Subject: Public Comment on Remedies Topic A.1.
Date: Monday, June 13, 2005 12:43 PM
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Dear Commissioners:

Attached is a research paper that is relevant to the Antitrust Modernization Commission's consideration of the treble-damages remedy in the context of international cartels. The paper's conclusions support treble damages in the U.S. court system as a means of achieving deterrence of international-cartel deterrence. I reproduce the abstract in this letter:

"This paper assesses the antitrust fines and private penalties imposed on the participants of 167 international cartels discovered during 1990-2003, using four indicators of enforcement effectiveness. First, the United States is almost always the first to investigate and sanction international cartels, and its investigations are about seven times faster than EU probes. Second, U.S. investigations were more likely to be kept confidential than those in Europe, but the gap nearly disappeared since 2000. Third, median government antitrust fines average less than 10% of affected commerce, but rises to about 35% in the case of multi-continental conspiracies. Civil settlements in jurisdictions where they are permitted are typically 6 to 12%. Fourth, fines on cartels that operated in Europe averaged a bit more than half of their estimated overcharges; those prosecuted only in North America paid civil and criminal sanctions of roughly single damages; and global cartels prosecuted in both jurisdictions typically paid less than single damages."

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EFFECTIVENESS OF ANTITRUST SANCTIONS ON MODERN INTERNATIONAL CARTELS

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Abstract

This paper assesses the antitrust fines and private penalties imposed on the participants of 167 international cartels discovered during 1990-2003, using four indicators of enforcement effectiveness. First, the United States is almost always the first to investigate and sanction international cartels, and its investigations are about seven times faster than EU probes. Second, U.S. investigations were more likely to be kept confidential than those in Europe, but the gap nearly disappeared since 2000. Third, median government antitrust fines average less than 10% of affected commerce, but rises to about 35% in the case of multi-continental conspiracies. Civil settlements in jurisdictions where they are permitted are typically 6 to 12%. Fourth, fines on cartels that operated in Europe averaged a bit more than half of their estimated overcharges; those prosecuted only in North America paid civil and criminal sanctions of roughly single damages; and global cartels prosecuted in both jurisdictions typically paid less than single damages.

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INTRODUCTION

Twenty years ago the Sentencing Reform Act of 1984 created the U.S. Sentencing Commission, which was charged with devising guidelines for sentencing for the federal judiciary (USSG Advisory Group 2003). The Commission was established because of Congressional concerns that sentencing was too variable across Circuits and individual judges and that average sentences were too low for certain crimes. Other jurisdictions outside the United States have since adopted similar anticartel sanctions. However, in January 2005, the U.S. Supreme Court declared the Guidelines unconstitutional, virtually guaranteeing that the Congress would pass overriding legislation (Cohen and Fields 2005). The Antitrust Modernization Commission also will make recommendations to amend U.S. price-fixing sanctions (AMC 2004).

The past decade has witnessed an upsurge in prosecutions of international cartels. Data collected on these prosecutions offer an opportunity to gain information on the size, duration, and harmfulness of cartel conduct. These data in turn permit the development of indicators of the effectiveness of cross-jurisdictional cartel enforcement policies and sanctions. In this paper, four quantitative measures of anticartel actions are calculated for a large sample of international cartels punished by several antitrust authorities.

Objective

The purpose of this paper is to assess the magnitude of global antitrust sanctions imposed on modern international cartels. Although there is a small literature that examines prosecutions of a few individual cartels, it is believed that this paper is the first to

examine and measure quantitatively all such legal actions. By doing so, this paper can contribute critical information for the on-going debate about the effectiveness of global antitrust sanctions to deter international price-fixing conduct.

Scope

The focus of this paper is on all types of monetary and penal antitrust sanctions that have been imposed on private international cartels discovered between January 1990 and July 2003. Monetary sanctions include *fines* imposed by antitrust authorities on both corporations and individuals. Monetary sanctions also include *payments* made by defendants in private suits to both direct and indirect buyers of cartelized products; most often these payments are made as a result of *settlements* made out of court prior to trial, but in a few cases are *litigated judgments* of a trial judge or jury. Sanction amounts do not include the legal fees and costs of defendants, which may be substantial but are almost never revealed. However, payments made by defendants to settle private class-action suits do include the legal fees and costs incurred by plaintiffs in prosecuting their cases.[1]

This paper analyses only what Evenett *et al*. (2001) call "Type I" and the OECD calls "hard-core" cartels. A *cartel* is a group of two or more independent sellers who agree to fix or control prices or output in a given market (Dick 1998). *International* cartels are those that have participants from two or more countries[2]; the qualifier does not refer to the geographic scope of the cartel's agreement. *Type I* or *private* cartels are those

[1] In the United States, among the 23 largest class-action awards for price fixing in 1972-1999, legal fees ranged from 7% to 36% of the net recovery to the plaintiffs (Connor 2001: 471). This ratio has trended downward over time and by size of the case.

[2] The DOJ definition refers to either corporate (ultimate parent) members (nationality determined by location of the headquarters or country of incorporation) or managers' nationalities. In practice, in this paper corporate composition is the key indicator.

that operate without the protection of national sovereignty; they can be indicted for antitrust violations. Thus, legally registered export cartels may be considered private, but not mandatory cartels nor those established by parliamentary statutes or by treaties among nations. Private cartels may contain state-owned or controlled corporations, but if such cartels can be prosecuted under the antitrust laws of any jurisdiction, they are considered private schemes.[3]

Finally, this paper examines only those international cartels that were "discovered" between January 1990 and July 2003. By *discovered* is meant prosecuted by a recognized antitrust authority; found liable for damages in a private suit, pleaded guilty to a criminal indictment, or agreed to pay damages in an out-of-court settlement.[4] The choice of 1990 is somewhat arbitrary, but is meant to capture the beginning of the current level antitrust sanctions in the United States[5], the EU[6], and Canada[7].

BACKGROUND ON THE ISSUES

[3] International comity is a principal ingrained in government antitrust decisions (Waller 2000).

[4] By "prosecuted" I mean to include payments of civil penalties for violations of competition regulations as in the EU, criminal indictments, and announced formal investigations. The latter typically result in fines or guilty pleas.

[5] In 1990, the final increase in the U.S. statutory cap on antitrust fines ($10 million per company) became law. In 1993, the DOJ announced a policy of automatic leniency for the first cartel member to confess that met certain predictable conditions, a policy shift that proved widely-effective.

[6] In Europe, Harding and Joshua (2003) conclude that "... European law has over [1890-1990] caught up with American law" (p.270) in the sense that cartels are now subject to "categorical censure". Since the 1970s in Europe, "... the classic price-fixing, market-sharing cartel has... been driven underground and become strongly prohibited... "(p.229). In 1998 the EC issued guidelines for the calculation of price-fixing fines that explained practices being followed during the 1990s (ibid, p. 242). Moreover, in 1996 the EC issued its first leniency notice, which was revised in 2002 in a way that closely mimicked the U.S. policy. Therefore, by the late 1990s, the EU had also developed a set of government Anticartel sanctions for corporations that were similar to those in the United States and Canada (ibid. pp. 216-222).

[7] In 1992, Ontario, Canada passed a major piece of legislation that promulgated rules for private class actions, and other provinces followed soon after (Goldman 2003: 4). A civil remedy was made law in 1976 and affirmed by the Supreme Court of Canada in 1989, but was little used until the 1992 rules change was promulgated (ibid). Passage precipitated a large number of suits against members of international cartels in Canada. Along with Canada's nearly per se condemnation of price fixing as a criminal act, the addition of feasible compensatory suits brought Canada's legal structure very close to the U.S. model.

Origin and Importance of the 10% Presumption

The USSC's cartel fine levels followed from its famous conclusion: "It is estimated that the average gain from price-fixing is 10 percent of the selling price."[8] The Commission explained how it used this estimate to establish cartel fines. After noting that fines should be based on consideration of both the gain to the offender and the losses caused by the offender, the USSC noted that it would double the 10% estimate to account for harms "inflicted upon consumers who are unable or for other reasons do not buy the product at the higher price."[9] The Commission added: "The purpose for specifying a percent of the volume of commerce is to avoid the time and expense that would be required for the court to determine actual gain or loss."[10]

The Guidelines' approach is consistent with the standard optimal deterrence standard promulgated by William Landes (1983). Landes convincingly showed that to achieve optimal deterrence the damages from an antitrust violation should be equal to the

[8] U.S. Sentencing Commission Guidelines for the United States Courts, 18 U.S.C.18 U.S.C. Section 2R1.1, Bid-Rigging, Price Fixing or Market-Allocation Agreements Among Competitors, Application Note 3. The first guidelines were promulgated in 1987, and after almost three years of study and public comment were made law in 1989. The first guidelines were directed primarily at sentencing applicable to individual defendants with one exception, guidelines for organizations guilty of horizontal price fixing and bid rigging (Cohen and Scheffman 1989:332). It appears that the Commission believed that it had by 1987 sufficient statistical data on price fixing to set penalties at levels that would exceed the financial benefits of price fixing. During 1987-89, the Commission turned its attention to developing organizational or "corporate" guidelines, which were effective in 1991. The reason given for the delay in issuing the second set of guidelines was "time constraints and the nonexistence of statistical information" (USSG 1989: 1.12). Because the price-fixing guidelines were the *only* corporate criminal standards issued two years earlier, the USSG must have been confident about its knowledge base concerning the harmfulness of cartels.

[9] Section 8C2.4 (a) (3). It is unclear why the Guidelines doubled the assumed 10% loss, although the explanation in the Guidelines' commentary implies that this could be due to such factors as the allocative inefficiency harms of market power (the deadweight loss), the disruptive effects on victims caused by antitrust violations and/or the umbrella effects of market power. Perhaps the doubling can be explained by the Criminal Fine Improvements Act of 1986, which provides an alternative fine: "If any person derives pecuniary gain from the offense, or if the offense results in pecuniary loss to a person other than the defendant, the defendant may be fined not more than the greater of twice the gross gain or twice the gross loss." Pub. L. No. 100-185, 100 Stat. 1280 (codified at 18 U.S.C. § 3571 (1987)) at § 3571(d). "Umbrella effects" is the name given to higher prices charged by non-cartel members that were permitted or caused by the cartel's supracompetitive prices. The doubling of the 10% presumed overcharge does not, however, given the context, account in any way for the small chances of finding and convicting cartels or the lack of prejudgment interest.

[10] *Ibid*.

violation's "net harm to others", divided by the probability of detection[11] and proof (Landes 1983: 666-68). The base fine (20% of affected revenues) is adjusted by a number of factors, such as whether bid rigging[12] and other aggravating factors were involved, and by mitigating factors as well.[13] This adjustment results in a pair of "culpability multipliers" that are somewhere between 0.75 and 4.0 and are in a 1:2 ratio. The product of the base fine and the culpability multipliers results in the fine range that is to be imposed on a cartel member. Thus, the fine range recommended for convicted cartelists is from 15% to 80% of affected sales. (These fines usually are adjusted downwards for cooperation or as a part of the Division's leniency program.[14]) As the Sixth Circuit noted, the Sentencing Commission "opted for greater administrative convenience" instead of undertaking a specific inquiry into the actual loss in each case."[15]

The USSC appears to have adopted the 10% presumption because its use was advocated by the (then) head of the Antitrust Division, Douglas Ginsburg. In a statement to the Commission AAG Ginsburg stated that "the optimal fine for any given act of

[11] In 1986 the Assistant Attorney General for Antitrust, Douglas Ginsburg, estimated that the enforcers catch less than 10% of all cartels. See USSG (1986: 15). If he is correct, optimal damages for cartels should be tenfold! However, the percentage of cartels that are caught and proven probably is much higher today. See Spratling (2001). There is, however, no evidence that it exceeds 1/3, so there is no reason to believe that the treble damage remedy should be lowered. See also the discussion in Landes (1983: 115 fn. 1).

[12] If bid rigging is involved this increases the Base Offense Level by 1, See 18 U.S.C. Section 2R1.1 (b). This indicates the USSC's belief that Bid-rigging is worse than other forms of illegal collusion.

[13] See Section 2R1.1 and Application Note 1.

[14] The USSC's Commentary also notes that "In cases in which the actual monopoly overcharge appears to be either substantially more or substantially less then 10%" they might not employ the 20% assumption. See Application Note 3. But in practice they almost always use the figure of 20% of affected commerce as their starting point in their criminal fine calculations.

[15] See *United States v. Hayter Oil Co*., 51 F.3d 1265, 1277 (1995). The court noted: "The offense levels are not based directly on the damage caused or profit made by the defendant because damages are difficult and time consuming to establish. The volume of commerce is an acceptable and more readily measurable substitute...We find nothing other than the following commentary language that indicates that the Sentencing Commission adopted the theory of optimal penalties: It is estimated that the average additional profit attributable to price-fixing is 10 percent of the selling price."(*ibid*.).

price-fixing is equal to the damage caused by the violation divided by the probability of conviction . . . such a fine would result in the socially optimal level of price-fixing, which in this case is zero" (USSG 1986:14). He stated his judgment that "price fixing typically results in price increases that has harmed the consumers in a range of 10 percent of the price..." and that these violations had no more than 10% chance of detection (*ibid*. p.15).

While we do not know all of the reasons behind Ginsberg's estimate, a prominent analysis of the issue by Cohen & Scheffman (1989) states that the economic evaluation of a very small number of price-fixing conspiracies was particularly important in shaping the 10% presumption. The three cases were: United States v. Container Corp. of America[16] and the subsequent civil litigation; the Federal Trade Commission case involving the Bakers of Washington State; and a short survey by DOJ economists of empirical studies of bid rigging in the road-building industry in the 1980s (*ibid*. pp. 344-345). Thus, the lynchpin of modern criminal cartel fines is supported by a surprisingly small amount of evidence.

Critiques of the 10% Guidelines Presumption

The USSC's 10% presumption was attacked as unreliable and overstated almost as soon as it was issued. For example, Cohen and Scheffman (1989) concluded that "…there is little credible statistical evidence that would justify the Commission's assumptions which underlie the Antitrust Guidelines (p. 333)." "At least in price fixing cases involving a substantial volume of commerce, ten percent is almost certainly too high (p. 343)." Moreover, the specific data that the Commission uses was attacked as unreliable: "later

[16] 393 U.S. 333 (1969).

research has cast considerable doubt on ... these estimates, concluding that the markups, if they existed, were quite small (p. 345)."

From 1990 to 1999, a series of record corporate fines were imposed for criminal price fixing by U.S. courts; a similar upswing may be noted for fines imposed by the European Commission after 1995 (Connor 2003, Burnside 2003). Moreover, there is a high correlation between the fines imposed by the United States and the EU for the same international cartels. Civil treble-damages cases in the United States have seen a parallel, if lagged response in the size of settlements. Not surprisingly, attorneys who have defended companies that have been convicted of collusion in a number of highly publicized international antitrust conspiracies have claimed that the Guidelines have resulted in penalties so large that they have resulted in overdeterrence. For example, just as the DOJ's campaign against international cartels was gathering steam, Adler and Laing (1997) assert that "the fines being imposed against corporate members of international cartels are staggering (p.1)", placing the blame on the "uniquely punitive" requirements of the U.S. Sentencing Guidelines.

> "What is….troubling is that the company fines...have risen astronomically – to levels far higher than the fines for other serious economic crimes and in amounts that can be unrelated to the economic harm caused by the violations (Adler and Laing 1999:1)."

More recently, Denger (2003) too decries the prevalence of excessive price-fixing fines and private settlements. He places the blame for excessive fines on the Corporate Guidelines base fine calculation, which is 20% of the volume of affected commerce (p.3). This approach, he notes, presumes a pecuniary loss of 10% of sales due to price fixing; unlike all other white-collar federal crimes, the actual degree of direct harm caused does

not have to be proven by prosecutors.[17] Denger notes a failure of the economic-legal literature, namely, that "…we have little information on what level of criminal or civil exposure is needed to deter most cartels (p.4)."

Concern about the lack of empirical evidence on the actual harm caused by price fixing is not confined solely to those sympathetic to the increased exposure of corporate defendants. Graubert (2003) notes that the controversy over whether antitrust payments are excessive (which on p. 7 he equates with payouts greater than reasonable damage estimates) is largely attributable to the "…difficulty of gathering useful data." A well known critic of the effectiveness of antitrust enforcement, Klawiter (2001) expresses skepticism as to whether the severe monetary penalties imposed on cartelists in the late 1990s will in fact deter illegal price fixing.

Antitrust Fine Limits Abroad

In the European Union, 10% also plays a key role in setting antitrust fines on international cartels. The maximum amount that the European Commission can impose on a company that violates the EU's competition laws is in principle unrelated to the amount of harm. Rather, the maximum is 10% of the company's total revenues in the year preceding the EC's decision (Burnside 2003). The origin of this limit, spelled out in the EC's Regulation 17, is obscure. If a single-line firm participates in a cartel for only one year, those profits in excess of 10% of revenues will be retained by the violator. Price fixing will be even more profitable if, as is usually the case, the cartel endures for

[17] Denger appeals primarily to an increase in settlement rates in treble-damage direct-purchaser suits to establish the unfairness of the high fines imposed on corporate price fixers, an increase that, he believes, cannot be explained by increases in overcharge rates. He cites about 8 domestic U.S. law cases that settled for 2 to 4 % of sales in the 1970s and one international case in 2001 that settled for 18 to 20% (pp. 3-4). I argue below that settlements are inappropriate evidence in this context.

more than a year or if EC fines are less than 10% of revenues.[18] This limit has not been seriously considered for amendment.[19]

Japan's Antimonopoly Law has even more restrictive upper limits on the fines that can be imposed by the Japan Fair Trade Commission (JFTC). For the largest companies in the manufacturing sector, the limit is 6% of sales. For smaller companies in non-manufacturing industries, the limit is far lower. In 2004, the government proposed doubling the upper limit on antitrust fines.[20]

The Broader Issue of Cartel Deterrence

Cohen and Scheffman also argue that the Antitrust Guideline, when coupled with civil and marketplace sanctions will cause "a serious over deterrence problem" (p. 334). That is, they and other critics of the Guidelines believe that there is a disparity between the size of the corporate fines mandated for antitrust violations and the amount of the economic injuries caused by overt price fixing. During recent years this criticism has been repeated with perhaps even more intensity. These attacks could be due to rising levels of corporate antitrust fines in recent years.

Concerns about the inadequacy or excessiveness of antitrust sanctions are part of the larger issue of the effectiveness of antitrust interventions. To make any headway in assessing empirically the adequacy of anticartel enforcement, it is necessary to have

[18] Nearly all cartels sanctioned by the EU are international, and there is abundant research showing that international-cartel duration averages 5 to 7 years. The saving grace for EU fines is the fact that in practice most corporate violators have been large multinational corporations for which the cartelized product is a small share of total company sales. There are, however, many counter examples.
[19] Regulation 17 was amended in 2004 with changing this limit on fines.
[20] The amendment is supported by the Prime Minister, bar associations, and consumer groups, but is opposed by Japan Business Federation, which may be the country's most powerful lobby. According to a JFTC study, average monopoly profits in Japanese cartels are estimated to average 16.5% (Asahi News Service, April 23, 2004).

reliable information about the degree of harm generated by private cartels. Cartel injuries to purchasers are positively related to three economic factors: the size of the cartel's market, the duration of the conspiracy, and the percentage overcharge. Antitrust sanctions should be calibrated to a cartel's affected sales and overcharges; investigation procedures can reduce the probability of cartel formation or the duration of cartels.

Those critical of aggressive antitrust policy have often embraced the comforting notion that cartels are fragile coalitions. When the OPEC cartel began to have an impact on petroleum prices in the early 1970s, several leading economists predicted its imminent demise. Morris Adelman (1972) wrote that

> "Every cartel has in time been destroyed by one and then some members chiseling and cheating…"(p.71).

In 1974, in a now infamous news magazine article, Milton Freedman predicted OPEC's collapse. However, research by Eckbo (1976) and Suslow (2001) finds that the mean duration of discovered cartels is around five or six years. The (unknown) duration of undiscovered cartels is likely to be longer. OPEC may be less powerful today than in the 1970s, but its production decisions continued to roil world petroleum markets.

In a provocative essay that quickly drew rebuttals[21], Crandall and Winston (2003) assert that extant empirical evidence demonstrates that antitrust policy has been ineffective in either raising consumer welfare or in deterring anticompetitive conduct:

> "We find little empirical evidence that past [antitrust] interventions have provided much direct benefit to consumers or significantly deterred anticompetitive behavior" (p. 4).

[21] See Baker (2003), Werden (2003), and Kwoka (2003). According to Kwoka (2003: note 2), Crandall and Winston's earlier drafts "… endorsed consideration of outright repeal of the antitrust laws".

The great majority of their criticisms are directed at monopoly and merger enforcement, but remedies in collusion cases also attract their disfavor. To support their view that the prosecution of overt price fixing is misdirected, they cite five empirical studies of overt collusion that find no upward effects on prices of conspiracies convicted in U.S. courts.[22] While Crandall and Winston later admit that there are some "examples" of successful collusion, no studies are cited that support the positive effect on prices.[23] As for deterrence, Crandall and Winston rather grudgingly admit that the large DOJ fines meted out to cartels in recent years possibly deterred the most harmful cartels.[24] This concession is immediately tempered by a citation to an entirely theoretical analysis of the dangers of over deterrence.

In his comment on Crandall and Winston, Kwoka (2003) faults them for their "startlingly selective" body of evidence. He suggests that they should have included "… studies from any source with appropriate evaluation of their credibility" (p. 4). Kwoka is hardly the first specialist to lament the absence of quantitative estimates of the price effects of overtly collusive arrangements.

Despite the evident antitrust successes in sanctioning international cartels in the last decade, skepticism still is expressed about whether current enforcement regimes are capable of serving the aims of antitrust. A narrow construction on the purpose of antitrust

[22] We should note that space constraints do not appear to be responsible for such a skimpy treatment of this topic, for they list 59 references. The choice of two of the articles is unfortunate, because both are methodologically deeply flawed. Newman (1988) is discussed later in this paper; Sproul (1993) is criticized by Werden (2003). Both articles appear in journals managed by University of Chicago economists. Two other studies focus on an odd alleged episode of price fixing, the so-called Overlap group of 23 elite U.S. universities that met regularly to allocate needs-based graduate scholarships; this practice was permitted to continue under a consent decree that limited the degree of detail shared.

[23] They say that the lysine, citric acid, and vitamins cases are "well known". I am aware of only one publication that covers the price effects of all three of these three cases with a degree of depth, viz., Connor (2001).

[24] Their reasoning is obscure. Perhaps they are referring to international cartels, cartels with absolutely large overcharges, or conspiracies with high percentage overcharges. In any case, why they expect the probability of discovery or relative size of expected sanctions to be greater in such cases is not clear.

laws limits it to maximizing consumer welfare and efficiency; a broader interpretation gives some weight to income redistribution, small business protection, or dispersion of political and economic power. However, under either stance the aims of antitrust are served by competition policies that deter recidivism. While deterrence may have improved marginally in the 1990s, scholars of modern international cartels believe that current competition policies cannot fully deter because they are "...oriented towards addressing harm done in domestic markets... [or] merely prohibit cartels without [sufficiently strong sanctions]" (Evenett *et al*. 2001: 1222). Moreover, empirical evidence from recent years demonstrates a significant degree of continued cartel formation and multiple corporate convictions for price fixing. It would appear that either greater sanctions ought to be applied or that a multilateral approach implemented in order to approach optimal deterrence of international price fixing.[25]

In sum, there does indeed seem to be a broad consensus among legal and economic writers that the question of the optimality of price-fixing penalties turns mightily on the actual degree of harm caused by cartel conduct, and that we do not know enough about this issue. Moreover, even if the creators of the USSC Guidelines were correct that in the 1980s cartels generally raised prices by 10%, the harsher cartel sanctions imposed more recently could mean that this presumption is no longer justified. This is a gap in the literature that this article attempts to address.

LITERATURE REVIEW

Analyses of the antitrust prosecutions and convictions of single legal jurisdictions are commonplace. Gallo *et al*. (2000) have reviewed the enforcement of the Sherman Act by

[25] One way of increasing sanctions without changing the statutes is to extend standing to foreign buyers to permit them to sue for private damages in U.S. courts. On the Empagram case, see Davis (2003) and Bush et al. (2004).

the U.S. DOJ for the period 1955-1997. This paper describes the number antitrust cases by type and outcome over time, but it collects only limited information on the characteristics of the prosecuted cartels. Examining only *per se* horizontal violations during 1955-1989 (a category that corresponds closely to cartels), Gallo *et al.* find only 34 international cases, which represent merely 2.3% of all such cases. During the Reagan and first Bush administrations, the international rate dropped to 0.4%, but in the late 1990s the rate exceeded 50% (Connor 2001). Gallo *et al.* also provide information on the size and duration of U.S.-prosecuted cartels. The average number of defendants was about four, but dropped to less than two in 1980-1997. The average size of affected sales was 870 million 1982 dollars; again, the average size was much smaller during 1980-1994 ($120 million) than before. The average duration of the conspiracies was 5.4 years, with no trend over time. Finally, this study gives summary data on fines and prison sentences imposed in criminal cartels cases. The total fines imposed on 2908 companies during 1955-1997 was $305 million (approximately 440 million 1995 dollars), two-thirds of which was imposed after 1989. In addition, 1431 individuals were fined a total of $30 million.

Similar less detailed compilations of prosecution statistics are available for other jurisdictions, but analyses for international cartels are few. Guersent (2004) summarizes the cartels' conduct and sanctions taken against 19 international cartels by the EC from July 2001 to December 2003. This paper simply collects information previously released by the Commission in its news releases and in-house publication *EC Competition Newsletter*. Perhaps the fullest survey of modern international cartels appears in a lengthy working paper by two of the profession's most active researchers on cartels,

Levenstein and Suslow (2002). The paper aims at describing the structure of cartel markets (numbers, concentration, and demand features) and assessing three dimensions of cartel performance: stability, duration and "profitability," the last equivalent to overcharges. Levenstein and Suslow (2002) cite several studies of the interwar period and collect information on 35 international singe-episode cartels prosecuted by the DOJ and EC from 1990 to 2001(Table 15). While their 2002 monograph employs in part data taken from prosecutors' statements, it does not document the antitrust consequences of the cartels' behavior. A more recent paper by Levenstein *et al.* (2003) does cite antitrust fines for two modern cartels in Table 2, but it does not aim to analyze cartel sanctions in a cross-sectional manner.

The Organization of Economic Co-Operation and Development (OECD) for several years have had an active program for the consideration of a common policy approach towards international cartels. Its report *Hard Core Cartels* summarizes a unique survey of its member countries' experiences in sanctioning such cartels (OECD 2003). The EU and 14 members provided data (fines, affected commerce, or harm) on 38 convictions of 27 international cartels; while most of these data are public knowledge, some are unique (*ibid.* Annex A). These data have been incorporated into the present paper.[26]

MEASURES OF EFFECTIVENESS

The data collected on international cartels for this paper suggest four indicators of enforcement effectiveness by antitrust authorities. First, the speed with which the agencies investigate, negotiate, and impose sanctions may be analyzed. Generally, long

[26] In some cases errors have been corrected and reliable additional facts have supplemented the OECD data.

delays in the administration of justice are regarded as bad public policy. One can imagine an investigation that is too short for an adequate judgment about probable cause, but the main complaint of defendants is about excessive length and the consequent period of uncertainty about prosecution or the size of sanctions, especially if the investigation becomes public, as many do. Plaintiffs especially have an interest in quick conclusions to suits, which defendants habitually delay as far as possible (Adams and Metlin 2002). A peculiar feature of international cartels is that when a probe, fine, or guilty plea is made in one jurisdiction, it may well trigger follow-on investigations in other jurisdictions. Although court trials are rare for either criminal or civil prosecutions, they can add several years to a final determination of guilt; in the EC, appeals about the sizes of the EC cartel fines are common, but as these are by choice of the fined companies, this aspect of speed will not be studied.

A second indicator is the pattern of cartel formation over time. The simple notion underlying this measure of enforcement effectiveness is that as information becomes available to business persons about increases in maximum legal price-fixing penalties, in the probability of detection, or in harshness of actual sanctions corporate decision makers will raise their expectations concerning the costs of illegal behavior. This information is likely to arise from several sources: legal advisors, business and trade publications, and the informal exchange of information between business persons. The lags in learning and in forming expectations may be considerable. Therefore, conclusions about the relationships between milestones in anticartel laws or enforcement actions and decreases in cartel formations will require long periods of analysis.

A third measure of effectiveness is the size of a company's fine relative to its sales during the cartel period; alternatively, the fines on all members of a cartel can be compared to affected sales of the total market. Although these ratios have no direct relationship to economic deterrence, they are the most frequently cited measure of a successful prosecution in legal discussions. Judicial opinions on the fairness of proposed class-action settlements inevitably focus on the recovery/sales ratio proposed relative to the same ratios from other settlements. Class counsel likewise highlights this ratio when defending a settlement from criticisms about a particular deal. Recoveries above 10% or even 5% of sales are cited as successful results for plaintiffs. Some students of cartels opine that fines as high as 150% of affected sales are necessary for absolute deterrence (Wils 2001). Despite the absence of a firm economic defense for the fine/sales ratio,[27] this index is broadly computable and is a rough indicator of the rigorousness of anticartel enforcement over time or across jurisdictions.

The fourth measure of enforcement effectiveness is the ratio of monetary sanctions to the cartels overcharge.[28] This index bears directly on the question of economic deterrence. Unfortunately, it is the most difficult to compute, has the smallest sample size, and is the most likely to contain measurement errors.

Rates of International Cartel Formation

[27] From a compensation or deterrence standpoint, optimal fines should relate to the antitrust injuries caused by the cartel. While damages in some situations should be based upon lost profits, in U.S. federal law damages are customarily computed from overcharges (Hovenkamp 1999:658-659). The size of civil damages is positively related to the overcharge percentage and affected sales. Cartel fines, however, are computed almost solely from affected sales (Connor 2005). Because of the reluctance of the courts to bankrupt defendants, maximum fines are set relative to profits or liquid assets in order to take into consideration a company's ability to pay.

[28] Of course, the best denominator would the sum of the overcharge and the deadweight loss, but the latter is even more difficult to compute in cartel cases than the overcharge.

An informal analysis of cartel formation is provided in Figures 1 to 4. In every geographic region, the annual rates of cartel formation (the year the cartel began fixing prices) peaks in the early 1990s. The increase in formation rates from the 1980s to the 1990s is particularly striking and informative. The acceleration in new cartels is apparent for all types of international cartels, global, European, and North America.

[INSERT FIGURES 1, 2, 3, AND 4 HERE]

The NAFTA-area cartels began at a slightly earlier time than the other two types (cf., Figure 4 with Figures 2 and 3). During the 1981-1988 Regan administration, the resources of the U.S. DOJ were directed primarily at small scale bid-rigging conspiracies (Connor 2001: 67). Attention to international cartel enforcement rose slightly during the Bush *pere* administration, but really became a major priority of the DOJ only after 1992. U.S. legal sanctions increased in 1987 when price fixing was made a felony and in 1990 when the statutory corporate fine was raised to $10 million; however, the DOJ seems not to have implemented these new powers until after 1992 or 1993 (Spratling 1999, 2001). The fall-off on new cartel formations in North America is consistent with the threat of the DOJ's enhanced prosecutorial powers and, after the DOJ's singular victories in the lysine and citric acid cases in 1995-1996, with the demonstrated ability to win in court. The notable decline in new cartel formations after 1997 is suggestive of a deterrence effect, but only a longer time period will allow for a more definitive conclusion.[29]

[29] The decline after 1992 is partly attributable to the sample's termination date. Because no data are collected after 2003 there is a ceiling on formations, which tend to lead discoveries by about six years.

Europe began successful prosecution of international cartels in 1969, but significantly increased the priority to investigate such cases only from the mid 1990s.[30] Figure 3 demonstrates a peak in cartel formation in 1993-1995 and a notable decline after 1995. Again, although time will tell if the post-1995 decline is not just a statistical illusion, the pattern is consistent with increased cartel deterrence after 1995.

Finally, global-cartel initiations also peaked in 1989-1992; those formed prior to 1989 are mostly shipping conferences, which operated in a grey area of the law. Though too early to tell, the successful prosecutions of several high-profile global cartels in the late 1990s may well have had a chilling effect on would-be global cartelists.

Speed and Confidentiality of Investigations

Table 1 summarizes the information available on time lags in enforcement actions with respect to international cartels prosecuted from 1990 to 2003. The first panel in the table calculates the percentage of cases for which there were no lags between the first public notice and the announcement of the sanction by the antitrust authority (guilty plea, indictment, fine, or consent decree). In other words, these percentages are indicators of how well investigations are kept secret. In the United States, grand jury proceedings are secret, but their existence may become known if someone asked to testify voluntarily reveals it.

Data on lags are available on 106 cartel cases. On average, half of the cases were kept secret until the day sanctions were announced, but secrecy was far more pronounced in North America than in Europe. The U.S. grand jury system is clearly effective in

[30] Competition Commissioner van Miert reorganized DG-4, creating a cartel unit around that time; Commissioner Monti dates the resurgence in anticartel enforcement from 1998. The member states began separate enforcement about 1997.

Table 1. Time Lags, International Anticartel Enforcement, 1990-2003.

Cartel Types	No Lags [a]					From First Notice to First Sanction [b]					Sanctions From Jurisdiction to Jurisdiction			
	US	Can.	EC	Other Eur.	Total	US	Can.	EC	Other Eur.	Total	U.S. to Can.	U.S. to EC	Can. to EC	EU to Other
	Percent					*Months*					*Months*		*No. of Cases*	
Global scope	41^{32}	100^{1}	25^{12}	--	52^{45}	16^{7}	--	29^{8}	--	23^{15}	7.3^{16}	34.0^{15}	14	2
NAFTA area	76^{25}	67^{3}	--	--	75^{28}	3^{14}	15^{1}	--	--	4^{15}	11.0^{3}	--	--	--
EU wide	--	--	33^{21}	--	33^{21}	--	--	39^{14}	--	39^{14}	--	--	--	--
European nations	--	--	--	8^{12}	8^{12}	--	--	--	8^{14}	8^{14}	--	--	--	--
Total	61^{57}	75^{4}	30^{33}	8^{12}	49^{106}	7^{12}	15^{1}	35^{22}	8^{14}	18^{58}	7.9^{19}	34.0^{15}	14	2
Date of First Notice:														
1990-1995	57^{7}	67^{3}	0^{9}	--	31^{19}	15^{3}	15^{1}	43^{9}	--	34^{13}				
1996-1999	79^{19}	100^{2}	8^{10}	--	57^{31}	16^{6}	--	31^{11}	--	26^{17}				
2000-2003	75^{16}	--	67^{4}	14^{14}	49^{34}	18^{5}	--	3^{1}	11^{12}	13^{18}				

a) A measure of secrecy maintained by the antitrust agencies and the targets of their investigations. Superscripts are number of cases.
b) Measures the time between a raid that is reported publicly and the date the first corporate participant is fined. Cases of no lags are not calculated in these columns.

Source: Connor (2003: Appendix Table 3)

preserving confidentiality in most cases, whereas the use of "dawn raids" in Europe makes most investigations public at an early stage of investigation. Over time it appears that the secrecy of EC cartel investigations is increasing. In fact in 2000-2003, secrecy levels of the EC were at levels comparable to U.S. and Canadian practice. European national agencies are more transparent than the EC.

Looking only at cases with positive lags (about 58 observations), the average time between "first notice" (generally news accounts of raids) and the first cartelist to be sanctioned is 18 months. However, the raid-to-sanction lag is far shorter in the United States than for EC cases: 7 months versus 35 on average. The DOJ dispatches more localized cartels with amazing alacrity (three months) compared with more complex and challenging global-cartel cases (16 months, four times as long). Rather surprising is the relative speed of the European national antitrust authorities (eight months), which may be related to the smaller size of the cartels prosecuted, greater prosecutorial resources, or the familiarity of agencies' staffs with local markets. Time series data are fairly thin, but there is some evidence that the EC is moving its cases through more rapidly in the 2000s than in the 1990s. Note that these figures include only the most active phase of cartel investigations. Prior to obtaining search warrants, an antitrust authority may spend two or three years determining probable cause (as in lysine and vitamins), though a few months is probably more typical.

The final analysis of speed concerns lags between jurisdictions in the case of overlapping prosecutions. In the lysine case, the DOJ began its undercover investigation in November 1992, raided corporate headquarters in June 1995, and negotiated the first guilty pleas in September 1996, EC fines came more than five years later. Are such long

leader-follower lags typical? Table 1 shows that the lysine case was atypically long. On average, the lag from the date an investigation or guilty plea is publicly known in the United States to the date a cartel fine is imposed by the EC is 34 months. This is a minimum figure, because under cooperative arrangements in force since the 1990s, the EC is informed in advance about U.S. programs in investigations on many cases; the average length of advance notification is unknown. Canada, on the other hand, responds far more quickly to the news of U.S. guilty pleas or indictments. The CCB has had longer and more complete working arrangements with the U.S. DOJ, has had a corporate leniency program in place long before the EC, and unlike the EC does its work without protracted multi-stage administrative hearings.

Finally, Table 1 shows that the U.S. DOJ is typically the first mover in global cartel cases. In 15 instances, U.S. action predated EC action; in 14 cases, Canadian prosecution predated EC fines. In only two cases has the EC completed its work in advance of one of the North American authorities.

Monetary Sanctions Relative to Sales

The ratio of fines for international price fixing to cartels' affected sales is computed for a large sub-sample of prosecuted cartels (Table 2). In some cases, affected sales are known only for one or two jurisdictions but are unavailable for other parts of the world; these observations are reported under the appropriate jurisdiction(s). However, if reasonably accurate overcharge or sales figures cannot be found for one region in which a global cartel was known to operate, the total column mat not be computable; likewise, in a few

Table 2. Cartel Sanctions Relative to Affected Sales, 1990-2003

Origin of Sanctions						
Cartel Types	U.S. DOJ	CCB	EC	Other Gov't[b]	Private	Total
	Mean percentage [a]					
Global coverage	20 [6]	12 [9]	11 [17]	9 [6]	26 [9]	16 [10]
EU-wide	--	2 [1]	7 [15]	--	0 [16]	7 [16]
Other regional	11 [14]	22 [7]	4 [2]	9 [26]	9 [6]	11 [43]
All types	16 [25]	16 [17]	10 [34]	9 [32]	9 [31]	12 [65]

= Not available, probably not zero.

Source: Connor (2003: Appendix Table 6A).

Note: superscripts count the number of observations.

a) The arithmetic mean of the sanction/sales ratio divided by the percentage overcharge, in those cases where both are available and both are non-zero. That is, treating each cartel as an equal observation, what is shown is the simple mean of the sanction/overcharge ratios. If either is a range, the midpoint of the range is used. The "private" column shows treble-damage suits, all but two from U.S. cases.

b) Prosecutions by other national competition authorities include Italy (4.5%, average of 12 cases), the Netherlands (4.3%, 2 cases), Sweden (39%, 2 cases), Australia (2.3%, 1 case), France (0.1%, 1 case), Korea (25%, 1 case), Japan (1.25%, 1 case), and Germany (15.5%, 1 case).

cases global sales are known but not regional affected sales. If affected sales are only known as a range, the mid point is used. The total number of observations is close to 100.

On average for all types of cartels, the U.S. DOJ and CCB have imposed corporate fines equal to 16% of cartelized sales *in their jurisdictions.* The EC and other national agencies (overwhelmingly located within the EC) assess fines that average 9% to 10% of EU affected sales.[31] In North America, private treble-damage suits have won settlements that average 9% of affected commerce.[32] Thus, in the United States (and two or three cases in Canada) public fines and private recovery have amounted to about 25% of sales – more than double the European rates. Many of the global cartels in the sample were triple-sanctioned: criminally by the United States, administratively by the EU, and civilly in the USA; these cartels paid monetary penalties that on average totaled 25% to 30% of the cartels' sales in both jurisdictions.[33]

There is some variation in sanction rates by geographic location. Global cartels prosecuted by the U.S. DOJ suffered fines that averaged 20% of affected sales, almost double the

[31] This figure is within the range of 2% to 15% suggested as the typical EC practice in the 1990s (Wils 2001). In most EU cartels cases, affected sales are calculated for the European Economic Area, which consists of the EU proper and those members of the European Free Trade Agreement that did not join the EU.

[32] Canada and the United States are virtually alone in the word in having legal systems that encourage private antitrust suits. Australia had one private damages suit against an international cartel (the vitamins cartel) in 2003, but similar suits are negligible or unknown in the rest of the world.

[33] The *mean* percentages shown in Table 2 probably exaggerate what is typical because the sanction/sales ratios are highly skewed. The calculated means are the compound result of a small number of very high ratios and a large number of ratios close to zero. In addition, while data on government fines are almost always made public, for cartels of all types and sizes, smaller private settlements are often unreported (because they are deemed not newsworthy) or news of them is delayed. In such situations, the *median* sanction is a better indicator of central tendency.

Median fines for all types of cartels are lower than mean fines in every jurisdiction. In North America, median government cartel fines are 9% to 10% of affected commerce. The EC's fines are not quite as skewed, so the median fine is just two percentage points lower than the mean (8% versus 10%). The other fines of the other national antitrust authorities are highly skewed, the median (3%) being one-third of the mean. The most extraordinary finding is that the median private settlement is zero, an outcome predicated by the fact that victims of cartels located outside North America have no recourse to civil damage suits. Therefore, as a percentage of total sales (in all areas affected by the cartel), the typical corporate sanctions in private suits amount to a mere 4% of international cartels' revenues.

rate imposed on domestic conspiracies.[34] This finding suggests that the high fines imposed in the United States were driven more by the higher overcharges achieved by global cartels than by a desire by the DOJ to carry out a possibly politically popular program of targeting foreign-owned cartelists for high fines.[35] Moreover, private plaintiffs in North America that sued global cartels settled for amounts that were triple (26%) the settlement rates of more localized conspiracies (9%). The same pattern of collecting higher fines (per euro of EU affected sales) from global cartelists than for intra-EU cartels is observed in Europe. However, relatively higher fines have not been imposed on global cartels by the Canadian Competition Bureau[36] or by the other national antitrust authorities, most of them European (see footnote b in Table 2).

An important feature of many global cartels is that they affected commerce in Asia, Australia, Latin America, and Africa (Connor 2001, 2003). Discovered global cartels were usually sanctioned in North America and the EU, sometimes fined in Australia, but rarely fined in the other continents. As a result, for the ten cases for which global affected sales could be calculated, *global* fines averaged only 16% of worldwide cartel sales.[37] There is, moreover, evidence that global cartels achieve higher overcharges in precisely those countries with weak or nonexistent antitrust regimes (Clarke and Evenett 2004). These considerations point to a key factor that may explain why the historically high penalties in North America and Europe do not yet deter global-cartel formation: even if antitrust detection has improved in the last decade, expected profits net of penalties are still large in the continents with weak anticartel enforcement.

[34] Recall that although these were cartels that affected prices only in North America, each of the domestic cartels had some foreign members.
[35] Connor (2004) confirms with a much larger data set that throughout history international cartels have displayed significantly higher overcharge rates than domestic price-fixing schemes.
[36] This result is driven by a few national bid-rigging cases where the government was the victim. This issue is further discussed below.
[37] Optimal deterrence principles suggest that with certain prosecution anticipated overcharges above 16% will not deter; alternatively with detection rates of 10% to 33%, expected cartel profits of only 1.6% to 5.3% of sales will motivate cartel formation. The vast majority of international cartels have higher returns (Connor 2004).

From 1974 to 2004, changes in U.S. antitrust laws have permitted notably higher fines.[38] Cohen and Scheffman (1989) provide useful historical benchmark data for U.S. price-fixing fines. From 1955 to 1974 when the statutory maximum fine was set at $50,000, the average fines for corporations and individuals amounted to only 0.4% of the cartel's affected sales. During 1974-1980, when the maximum corporate fine was raised to $1 million, the average price-fixing fines rose to 1.4% of affected commerce. However, mostly as a result of plea bargaining, corporations paid average fines of $140,000, which represents an 86% discount from the maximum fine in 1974-1980. In the late 1970s the U.S. Sentencing Commission adopted guidelines that specified 20% of affected sales as the "base fine," with several aggravating factors allowing fines to rise as high as 80% of affected sales and two mitigating factors permitting downward departures that could drive the recommended fine to as low as 15% of affected sales (Connor and Lande 2004). A survey of cases in the mid 1980s reported average corporate U.S. price-fixing fines rose slightly to $160,000 per company. In 1987, when price fixing was made a felony, it became possible for U.S. courts to impose fines equal to double the antitrust damages.[39] The "double the harm" standard has rarely been applied in practice. In 1990, the maximum corporate price-fixing fine was raised to $10 million and in April 2004 to $100 million.

In the United States, the DOJ has certainly responded to the demonstrated political will for greater cartel fines. Average antitrust fines, as a proportion of affected sales, meted out to international cartels since 1990 have risen eleven-fold since 1970-1980 and forty-fold since 1955-1974.[40] In the EU, Canada, and other national jurisdictions active in sanctioning cartels,

[38] DOJ antitrust officials have requested and testified in favor of these changes.
[39] To be more precise, the fines are to be double the harm or double the illegal profits, *whichever is greater*. In the context of a particular cartel episode, the overcharge will be greater than or equal to the monopoly profits.
[40] Few of these cases were international (Connor 2004).

there have been few changes in laws permitting harsher fines in the last 20 or 30 years,[41] yet average fines have pushed upward anyway (Connor 2005).

To summarize, multi-continental cartels have generally experienced markedly higher sanctions relative to affected sales than more localized international cartels. Since 1990 individual government authorities imposed mean fines of 9% to 20% of affected commerce on global cartels; many of them also had civil settlements averaging about 9%. However, international cartels operating in only one country or within the EU faced distinctly more lenient treatment: government fines of 1% to 4% of sales, and no additional civil liability for cartels with activities outside North America.

Sanctions Relative to Injury

Injury is measured by the average monopoly overcharge achieved by a cartel during the entire conspiracy period.[42] These figures fall in a range of degree of precision and are in many cases expressed as fairly wide ranges. About 70 estimates are available (Table 3); for some global cartels separate estimates are available for two or more of the continents on which they fixed prices. One or more geographic estimates are available for 54 distinct cartel cases. *Median* measures of the sanction/overcharge are preferred to the mean because of evident skewness in these ratios.

Before examining the severity of sanctions across types of cartels, an issue must be addressed. It is clear that governments treat bid-rigging against themselves with greater than average severity. Although there are only 8 such observations, government bid-rigging sanctions averaged 549% -- more than *five times* the overcharges inflicted on government-procurement

[41] The UK, Australia, and New Zealand seem to be the main examples.
[42] Adding the dead-weight or "social" loss due to price fixing would lower these ratios by at least 10% on average. Peak overcharge rates are typically 50% to 100% higher than full-period overcharges.

agencies. By contrast, bid-rigging cartels directed at private buyers were sanctioned at a rate equal to about 50% of affected sales.[43] Therefore, Table 3 separates these cases from those cartels that sold principally to private buyers. If antitrust prosecutors are disinterested parties in treating cartel violations, this disparity is puzzling.

Looking now only at non-government purchases, the median total sanction (government and private) on all types of international cartels is 55% of the estimated global overcharges – slightly more than half of single damages. There is modest variation in the severity of government fines across jurisdictions, with U.S. fines (47%) a bit on the low side and those of other governments (66%) on the high side. In the United States the private settlements gravitate toward 72% of single damages, so government and private sanctions together account for 115% of U.S. damages. Outside the United States because there are virtually no private antitrust actions, international cartels pay out 50% to 66% of their overcharges. The reader should note that the sizes of some of these sub-samples are perilously small to be highly confident about some of these differences.

[43] Private party bid-rigging cartels are not displayed in Table 3.

Table 3. The Severity of Sanctions Relative to the Degree of Injury, International Cartels, 1990-2003

Type of Cartel	Bid-Rigging against Governments					Private Party Purchases					
	US	Canada	EC	Other Gov't.	World	US	Canada	EC	Other Gov't.	Private	Total
	Mean of Sanctions ÷ Overcharges [a]										
Global	--	--	--	--	--	54 [6]	43 [5]	34 [4]	100 [1]	71 [7]	47 [6]
EU-wide	--	--	141 [1]	--	100 [1]	--	--	63 [8]	--	0 [2]	54 [8]
National/regional	142 [1]	4,176 [1]	--	62 [5]	699 [7]	32 [7]	61 [3]	41 [1]	59 [5]	73 [6]	64 [15]
Prosecuted before 2000	--	4,176 [1]	141 [1]	7 [3]	864 [5]	45 [12]	51 [7]	46 [8]	92 [2]	60 [7]	53 [22]
Prosecuted since 1999	142 [1]	--	--	152 [2]	149 [3]	13 [1]	39 [1]	56 [5]	52 [4]	86 [6]	58 [7]
All types	142 [1]	4,176 [1]	141 [1]	62 [5]	549 [8]	43 [13]	50 [8]	53 [13]	66 [6]	72 [13]	55 [29]
Size distribution:						*Percentage*					
Less than 10%	0	0	0	40	25	21	11	43	27	8	30
10-49%	0	0	0	20	13	36	56	21	27	31	30
50-99%	0	0	0	0	0	21	11	14	18	23	5
100-199%	100	0	100	100	50	21	11	21	36	23	22
200% or more	0	100	0	0	13	0	11	7	0	8	11

Source: Connor (2003: Appendix Table 6B)

a) Based on 61 observations, 12 U.S., 8 Canadian, 14 EC, 11 other governments, and 12 private suits. "Total" column included only if all affected regions' data are known.

In the previous section global cartels were found to have a relatively high sanctions/affected sales ratio. Global cartels frequently are indicted in three or more jurisdictions, so one might expect their sanctions to be a higher share of damages than more localized schemes. This turns out not to be the case. Global cartels had *lower* worldwide sanctions as a share of overcharges (47%) than the EU-wide and national-scope cartels (54 to 64%). Only U.S. fines were much more severe for global cartels than those international cartels with only North American operations. EU and Canadian sanctions were more lenient on global cartelists than the local ones. And, finally, private parties bringing suits against international cartels were no more successful in settling with global conspirators than with those engaging in more localized conspiracies.

From a historical perspective, cartels are certainly suffering greater absolute monetary costs for antitrust violations than a few decades ago. In part that trend may be attributed to fines imposed by the EU and its Member States. European cartel fines were unheard of until the *Quinine* case decided in 1969, but by 2003 the EU's fines on international (including intra-EU) cartels had accumulated to $3.6 billion (Connor 2005). Most European national competition authorities have become active in prosecuting cartels only in the last five or ten years, yet these and other national authorities have imposed fines of at least $1.5 billion on international cartels. For the United States, international-cartel fines from 1990 to 2003 amounted to $2.3 billion.

The data in Table 3 suggest that international-cartel fines are becoming slightly more severe when gauged against the damages they have created. During 1990-1999, average fines and settlements equaled 53% of damages, but during 2000-2003 that ratio rose to 58%. However, the only category to demonstrate an increase in the decade of the 2000s was private suits. Longer-term trends in the severity of fines would be desirable, but I have found only one

earlier study , an internal U.S. DOJ survey by Sheer and Ho (1989) that found that the average 1988 corporate fine was a mere 0.36% of the overcharges. If the data in Table 3 are anyway near correct, U.S. fines on international cartels since 1990 have been a hundred times harsher than those in 1988.

These impressive upward trends in themselves imply little about the deterrence power of corporate anticartel sanctions.[44] Indeed, as mentioned in the Introduction, these trends have led several commentators to conclude that current antitrust penalties are over-deterring . Yet, dozens of international cartels continue to be discovered each year, and recidivism is rampant (Connor 2003). Under U.S. the most extreme application of U.S. laws, an international cartel could in principle be liable for about 1200% of its U.S. price-fixing damages.[45] By that measure, actual U.S. cartel fines and settlements of 115% of damages since 1990 are about one-tenth what is theoretically possible. More importantly, the little that is known about cartel detection implies that to effectively deter, penalties should be three to ten times a cartel's global damages. This suggests that under-deterrence may be typical.

Connor and Lande (2004) have attempted to resolve this gulf by confronting U.S. sentencing practices with a massive amount of cartel-overcharge data. A principle conclusion is that international cartels have typically overcharged buyers by 25%. Factoring in the probability of detection[46] suggests that an optimal fine should average 75% to 250% of damages. The data in the bottom of Table 3 show that over-deterrence might have occurred in 10% to 35% of the

[44] Only the United States has applied significant monetary and penal sanctions on individual managers, but incorporating individual penalties into a comprehensive deterrence assessment greatly complicates the analysis.
[45] The DOJ could impose a fine based on double the domestic U.S. harm and then use the cartel's *global affected sales*, which is typically three to four times domestic sales (see Connor 2003). Direct purchasers are entitled to treble damages, and indirect buyers to an equal amount in those states with *Illinois Brick* repealers. The total of the three sets of penalties is 10 to 12 times U.S. damages.
[46] Connor (2003: 67-68) found six estimates of cartel-detection rates form U.S. and European sources. The range was 10% to 33%. For some of the most common felonious property crimes (burglary, auto theft, and arson), U.S. arrest rates in the 1990s vary from 13.8% to 16.5%, well within the range adopted here.

instances. On the other hand, the likelihood of under-deterrence ranges from 65% to 90% of the sample.

CONCLUSIONS

The major objective of anticartel policies should be to lower the benefits (profits) or raise the costs (penalties) of price fixing. Other than vigilance in merger control, public policies can do little to change the structural features of markets that make cartels profitable: inelastic demand, large numbers of buyers, economies of scale, product homogeneity, and so forth. Policies can sometimes have salutary effects on exchange conditions, such as the publication of transaction prices in markets characterized by lack of transparency. However, in light of the effectiveness of sanctions noted above the principal role for antitrust is to develop rules, laws, and investigative procedures that make punishment surer and harsher than at present.

It is clear from the geographic location of cartel meetings that, as a general rule, United States territory was avoided because of its well-deserved reputation for tough anticartel enforcement. Instead, conspirators met in Switzerland, Mexico, Japan, Hong Kong, and several EU cities that were regarded as less risky. This behavioral pattern is perhaps the best indicator that U.S. anticartel policies are the ones other jurisdictions should emulate.

One investigative technique that has proven especially useful in discovering cartels is the DOJ's 1993 nondiscretionary Corporate Leniency Program (Delrahim 2004). Similar programs were subsequently adopted in several other jurisdictions. A novel variation is the "Amnesty Plus" program that rewards indicted companies if they inform the DOJ about collusive activity in a market not yet being investigated. In 2001, more than half of the DOJ's 30 global-cartel investigations were the result of Amnesty Plus leads (*ibid.*:6). More than three applications per

month were received in early 2003 (Pate 2003). A trail of connected cartel prosecutions occurred in the graphite-related and carbon related cartels (Pate 2003). Kovacic (2001) has suggested extending the corporate leniency program by giving bounties to individuals who provide information about hidden cartels.[47]

An important issue facing the U.S. courts is the status of wholly foreign purchasers from global cartels under the Sherman Act. In particular, should a foreign (i.e., non-U.S.) entity that buys cartelized products at artificially high prices outside the United States be permitted to seek treble damages in U.S. courts? Such purchases are usually necessary in order to maintain the high U.S. prices; that is foreign injuries are a *sine qua non* for domestic injuries. Therefore, the plain language of the Sherman Act would appear to permit standing by wholly foreign buyers (Bush *et al*. 2004).

Permitting wholly foreign buyers to use U.S. courts would by itself increase the expected financial losses from global cartels and, thus, increase deterrence (Bush *et al*. 2004). On the other hand, such suits might strain U.S. judicial resources and would have a negative impact on the number of DOJ leniency applications by international cartelists. Judicial resources could be expanded by charging foreign buyers who pay no U.S. taxes a users' fee, which could fund the employment of court-appointed special masters to deal with such cases. Special masters are quite capable of holding hearings exclusively for foreign buyers because such buyers only have standing if domestic plaintiffs have already filed against the same defendants. Leniency applications might decline in the short run because the DOJ has no authority to intervene in private suits, and permitting wholly foreign plaintiffs to sue for treble damages would increase potential applicants' liability. The net effects on deterrence of these opposing forces is a matter in need of empirical analysis, but Stiglitz and Orszag (2004) conclude from economic principles

[47] The Korean FTC recently offered a bounty to an individual with inside information on a cartel.

that standing for wholly foreign buyers in U.S. courts will tend to increase global-cartel deterrence.

Other U.S. policies worthy of globalization include: fines based on multiples of overcharges rather than arbitrary percentages, sharply increased penalties for recidivists, encouragement of private damages suits, and habitual criminal indictments for antitrust violations. This last initiative is especially important because it reduces the number of safe havens for fugitives from U.S. antitrust laws. These policy reforms are especially needed in Japan (which has an arbitrary fine of 6 percent of sales for price fixing by manufacturers) and other industrialized Asian countries (Chemtob 2000, Hammond 2001a).

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FIGURES

Figure 1: Rates of Discovery: Global-Scope Cartels

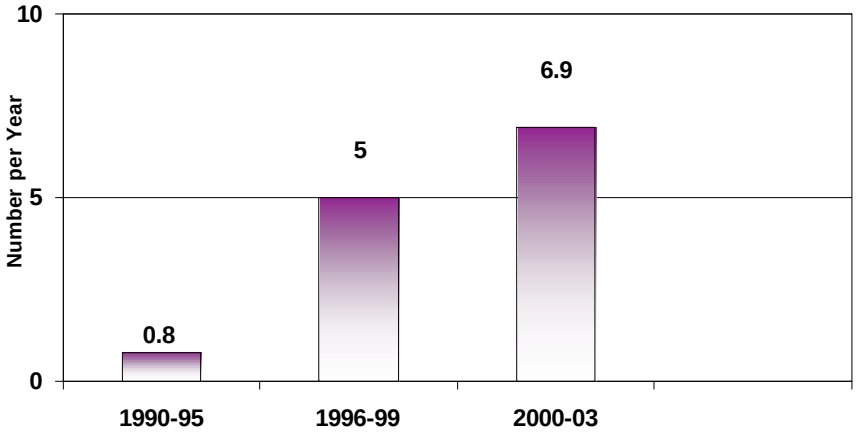

Figure 2. Rates of Discovery: Single National Market Scope

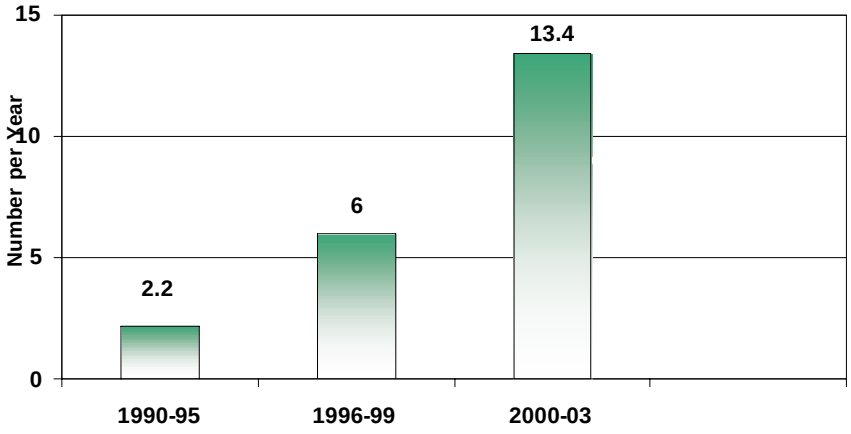

Figure 3. International Cartel Fines Collected, U.S. Dept. of Justice, 1995-2002 Calendar Years

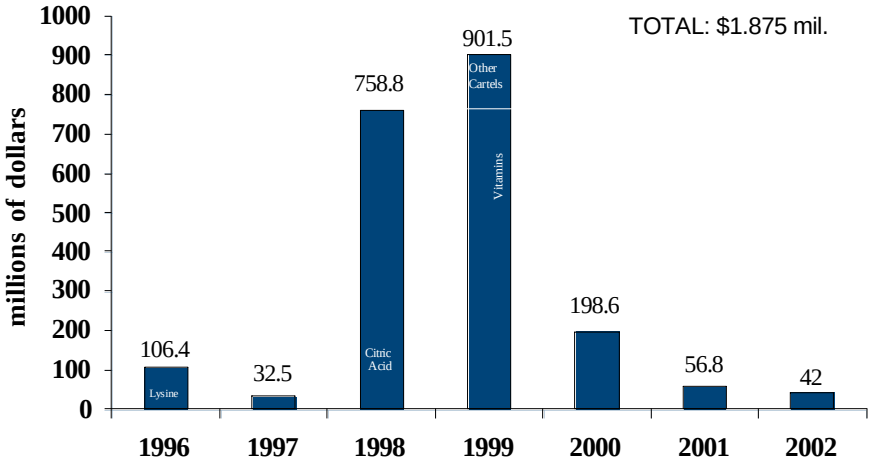

Figure 4. International Cartel Fines Imposed, European Commission, 1996-2003