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Cartel Detection and Duration Worldwide

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I. INTRODUCTION

In the old days—before price-fixing became illegal nearly everywhere—cartels operated in the public sphere. In some cases, the formation of a new cartel would be trumpeted to the business press because after a disastrous decline in prices, the market needed to be "stabilized." Sometimes these saviors of industries would even publish the new scheme's contract, which might be enforceable in a national court. Legal and scholarly opinion supported the many benefits of cartels in tough times. If successful, their members knew, profitability would return and possibly reach new heights. Most cartels died natural deaths—war, squabbles over market shares, and the like—not legal deaths after raids by antitrust authorities.

Today, detecting modern cartels is hard, and detecting international cartels is even harder. They tend to be populated with multinational corporations that have histories of engagement in cartels, and executives from these recidivists pass on their knowledge of both organizing and hiding the new virtual joint venture. Wily cartelists use all manner of subterfuge to keep their activities secret: by meeting in unexpected places (far from the eyes of their customers), at times that coincide with legitimate industry conferences, and in Switzerland or other cartel havens; by destroying written evidence of agreements; keeping the incriminating spreadsheets hidden in their homes; using code words and code names when telephoning; and fabricating in advance plausible stories to mislead business journalists. Price increases tended to be orchestrated, slowly and steadily, so as not to alarm customers. Big customers would be thrown off the scent by benefitting from collusively agreed-upon discounts. Evading the authorities became fun and games for some.

The consensus among experienced antitrust lawyers and from abstruse economic studies is that the great majority of cartels operate clandestinely their entire lives. Table 1 collects all the publications that have quantitative opinions about cartel detection rates, and documents the dismal conclusion that most believe that only between 10 percent and 33 percent of all cartels are being uncovered in the post-World War II era. Another rule of thumb that has not changed much for a century or more is that cartels seem to have an average life of about five to eight years.[2] However, it should be noted that many of these beliefs rest upon data sets that are pretty old in some cases. Have things changed since the early 1990s when scores of new antitrust authorities began operating and had access to tough new detection methods?

In this note I address trends in modern international cartel detection and duration over the past 21 years. Greater rates of detection and increasingly shorter duration may well be signs that anti-cartel policy measures are winning the battle against price-fixing. If the total number of cartels in existence has not changed much, greater numbers of investigations and prosecutions *per*

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[2] *See* Margaret C. Levenstein & Valerie Y. Suslow. *Breaking Up is Hard to Do: Determinants of Cartel Duration: Ross School of Business Paper No. 1150.* (September 2010). [*Available at* SSRN: http://ssrn.com/abstract=1676968].

year would be a measure of antitrust success. Similarly, if cartel duration is declining, then that suggests that leniency programs and other policies have had their intended effects of destabilizing collusion.

II. DATA SOURCE

For several years I have collected data on the sizes, economic impacts, and the enforcement responses of the world's antitrust authorities and national courts to the modern international cartel movement.[3] The sample consists of 645 private hard-core cartels that were subject to government or private legal actions (*i.e.*, formal investigations, damages suits, fines, or consent decrees) between January 1990 and December 2010. These cartels are international because each had participants with headquarters in two or more nations; these tend to include most of the larger discovered cartels. Cartels like OPEC that are supported by sovereign treaties and are immune to antitrust actions are omitted, as are cartels cleared of guilt. The sample is believed to be a reasonably complete list of all contemporary private international cartels discovered by jurisdictions with an active press or informative antitrust authority website.

All monetary data are expressed in nominal U.S. dollars using exchange rates during the cartel's life or on the day a legal action was announced.

III. MAJOR TRENDS

A. Detection

Worldwide, more and more international cartels are being discovered each year (Figure 1).[4] This upward trend is, in part, explained by improved policies and stricter investigation methods and, in part, to many more antitrust authorities with greater experience going after these cartels. In the most recent years 2001-2010, the annual number of investigations or indictments has been running at an annual rate five or six times higher than in the early 1990s. It is no longer unusual for international cartels to be investigated and fined by several jurisdictions; up to five authorities have raided suspected cartelists in the New and Old Worlds nearly simultaneously.

However, this global trend is a composite of two disparate trends. First, indictments by three of the most mature antitrust jurisdictions—the EC, United States (DOJ), and Canada—peaked during 1995-2007 (Figure 2). The reasons for this moderating of effort are not entirely clear. Second, among almost all other antitrust authorities, cartel actions have continued to rise without interruption throughout 1990-2010. Looking at the number of cartel actions in only 2008-2010, I find that 41 percent of all investigations were announced by authorities in Africa, Asia, and Latin America; the NCAs of the EU accounted for 37 percent; and the DOJ and EC account for merely 12.5 percent of all investigations. Nations such as South Africa, South Korea, Brazil, Italy, Germany, and France are now competing with or complementing the work of

[3] John M. Connor, *Private International Cartels: Full Data (March 2011 edition).* The *PICs* spreadsheet, first created about 1998, is continuously updated.

[4] Details on detection and duration may be seen in two working papers: John M. Connor, *Cartels Portrayed, A 21-Year Perspective: Cartel Structures.* AAI Working Paper No. 11-04 (posted 8/2/2011). [http://www.antitrustinstitute.org/sites/default/files/AAI%20Working%20Paper%20No.%2011-04.pdf]; and John M. Connor, *Cartels Portrayed, A 21-Year Perspective: Detection.* AAI Working Paper No. 11-05 (posted 8/2/2011). [http://www.antitrustinstitute.org/sites/default/files/AAI%20Working%20Paper%20No.%2011-05.pdf].

punishing international cartels that not too long ago was the sole province of the Big Two, the DOJ and EC.

I believe that we are witnessing a true globalization of the antitrust idea. By the end of 2010, no less than 50 nations had launched investigations and more than 30 had imposed fines on international cartels. This is a far cry from the only three serious national anti-cartel laws and policies in the world before 1960. The fact that global harmonization of anti-cartel enforcement has happened voluntarily makes it even more interesting.

The ultimate purpose of antitrust enforcement is to deter the formation of cartels in the future. We do not know whether increased detection rates mean that a higher proportion of cartels are being discovered and punished. If that were the situation, then the subjective evaluation of would-be cartelists of the probability of being caught ought to rise, and *ceteris paribus* deterrence is improved. But if the total number of cartels seen and unseen is rising, then the subjective probability of detection could be constant or even decreasing.

There is limited research but many opinions on the issue of the size of the probability of detection of clandestine cartels (Table 1). The consensus of informed opinion is that it is in the 10 percent to 33 percent range. A related issue is whether new detection methods have increased the probability of detection; economists are particularly excited about the effects of the nearly worldwide adoption of cartel leniency programs that began in 1993 in the United States and 1996 in the EU. Unfortunately, the two best pieces of research seem to be split. One published article found a 60 percent increase in the probability of detection in the United States after 1993;[5] a second empirical study of cartels concludes that: "Estimates show that cartel detection rate in the EU has stayed under 20% for most of the analyzed period (1985-2005), and it frequently dropped under 10%."[6]

B. Duration

As I mentioned above, some of the better studies with large samples of international cartels that ended before 1960 generally calculated mean average durations of five to eight years, or—to be more precise—64 to 100 months.[7] In the PIC contemporary sample assembled for this note, I find that the mean average duration is 82 months, which is about in the middle of the means for historical cartels. However, the mean can be somewhat misleading when, as in this case, there are a small number of extremely long-lasting cartels. A better measure of central tendency is the *median* average, which in our full sample is 57 months.[8]

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[5] Nathan H. Miller, *Strategic Leniency and Cartel Enforcement: Working Paper*, University of California at Berkeley. [*available at* http://scholar.google.com/scholar?hl=en&q=nathan+miller+cartel+&btnG=Search&as_sdt=0%2C22&as_ylo=&as_vis=0]

[6] Peter Ormosi, *How big is a tip of the iceberg? A parsimonious way to estimate cartel detection rate: CCP Working Paper 11-6.* (May 19, 2011): 32. [*available at* http://ssrn.com/abstract=1851309]

[7] Levenstein & Suslow *supra* note 2, Table 1. These figures refer to episodes in the case of multi-phase cartels. Nearly all the contemporary cartels in the PIC data are single-episode. Domestic U.S. cartels tended to be less durable. In a convenience sample of 81 *contemporary* international cartels (those that operated in 1990 or later), the mean duration was 97 months, which is on the high side compared to the earlier cartels. It is a convenience sample because the authors had to have cartels with a rather rich array of variables. The PIC data are a larger sample and are not a convenient sample.

[8] Unfortunately, although the older studies of duration also had skewed distributions, they did not report the median.

However, there are significant differences between types of cartels that have antitrust implications. Global cartels (those that fix prices in two or more continents) and EU-wide cartels endure 35 percent and 29 percent longer than the average, respectively. Cartels located in Eastern Europe and Asia lasted only about 50 percent as long as average.[9]

Finally, there is the question of whether duration shows signs of declining in the face of much more aggressive antitrust enforcement by many more agencies. As one impressive study of 81 contemporary cartels concludes:

> What causes cartel death? First and foremost, active antitrust enforcement. The change in antitrust enforcement in the mid-1990s, with additional resources and policy tools directed toward international cartels, resulted in the discovery and breakup of a large number of cartels operating globally across a range of markets.[10]

In the larger sample, median duration was only very slightly lower for all cartels discovered in the 2000s than in the 1990s. To verify the direction of change, a time-trend analysis was performed. Arrayed by year of discovery, duration is slowly declining for global cartels and those located in North America (Figures 3 and 4); but for cartels located in Western Europe, duration has been virtually constant (Figure 5).

III. SUMMARY

Deterrence is the ultimate goal for anti-cartel enforcement in all jurisdictions. This survey of detection rates and duration trends for contemporary international cartels finds the following. Detections per year were five or six times higher in 2008-2010 than they were in the early 1990s. There are signs that DOJ and EC efforts at detection are flagging, and they are being rapidly displaced by newer antitrust authorities. It is unclear that cartelists' perceptions of the probability of detection have fallen. As for duration, only slight declines have been seen since the 1990s, and these reductions are generally confined to North American and global cartels. Western European cartels have remained consistently durable.

[9] There may be measurement problems for these short cartels. Some of the antitrust laws in Eastern Europe and Asia are quite new, so the starting dates of some convicted cartels are foreshortened to the date the law came into force.

[10] Levenstein & Suslow, *supra* note 2, at 31.

TABLE 1:
Studies and Opinions on the Probability of Cartel Detection

Source	*Probability*	*Comment*
Beckstein & Gabel (1982)	Less than 0.50	A large anonymous survey of antitrust lawyers in the ABA, most working in the USA; the mean response was 3.6, where 5=strongly agree, 4=agree, and 3=neither agree nor disagree.
Landes (1983)	0.33	Merely an illustration, but a seminal work on optimal deterrence that may have influenced many adherents of optimal deterrence theory.
Feinberg (1985: 379)	Less than 0.50	An anonymous confidential survey of antitrust lawyers working in Brussels and observing the EC; the mean response was 4.4, where 5=strongly agree and 3=neither agree nor disagree.
USSG (1986:15)	0.10	Contains the transcript of the 1987 testimony of DAAG for Antitrust Ginsberg; probably refers to domestic cartels of 1970s and 1980s.
Werden & Simon (1987)	Less than 0.10	Appears to be a general, subjective opinion of Antitrust Division professional prosecutors.
Cohen & Scheffman (1989)	0.33	No hint as to the source, but may have been influenced by Landes (1983).
Bosch & Eckard (1991)	0.13-0.17	A quantitative estimate derived from an event study of U.S. prosecuted cartels 1961-1988.
Polinsky and Shavell (2000)	0.138- 0.165	Refers to U.S. arrest rates for some of the most common felonious property crimes (burglary, auto theft, and arson); may be overstated if victims of such crimes fail to report some occurrences.
OFT (2007: 20)	0.30	An anonymous survey of U.S. antitrust lawyers in private practice (with a "low response rate") asked about the increase in cartel activity "if the Division stopped enforcing Section 1 of the Sherman Act." Results were originally summarized in the FY2001 DOJ report to Congress.
Posner (2001: 47)	0.25	An illustration of an optimal deterrence calculation by a leading antitrust jurist.
OECD (2002:19)	0.13-0.17	OECD accepts Bosch & Eckard (1991).
Combe et al. (2003)	0.129-0.133	Replicates Bosch & Eckard's (1991) method using data from EU-prosecuted cartels from 1969 to 2002.
Bush et al. (2004)	0.10 to 0.33	A summary of most of the sources in this table above.

Golub et al. (2005)	0.13-0.17	This paper replicates the Bosch & Eckard (1991) model using U.S. cartels from a later period and finds few differences in deterrence.
Calvani (2005:77)	0.13-0.17	In an article on cartel enforcement an experienced antitrust official cites Bosch & Eckard (1991) with approval.
Wils (2005:30)	Less than 0.33	Cites with approval Bosch & Eckard (1991), but author believes that the U.S. probability has increased since 1961-1988 and that it is lower in the EU than the U.S.; this is a "conservative" upper limit for the EU.
Schinkel (2006:25)	0.15	Cites only Bosch & Eckard (1991), but considers it "controversial as well as dated"
Stucke (2006:457)	Unknown, but possibly 0.13-0.17	"Nobody knows." However, the author also favorably cites USSG (1986), OECD (2002), and Bosch & Eckard (1991).
Buccirossi & Spagnolo (2007:95)	0.15	The authors' "prudent" assumptions for their simulation analysis.
Chen & Harrington (2007:65-66)	0.1 – 0.3	In illustrating the effect of detection probability of cartel formation, the authors chose this range.
OFT (2007: 50-54)	21.7% caught of those seeking advice	Results of a survey of 234 competition law lawyers in UK and Brussels for the years 2004-06 asking what proportion of their clients were convicted of illegal cartel conduct (295) by the UK's OFT compared to the 1361 instances where a client abandoned or changed a possible cartel agreement "because of the risk of OFT investigation."
Nazzini & Nikpay (2008): 111	Less than 0.20	"The authors' own anecdotal observations suggest that the OFT fully investigates less than 20 percent of all cases in which it has a reasonable suspicion that the competition rules have been breached."
Werden (2009: 12)	0.25	Part of an illustration of optimal fines for typical EU cartels.
Miller (2009)	0.21-27.5	An empirical study of U.S. cartel prosecutions shows that U.S. detection rates rose 62 percent because of the revised 1993 Leniency Program; this increase is applied to Bosch & Eckard's estimate of p.

FIGURES

Figure 1

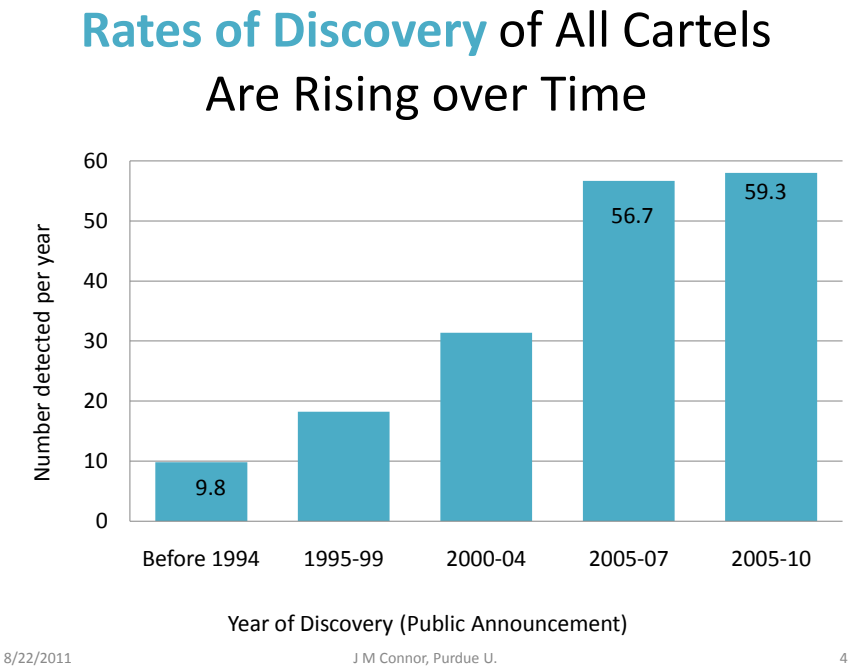

Figure 2

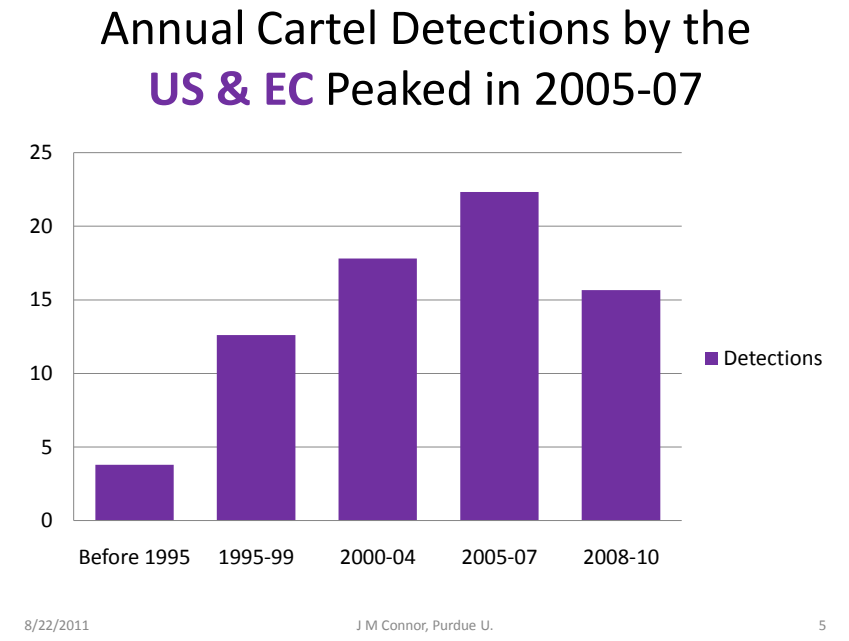

Figure 3

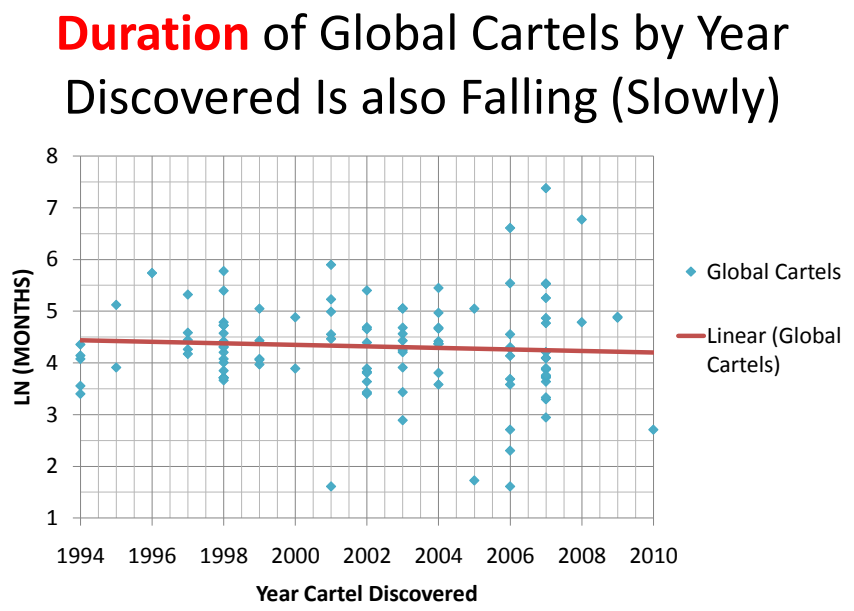

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Figure 4

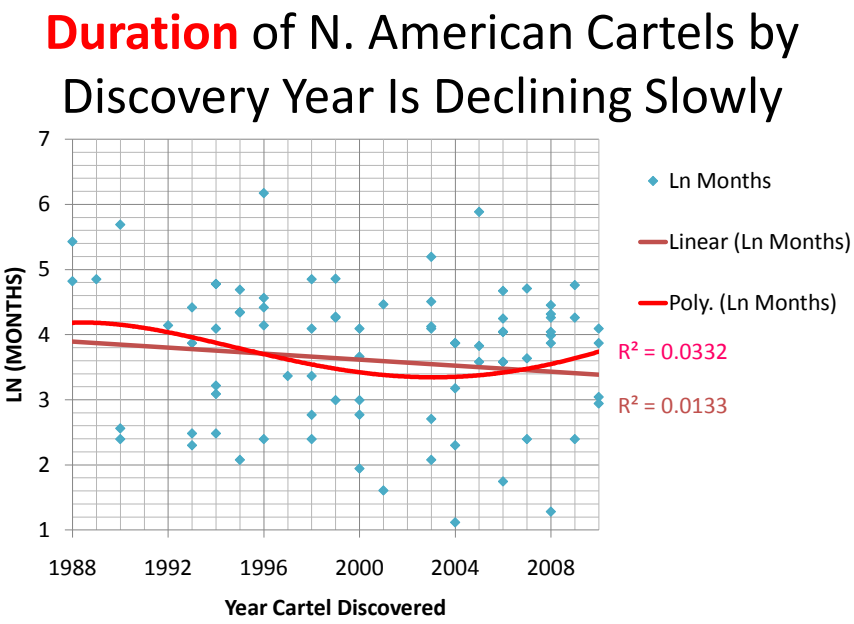

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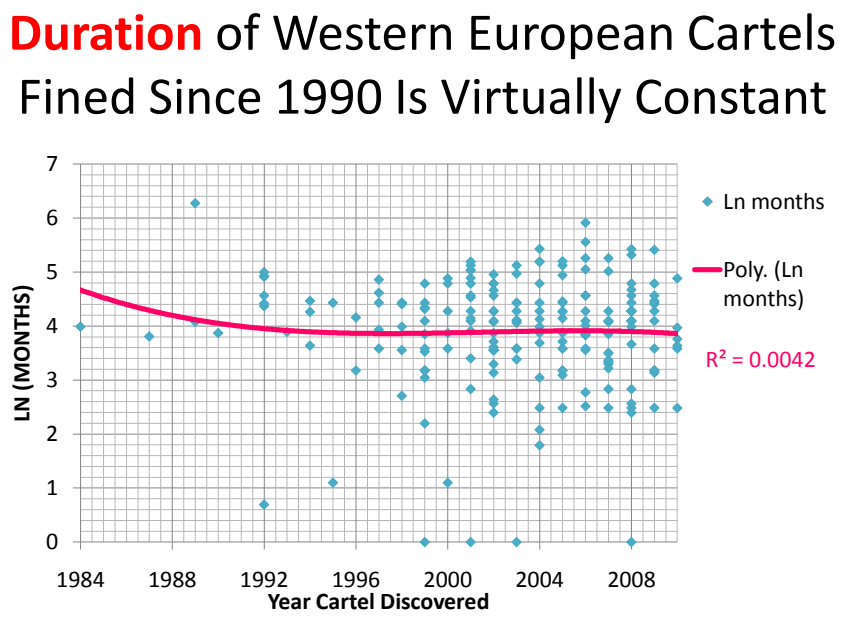
Figure 5



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