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Recidivism Revealed: Private International Cartels 1990-2009

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The objective of this paper is to look for empirical regularities in the sample of 389 recidivists that engaged in international price-fixing in the past 20 years. Recidivism appears to be increasing rapidly, both in number and relative to all corporate cartelists. Recidivists are overwhelmingly headquartered in northern Europe or Japan, and they tend to be highly diversified multinational firms that sell homogeneous producer goods. The skills acquired from participating in multiple price conspiracies are transferrable across divisional lines at very low marginal costs. Those acquired skills include identifying feasible collusive opportunities, negotiating mutually satisfactory deals, diplomatically dealing with partners when no enforceable contract exists, and evading detection by the antitrust authorities.

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I. Introduction

High rates of or rising trends in recidivism is evidence that enforcement of a criminal law is failing.

The principle goal of a criminal legal system is to impose predictable sentences that are so painful that would-be violators will decide that the costs of a crime outweigh the benefits.¹ This rule is derived from the legal-economic theory of optimal deterrence, which has become the touchstone of the leaders of the world's major antitrust authorities.² In the case of collusive group crimes like price-fixing, deterrence means that companies or individuals, after weighing the probable gains versus expected losses associated with overt collusion, decide that it would be less profitable to form a cartel (or join an existing cartel) than to adopt a form of business conduct that does not involve illegal manipulation of markets. One factor a future criminal must take into account is the probability of being apprehended. The lower the chance of being detected, the higher the optimally deterring sanctions. For modern cartels, which are outlawed in nearly every corner of the world, the probability is well under 100 percent; most scholars believe that it averages less than 30 percent.

Recidivism is a significant issue in cartel enforcement. In the past 25 years, antitrust authorities have increasingly incorporated counts of corporate recidivism as an aggravating factor in their cartel-fining guidelines. Economic theory supports such policies because prior experience in cartelization is believed to enhance a participant's ability to negotiate and sustain future collusive agreements. Legal experts are somewhat more divided on the wisdom of corporate recidivism penalties. However, these policies seem to have been implemented on the basis of the limited, perhaps anecdotal, experience of single agencies with defendants. There is virtually no literature on the dimensions, determinants, or effects of cartel recidivism.

This purpose of this paper is to examine evidence on the patterns and trends in recidivism among corporate participants in large hard-core cartels in the past two decades. A large sample of recidivists is drawn from a data set of nearly 600 international cartels discovered by antitrust agencies, competition-law commissions, and plaintiffs in private actions from 1990 to 2009. While much has been written about recidivism in the abstract, as far as I know the present paper is the first to examine empirically, on a large scale, the issue of price-fixing recidivism. The results of the analysis may yield empirical regularities that can guide future theoretical and empirical modeling.

The following section defines recidivism and reviews the role of recidivism in sentencing members of hard-core cartels. The following sections review previous

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empirical studies; describe the data sample; analyze the number of recidivists discovered along with their sizes, industries, and geographic location; look at trends; and describe some interesting specific cases.

II. Definitions and Legal Standards

Recidivism in criminology is the act of a person repeating an undesirable behavior after having been sanctioned previously for that behavior.³ Individual criminal recidivism is highly correlated with psychopathy.⁴ The psychopath is defined by an uninhibited gratification in deviant, criminal, or aggressive impulses and the inability to learn from past mistakes. Individuals with this disorder gain satisfaction through their antisocial behavior and lack remorse for their actions. Some legal scholars argue that the reasonableness of penalties for corporate recidivism requires that companies have stable personalities over time.⁵ A firm's top management and even its organizational structure may impart a distinctive "corporate culture."⁶ Whether companies can develop pathologies is a matter of speculation beyond the scope of this paper.⁷

Companies can also be recidivists under the law. In the context of price-fixing, a company will be identified as a recidivist in the most general sense if it is convicted a second time for cartel conduct, no matter where or when the earlier violation took place. Cartels tend to be formed in narrowly defined product markets. Because many companies are large, diversified organizations, some might argue that corporate recidivism could be reserved in a more restricted sense to mean repeated violations in an identical market. However, criminal systems generally, and antitrust in particular, do not apply such a narrow definition. An individual guilty of fraud is likely to receive a more severe sentence if she was guilty of insider trading, at least if the first crime occurred within some specified time period. So too in antitrust enforcement; previous convictions for price-fixing

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in any line of business within a decade or so are cause to increase sentences for repeated price-fixing.

The laws of many nations regard evidence of repeat offenses as an indicator of a propensity to commit future crimes.⁸ Therefore, a history of criminal acts is a relevant consideration in sentencing offenders. That history may apply perpetually and to all crimes, but more often recidivism in similar classes of crimes and more recent instances are given greater weights in sentencing a perpetrator. Under U.S. federal law, all prior convictions of §1 of the Sherman Act within the past 10 years are given equal weight in cartel sentencing decisions.

Large or increasing numbers of cartel recidivists is symptomatic of flaws in the structure of anti-cartel enforcement. More specifically, high recidivism rates indicate that current sanctions do not deter cartel formation or continuing collusion.⁹ Large numbers of recidivists may indicate that the total number of car-

tels being created is high—the very phenomenon that optimal deterrence policy was meant to stamp out. Increases in cartel formation might be due to increases in the profitability of hard-core collusion, but empirical investigations suggest otherwise. Overcharges attained by contemporary cartels, while higher than many have believed, have been trending downward since the late 19th century, even during periods in which significant antitrust enforcement was in evidence.¹⁰ Recidivism might rise if fewer clandestine cartels were being uncovered by antitrust authorities. However, the advent of automatic, well-designed amnesty programs seems to have resulted in an increase in the proportion of secret price-fixing schemes that have been detected after 1993.¹¹ Increased recidivism may also be associated with sub-optimal monetary sanctions on cartelists that are caught; indeed, empirical work on optimal sanctions has suggested that *ex post* penalties are too low. Penalties rarely disgorge the monopoly profits (properly measured) garnered by members of the great majority of cartels. Most legal-economic scholarship favors the last explanation.

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Senior antitrust officials are aware of the problem; indeed, one Department of Justice (“DOJ”) official observed that price fixers “tend to be recidivists.”¹² A belief that recidivism undermines the effectiveness of cartel deterrence is revealed by the fining policies and practices of the DOJ and the European Commission (“EC”). The U.S. Sentencing Guidelines (“USSGs”) that apply to federal criminal violations like hard-core price-fixing consider prior criminal price-fixing convictions an aggravating factor in the determination of suggested fines.¹³ The EC began imposing higher fines for cartel recidivism during 1998-2004 under its first guidelines.¹⁴ In 2006, the second guidelines specified increases of 50 percent to 100 percent in cartel fines for each instance of “similar” repeated infringements. This change was sanctioned by decisions of the European courts.¹⁵ The EC and DOJ policies on recidivism are jurisdiction-specific. Empirical studies verify that price-fixing fines imposed by the EC and the DOJ are higher for recidivists.¹⁶ Thus, knowledge about the dimensions of recidivism can have antitrust policy relevance.

Changes in corporate structure may be a consideration in defining corporate recidivism. In this study only ultimate corporate parents are units of observation. Thus, if a company that was sanctioned for price-fixing was subsequently acquired by a new parent firm, the acquiring firm is disgraced by the crime of its acquired unit. This procedure is consistent with the legal principle that firms acquire both the assets and liabilities of merged units. For example, in 1999 the large German chemical company Hoechst merged with Rhone-Poulenc and was renamed Aventis; in turn Aventis merged with Sanofi and is now called Sanofi-Aventis. Price-fixing convictions of Hoechst and Rhone-Poulenc become assigned to the present Sanofi-Aventis.

Time limits may be imposed by legal authorities for defining recidivism. In the United States the time limit is ten years prior to the date of the guilt-finding. This practice may arise out of administrative convenience or because companies, like individuals, may be seen as capable of shedding their criminal tendencies. However, in the *French Beer* case the EC decided to apply recidivism as an aggravation factor in price-fixing decisions without regard to time.¹⁷ Thus, in principle the EC can reach back to 1960s to identify previous price-fixing violations. The present study traces recidivism over a 20-year period.

Some legal authorities may not consider a company that was engaged in contemporaneous cartels in different markets to be a recidivist because one illegal act did not precede the other. In this paper, contemporaneous counts of recidivism will be counted as evidence of recidivism, partly because dates of participation by one company are not always known with precision, whereas the dates of collusion for all the companies are usually well known.

III. Literature Review

Most of the literature touching on recidivism tends to be of a theoretical nature: optimal deterrence proofs or analyses based on the philosophy of law. In general, the former attempt to verify that the nearly universal practice of escalating penalties for recidivists is rational, whereas the latter try to establish that such penalties are at variance with legal theory. There are few articles that examine recidivism in specific law cases and fewer still that fall into the empirical legal-economic literature.

A. OPTIMAL DETERRENCE PROOFS

There is a fairly rich but inconclusive body of theoretical analyses of general criminal recidivism in the Beckerian tradition.¹⁸ Among the earlier influential contributions, Rubinstein¹⁹ and Polinsky & Rubinfeld²⁰ offer one reasonable defense of the practice. These models are built upon adverse selection. Repeat offenses are envisioned to be a strong signal that the defendant is a committed criminal with little likelihood of prosecutorial error. In addition, in Polinsky & Rubinfeld's model recidivism serves as a signal to prosecutors that helps separate the gains from legal conduct from the gains to illegal conduct. This assumption might be consistent with screening rules formerly used by antitrust enforcers to open cartel investigations. These models prove that under certain parametric values, recidivism penalties are optimal.

An alternative modeling approach focuses on the “pure moral hazard problem,” i.e., one in which the government's objective is to deter crimes. This approach seeks an efficiency rationale for escalating criminal sanctions for repeat offenders. Generally, recidivism is seen to be a factor that could affect the probability of cartel detection. For this type of model, Emons²¹ judges that the results

of the literature are less convincing. “For the well developed law and economics literature on deterrence escalating sanction schemes are still puzzling.”²² Recidivism penalties are justified only under special assumptions that may not be realistic. For example, in Emons’ model, the size of illegal gains and the probability of detection are correlated; with this relationship, escalating recidivism penalties makes the choice of a law-abiding career relatively more attractive than repetitive crime. In an antitrust environment where most cartels are detected through leniency applications and have little to do with price- or performance-screening, it is difficult to justify such assumptions.

Mungan²³ develops a two-stage game-theoretic model in which learning takes place.²⁴ Offenders learn better how to cover up their second crimes (i.e., they know that the probability of detection falls with experience), and enforcers learn to target previous offenders when they next investigate (i.e., they “round up the usual suspects”²⁵). The optimality of recidivism penalties turns upon the relative power of the learning effects: If offenders learn “more” than enforcers, recidivism penalties are rational. Unlike all of the previous analyses above, Mungan’s model does not assume that there is no error of prosecuting the innocent.

B. LEGAL POLICY ANALYSES

Although more severe treatment of recidivism is now enshrined in most cartel-fining guidelines, not all observers agree on the wisdom of doing so. In general, these critiques ignore optimal deterrence thinking, instead appealing to widely shared legal principles. And the most heated debate has occurred over EC policies.²⁶

For example, Jeremy Lever, a prominent UK lawyer, disagrees in principle with using recidivism as an aggravating factor in EC fines upon companies; rather, he favors the imposition of individual penalties on executives who are recidivists:

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“The Commission’s approach to recidivism seems to me to betray a failure to understand the relevant differences between individuals (*personnes physiques*) and corporate undertakings (*personnes morales*). Individuals can certainly have a propensity to commit offences, usually of a particular kind (e.g. the serial rapist, the professional burglar). But corporations as such do not have propensities.”²⁷

Beginning with the EC’s 1998 cartel-fining guidelines, perpetrators in hard-core cartels were subject to a 50 percent increase in their fines for one or more previous price-fixing infringements under the EU Treaty, with no time limit. From 1998 forward, this aggravating factor merited up to a 100 percent increase for each prior conviction, including convictions by the Member States. Shortly after the 2006 EC fining guidelines were released, Wils published a detailed legal analysis of issues concerning repeated infringements as an aggravating factor.²⁸ He admits that if the purpose was to increase general deterrence, the Commission could have reasonably raised the general fine level; however, citing European court decisions and general legal principles, raising company-specific penalties is also justified if recidivism is an indicator of the propensity of a perpetrator to commit cartel violations. Moreover, recidivism may signal that a perpetrator has learned to evade detection. This position amounts to a call for specific deterrence.²⁹

Other authors opine that a recidivism penalty is more appropriate where there is a strong connection between one price-fixing offence and another, such as price-fixing in similar markets or by the same employees.³⁰ Wils agrees that recidivism only applies to “similar” crimes, presumably hard-core price-fixing. However, Wils seems to disagree with one EC interpretation of the similarity requirement that was overly narrow.³¹ In *Belgian Beer* no penalty was applied to a member of a “price-fixing cartel” that had been fined previously as a member of a “market-sharing cartel.” Economists tend to conflate the two types of conduct.

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The final issue is whether recent recidivism ought to be given greater weight than historically distant ones. Norlander³² is highly critical of recidivism penalties contained in the EC’s fining guidelines for cartel infringements. In particular, unlike nearly all of the EU’s member states, the EC guidelines have no time limit in counting repeat offenses. Because corporations have been granted the legal privilege of immortality, future violators are liable for recidivism penalties “in perpetuity.”³³ This, Norlander argues, violates proportionality in sentencing. In response, Wils³⁴ cites a European court decision that empowers the Commission to set its own rules for recidivism as an aggravating factor in sentencing, including the right to apply temporal weights to prior infringements.³⁵

C. EMPIRICAL LEGAL-ECONOMIC STUDIES

An influential early study of several categories of corporate crime by Clinard & Yeager concluded that “...large corporations in general commit no more violations per unit size than do smaller corporations.”³⁶ These authors also found that firm diversification was weakly positively related, while profitability and growth

rates were inversely related to many types of crime.³⁷ Alexander and Cohen³⁸ take a different approach. They assemble a sample of publicly traded firms convicted of federal crimes during 1984-1990 and focus on corporate governance as explanatory factors. They find that corporate crime is highest when officers and directors own less than 10 percent of the firm's stock and when the CEO is entrenched. The equity size of firms generally has no effect on the likelihood of violations.

There are three descriptive studies of cartel recidivism based on U.S. cases. Shughart and Tollison³⁹ examined recidivism in FTC cases, but few involved cartel conduct. An earlier review identified over forty corporate defendants who faced four or more indictments and convictions for U.S. antitrust offenses between July 1955 and 1980.⁴⁰ Among those criminally convicted for multiple antitrust violations during this twenty-five-year period were: Westinghouse Electric Corp. (20 violations); General Electric Co. (19); United States Steel Corp. (11); Mobil Oil Corp. (11); Phillips Petroleum Co. (7); Shell Oil Co. (7); Bethlehem Steel Corp. (7); and Gulf Oil Corp. (6). Dalton & Kesner⁴¹ examined the number of 1980-1984 antitrust violations ascribed to the Fortune 500 industrial companies; the top 250 were three times as likely to be recidivists (24 percent) as were the next 250 firms (7.6 percent). As a former Assistant Attorney General for the Antitrust Division said, the DOJ files "contain the stories of industries that seem again and again to have had antitrust difficulty" and that corporate recidivism "is not at all unknown in the antitrust world."⁴²

A laboratory experiment by Bigoni et al.⁴³ reports that when leniency programs are introduced, cartel recidivism is reduced compared to a no-leniency regime. One might infer from this finding that *ceteris paribus* the introduction of effective leniency programs ought to reduce the need for additional recidivism penalties, if not eliminate them.

There are two formal legal-economic empirical studies of antitrust recidivism. First is an event study by Simpson & Koper.⁴⁴ Using a sample of 38 corporations charged with one or more serious antitrust violations between 1928 and 1981, they attempt to see whether sanctions affect the likelihood of a firm's re-offending. Controlling for changes in antitrust law and the economic conditions of the firm, industry, and general economy, they find weak evidence that past guilty verdicts inhibit recidivism. Moreover, criminal felony penalties have stronger effects on reducing recidivism than misdemeanor penalties. Second, Bolotova et al.⁴⁵ examine cartel recidivism over long periods of history within the same industry. They find evidence that high overcharges reduce the number of episodes.

Although it deals with environmental laws, an analysis by Miller provides additional insights into recidivism.⁴⁶ He examines civil and criminal actions against companies and their employees by the U.S. Environmental Protection Agency ("EPA"). Using data from 1970 to 1997, a non-parametric approach is employed to estimate recidivism probabilities and impacts of various types of regulatory actions. Miller concludes that civil lawsuits with higher fines imposed on firms are

not more effective at reducing repeat offenses (recidivism) than administrative actions, which carry much lower fines. However, criminal lawsuits significantly reduce recidivism. There is also evidence of a dynamic liability effect where civil lawsuits against companies with one or more priors carry higher fines and significantly reduce recidivism. He also finds that limits on owners' ability to contract with employees in the event of criminal action may serve as an explanation for the apparent power of such enforcement over future company behavior.

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IV. Data Sample

The sample employed in this paper is derived from the author's *Private International Cartels Data Set*, ("PIC"). In common with nearly all other empirical studies on cartels, this paper considers only discovered cartels. Studies that depend on discovered cartels may suffer from sample selection bias. These cartels were clandestine, and their members typically attempted to cover up or destroy evidence of their meetings and communications. Cartel studies generally conclude that only about 10 percent to 30 percent of all such conspiracies are discovered and punished. Undiscovered cartels are probably more durable than discovered cartels and may differ in some other economic characteristics.

The PIC consists of information collected at two levels: the market (i.e., the whole cartel), along with the companies and individuals that are members or alleged members of the cartels.⁴⁷ The market sample comprises 648 hard-core cartels. Seventy-four percent of these cartels at a minimum have had several participants indicted or sanctioned by an antitrust authority; the greatest amount of information is available for these cases. Ten percent of the cartel investigations have been closed (in some cases because of a statute of limitations), and 16 percent are still being investigated. All private cartels with international membership that were discovered between January 1990 and December 2009 are in the sample; cartels protected by sovereignty or multilateral treaty are excluded, as are suspected cartels with no sanctions imposed after about five years.

Instances of recidivism are the number of times a company participated in unique, convicted hard-core cartels. If a company was sanctioned⁴⁸ by multiple jurisdictions for the same crime, that counts as one cartel offense. If a company admitted its guilt but was granted one or more full amnesties, that counts as one crime. Punished cartelists are frequently affiliates of larger corporate groups. Although it is difficult to trace ownership for many firms, PIC attempts to identify the ultimate controlling parent group of sanctioned companies; in the case of joint ventures, the parent that was fined is assumed to be the controlling owner. Company names that have changed in the past are updated to the company's present name. If a parent group acquired a convicted affiliate, following the legal rule of liability, the sins of the children are counted as sins of the par-

ent group. For example, Hoechst and Rhone-Poulenc merged to form Aventis in 1999; because the two merger partners had each been convicted of price-fixing in the markets for two vitamins, Aventis (now Sanofi-Aventis) was credited with two crimes.

Identification of recidivists is hampered by the practices of some European antitrust authorities that fail to identify by name all convicted cartelists.⁴⁹ For example, although not a general practice, the Netherlands did not identify on its website the great majority of the 2000 construction firms that were discovered to have engaged in bid-rigging in the 1990s and early 2000s; only a few are known by name from press reports. The German Federal Cartel Office likewise is inconsistent in naming and shaming cartelists, both corporate and individual. Consequently, the number of companies that are recidivists is undercounted in this study.

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V. How Many Recidivists, How Much Recidivism?

The number of corporate price-fixing recidivists is described in two previous publications. First, Bosch & Eckard⁵⁰ prepared a data set that was a sample of 127 firms that were indicted for price-fixing in the United States from 1962 to 1980. They noted that 14 percent of the sample consisted of repeat offenders. Second, Connor & Helmers⁵¹ reported that there were 174 recidivists in their sample of 283 private international cartels that were sanctioned during 1990-1995; recidivists comprised 11.3 percent of all non-anonymous cartel participants in the sample. Connor & Helmers relied on an earlier version of the PIC used in the present paper.⁵²

Four years later, by the end of 2009 the number of cartels detected rose by 124 percent. The number of recidivists increased to 389, which is 18.4 percent of the total number of non-anonymous cartelists (Table 2). The number of cases⁵³ of recidivism (among firms known by name) rose to 1,548 by the end of 2009. That number is surely an underestimate. One reason is that some antitrust authorities customarily do not reveal the names of fined violators by name; similarly, the DOJ treats the identities of amnesty recipients as confidential.⁵⁴

The sample covers cartels discovered over a 20-year period. Here I examine the annual discovery rates of recidivists from 1990 to 2009 compared to all cartelists. Before 1990, relatively few recidivists were members of discovered cartels (Table 2). However, the relative frequency increased after 1990 and was quite high during 1995-2004. In 2005-09 the rate slowed somewhat. It is difficult to interpret this temporal pattern. Could it mean that during 1995-2004 there was a bandwagon effect, and that it has recently petered out?

The mean number of cartels per recidivist is 4.0, but this number is highly negatively skewed. Most of the recidivists engaged in only two cartels and two is, of course, the minimum number. At the other extreme, 52 firms were members of seven or more cartels; 26 were in ten or more cartels; and six companies engaged in 20 or more cartels (Table 1). These top recidivists are primarily headquartered in the EU. The largest single number (eight of the 52) is French firms; indeed, three of the top six firms—each with at least 20 examples of recidivism—are French. The remaining European recidivists are mainly headquartered in Germany and other northern nations. The second largest block of leading recidivists is the seven companies from Japan and Korea. Only five U.S. companies are leading recidivists.

VI. How Big Are Recidivists?

It is apparent that leading recidivists tend to be highly diversified multinational companies. Detailed histories of modern global cartels have detected examples of collusion that spread like a contagious disease within and between companies; some of the histories have even identified the managers who were carriers. For example, executives of Hoffmann La Roche who had first organized the rebirth⁵⁵ of the global vitamins cartel in 1989-1990 recruited other companies in Europe and Japan; these firms, in turn, reached out to close rivals in their respective geographic regions.⁵⁶ The same Roche employees later contacted top executives in

ADM to form the global citric acid cartel; the success of citric acid inspired these ADM managers to initiate the global lysine cartel.⁵⁷

ARE DIVERSIFIED MULTINATIONAL COMPANIES MORE PRONE TO RECIDIVISM THAN SINGLE-LINE, SINGLE-NATION FIRMS?

Are diversified multinational companies more prone to recidivism than single-line, single-nation firms? At first blush one would think

that economic logic supports this proposition. Diversified companies tend to have multiple divisions organized by product groups or by geographic markets served by a grid system that combines product and geographic dimensions. While companies employ managerial transfers and communication systems intended to overcome lack of coordination between divisions, compartmentalization is bound to persist. As a result, when one division or subsidiary of a company is convicted of price-fixing, the learning from the adverse consequences is likely to be greater within one unit and more muted across divisional boundaries.

Moreover, if some cartels are formed or managed by rogue managers,⁵⁸ then their distribution across business units may be supposed to be random. That implies that a diversified parent group with ten divisions is ten times more likely to be caught than each of ten specialized firms. A third factor is the spread of knowledge or even excitement about the profit advantages of cartelization. If one division of a diversified firm successfully engages in collusion, top managers

may encourage the adoption of the idea across some of the company's other business units.⁵⁹ This hypothesis deserves formal testing in the future.⁶⁰

VII. Where Do Recidivists Come From? Products, Industries

This section explores what the industrial or geographic distribution of recidivists is and whether it differs from non-recidivists. A simple way of comparing the distribution of recidivists to all recidivists is to compute the sample shares across categories for all cartelists and for the recidivist subsample. The shares of all cartelists can serve as a base. For a given category, the ratio of the recidivist share to the total share yields a convenient indicator of the relative distribution of recidivists to all cartelists (Table 2).

To start with, I examine the product types by stage of processing. Of the six product types, recidivists were detected in cartels making inputs, especially capital goods, more frequently than all other cartelists. Recidivist firms were 60 percent more likely to collude in capital goods like elevators than were cartelists in general. For consumer goods and services, recidivists were not as common as sellers as were non-recidivists. These data suggest that recidivists sell relatively homogeneous products.

RECIDIVIST FIRMS WERE 60 PERCENT MORE LIKELY TO COLLUDE IN CAPITAL GOODS LIKE ELEVATORS THAN WERE CARTELISTS IN GENERAL.

Cases were also categorized into 28 industry groups. In some industries like forestry, clothing, and furniture, there are so few examples of cartels that comparing relative frequencies is not meaningful (Table 2). In other industries, such as mining, paper, nonmetallic minerals, miscellaneous manufacturing, and transportation, there are no significant differences in the frequency of cases between recidivists and other cartelists. Recidivistic cartelists tend to be relatively frequent sellers in (or drawn to) the following industries: organic chemicals, petroleum products, rubber and plastic, machinery, electronics, and public utilities. Many of these industries have significant technological or regulatory barriers to entry. On the other hand, recidivists tend not to operate as frequently as other cartelists in the construction, food, tobacco processing, textiles, wood, inorganic chemicals, fabricated metals, finance, insurance, banking, and other services industries. What explains the industrial distribution of recidivists is beyond the scope of this paper.

VIII. What Kind of Cartels?

Does the participation of recidivists result in cartels that have different characteristics from the typical cartel? Or, put another way—because experts do not know which way the causality runs—are recidivists drawn to cartels that are

atypical in any way? Recidivists generally have more experience with collusion than firms with singular experiences. Because successful collusion requires special, learned skills (predicting the potential for profit, bargaining and diplomatic skills, and evasion of detection), one might expect recidivists to be drawn to relatively high profit ventures with high risk tolerance. The characteristics that will be examined are numbers of participants, bid rigging, and duration.

A. NUMBER OF PARTICIPANTS PER CARTEL

The sample data show that recidivists are drawn to cozy cartels. Specifically, recidivists tend to populate cartels comprised of eight or fewer members, and they are especially fond of cartels with three or four participants.⁶¹ Cartels with few members are somewhat easier to organize, to manage, and to keep hidden. By contrast, in cartels with more than 20 members, recidivists are relatively rare.

B. BID RIGGING

The participant size of cartels is consistent with one distinction in price conduct, viz., the use of bidding rings in contract auctions versus a classic setting of selling prices or industry output levels. The sample data show that recidivists engage primarily in classic price-fixing rather than bid-rigging, though the difference is not particularly strong (Table 2). Bidding rings tend to have larger numbers of players and tend to be found in certain industries like construction.

C. CARTEL DURATION

This section examines whether cartels that are populated with recidivists contribute to cartel “success.” Cartels succeed from a private point of view when they generate large total monopoly profits for their members. Two dimensions of private success are the size of price effects and the longevity of the cartel.⁶² The latter is more readily measured (see Table 2). Recidivists tend to be found in quite durable conspiracies. Relative participation of recidivists is average or below average for cartels with durations of less than eight years, which is above the median length of international cartels.

RECIDIVISTS TEND TO BE FOUND
IN QUITE DURABLE CONSPIRACIES.

Recidivists are found relatively frequently in cartels with longevities of eight to 15 years and of 20 years or more.

IX. Has Anyone Learned?

One rough way to tell if cartel sanctions have worked to discourage recidivism for some companies is to perform a prospective analysis. If sanctions have the power to dissuade companies to engage in repeated violations, one would expect to see a reduction, if not elimination, of such conduct in subsequent periods. Let us look at the leading recidivists that were sanctioned in 1990-99 and see how

many avoided sanctions in the next ten years (Table 1). The answer is none! No firm learned to avoid participating in cartel conduct in the 2000s after being sanctioned for that same conduct discovered by competition-law authorities before 2000.

But perhaps that tough standard needs to be relaxed to capture legal learning-by-doing. After all, there were several times more cartels discovered during 2000-09 than before 2000. Thus a loosed criterion would look for recidivists that exhibited a *slowing of the rate of recidivism*. Consider, for example, the ADM Co. It was sanctioned mightily for its ring-leading roles in seven cartels—Lysine, Citric Acid, High Fructose Corn Syrup, and others—all of which were discovered before 2001. Since then, ADM has been “clean.” I think one can infer some cartel-avoidance behavior among a few other recidivists in Table 1: Sanofi-Aventis, Bayer, A. P. Moeller, ThyssenKrupp, Degussa, Stora Enso, Air Liquide, Solvay, and Sumitomo Chemicals.

Unfortunately, for most of the remaining 43 top recidivists, one observes an acceleration in the rate of recidivism after 1999. In general, the top recidivists engaged in three times as many discovered cartels after 1999 than in the decade before 2000. Total SA, for example, the current world champion of cartel recidivism, engaged in almost 90 percent of its cases during 2000-09. Indeed, ten companies were clean before 2000 and began joining cartels only afterwards. Serious enforcement of anti-cartel laws was well along in Europe and North America during the 1990s, yet these ten companies and score of others seemed to have learned no lessons.

IN GENERAL, THE TOP
RECIDIVISTS ENGAGED IN THREE
TIMES AS MANY DISCOVERED
CARTELS AFTER 1999 THAN IN
THE DECADE BEFORE 2000.

X. Three Interesting Cases

Wagner-von Papp⁶³ relates a most interesting case of recidivism, taken from a 2006 German Pre-insulated Pipes cartel decision and unusually severe sentences imposed by the Regional Court in Munich.⁶⁴ This decision closely followed the eponymous EU cartel decision made by the EC during March 1996 to October 1998⁶⁵. The EU cartel covered illegal collusion in several Member States in northern Europe during 1990-1996. The Commission imposed relatively high fines, and its decision was appealed. Starting in 2000,

“...while the appeal before the Court of First Instance was still pending, one of the German participants of the Pre-Insulated Pipes Cartel re-initiated contacts with its competitors, exchanged information about current and future bids, agreed the submission of cover bids, and submitted rigged bids on

several occasions between 2001 and 2004. All this was done with the stated objective of raising prices between 5 and 15 per cent.

The driving force in the renewed cartelisation efforts was the main defendant, who in the European case had narrowly escaped becoming himself an addressee of an infringement decision. In sentencing the main defendant, the [Court] considered as aggravating factors that he was the de facto head of the undertaking and that the infringements had taken place at a time when the appeal of the very same undertaking to the European courts in the Pre-insulated Pipes Cartel case was still pending. The Court also considered the loss inflicted, estimated to be €65,000 (using a 5 per cent overcharge assumption), as ‘substantial’ and an aggravating factor. On the other hand, the defendant’s attempts to compensate victims were treated as a mitigating factor. The Court considered that a final prison sentence of 34 months, i.e., two years and ten months, and an additional fine of €100,000, was adequate and sufficient punishment for the main defendant. Pursuant to s 56(2) of the Criminal Code, a prison sentence exceeding two years cannot be suspended. Accordingly, the ‘King of the Pipes’ was sentenced to serve his term in prison. Two of his codefendants were sentenced to suspended prison terms of two years each, and the third co-defendant to a suspended prison term of one year” (Wagner-von Papp 2010: 9-10).”

Total SA is totally corrupt. The French petroleum firm Total is the corporate King of Cartel Recidivism. During 1990-2009, Total amassed the greatest number of participations of in international cartels, and the rate of increase has not slackened. Buyers who deal with Total should be more cautious than usual when dealing with this company, and antitrust authorities should be extra vigilant when monitoring markets in which Total is present.

THE FRENCH PETROLEUM FIRM
TOTAL IS THE CORPORATE
KING OF CARTEL RECIDIVISM.

On the other hand, Akzo Nobel is no longer a trustworthy partner in cartel crimes. How do we know? Akzo was at one time an avid participant in the sport of price-fixing, but in the past few years Akzo has joined the leniency bandwagon. In the past several years, Akzo has been granted at least six leniency applications (and others may be in the works). It is no longer a trustworthy partner in crime.

XI. Discussion

This analysis of international-cartel recidivism is a snapshot taken retrospectively from the vantage point of January 2010. Although the sample pools 20 years of cartel activity, it has some of the disadvantages of a cross-sectional data set. As soon as a company steps over the line from participating in one cartel to partic-

icipating in two, it becomes branded as a recidivist for the entire 20 years. Unlike human recidivists, though it is relatively uncommon, a company guilty of only one case of price-fixing may become a recidivist by acquiring another business with a history of price-fixing.

There seems to be no way around counting corporate recidivism in this manner, except in a few temporal analyses of the data found above. Extending the data collection further backward in time would likely have only a small impact on the patterns observed. Going back 50 years looking at U.S. convictions would yield few fresh examples of international cartels; the EC found few infringements “with fines” prior to 1990; and all other antitrust authorities were inactive in fining cartels before 1990.

The objective of this paper was to look for empirical regularities in the sample of 389 recidivists that had engaged in international price-fixing in the past 20 years. A few have been found. Recidivists are overwhelmingly headquartered in northern Europe or Japan, and they tend to be highly diversified multinational firms that sell homogeneous producer goods. The skills acquired from participating in multiple price conspiracies are transferrable across divisional lines at very low marginal costs. Those acquired skills include identifying feasible collusive opportunities, negotiating mutually satisfactory deals, diplomatically dealing with partners when no enforceable contract exists, and flying below the radars operated by the antitrust authorities.

There are not a lot of hopeful signs in the data analyzed herein. The relative frequency of cartels discovered with recidivists as members did fall slightly after 2004 compared to the previous ten years. One can find the occasional heavy recidivist that has converted to a life of leniency application. But on the whole, recidivism rates appear to be rising. This observation seems to justify a continuation of policies that impose brutally higher fines and other effective sanctions on cartel recidivists. ▼

RECIDIVISTS ARE OVERWHELMINGLY HEADQUARTERED IN NORTHERN EUROPE OR JAPAN, AND THEY TEND TO BE HIGHLY DIVERSIFIED MULTINATIONAL FIRMS THAT SELL HOMOGENEOUS PRODUCER GOODS.

Company	Participation in Cartels			Subtotal	HQ Nation
	Cartel Ended Before 2000	Cartel Ended 2000-2009	Total Cases		
Total SA	3	24	27		FR
Sanofi-Aventis SA	14	8	22		FR
BASF	4	17	21		DE

Table 1

Fifty-two Leading Recidivists, 1990–2009

Table 1,
continued

Company	Participation in Cartels			Subtotal	HQ Nation
	Cartel Ended Before 2000	Cartel Ended 2000-2009	Total Cases		
Lafarge SA	5	16	21		FR
Bayer AG	15	5	20		DE
Hitachi Ltd.	2	18	20	6	JP
Holcim Ltd.	2	17	19		CH
Akzo Nobel	4	14	16		NL
BP Amoco	4	14	16		UK
A.P. Møller - Mærsk A/S	12	3	15		DK
ENI (Ente Nazionale) SpA	4	11	15		IT
ExxonMobil	3	12	15	12	US
Mitsubishi Corp.	4	10	14		JP
ABB Asea Brown Boveri	2	11	13		CH/SE
Samsung Group	0	13	13		KR
Cemex SAB	1	11	12		MX
Nestlé	3	9	12		CH
Siemens AG	1	11	12		DE
Toshiba Corp.	1	11	12		JP
Bouygues SA	1	10	11		FR
Buzzi Unicem	3	8	11		IT
Hyundai Corp.	3	8	11		KR
LG	0	11	11		KR
Sony Corp.	1	9	10		JP
ThyssenKrupp AG	5	5	10		DE
United Technologies Corp.	1	9	10	26	US
ArcelorMittal SA	2	7	9		LX
Degussa AG (now RAG AG)	6	3	9		DE

Continued on next page

Participation in Cartels

Table 1,
continued

Company	Cartel Ended Before 2000	Cartel Ended 2000-2009	Total Cases	Subtotal	HQ Nation
Phillips Electronics	1	8	9		NL
Vinci SA	1	8	9		FR
Vodafone Group PLC	1	8	9		UK
Crompton Corp. (renamed Chemtura)	1	7	8		US
DuPont	3	5	8		US
Johnson & Johnson	1	7	8		US
Kone Oyj	0	8	8		FI
Linde Group	3	5	8		DE
Merckle GmbH (Heidelberg Cement parent)	2	6	8		DE
Stora Enso Oyj	4	4	8		FI
ADM Co.	6	1	7		US
AIG (American Intl. Group)	0	7	7		US
Air Liquide	4	3	7		FR
Alstom SA	0	7	7		FR
Danone	5	2	7		FR
Heijmans NV	1	6	7		NL
Repsol YPF SA	1	6	7		ES
Schindler Holding AG	0	7	7		CH
Solvay SA	5	2	7		BE
Strabag SE	0	7	7		AT
Suez SA	0	7	7		FR
Sumitomo Chemical Co. Ltd.	5	2	7		JP
UPM Kymmene	0	7	7		FI
Vivendi SA	0	7	7		FR
Total of above = 52 companies	147	429	576		

a) Cases are observations of cartel-company combinations.

b) Assumes that all anonymous firms are counted only once, which is a slight overstatement.

Table 2

Selected Characteristics of Corporate Cartel Recidivists and All Cartelists, 1990–2009

Characteristics	Participation in Cartels				
	(1)	(2)	(3)	(4)	(5)
	Corporate Recidivists	All Corporate Cartelists	Recidivist Distribution	All Distribution	Ratio (3)/(4)
	<i>number</i>		<i>percent</i>		
Numbers:					
Number of cases, firms known by name ^a	1548	3663	—	—	42.3
Number of unique firms known by name	389	2115	—	—	18.4
Number of firms, including anonymous	389	6525 ^b	—	—	6.0
Cases by Industry Group:					
Agricultural raw materials	6	60	0.4	1.6	0.25
Forestry, timber, roundwood	3	3	0.2	0.1	2.00
Minerals	18	46	1.2	1.3	0.99
Construction	105	324	6.8	8.9	0.76
Food and beverage mfg.	75	221	4.8	6.0	0.80
Tobacco mfg.	3	14	0.2	0.4	0.50
Textiles	8	26	0.5	0.7	0.71
Clothing	0	0	0	0	0
Wood, lumber	3	22	0.2	0.6	0.33
Furniture	0	4	0	0.1	0
Paper and printing	49	119	3.2	3.3	0.97
Organic chemicals, food and agricultural uses	107	143	6.9	3.9	1.77
Organic chemicals, other	146	260	9.4	7.1	1.32
Inorganic chemicals, fertilizers	36	101	2.3	2.8	0.82

Continued on next page

Table 2,
continued

Characteristics	Participation in Cartels				
	(1)	(2)	(3)	(4)	(5)
	Corporate Recidivists <i>number</i>	Corporate Cartelists All <i>number</i>	Recidivist Distribution <i>percent</i>	All Distribution <i>percent</i>	Ratio (3)/(4)
Petroleum products	52	72	3.4	2.0	1.70
Rubber and plastic	79	151	5.1	4.1	1.24
Stone, clay, graphite, glass products	127	295	8.2	8.1	1.01
Primary metals	21	35	1.4	1.0	1.40
Fabricated metal products	35	195	2.3	5.3	0.43
Machinery, including electrical and parts	113	213	7.3	5.8	1.26
Electronic devices, including computers	61	104	3.9	2.8	1.39
Instruments, miscellaneous manufacturing	41	96	2.7	2.6	1.04
Transport services	138	323	8.9	8.8	1.01
Communication services	50	100	3.2	2.7	1.19
Wholesale, retail	147	303	9.5	8.3	1.14
Finance, insurance, banking	52	238	3.4	6.5	0.52
Water and energy distribution	22	31	1.4	0.9	1.56
Other services	51	164	3.3	4.5	0.73
Cases by Product Type:	1548	3363	100.0	100.0	—
Raw material	20	78	1.3	2.3	0.57
Industrial intermediate input	739	1544	47.7	45.9	1.04
Industrial capital good	103	143	6.7	4.2	1.60
Generic final consumer good	63	228	4.1	6.8	0.60

Table 2,
continued

Characteristics	Participation in Cartels				
	(1)	(2)	(3)	(4)	(5)
	Corporate Recidivists	Corporate All Cartelists	Recidivist Distribution	All Distribution	Ratio (3)/(4)
	number		percent		
Differentiated consumer good	119	276	7.7	8.2	0.94
Services, including construction	504	1391	32.6	41.4	0.79
Geographic Location:	1538	3363	100.0	100.0	1.00
NORTH AMERICA	166	524	10.8	15.6	0.69
WESTERN EUROPE (includes Central Europe)	519	1428	33.8	42.5	0.80
EASTERN EUROPE	137	239	8.9	7.1	1.25
ASIA	113	365	7.4	10.9	0.68
LATIN AMERICA (includes Mexico)	55	119	3.6	3.5	1.03
OCEANIA	15	48	1.0	1.4	0.71
AFRICA	88	191	5.7	5.7	1.00
GLOBAL (2 or more continents)	445	753	28.9	22.4	1.29
Cases by Type of Conduct:	1538	2810	100.0	100.0	1.00
Primarily bid rigging	631	1226	41.0	43.6	0.94
Classic price fixing	907	1583	59.0	56.3	1.05
Trends: Number discovered over time	1538	3555	100.0	100.0	1.00
Before 1990	31	85	2.0	2.4	0.83
1990-94	113	262	7.4	7.4	1.00
1995-99	247	443	16.1	12.5	1.29
2000-04	405	668	26.3	18.8	1.40
2005	155	390	10.1	11.0	0.92
2006	150	326	9.8	9.2	1.07

Continued on next page

Table 2,
continued

Characteristics	Participation in Cartels				
	(1)	(2)	(3)	(4)	(5)
	Corporate Recidivists	Corporate Cartelists	Recidivist Distribution	All Distribution	Ratio (3)/(4)
	<i>number</i>		<i>percent</i>		
2007	150	317	9.8	8.9	1.10
2008	177	397	11.5	11.2	1.03
2009	120	391	7.8	11.0	0.71
Size of Cartel (Participants):	1543	3651	100.0	100.0	1.00
2	88	192	5.7	5.3	1.08
3	119	200	7.7	5.5	1.40
4	198	377	12.8	10.3	1.24
5	159	321	10.3	8.8	1.17
6	129	295	8.4	8.1	1.04
7	78	183	5.2	5.0	1.04
8	134	282	8.7	7.7	1.13
9	47	154	3.1	4.2	0.74
10-20	492	1160	31.9	31.8	1.00
21+	99	487	6.4	13.3	0.48
Duration of Cartels by Cases: c	1382	3213	100.0	100.0	1.00
Less than 1 year	114	282	7.4	8.8	0.84
1-1.99 years	117	315	7.6	9.8	0.78
2-2.99 years	132	293	8.6	9.1	0.95
3-3.99 years	138	389	8.9	12.1	0.73
4-4.99 years	157	323	10.2	10.1	1.01
5-5.99 years	98	263	6.4	8.2	0.78
6-6.99 years	143	357	9.3	11.1	0.84
7-7.99 years	68	171	4.4	5.3	0.83
8-9.99 years	102	190	6.6	5.9	1.12
10-14.99 years	175	314	11.3	9.8	1.15

Table 2,
continued

Characteristics	Participation in Cartels				
	(1)	(2)	(3)	(4)	(5)
	Corporate Recidivists	All Corporate Cartelists	Recidivist Distribution	All Distribution	Ratio (3)/(4)
	number		percent		
15-20 years	84	200	5.4	6.2	0.87
20 or more years	59	115	3.8	3.6	1.06

a) Cases are observations of cartel-company combinations. Almost half (48%) of the cartelists in the full data set are anonymous because many of the world's antitrust authorities (e.g., Germany) fail to reveal names of sanctioned companies, press reports do not supplement the names of all cartelists, and some (the United States) do not reveal the name of amnesty recipients. This paper for obvious reasons ignores anonymous cartelists.

b) Assumes that all anonymous firms are counted only once, which is a slight overstatement.

c) Several cartels are double counted.

- 1 Penalties associated with specific deterrence will be just high enough to discourage a legal person from repeating the same crime. Under general deterrence, persons contemplating a property crime will observe the penalties imposed on others for similar crimes, form conjectures about the likely future costs of the crime, and decide against the illegal conduct. General deterrence is also the goal of administrative-law jurisdictions like the European Union (EU) that regard hard-core price-fixing as a serious infringement of market rules rather than crimes strictly defined.
- 2 Perhaps the best evidence for the ubiquity of acceptance of optimal deterrence principles is a 2005 survey of leading competition-law authorities that are members of the International Competition Network (ICN 2005: 49-52). The antitrust authorities participating were: Australia, Brazil, Canada, European Union, France, Germany, Hungary, Ireland, Japan, Mexico, Pakistan, Russia, South Africa, Spain, Sweden, Switzerland, United Kingdom, United States of America, and Venezuela. All 19 antitrust agencies surveyed agreed with the following statement: "*The principal purpose of sanctions in cartel cases is deterrence.*"
- 3 JAMES HENSLIN, *SOCIAL PROBLEMS: A DOWN-TO-EARTH APPROACH* (2008).
- 4 MARVIN ZUCKERMAN, *PSYCHOBIOLOGY OF PERSONALITY* (1991).
- 5 Steven L. Friedlander, *Using Prior Corporate Convictions to Impeach*, CAL. L. REV. 78, 1313 (October 1990).
- 6 MARSHALL B. CLINARD & PETER C. YEAGER, *CORPORATE CRIME* (1980).
- 7 Proprietorships with few employees are often characterized as having the temperaments of their owner-managers. Partnerships may develop practices that reflect the personalities of their dominant partners. Although rare, small companies and partnerships have been driven out of business by severe legal penalties (e.g., Arthur Anderson, the accountant to Enron). Large corporations may be less likely to take on the personality of their founders or CEOs, but it may happen. Do some large corporations

have difficulties learning from their past mistakes? This paper demonstrates that there is wide variation in corporations' ability to avoid the mistakes of the past; in that sense, some firms display a kind of corporate pathology.

- 8 Wouter P.J. Wils, *The European Commission's 2006 Guidelines on Antitrust Fines: A Legal and Economic Analysis*, *WORLD COMPETITION L. & ECON. REV.* 30 (June 2007), available at SSRN: <http://ssrn.com/abstract=962654>.
- 9 Douglas H. Ginsberg & Joshua D. Wright, *Antitrust Sanctions*, *INT'L J. COMPETITION L.*, (forthcoming 2010).
- 10 See Yuliya Bolotova, John M. Connor, & Douglas J. Miller, *Cartel Stability: An Empirical Analysis* (October 2006), available at SSRN: <http://ssrn.com/abstract=939078>.
- 11 Andrew B. Miller, *What Makes Companies Behave? An Analysis of Criminal and Civil Penalties Under Environmental Law*, SSRN Working Paper. (December 2005).
- 12 William J. Kolasky, *Antitrust Compliance Programs: The Government Perspective*, speech at the Corporate Compliance 2002 Conference Practising Law Institute, San Francisco, CA (July 12, 2002), available at <http://www.justice.gov/atr/public/speeches/224389.htm>.
- 13 From 1987 to early 2005, the USSGs were mandatory for federal prosecutors and judges. In January 2005 a Supreme Court ruling made the Guidelines voluntary, but subsequent experience has shown that they are still being followed by the judiciary. In practice the DOJ typically requests waivers for co-operating cartellists that result in large fine discounts below the minimum fines specified in the Guidelines. Nevertheless, because the Guidelines are the starting point for calculating sanctions, ultimately the fines paid correlate with the Guidelines ranges.
- 14 "... in *Interbrew/Alken Maes*, which involved two different cartels, Danone was reprimanded for the fact that it had participated in similar anti-trust infringements on two previous occasions and the fact that these previous infringements occurred in a different sector (flat glass) was deemed irrelevant," Damien Geradin & David Henry, *The EC Fining Policy for Violations of Competition Law: An Empirical Review of the Commission Decisional Practice and the Community Courts' Judgments*, SSRN Working Paper (February 2005), available at <http://ssrn.com/abstract=671794>.

Danone's fine was raised 50 percent because of its recidivism.
- 15 ... the Court of First Instance has held that 'it must be recalled to mind that, for the purpose of determining the amount of the fine, the Commission must ensure that its action has the necessary deterrent effect [...]. Recidivism is a circumstance that justifies a significant increase in the basic amount of the fine. Recidivism constitutes proof that the sanction previously imposed was not sufficiently deterrent.'

Wils, *supra* note 8, quoting Judgment of the Court of First Instance of 30 September 2003 in Case T-203/01 *Michelin v Commission* [2003] ECR II-4071, ¶ 293.
- 16 John M. Connor & Douglas J. Miller, *Determinants of U.S. Antitrust Fines of Corporate Participants of Global Cartels*, paper presented at the 7th International Industrial Organization Conference, Boston, (April 3-5, 2009). John M. Connor & Douglas J. Miller, *Determinants of EC Fines for Members of Global Cartels*, paper presented at the 3rd Conference on "The Economics of Competition Law," sponsored by LEAR (Laboratorio di Economia, Antitrust, Reglementazione), Rome, (June 25-26, 2009), available at <http://www.learlab.com/learconference/documents.html>.
- 17 Geradin & Henry, *supra* note 14.
- 18 I refer to the outpouring of articles that flow from Becker on crime and deterrence, see Gary S. Becker, *Crime and punishment: An economic approach*, *J. POL. ECON.* 76, 169-217 (1968). For surveys of this branch of knowledge, see Nuno Garoupa, *The theory of optimal law enforcement*, *J. ECON. SURVEYS*

- 11, 267–295, (1967) and A. M. Polinsky & S. Shavell, *The economic theory of public enforcement of law*, J. ECON. LITERATURE 38, 45-76 (2000).
- 19 Rubenstein, *An optimal conviction policy for offenses that may have been committed by accident*, APPLIED GAME THEORY (S. J. Brams, A. Schotter, & G. Schwodiauer, Eds), (1979).
- 20 A.M. Polinsky & D. L. Rubinfeld, *A model of optimal fines for repeat offenders*, J. PUBLIC ECON. 46, 291–306 (1991).
- 21 Winand Emons, *Escalating penalties for repeat offenders*, INT'L REV. LAW AND ECON 27, 170–178, (2007).
- 22 *Id.*, at 171.
- 23 Murat C. Mungan, *Repeat Offenders: If They Learn, We Will Punish Them More Severely*, INT'L REV. LAW AND ECON 30, 173-177 (2010).
- 24 There are previous analyses in which learning occurs, but in them, according to Mungan (*id.*), the offenders cannot form conjectures about the probability of detection.
- 25 *Casablanca*, Dir. Michael Curtiz. Perf. Humphrey Bogart, Ingrid Bergman, Claude Raines, Conrad Veidt, Peter Laurie, Sidney Greenstreet. Warner Brothers, 1943.
- 26 The most recent review of U.S. antitrust policies contains no reference to recidivism, Antitrust Modernization Commission: Report (April 2007), available at (http://govinfo.library.unt.edu/amc/report_recommendation/amc_final_report.pdf).
- 27 Jeremy Lever, *Opinion: Whether and if so how, the EC Commission's 2006 guidelines on setting fines for infringements of Arts. 81 and 82 of the EC are fairly subject to serious criticism*, §18, German Employers' Association (BDI): Law and Public Procurement series (2009).
- 28 Wils, *supra* note 8 at 21-27.
- 29 The purposes of cartel fines are: "Fines should have a sufficiently deterrent effect, not only in order to sanction the undertakings concerned (specific deterrence) but also in order to deter other undertakings from engaging in, or continuing, behaviour that is contrary to Articles 81 and 82 of the EC Treaty (general deterrence)" (Guidelines on the method of setting fines imposed pursuant to Article 23(2)(a) of Regulation No 1/2003 (2006/C 210/02). OFFICIAL JOURNAL OF THE EUROPEAN UNION: C 210/2-C210/4.: §4, (September 1, 2006). Wils, *supra* note 8, chooses to use the term deterrence in the sense of utter abolishment of a crime. He clearly distances himself from the Beckerian tradition of optimal deterrence, which takes the position that some small amount of law-breaking is optimal. It is a matter of conjecture as to whether his is a consensus view of the Commission's Legal Service or of the Commission more broadly.
- 30 Alan Riley, *The Modernisation of EU Anti-Cartel Enforcement: Will the Commission Grasp the Opportunity?* Brussels: Centre for European Policy Studies, Special Report. (January 2010), available at www.ceps.eu.
- 31 Wils, *supra* note 8 at 26.
- 32 Kristina Nordlander, *The Commission's Policy on Recidivism: Legal Certainty for Repeat Offenders?* COMPETITION L. REV 2, 55-68(August 2005), available at <http://www.clasf.org/CompLRev/Issues/Vol2Issue1Article3.pdf>.

- 33 Nordlander cites one case in which the Commission looked back 40 years. In principle, the EC could look back to the first EU cartel case, which was decided in 1962. The idea of granting state charters that conferred corporate immortality seems to have originated in the United States in the 1880s, (*Id.*)
- 34 Wils, *supra* note 8, at 27.
- 35 In fact, the most recent EC decisions have reduced the recidivism penalty to about 30 percent of affected sales per instance, rather than 60 percent.
- 36 Clinard & Yeager, *supra* note 6 at 130.
- 37 *Id.* at 129-131.
- 38 Cindy R. Alexander & Mark A. Cohen, *Why Do Corporations Become Criminals? Ownership, Hidden Actions, and Crime as an Agency Cost*, J. CORP. FIN 5, 1-34 (March 1999).
- 39 Willam F. Shughart & Robert D. Tollison, *Antitrust Recidivism in Federal Trade Commission Data: 1914-1982*, PUBLIC CHOICE AND REGULATION: A VIEW FROM INSIDE THE FEDERAL TRADE COMMISSION (Robert J. MacKay et al. eds.) (1987).
- 40 JAMES M. CLABAULT & MICHAEL K. BLOCK, SHERMAN ACT INDICTMENTS: 1955-1980, at 905-11 (1981).
- 41 Dan R. Dalton & Idalene F. Kesner, *On the Dynamics of Corporate Size and Illegal Activity: An Empirical Assessment*, J. BUS. ETHICS 7, 861-870 (1988).
- 42 John H. Shenefield, *Compliance Programs As Viewed from the Antitrust Division*, ANTITRUST L.J. 48, 79 (1979).
- 43 Maria Bigoni, Chloe Le Coq, & Giancarlo Spagnolo, *Fines, Leniency and Rewards in Antitrust: an Experiment*, CEPR Discussion Paper No. 7417. (2009).
- 44 S. S. Simpson & C.S. Koper, *Deterring Corporate Crime*, CRIMINOLOGY 30, 347-375 (1992).
- 45 Bolotova et. al., *supra* note 10.
- 46 Miller, *supra* note 11.
- 47 For more details on sources and methods of data collection, see John M. Connor & Gustav Helmers, *Statistics on Modern Private International Cartels*, Working Paper 07-01: American Antitrust Institute (January 2007), available at <http://www.antitrustinstitute.org/recent2/567.pdf>.
- 48 Sanctions are overwhelmingly corporate fines, but also include consent decrees or warnings from antitrust authorities. Payments made by firms that were defendants in private antitrust suits (usually class actions with judicial supervision), are also classified as cartel sanctions even if no fines were also imposed.
- 49 In contrast the U.K. Office of Fair Trade is punctilious in naming all sanctioned companies, even when there are many and some are small partnerships.
- 50 Jean-Claude Bosche & E. Woodrow Eckard, *The Profitability of Price Fixing: Evidence from Stock-Market Reaction to Federal Indictments*, REV. ECON. & STAT. 73, 309 (1991).
- 51 Connor & Helmers, *supra* note 47.

- 52 To be clear, this study and the present paper as well do not count multiple *convictions* for the same cartel as repeated violations. If a company was fined in Canada and the United States and paid into class-action settlements in both countries, those four convictions do not qualify as four counts of recidivism. What is being counted as recidivism is a firm's participations in multiple cartels—separate markets in almost all cases.
- 53 In the PICs, a case is a unique combination of a cartel market and a company name.
- 54 In the PICs, there are 3,663 cases with companies identified by name, both recidivists and non-recidivists. However, some antitrust authorities (e.g., Germany and the Netherlands) choose to omit the names of some or all of the members of convicted cartels, especially if the total number of companies is large; there were 2,865 cases of anonymous cartelists in the PICs at the end of 2009.
- 55 There is evidence that a European vitamins cartel operated in the late 1980s.
- 56 Connor, *supra* note 47.
- 57 *Id.* at 12-13.
- 58 The evidence on convicted cartelists suggests that rogue managers are in a minority. Cartel executives tend to have titles that place them in a company's top layer of management.
- 59 There is narrative evidence that this happened within Archer Daniels Midland and Hoffmann La Roche, JOHN M. CONNOR, *GLOBAL PRICE FIXING*, 2nd paperback ed. (2008).
- 60 This will be difficult. Antitrust decisions of most antitrust authorities lack details about the size of sanctioned firms (those of the EC are an exception). Most convicted cartelists, if named at all, are non-traded firms or are subsidiaries of traded firms.
- 61 If a cartel was prosecuted in multiple legal venues, the number of participants is the union of the firms sanctioned by each authority. For example, in *Graphite Electrodes* the United States and the EC both fined four firms, but each also fined one unique firm. Thus, the number of participants is recorded as six.
- 62 Margaret C. Levenstein & Valerie Y. Suslow *What Determines Cartel Success?* J. ECON. LIT. 64 at 43-95 (March 2006).
- 63 Florian Wagner-von Papp, *Criminal Antitrust Law Enforcement in Germany: 'The Whole Point is Lost If You Keep it a Secret! Why Didn't You Tell the World, Eh?'*, SSRN Working Paper. (April 5, 2010), available at SSRN: <http://ssrn.com/abstract=1584887>.
- 64 *Landgericht München II* (LG Munich II) 3 May 2006, W5 Kls 567 Js 30966/04, BeckRS 2008, 00736. In Germany, prison sentences can be imposed for bid-rigging.
- 65 *Preinsulated Pipe Cartel* [1999] OJ L24/1.