently engaged by it. The third is that it is possible that certain market participants are still engaging in collusion while going unnoticed. As was stated earlier in this study, many of the cartels in the chemicals sector that were exposed between 2000 and 2010 were already in trouble when they were discovered. There may be occasions where strong new cartels emerge notwithstanding the presence of leniency, the threat of enforcement, and the participants' best efforts to comply. It's also possible that less overt types of collusion have gained popularity; these don't require direct communication, are harder to examine, and aren't as easily exposed to infringement judgements. Even if all of these cautions are accurate, the argument for investing in compliance is still strong since it can assist limit liability by reducing the opportunity for serious cartel violations and by encouraging cooperation in exchange for forgiveness.

2. CONCLUSION

This essay has made a significant and original contribution to our knowledge of the interplay between competition compliance and cartel enforcement. Our qualitative research has revealed that many of the larger chemical industry players seem to have directly responded to cartel enforcement by the European Commission (and in many cases, the US Department of Justice) by making investments in competition compliance through the adoption of a formal compliance programme, a code of conduct, staff training, and dedicated in-house compliance officers and directors. Due to the industry-specific growth of cartels and shared membership across enterprises, leniency turned out to be quite successful. In order to maximize their gain from the leniency program, the corporations sought to determine the degree of their exposure to cartels, which had an evident domino effect on enforcement. We also observed that after the period of vigorous enforcement from 2000 to 2010, there was a decade of what appeared to be compliance with anti-cartel laws, as evidenced by the fact that the number of cartel infringement decisions involving the chemical industry decreased from 26 (or roughly a quarter of EU cartel enforcement) to just one (or 3% of all EU cartel decisions in the relevant period).

It is evident that, at least in some instances, enforcement led the larger chemical industry businesses to invest significantly in compliance. The three quarters of (mostly smaller) organizations subject to enforcement throughout the 2000s may not have made any public declarations of

compliance investment, but that does not mean they did not take compliance more seriously. In fact, it is plausible to assume that the 26 out of 107 businesses that did publicly declare their compliance initiatives inspired others to follow suit and had a beneficial influence on the sector.

Beyond the specific examples covered in this research, it is difficult for us to distinguish between the effects of enforcement and leniency and the amount to which compliance efforts have helped to decartelize the chemical business (if indeed that is what has happened). Given that we have observed numerous instances when the latter helps and motivates businesses to reduce their vulnerability to fines under the former, it may be appropriate to view leniency and compliance as complementing. In fact, data from the literature suggests that some degree of delinquency is unavoidable given the ethically ambiguous character of anti-competitive behavior unless a moral commitment to uphold the law is also developed and accepted. Only unambiguous assertions of compliance and ethics supported by strict training and reporting procedures may demonstrate this moral commitment. However, it is noteworthy that the major chemical corporations made a considerable investment in compliance in the sector that perhaps had the greatest success in terms of leniency exposing cartel violations.

The example of AkzoNobel demonstrates how cutting-edge internal compliance techniques can be useful for assisting a business in identifying an infraction and being the first to disclose it to the competition authority in exchange for immunity. It sold its chemical division in 2018 to concentrate on paints and coatings, but it continues to implement focused internal amnesty initiatives for its recent acquisitions. Although its internal amnesty program was successful, it has not been implemented again in the same manner, which raises the issue of how much employees who report inappropriate behavior should be exempt from discipline. Given the severity of the enforcement and the volume of alleged unreported cases, AkzoNobel was in unusual circumstances. Employees are now expected to follow codes of conduct and competition compliance training, and if they don't, they risk being reprimanded or fired. However, when it comes to leniency programs, all large firms are faced with a moral conundrum since frequently, the exact people who committed the infraction must be relied upon to help the company obtain amnesty or a smaller payment. It may be highly challenging to carry out threats of reprimand or termination as a result. However, the widespread application of internal amnesty may be viewed as unethical, as it could send the wrong signals to other workers. It is also fraught with complications relating to employment law, legal privilege, corporate disclosure, and conflicts of interest when the subject is also the subject of a criminal investigation.

3. REFERNCE

1. Margaret C Levenstein, Catarina Marvao and Valerie Y Suslow, *Preventing Cartel Recidivism*, 30(3) ANTITRUST 81, 81. (2016).
2. Michael Andreas, Archer Daniels Midland. FBI covert recording of a Lysine Cartel meeting in Hawaii, March 1994. The transcripts of the Lysine cartel recorded meetings are available in the Department of Justice website as public documents at https://www.justice.goviatespeech/caught-act-inside-international-cartel (last accessed (23 April 2023).
3. European Commission decisions of 23 November 1984 (IV/30.907 - *Peroxygen products),* of 23 April 1986 (IV/31.149 - *Polypropylene)* and of 2 December 1986 (IV/31.128 - *Fatty Acids).*
4. Kurt Eichenwald, *The Informant* (New York: Broadway 2000).
5. For an analysis of European Antitrust Policy for the period 1957-2004, see: Martin Carree, Andrea Giinster and Maarten Pieter Schinkel, *European Antitrust Policy 1957-2004: An Analysis of Commission Decisions* 36 REVIEW OF INDUSTRIAL ORGANISATION 97 (2010).
6. See Andreas Stephan, *An Empirical Assessment of the European Leniency Notice*, 5(3) JOURNAL OF COMPETITION LAW & ECONOMICS 537 (2009).
7. Ibid.
8. The identification of cartels decided between 2000-2010 was based on the combined assessment of:

(i) 72 cartel decisions issued by the Commission from 1 January 2000 to 31 December 2010, retrieved from the Commission website at https://ec.europa.eu/competition/elojade/isef/index.cfm?clear=l&policy_area_id=1 and

(ii) decisions at the Commission "cartels cases" webpage available at https://ec.europa.eu/competition/cartels/cases/cases.html

9. Commission Notice on the non-imposition or reduction of fines in cartel cases, [1996] OJ C207/4 ("Leniency Notice"), which was amended in [2002] OJ C45/3. The current Leniency Notice dates from [2006] OJ C298/17, and was amended in [2015] OJ C256/1, after the Directive (EU) No

104/2014 of 26 November 2014 on certain rules governing actions for damages under national law for infringements of the competition law provisions of the Member States and of the European Union [2014] OJ L349/1.

10. Owing to the wide meaning of 'undertaking' in EU law, many of these cartel decisions make reference to multiple entities that fall within the same undertaking, but only one fine is imposed per undertaking.
11. Immunity was not granted because Ajinomoto revealed the cartel but did not benefit from immunity because it had acted as ringleader and had failed to disclose another cartel to the Commission. See European Commission Press Release IP/00/589, 'Commission fines ADM, Ajiinomoto, others in lysine cartel' (7 June 2022).
12. Immunity was not granted because Waardals approached the Commission shortly after the surprise investigations were carried out. See Commission Press Release IP/01/1797, 'Commission fines six companies in zinc phosphate cartel' (11 December 2022).
13. Immunity was not granted because Cerestar only came forwards after it became fully aware of the Commission's investigation. See Commission Press Release IP/01/1743, 'Commission fines five companies in citric acid cartel' (5 December 2022).
14. Five other companies were not fined because the cartels in which they were involved ended five years or more before the Commission opened its investigation. See Commission Press Release IP/01/1625, 'Commission imposes fines on vitamin cartels' (21 November 2001).
15. A fine was, however, imposed on Aventis for its passive participation in the vitamin D3 infringement, on which it provided no information to the Commission. Ibid.
16. Aventis applied for immunity on 19 May 1999. No annual reports available before this date.
17. Immunity not granted for the same reason as in *Citric Acid* (see footnote No 14 above).
18. Takeda applied for immunity on 09 September 1999. No annual reports available before this date.
19. Merck applied for immunity on 27 Sep 1999. No annual reports available before this date.
20. Aventis applied for immunity on 26 May 1999. No annual reports available before this date.
21. While no company was the first to report the cartel, AGA and Air Products were granted a 25%
22. reduction for providing additional evidence as well as explanations on the documents found during the inspections and for not contesting the facts. See Commission Press Release IP/02/1139, 'Commission fines seven companies in Dutch industrial gases cartel' (24 July 2002).
23. Graftech applied for immunity on 13 April 1999. No annual reports available before this date.
24. AkzoNobel applied for immunity on 7 April 2000. That same year, it created its antitrust program.
25. Chisso applied for immunity on 29 September 1998. No annual reports available before this date
26. This was a North American producer that had made the Commission aware of the cartel in April 1999, but which was not subject to the Commission decision. See Commission Decision of 9 December 2004 in *Choline Chloride* (Case C.37.533).
27. Akzo/Flexys applied for immunity on 22 April 2002. Two years before it had created its antitrust program.
28. Clariant applied for immunity on 6 December 1999. No annual reports available before this date.
29. Bayer applied for immunity before the first surprise inspection, which happened on 27 March 2003. Bayer had introduced a general compliance code in 1998. See Bayer 1998 Annual Report, p. 21.
30. Degussa applied for immunity on 20 December 2002. That same year, its compliance efforts occurred.
31. BP applied for immunity on June 2002. BP had implemented measures focused on compliance in competition, in response to prior enforcement in other industries. See footnote No 112.
32. Shell's 2010 Annual Report referred to the existence of a "globally co-ordinated antitrust training programme since 2000", see 2010 Shell Sustainability Report.
33. Boliden applied for immunity on 23 March 2005. No annual reports are available.
34. EKA Chemicals/AkzoNobel applied for immunity on 28 March 2003. In 2000 the group had created its antitrust program
35. Immunity was not granted because Bayer, the first company to contact the Commission expressing its wish to cooperate, did not disclose the first period of the cartel (which was disclosed by the other cooperating company, Zeon, which benefited from a further reduction). See

Commission Decision of 23 January 2008 in *Nitrile Butadiene Rubber* (Case COMP/38.628), paras 21 and 192-97.

36. Chemtura applied for immunity before the first surprise inspections on 12 and 13 February 2003. No annual reports are available.
37. AkzoNobel applied for immunity before 20 December 2006. In 2000 the group had created its antitrust program.
38. Kemira applied for immunity on 28 November 2003. Nothing was found for the years 1999-2003.
39. For a detailed analysis of how cartels operated in the chemicals industry, see Joseph E Harrington, *How Do Cartels Operate?* 2(1) FOUNDATIONS AND TRENDS IN MICROECONOMICS 1 (2006).
40. See e.g. *Vitamins*, see footnote 15 above.
41. A list of these companies is available in Appendix 1.
42. The key search terms included: antitrust, anti-trust, compliance, competition law, cartel, integrity, fines,
43. training, European Commission. Finally, we checked the official press releases of the involved companies in the years around the Commission decision.
44. Wouter Wils, *The Use of Leniency in EU Cartel Enforcement: An Assessment after Twenty Years* 39(3) WORLD COMPETITION 327 (2016), shows how leniency applications increased from 10% in 1996-2000 to 81% in the 2006-10 period, and how cartel decisions tripled following the introduction of the leniency program in Europe.
45. See Luca Aguzzoni, Gregor Langus and Massimo Motta, *The effect of EU Antitrust Investigations and Fines on a Firm's Valuation,* 61(2) THE JOURNAL OF INDUSTRIAL ECONOMICS 290 (2013).
46. These 107 involved companies include entities that were independent for a time, but were also subsidiaries of another involved company for a time. See for example Arkema (previously known as Atochem/Atofina)
officially created by Total in 2004, whose IPO occurred on the Paris Stock Market in 2006.
47. In total, €5,008,475,300 in fines were levied against the 26 businesses as a result of the 28 chemical cartel verdicts. We only included the fines (€78.6 million) that Total, Arkema, and Elf Aquitaine collectively paid in Hydrogen Peroxide in 2006 and the fines (€219 million) that Arkema, Altuglas, Altumax, Total, and Elf Aquitaine collectively paid in Methacrylates in 2006 (if the fines of the respective subsidiaries were included, the total amount would rise to €3,373,898,250 or 67%). Regardless of the outcome of any appeals before the CJEU, we took fines into consideration while making the first Commission determinations.
48. Older Annual Reports are not published on the undertakings' websites and are not accessible from online repositories including the US Securities and Exchange Commission (SEC).
49. See Letter from the Chairman in Roche Group Annual Report and Group Accounts 1999, p. 6.
50. See BASF Social Responsibility Report 2001, p. 52.
51. See BASF Corporate Report 2003, p. 15.
52. See BASF Corporate Report 2009, p. 120.
53. See BASF Corporate Report 2010, p. 120.
54. Ibid
55. Ibid. p. 42.
56. See 2003 AkzoNobel Annual Report, p. 45.
57. See 2004 AkzoNobel Annual Report, p. 5.
58. See 2003 Nippon Soda Annual report.
59. See 2009 AkzoNobel Annual Report, p. 77.
60. Ibid., p. 139.
61. See 2010 Sasol Wax Annual Report, p. 80.
62. Le Carbone Lorraine: *Specality Graphite* in 2002 (€6.97 million).
63. See Interview with the Chairman in 2002 Group Carbone Lorraine Annual Report, p. 5
64. See 2011 Kemira Annual Report, p. 73.
65. See 2008 Tosoh Corporation Annual Report, p. 12.
66. See Letter from the Chairman in Roche Group Annual Report and Group Accounts 1999, p. 6.
67. See BASF Corporate Report 2006, p. 18.
68. See Eisai Annual Report 2002, p. 17.
69. See Solvay Global Annual Report 2007, p. 143.
70. See 2002 Merck Annual Report, p. 42.
71. See 2009 Evonik Industries Annual Report, p. 83.
72. See 2012 Total Registration Document, p. 116.
73. The exact date of Shell's leniency application is unclear. The first inspections were conducted in April 2005.
74. See 2008 L'Air Liquide Reference Document, p. 50.
75. See 2010 H&R Annual Report, p. 17
76. Most notably, in Choline Chloride, it unsuccessfully tried to rebut the Commission's presumption that AkzoNobel NV exercised decisive influence over its subsidiaries.
77. Case C-97/08 Alczo Nobel NV and Others v Commission. Judgment of 10 September 2009, para 74; For analysis see F Wenner and B Van Barlingen, 'European Court of

Justice Confirms Commission's approach on parental liability' (2010) Competition Policy Newsletter 1, pp. 23-27.

78. Jan Eijsbouts, former AkzoNobel General Counsel, talks about the company internal amnesty program in a 2015 interview available (in Dutch) at https://www.goodgovernance.nu/interviews/jan-eijsbouts-dee1-1 See also the 2002 Annual Report, p. 25: "since 2000 a special project to reduce such risks has been in place".
79. In Re: Vitamins Antitrust Litigation, Misc. No. 99-197 (TFH), MDL 1285 (D.D.C. Jul. 18, 2001), available at https://casetext.com/case/in-re-vitamins-antitrust-litigation-223. See also AkzoNobel Annual Report 2000, p. 79: "the Company is involved in civil damage claims in relation to some of these alleged antitrust violations. Legal costs and civil damage settlements incurred in 2000 in connection with these cases amounted to EUR 30 million".
80. It was topical from a commercial perspective that a European company had to pay a high figure to civil plaintiffs in a jurisdiction where the company was not selling its products: the investigated conduct included a market sharing arrangement by which European producers would not export to the North American market and vice versa.
81. AkzoNobel challenged the Commission Decision of 11 November 2009 in Heat Stabilisers (Case COMP/38589), which refused the legal professional privilege to 2000 exchanges between the competition law in-house counsel and a manager, thus triggering the landmark EU judgment stating that legal professional privilege is available only when an EU qualified outside counsel is advising the company, see the judgment of the Court of 14 September 2010, Akzo Nobel Chemicals Ltd and Akcros Chemicals Ltd v Commission, Case C-550/07 P, ECLI:EU:C:2010:512.
82. Interview of the author with Jan Eijsbouts, former AkzoNobel General Counsel, and currently Professor of Corporate Social Responsibility at the Maastricht University.
83. See US DOJ Press Release, 'European Executive Agrees to Serve a Jail Sentence in the United States' (27 June 2001.
84. The Leniency Notice of 1996 (n 10) at recital 4 reads "the Commission considers that it is in the Community interest in granting favourable treatment to enterprises which cooperate with it ... The interests of consumers and citizens in ensuring that such practices are detected and prohibited outweigh the interest in fining those enterprises which cooperate with the Commission, thereby enabling or helping it to detect and prohibit a cartel". This language has remained the same in the Leniency Notice of 2006, at recital 2.
85. While other executives were carved-in in the company plea agreements and could thus be covered by the US leniency program, that was not possible for this executive due to his significant involvement in the conduct. 100 Based on explicit agreement with the US DOJ, which otherwise would have insisted on dismissal as a general rule in these cases.
86. For example, in 2013, Canada-based engineering and construction company SNC Lavalin launched a 90-day amnesty period for employees who came forward with information about potential corruption and competition law matters, see Jaclyn Jaeger, 'Employee amnesty programs: Strategic move or act of desperation?' (Compliance Week, 14 November 2017) available at https://www.complianceweek.com/employee-amnesty-programs-strategic-move-or-act-ofdesperation/2462.article. For a competition law example, see the 2013 amnesty program by the Germany-based ThyssenKrupp Steel carried, adopted in response to a German competition authority's investigation in the rail sector, leading to more than twenty leads, without however any serious or structural compliance infringements being identified, see https://webservice.thyssenkrupp.info/financial-reports/12_13/en/report/compliance.html
87. Wouter PJ Wils, Antitrust Compliance Programmes & Optimal Antitrust Enforcement, 1(1) JOURNAL OF ANTITRUST ENFORCEMENT 52 (2013), to be contrasted with Damien Geradin, Antitrust Compliance Programmes and Optimal Antitrust Enforcement: A Reply to Wouter P.1 Wils 1(2) JOURNAL OF ANTITRUST ENFORCEMENT 325 (2013).
88. US DOJ Antitrust Division, Evaluation of Corporate Compliance Programs in Criminal Antitrust Investigations, July 2019: "three-point reduction in a corporate defendant's culpability score if the company has an effective compliance program". Brazilian authority (CADE), Guidelines on Competition Compliance Programs, January 2016: "Compliance program ... in some situations it can have

favorable effects when these sanctions are established. For example, it can remove specific prohibitions or even reduce the amount of the applicable fine". Contra, see European Commission, Compliance Matters, 2012: "Any effort by a company to ensure compliance with EU competition rules is laudable. But what matters ultimately is that the rules are actually complied with".

89. For example, the US Deputy Assistant Attorney General of the Antitrust Division declared "the lysine investigation eventually led the Division to evidence that exposed additional worldwide cartels operating in other chemical markets, including citric acid, sodium gluconate, sodium erythorbate, and maltol". Scott D. Hammond, 'Caught in The Act: Inside an International Cartel', 18 October 2005, available at https://www.justice.gov/atr/speech/caught-act-inside-international-cartel
90. The high frequency of cartels in the chemicals sector is shown by several datasets and literature. OECD, 'Serial Offenders: A Discussion On Why Some Industries Seem Prone To Endemic Collusion' (9 October 2015).
91. Combe and Monnier Ibid, report that all the cartels involving three recidivists were in the chemical sector.
92. AkzoNobel Annual Report 2000, p. 79.
93. The public version of the decision redacts the year of application for leniency, which however was under the 2002 Leniency Notice (n 10) and therefore one can infer that the application must have occurred between 2002 and 2006 when the new Leniency Notice entered into effect.
94. Heat *Stabilisers* (n 55), para 772.
95. See for example: "special case studies have been developed to stimulate debate on ethical dilemmas, but we find the most benefit is obtained when participants work together on real issues drawn from their own business experience. Amoco has run seminars on various aspects of ethical behaviour including ... compliance with anti- trust" (1998 BP Amoco sustainability report of, p. 39)
96. See Margaret Levenstein and Valerie Suslow, *Breaking Up Is Hard to Do: Determinants of Cartel Duration,* 54(2) JOURNAL OF LAW AND ECONOMICS 455 (2011).
97. Andreas Stephan and Ali Nikpay, "Leniency Decision-Making from a Corporate Perspective: Complex Realities" in Caron Beaton-Wells and Christopher Tran, ANTI-CARTEL ENFORCEMENT IN A CONTEMPORARY AGE: THE LENIENCY RELIGION (Oxford: Hart Publishing 2015).
98. See 2008 Sasol Annual Report, p. 84.
99. See 2010 Sasol Wax Annual Report, p. 80.
100. See 2006 Dow Chemical Annual Report, p. 58; Note that Veljanovski observes inconsistencies during these period in how leniency discounts are calculated: Cento Veljanovski, *Deterrence, Recidivism, and European Cartel Fines* 7(4), JOURNAL OF COMPETITION LAW & ECONOMICS 871 (2011).
101. See for example, John M Connor, *Recidivism Revealed: Private International Cartels 1990-2009*, 6 COMPETITION POLICY INTERNATIONAL (2010).
102. European Commission Press Release IP/20/1348, 'Antitrust: Commission fines ethylene purchasers €260 million in cartel settlement' (14 July 2020).
103. See the 2007 Clariant Annual Report, p. 34
104. Clariant press release (14 July 2020), available at https://www.clariant.com/en/Corporate/News/2020/07/Clariant-receives-fine-following-a-European-competition-law-investigation
105. Between 2011-20, the European Commission issued 46 cartel decisions, of which six decisions were re-adoptions earlier cartel decisions, which we excluded from the count; two re-adoption/amendment decisions involve chemical cartels, namely, the Heat Stabilisers and Sodium Chlorate cases. The identification of cartels decided between 2011-2020 was based on two queries: 41 results of cartel decisions from 01/01/2011 to 14/08/2020 in the Commission's search field webpage, available at https://ec.europa.eu/competition/elojade/isef/index.cfm?clear=1&policy_area_id=1; and other decisions listed at the Commission's "cartels cases" list, available at https://ec.europa.eu/competition/cartels/cases/cases.html.
106. Between 2000-10, the European Commission issued 76 cartel decisions, including seven re-adoption decisions, which were excluded from the count; this includes three 2000 re-adoption decisions in a chemical cartel, following annulment by the CJEU on procedural grounds. See the Commission Press ReleaseIP/00/1449, 'Commission readopts three decisions imposing fines on Solvay and ICI in the Soda ash case' (13 December 2000).
107. Westlake requires from its employees a Code of Conduct acknowledgement (November 2019, available at https://www.westlake.com/sites/default/files/COC%20Final%202019.11.19%20WLK.pdf), and was considered by Forbes one of the Top 100 Most Trustworthy Companies in America in 2012 and 2015 (available at https://www.westlake.com/awards-recognitions).

108. Only the following chemical cartels were found, in relation to single jurisdictions: Aggrenox, treatment for stroke, pay for delay, US; Aluminum sulfate, liquid, US (civil actions, no penalties); Personal Care Products, toiletries, France, 2014; Auto Refinishing Paints, imports, Hungary, 2014; Chemicals, specialty mining, Poland, 2013; Spolchemie, Czech Republic (pending); Detergents, Australia and New Zealand, 2016; Gases, industrial (nitrogen, oxygen, argon), South Africa, 2013; Surfactants, South Africa, 2017; Fertilizer, Zambia in 2013. The OECD database is available at https://qdd.oecd.org/subject.aspx?Subject=OECD_HIC
109. On the evaluation of competition policy more generally, see: Paolo Buccirossi et al., Measuring the Deterrence Properties of Competition Policy: The Competition Policy Indexes 7(1) JOURNAL OF COMPETITION LAW & ECONOMICS 165 (2011); Stephen Davies and Peter Ormosi, Assessing Competition Policy: Methodologies, Gaps and Agenda for Future Research CCP WORKING PAPER 10-19; Fabienne Ilzkovitz and Adriaan Dierx, Ex-post economic evaluation of competition policy enforcement: A review of the literature, (European Commission, June 2015).
110. See Christine Parker, The "Compliance" Trap: The Moral Message in Responsive Regulatory Enforcement, 40(3) LAW AND SOCIETY REVIEW 591 (2006); Christopher Hodges and Ruth Steinholtz, ETHICAL BUSINESS PRACTICE AND REGULATION (Oxford: Hart Publishing 2018).
111. Gianni De Stefano, Compliance as Antitrust Cooperation: An Incentive for Cartel Enforcement 9(10) JOURNAL OF EUROPEAN COMPETITION LAW & PRACTICE 617 (2018).
112. See Anne Riley and Margaret Bloom, Antitrust Compliance Programmes – Can Companies and Antitrust Agencies Do More? 10(1) COMPETITION LAW JOURNAL 21, FN 32 (2011).