

International Cartel Enforcement: Lessons from the 1990s

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1. INTRODUCTION

IN its 1997 Annual Report, the World Trade Organisation (WTO) highlighted the growing significance of international cartels for policymakers, noting ‘there are some indications that a growing proportion of cartel agreements are international in scope.’¹ Increasing trade liberalisation may, by increasing competition in formerly protected national markets, have increased firms’ incentive to participate in cartels. These cartels undermine international integration and decrease the benefits of liberalisation to consumers. International cartels may also undermine political support for liberalisation if citizens believe that private barriers to trade will simply replace government-created ones.

Recent investigations and prosecutions of international cartels make clear two important points. First, cartels are neither relics of the past nor do they always fall quickly under the weight of their own incentive problems. Even where cheating eventually undermines collusion, consumers may have been burdened by years of increased prices, and barriers to entry may have been created by strategic cartel behaviour. Second, aggressive prosecution of cartels can deter collusion, but only where sufficient international cooperation exists to gather evidence and establish jurisdiction so that cartel participants actually have something to fear.

A more comprehensive approach to promoting competition is necessary to address the emerging issues of the international marketplace. Prevailing national

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¹ World Trade Organisation (1997).

competition policies are oriented towards addressing harm done in domestic markets, and in some cases merely prohibit cartels without taking strong enforcement measures. In this paper we propose reforms to national policies and to international cooperative arrangements that will strengthen the deterrents against international cartels and reduce the strategic creation of entry deterrents.

Section 2 of this paper discusses three types of international cartels. Section 3 examines two types of international cartels that were active over the last decade: illegal 'hard core' cartels and legal export cartels. We provide an overview of the prevalence and characteristics of these cartels and discuss the long-term effects of cartel-created barriers to entry. In Section 4 we examine the deterrent effect of current national competition laws, and in Section 5 we assess the recent experience with bilateral cooperation in international cartel investigations. Finally, in Section 6 we address the role that the WTO (or other international regulatory body) might play in promoting competition. We discuss other modifications to national and multi-lateral competition policies to the same effect. We argue that criminalisation of price-fixing is critical to deterring prospective international cartels and gathering evidence to prosecute existing ones. Furthermore, we argue that the aggressive prosecution of cartels must be complemented by vigilance in other areas of competition policy, such as merger enforcement and investigations of collaborative ventures between firms. Otherwise firms will respond to the enhanced deterrents to cartelisation by combining with or acquiring rivals or by taking other measures that lessen competitive pressures.

2. TAXONOMY OF INTERNATIONAL CARTELS

a. Three Types of International Cartel

There are a wide variety of organisations that could plausibly be described as international cartels, and to structure the analysis in this paper we distinguish between three types: Type 1 are the so-called 'hard core' cartels made up of private producers from at least two countries who cooperate to control prices or allocate shares in world markets. Type 2 are private export cartels where independent, non-state-related producers from one country take steps to fix prices or engage in market allocation in export markets, but not in their domestic market.² Type 3 are state-run, export cartels.

² Note, however, that not all export associations allocate market shares or fix prices. In his study of US firms which formed export associations that were reported under the Webb-Pomerene Act, Dick (1996) found that about 20 per cent engaged in neither of these activities; their cooperation was limited to promotion and marketing.

Although we briefly comment on policies toward export cartels, we restrict the greater part of our analysis to Type 1 cartels.³

b. The Basics of Cartel Performance and Implications for Anti-trust Policy

The economic theory of cartels has two main implications for anti-trust policy. First, economic theory identifies the incentive to sell above agreed quotas, or below cartel prices, as a source of instability underlying all cartels. This has implications for how governments might allocate scarce anti-trust resources, since we might want to identify which firms are most likely to be able to overcome the incentive to cheat and direct anti-trust resources there. Unfortunately, economic theory does not identify deterministic relationships between industry or firm structure and cartel success. Rather, theoretical advances have established that an infinite number of outcomes are possible, ranging from perfectly competitive prices to perfect collusion. Furthermore, the actual success or failure of a cartel in any industry depends on a host of factors, such as the legal environment, economic conditions, the terms of the cartel agreement, managerial skill, and industry history. Some of these variables are inherently unobservable.

Sutton (1998) suggests a ‘bounds’ approach to this problem which recognises that there are certain *necessary but not sufficient* conditions for cartel success.⁴ In other words, there is a broad range of industry and firm characteristics or conditions that support a range of cartel outcomes. Outside of the bounds of feasible collusion entry may be ‘too easy’ or coordination ‘too difficult’ for a cartel to survive in a particular industry. Inside the bounds of feasible collusion, cartels may succeed. On this view, anti-trust enforcement should focus its resources on industries inside these bounds.

All else equal, international price-fixing agreements are more likely to fall inside the bounds of successful collusion. The existence of commonly accepted market borders facilitates collusion. International agreements often divide markets along national borders, which need not be drawn or negotiated by cartel members themselves. The ability to monitor competitors increases the likelihood of cartel success – and firms in an international cartel can monitor exports and imports, using published trade and customs data, as part of their efforts to police agreements. If these features of international cartels outweigh any increased difficulty associated with differences in culture or language, then there is a strong argument for focusing anti-trust resources on international cartels.

³ State-run export cartels (Type 3 cartels) are motivated by a range of political as well as economic factors that distinguishes their behaviour and effects from the profit-maximising corporations who form private international cartels (Type 1 cartels), which are analysed here.

⁴ See also Evenett and Suslow (2000) and Levenstein and Suslow (2002).

The second implication of cartel theory for anti-trust policy also stems from cartels' underlying fragility. A successful cartel must take actions to counteract the incentive to defect. Such actions include mechanisms to increase the cost to defection: making cheating more observable; making cheating more difficult to undertake; creating mechanisms to punish cheating. They also include mechanisms that increase the returns to cooperation, such as the creation of barriers to entry. Therefore, in addition to the classic (static) deadweight losses created by a cartel, cartel behaviour is likely to create further costs over time. The longer a cartel operates the more likely that it will establish industry practices or barriers that facilitate collusion in the future. Barriers to entry created by the cartel, either through tariffs, patent pools, or distribution agreements will not necessarily disappear with the cartel's demise and may well limit future entry and stifle innovation. Firms may move beyond collusion to merger, achieving, in essence, a more stable and consolidated cartel.

Effective anti-trust policy should take advantage of the cartel incentive problem. It can do this by increasing firms' incentives to defect, limiting the mechanisms by which cartels can punish defection, and preventing the creation of barriers to entry. As we shall see in Section 3, strategic behaviour by cartel members (during and even after a conspiracy has been terminated by competition authorities) suggests that a more encompassing approach to tackling international cartels is required.

3. CONTEMPORARY INTERNATIONAL CARTELS

a. 'Type 1' International Cartels

(i) International cartels: prevalence, formation, and duration

There have been numerous recent international price-fixing prosecutions by the US Justice Department and the European Commission. From these, we have created a sample that we believe includes nearly all international cartels that have been successfully prosecuted by the US or the EC for fixing prices during the 1990s.⁵ These cartels operated in a variety of industries, including chemicals, metals, paper products, transportation, and services. Their members included some of the largest corporations in the world. The markets affected by these cartels have annual sales of well over \$30 billion.⁶

There are forty cartels in the sample, with participants from over thirty countries (Table 1). The typical international cartel of the 1990s had firms from

⁵ In order to be included in the sample, a cartel must: involve more than one producer; include firms from more than one country; have attempted to set prices or divide markets in more than one country; and begin or end in the 1990s.

⁶ Due to lack of data, this figure includes revenues for only about half of the industries in Table 1.

TABLE 1

Countries with Firms Convicted of Price Fixing by the United States or the European Commission During the 1990s

<i>Country</i>	<i>Cartel</i>
Angola	Shipping
Austria	Cartonboard, citric acid, newsprint, steel heating pipes
Belgium	Ship construction, stainless steel, steel beams
Brazil	Aluminium phosphide
Britain	<i>Aircraft</i> , steel beams
Canada	Cartonboard, pigments, plastic dinnerware, vitamins
Denmark	Shipping, steel heating pipes, sugar
Finland	Cartonboard, newsprint, steel heating pipes
France	<i>Aircraft</i> , cable-stayed bridges, cartonboard, citric acid, ferry operators, <i>methionine</i> , newsprint, <i>plasterboard</i> , shipping, sodium gluconate, stainless steel, steel beams, seamless steel tubes
Germany	<i>Aircraft</i> , graphite electrodes, cartonboard, citric acid, aluminium phosphide, lysine, <i>methionine</i> , newsprint, pigments, <i>plasterboard</i> , steel heating pipes, seamless steel tubes, vitamins
Greece	Ferry operators
India	Aluminium phosphide
Ireland	Shipping, sugar
Israel	Bromine
Italy	Cartonboard, ferry operators, newsprint, stainless steel, steel heating pipes, seamless steel tubes
Japan	Graphite electrodes, lysine, <i>methionine</i> , ship transportation, shipping, sodium gluconate, sorbates, seamless steel tubes, thermal fax paper, vitamins
Luxembourg	Steel beams
Malaysia	Shipping
Mexico	Tampico fibre
Netherlands	Cartonboard, citric acid, ferry operators, ship construction, sodium gluconate, tampico fibre
Norway	Cartonboard, explosives, ferrosilicon
Singapore	Shipping
South Africa	Diamonds, newsprint
South Korea	Lysine, <i>methionine</i> , ship transportation, shipping
Spain	<i>Aircraft</i> , cartonboard, stainless steel, steel beams
Sweden	Cartonboard, ferry operators, newsprint, stainless steel
Switzerland	Citric acid, laminated plastic tubes, steel heating pipes, vitamins
Taiwan	Shipping
UK	Cartonboard, explosives, ferry operators, newsprint, pigments, <i>plasterboard</i> , shipping, stainless steel, seamless steel tubes, sugar
US	<i>Aircraft</i> , aluminium phosphide, bromine, cable-stayed bridges, cartonboard, citric acid, diamonds, ferrosilicon, graphite electrodes, isostatic graphite, laminated plastic tubes, lysine, maltol, <i>methionine</i> , pigments, plastic dinnerware, ship construction, ship transportation, sorbates, tampico fibre, thermal fax paper, vitamins
Zaire	Shipping

Source: Levenstein and Suslow (2001, Table 1). Note: Products in italics are currently under investigation.

two or three countries. Some cartels included firms from four or five countries, and, in the cases of shipping cartels, as many as thirty countries. As expected, given that these are DOJ and EC cases, most are European and US firms. It is not unusual, however, to find Japanese or South Korean participation.

Cartels, being secretive organisations, rarely announce their formation. Empirical research on cartel formation is therefore limited to evidence gathered from cartels operating in a legal (or tolerant) environment or from evidence collected in anti-trust prosecutions. Theoretical research on the timing of cartel formation has focused on the effects of business cycles on cartel formation. The available evidence on the formation of the 1990s international cartels suggests that these cartels often were formed following a period of declining prices, but these price declines were not generally associated with macroeconomic fluctuations (Levenstein and Suslow, 2001). Anecdotal industry evidence suggests that they were the result of increasing competition and market integration.⁷

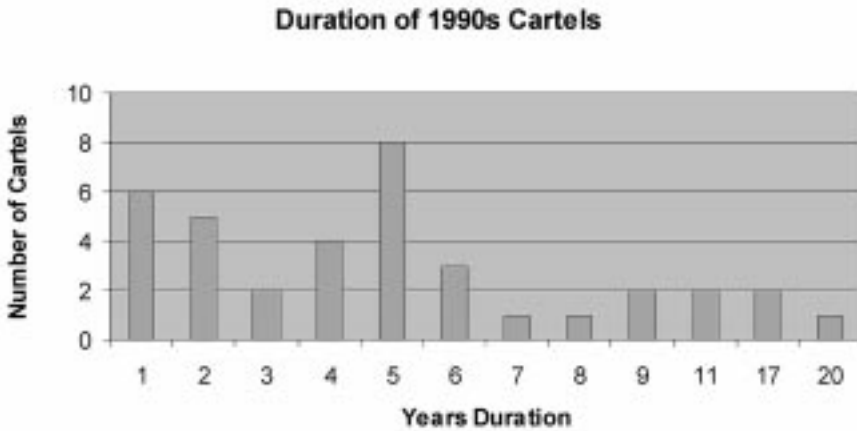
Figure 1 shows the pattern in duration for the 1990s sample of international cartels. The average duration of cartels in the 1990s sample of DOJ and EC prosecutions is six years.⁸ Some of these cartels lasted for two decades before anti-trust intervention. Other cartels lasted less than a year. Twenty-four of these forty cartels lasted for at least four years, certainly long enough to have had a significant impact on consumers. This finding is consistent with conclusions drawn from other samples of cartels. Average duration is generally in years, not decades; there are cartels that do survive decades, others that can't get started, and many in between.

Levenstein and Suslow's (2001) survey of cross-section studies of historical international cartels comes to a similar conclusion. The mean cartel episode length in these studies varies from four to eight years, with a range from one year to several decades. This high variance undoubtedly reflects both true variation in cartel longevity and scholars' selection bias for either very successful, long-lived cartels or those with an interesting history of on-again off-again episodes. Whatever the biases involved, it is clear that cartels are not 'short' or 'long' lived; they are both. There are also industries that followed the pattern of the Canadian oil industry, in which the failure to sustain collusion led to consolidation of the

⁷ Levenstein and Suslow (2002) comes to a similar conclusion analysing a different sample. The case studies they survey most often report cartel formation during a period of falling prices, but this is not always, or even usually, associated with falling demand.

⁸ This measure probably understates the duration of these cartels as it reflects the public, legal record of the years for which the member firms were found or plead guilty to colluding. If collusion preceded the legal allegation, but the relevant authority did not have evidence to convict participants of collusion earlier or chose not to bring that evidence to court as part of a plea arrangement, our measure would understate the duration of collusion. See Suslow (2001) for a fuller discussion of measuring duration and the pattern or duration in international cartels.

FIGURE 1
International Cartel Duration in the 1990s



Source: Levenstein and Suslow (2001, Table 1).

industry (Grant and Thille, 2001). In the next section, we look at this issue and its anti-trust implications more closely.

(ii) Strategies for survival: building barriers to entry

The potential profits associated with successful collusion create an enormous incentive for cartel members to devise tools to overcome the difficulties of colluding. A variety of tools have been used by contemporary cartels to block entry, prevent and detect cheating, and prevent detection by competition authorities. Some cartels have turned to government policies to achieve their ends, employing anti-dumping laws, quotas, regulations, or import surveillance and other forms of statistical reporting. Cartels have also employed a variety of private measures, including vertical restraints or the use of a common sales agent, patent pooling, joint ventures, and mergers (either during or after the conspiracy period).

For the most part, the public record on 1990s price-fixing cases does not discuss activities to block entry. Such evidence is not necessary for a criminal conviction, at least in the US, where price fixing is *per se* illegal. However, there are many examples of activities that may have been attempts to deter or block entry in these and other industries (Table 2).

Some cartels turned to government restrictions to block entry by outsiders.⁹ For example, China has presented vigorous competition in the world citric acid

⁹ This section draws on research by the authors on a few cases selected from Table 2. See Levenstein and Suslow (2001).

TABLE 2
Evidence from Historical Case Studies and from Recently Prosecuted Cartels: Are Cartel Members Attempting to Create Barriers to Entry?

<i>Industry</i>	<i>Conspiracy Dates (approximate dates for recent cartels, first year of cartel for historical studies)</i>	<i>Does anecdotal evidence point to firms accommodating entry or creating barriers to entry? If so, how?</i>
Bromine	1885	Raising pharmaceutical standards; vertical rent sharing/exclusive contracts.
Bromine	1995–98	Appear to be accommodating entry of developing country producers. Establishing joint ventures.
Cement	1922	Vertical integration.
Diamonds	1870s	Vertical integration.
Citric Acid	1991–95	Firms tried to block entry by twice requesting anti-dumping duties to protect the US market from Chinese citric acid imports. Once during the conspiracy (in 1995), and once after (1999). both times the petition was denied.
Ferrosilicon	1989–91	Five of the six major US manufacturers pleaded guilty and were fined. These same manufacturers asked for anti-dumping duties to be placed on Brazil, China, and other countries as well. These tariffs were approved and levied in 1993–94. When the International Trade Commission found out about the price-fixing conviction, however, they reversed the tariffs. The Commission said that industry leaders had been fixing prices during the very time period that they had testified that there was intense price-based competition (<i>Charleston Gazette</i> , 28 August, 2000).
Graphite Electrodes	1992–97	Cartel agreement specified that firms agreed to restrict non-conspirator companies' access to certain graphite electrode manufacturing technology.
Ocean Shipping	1870s	Deferred rebates for customers conditioned on cooperation with cartel; predatory pricing.
Oil	1871	Tariff.
Parcel Post	1851	Vertical rent sharing; network economies; 1st mover reputation.
Railroad/Oil	1871	Vertical rent sharing.
Seamless Steel Tubes (Oil Country Tubular Goods)	1990–95	Appear to be accommodating entry. Several cartel participants have, since the breakup of the cartel by the European Commission, entered into joint ventures with firms based in developing countries.
Steel Beams	1988–94	Restricted flow of information in order to freeze out any new competitors.
Vitamins	1990–99	No direct evidence of creating barriers to entry, other than a request for anti-dumping duties in 1999. After the breakup of the cartel, mergers of cartel members were approved by competition authorities.

Source: Historical case studies based on Levenstein and Suslow (2002, Table 16). Recent cartel evidence based on Levenstein and Suslow (2001).

industry, which is otherwise highly concentrated. US producers twice tried to use anti-dumping duties to insulate the US market from Chinese imports of citric acid, once during the conspiracy and once after. Both times the petition was denied. Producers in the ferrosilicon cartel pursued similar tactics, using US anti-dumping duties to protect the cartel from Chinese and other imports (Table 2).

Technological restrictions are also used to maintain cartel market power. For example, steel producers who were colluding to fix the price of steel beams 'restrict[ed] the flow of information ... in order to freeze out any new competitors', according to Karl Van Miert, a former EC competition commissioner.¹⁰ In another recent case, members of a graphite electrode cartel 'agreed to restrict non-conspirator companies' access to certain graphite electrode manufacturing technology.¹¹ These cases build on a history of cartel attempts to restrict information about technology to create barriers to entry.¹²

Finally, there is case-specific evidence of the use of strategic alliances and joint ventures to limit or control entry. One of the most striking examples is in the Oil Country Tubular Goods (OCTG) market. These are seamless steel pipes used in the oil and gas industry. In December 1999, the EC convicted four European and four Japanese steel manufacturers of price fixing. No evidence was found indicating that they blocked entry or potential entry into the OCTG market. However, since the breakup of the cartel, every member of the cartel has joined one of three international alliances. The largest of these, with a 25 per cent market share of world OCTG is led by Techint. Techint controls Dalmine, the Italian member of the cartel, Tamsa, a Mexican tube producer, and Siderca, an Argentine steel producer. They are known jointly as the DST group. Tamsa is currently under investigation by the Mexican Federal Competition Commission for abuse of monopoly power (in a case that appears unconnected to the EC charges). NKK, another leading producer and former cartel member, has formed an alliance with DST, as has a Canadian producer. Three of the Japanese ex-conspirators have formed an alliance in which they use a single joint sales agency. Mannesmann and Vallourec, the German and French cartel members, have formed a joint venture to which they have transferred all their OCTG production. They are also engaged in steel tube joint ventures with Corus (formerly British Steel), another former cartel member that has exited the OCTG market.

These kinds of activities might be particularly effective in limiting entry from developing country producers. In several commodity chemicals markets, incumbent firms have been willing to accommodate Chinese entry since the break-up of a cartel, but they have done so by establishing joint ventures between

¹⁰ 'European Commission Fines Steel Makers \$116.7 Million', *Wall Street Journal Europe* (17 February, 1994).

¹¹ 'Japanese Subsidiary Charged with International Conspiracy to Fix Prices for Graphite Electrodes in the US', US DOJ Press Release (23 February, 1998).

¹² See, for example, Reich (1992).

former cartel participants and their Chinese competitors. These arrangements give Chinese producers access to the world market, but may do so at some cost to competition. Of course, both entrants and established producers could have other, welfare-enhancing motives for joint ventures, such as sharing technology, local market expertise, or capital. These explanations for joint ventures are not mutually exclusive, but joint ventures (and mergers) in industries known to have a history of international price fixing should be carefully scrutinised by regulatory authorities.¹³

We have presented evidence of anti-competitive actions taken by contemporary international cartels to create barriers to entry through mergers and joint ventures, and to manipulate certain governmental policy tools, such as protective tariffs and anti-dumping duties, either during or after a conspiracy. While some of these activities may be appropriate under certain circumstances, their appearance in an industry that has recently attempted to collude should raise concern about possible anti-competitive effects.

b. 'Type 2' Export Cartels

(i) Legal status

Export cartels are associations of firms that cooperate in the marketing and distribution of their product to foreign markets. The competition laws of virtually all countries exempt such export cartels from prosecution by domestic authorities. A summary of these exemptions is provided in Table 3. In some legislation, exemptions for export cartels are explicitly motivated by mercantilism: a desire to increase national exports and give national firms a competitive advantage relative to firms based in other countries. In most cases, however, this exemption is *implicit* in national competition laws, which cover only those activities affecting the domestic market. Export activities are presumed not to affect the domestic market, and are therefore exempt. Several countries do, however, provide specific exemption from domestic laws for cartels that would otherwise violate domestic laws as long as their activities are restricted to export markets. Japan, Mexico, and the United States all have such legislation. Japan and the US require that export cartels register with a governmental agency to receive an anti-trust exemption. In most cases, however, no registration is required, so there is very limited information regarding the number or activities of export associations.

When the US passed the Webb-Pomerene Act in 1918 most of its trading partners did not prohibit cartels. The US was a relatively small player in many international markets, and those markets were effectively controlled by legal international cartels dominated by large European producers. Foreign cartels took

¹³ There are several industries, including bromine and steel, that appear in both the 1990s cartel sample and the historical sample of a century before. See Levenstein (1997).

TABLE 3
National Exemptions to Competition Law for Exporters^a

<i>Country</i>	<i>Exemption</i>	<i>Reporting Requirement</i>
Canada	Export activities that do not affect domestic competition	None
Estonia	Activities that do not affect the domestic market	None
Germany	Repealed by 1999 amendments to the Act Against Restraints of Competition	
Hungary	Activities that do not affect the domestic market	None
Japan	Agreements regarding exports or among domestic exporters	Notification and approval of industry administrator required
Latvia	Activities that do not affect the domestic market	None
Lithuania	Activities that do not affect the domestic market	None
Mexico	Associations and cooperatives that export	None
Portugal	Activities that do not affect the domestic market	None
Sweden	Activities that do not affect the domestic market	None
United Kingdom	Apparently removed by 1998 Competition Law	Formerly, agreements had to be furnished to Director General of Fair Trading
United States	Webb-Pomerene Act: Activities that do not affect domestic competition	Webb-Pomerene Act: Agreements must be filed with FTC
	Export Trading Co. Act: Exemption similar to W-P	Export Trading Co. Act: Certificate of Review provided by Commerce Dept.
	Foreign Trade Antitrust Improvement Act: Exemption from Sherman and FTC Acts	

Notes:

Information above is drawn from OECD (1996) and American Bar Association (1991).

actions to bar entry from non-members, but US firms were not allowed by US law to join these international cartels. US firms were therefore blocked from exporting to these markets. In such an environment, exemptions for export cartels were most likely export-promoting, even if they did not necessarily increase competition in foreign markets.

The international legal environment has undergone dramatic change since the early 1900s. Virtually all participants in international markets have laws

prohibiting price-fixing. Export cartel exemptions do not allow firms to join legal international cartels, because those cartels no longer exist. The effect of these laws in the current environment is to make it more difficult for national governments, all of which ban international cartels in their domestic market, to exchange information and evidence regarding illegal international cartel activity because some of that activity has been exempted from prosecution in a particular country.

Recent reforms of competition law in EC countries have restricted or eliminated export cartel exemptions in some countries. For example, Germany's new competition law explicitly omits its earlier provision for exemption and registration of export cartels. The UK's 1998 competition law omits mention of the Fair Trading Law's provisions for exemption and registration of export cartels.

Where countries have provided explicit exemptions these do not appear to be widely used by international cartels. For example, there is no mention of the existence of a Webb-Pomerene Association in any of the recent international cartel convictions obtained by the US Justice Department.¹⁴ The registration requirement may deter cartel participants from availing themselves of the exemption. Firms engaged in price-fixing may prefer secrecy to a limited immunity that might bring them to the attention of competition officials.

(ii) Prevalence of export cartels

Few countries require that firms organising an export association formally register with the government (Table 3). It is therefore almost impossible to track the number of these associations internationally. In the US, however, the Webb-Pomerene Act requires registration with the Federal Trade Commission. The number of registered Webb-Pomerene associations in the US hit a peak of 62 in 1930, and has declined fairly steadily through the years. By 1989 the number of registered associations had declined to twenty-four. Put into context, this number is quite small and represents only a fraction of US trade. Dick reports that these associations covered 2.3 per cent of US exports in 1962 and a mere 1.5 per cent in 1976.¹⁵ The limited information available from other countries shows a similar pattern. The OECD reported in 1984 that between 1972 and 1982, the number of export cartels in the UK held constant, the number in Germany declined slightly, and the number in Japan declined markedly.¹⁶

¹⁴ However, the European Commission took action against a cartel of US wood pulp producers, whose cartel was registered in the US under the Webb-Pomerene Act.

¹⁵ Dick (1992, p. 97).

¹⁶ OECD, *Competition and Trade Policies: Their Interaction* (1984, p. 24, at <http://www.oecd.org/daf/clp/Publications/COMPTRA.pdf>).

(iii) Activities of export cartels

In some cases, exporting firms cooperate by engaging in price fixing: either agreeing to sell their exports at the same price or to sell them through a single, joint sales agency that will accomplish the same thing. Firms may also use cooperative export organisations to jointly market products. While the latter type of activity may lessen competition, it may also allow firms to achieve sufficient scale to participate in foreign markets. In many cases, this outcome is more pro-competitive than the mergers or joint ventures to which firms might otherwise turn to achieve the necessary scale for global competition. Policies toward export cartels should distinguish between the various motivations for cooperative export organisations.

Where countries do require reporting or registration of cooperative export organisations, it may be possible to determine which activities such organisations engage in. Several studies by Andrew Dick find that US Webb-Pomerene Associations had little anti-competitive effect in part because they also served to lower the cost of exporting. One reason for the limited use of these associations by recent international cartels may be that they consist only of US exporters, with little ability to control international markets. Exemptions from national competition laws that permit firms to form national export associations but exclude foreign producers from membership might allow firms the cost-saving benefits of export associations while limiting their potential anti-competitive impact.

(iv) Anti-competitive effects of export cartels

The anti-competitive impact of export cartels may be more significant in some markets or countries than others. For example, at a recent meeting of competition policy-makers at the OECD, some countries voiced concern

that export or import cartels could inflict [harm] on trade and market access ... and argued that such cartels should lose any exemption they might enjoy from national competition law. Others ... questioned the importance of such cases and argued that ... such exemptions do not immunize such cartels from prosecution by the affected country. Others pointed out that affected countries might have difficulty obtaining the necessary evidence located abroad ...¹⁷

A recent article in the *Journal of Competition Law and Policy* made a similar point, arguing that Mexico has been harmed by the activities of legal export cartels based in other countries. While prosecution of these cartels is possible, in principle, under Mexican law, the lack of cooperation from home countries means that information gathering is difficult and prosecution impossible.¹⁸

¹⁷ 'Summary', *OECD Journal of Competition Law and Policy* 1:4 (1999, p. 10).

¹⁸ Wise (1999, p. 67).

There is little mention of legal export cartels in recent reports on international anti-trust from the OECD and the US International Competition Policy Advisory Committee.¹⁹ This suggests that the leading members of the American anti-trust community do not feel that this is an issue that severely affects consumers or those domestic producers who compete with foreign export cartels. The OECD's report on *Hard Core Cartels*:

urges ... reviews by competition authorities of [export cartel] exclusions [but] does not regard further action in this area to be a priority in connection with its program for bringing about more effective action against hard core cartels (OECD, 2000, p. 28).

Having laid out the main features of contemporary international cartels, and conveyed a sense of their prevalence in the 1990s, we now examine the effectiveness of current anti-cartel enforcement regimes.

4. THE DETERRENCE APPROACH TO INTERNATIONAL CARTEL ENFORCEMENT

Before assessing the recent increase in international cartel investigations, it will be useful to lay out – from a traditional ‘law and economics’ perspective – the incentives supplied by national anti-cartel enforcement regimes and penalties.²⁰ This analysis will then motivate a discussion of the inadequacies of national anti-cartel enforcement in a world of many legal jurisdictions.

From the law and economics perspective the objective of anti-cartel laws should be to deter, and where necessary punish, firms who engage in this undesirable act.²¹ Three characteristics of cartels are germane to understanding the incentives supplied by anti-cartel enforcement. First, cartels typically involve secret agreements between firms. Second, the objective of these agreements is to secure pecuniary gains for cartel members. Third, sustaining the cartel requires careful attention to crafting incentive compatible agreements between firms.

A group of firms will be *collectively* deterred from cartelising a nation's markets if that country's anti-trust authority is expected to fine them more than the gains from participating in the cartel. Assuming that the firms are risk neutral; there are no costs to the firms in defending themselves before a fine is imposed;

¹⁹ ICPAC (2000) and OECD (1999).

²⁰ For a recent exhaustive survey of the law and economics literature see Kaplow and Shavell (1998). Our discussion focuses on the incentives supplied by public enforcement practices. These incentives may be reinforced by private suits – brought for damages by cartel victims – that are permitted in some jurisdictions.

²¹ As a testament to the influence of this perspective it is worth noting that the Ministry of Commerce in New Zealand recently published a report on the effectiveness of the deterrence provided by that nation's enforcement practices and courts which was explicitly built on the lines of reasoning discussed in this section. See Ministry of Commerce, Government of New Zealand (1998).

the pecuniary gain from cartelisation equals G ; and the probability of the anti-trust authority detecting and punishing the cartel equals p , then a fine f equal to (G/p) will provide the necessary collective deterrent. An important insight is that even though cartel agreements are typically secret – and so the probability of detection and punishment p is low – so long as p is positive there exists a fine that will collectively deter cartelisation. Secrecy may impede investigations, but deterrence is still in principle feasible. These arguments may also provide a rationale for why some nations, such as the United States, Germany, and Switzerland, have made the maximum fines of cartel members a function of the pecuniary gain from their illicit activity.

Anti-trust officials have exploited the ‘incentive compatibility’ problems faced by cartels through the introduction of corporate leniency programmes. These programmes – which offer reduced penalties to qualifying firms that come forward with evidence of cartel conduct – induce members to ‘defect’ from cartel agreements. These programmes have also been motivated by the observation that the successful prosecution of cartels typically requires evidence supplied by at least one co-conspirator.

The US corporate leniency programme, last revised in 1993, can be rationalised in these terms. Currently only the *first* firm to come forward with evidence about a currently uninvestigated cartel is *automatically* granted an amnesty from all US criminal penalties. This encourages a ‘winner takes all’ dynamic, where members of an otherwise successful cartel each have an incentive to be the first to provide evidence to US authorities.²² A second feature is that even if a firm is not the first to approach the US authorities, such a firm can gain a substantial reduction in penalties by admitting to cartel practices in *other* markets that are (at the time of the application for leniency) uninvestigated. This provision has set off a ‘domino’ effect in which one cartel investigation can result in evidence for subsequent investigations. Since these changes, and others, were introduced the US has received on average one amnesty application per month, approximately twelve times the previous rate.

Jurisdictions differ considerably in whether they impose criminal penalties in cartel cases. In particular, few jurisdictions permit the incarceration of business executives responsible for cartelisation.²³ US officials strongly believe that criminal penalties including the threat of incarceration are essential deterrents to

²² The German Bundeskartellamt (Federal Cartel Office) revised their corporate leniency programme in April 2000 to include such a provision too. Dr. Ulf Boge, President of the Bundeskartellamt, argued in explicitly economic terms as follows: ‘By granting a total exemption from fines to the first firm that approaches us we want to induce the cartel members to compete with each other to defect from the cartel.’ See Bundeskartellamt (2000).

²³ Although the criminality of cartel behaviour has considerable implications for international cooperation and evidence sharing, the role of these sanctions as a deterrent is what concerns us presently.

cartelisation.²⁴ How does a law and economics approach assess this claim? First, incarceration involves costly losses in and re-allocation of output: managers' productivity is less during their period of incarceration, and resources must be devoted to the construction and operation of prisons. If these were the sole considerations, then incarceration would be a less desirable alternative to fines. However, given the low probability of punishing a cartel and the sizeable gains from engaging in such behaviour, the minimum fine that would deter a cartel may in fact bankrupt a firm or its senior executives. Bankrupting a firm that has been engaged in cartel behaviour could actually reduce the number of suppliers to a market, resulting perversely in less competition and higher prices. Furthermore, personal bankruptcy laws bound from below what corporate executives can lose from anti-cartel enforcement. Incarceration may provide – through the loss of freedom, reputation, social standing, and earnings – the only remaining means to alter the incentives of corporate executives. This argument is particularly important because the use of stock options in executive compensation packages provide very strong incentives to senior executives to maximise firm earnings and stock market value.

The second 'law and economics' argument is that incarceration is needed to reduce or eliminate the expected harm caused by repeat offences. There may be legitimate concern that executives who have successfully arranged explicit agreements to carve up a market will, after the cartel is broken up, attempt more subtle forms of collusion (such as price leadership). The imposition of fines alone may not induce a firm's shareholders to replace the offending executives, especially if the latter can convince shareholders that the fine was a 'cost of doing business' and that the benefits from implicit collusion (which they expect to secure in a market that is well known to them) will soon flow. Here, a clean break with the past may be needed, with incarceration simultaneously removing the relevant executives from their posts and acting as a threat to incoming senior executives not to attempt re-cartelisation. Anti-trust officials must also weigh the stronger deterrent effect of incarceration against the higher levels of evidence that are required to secure criminal convictions. The threat of incarceration exacerbates the difficulties that national anti-trust officials face in securing evidence and testimony from cartel participants, which in terms of the framework outlined above effectively lowers the probability of detection and punishment p .

²⁴ See, for example, Hammond (2000) who argues: 'based on our experience, there is no greater deterrent to the commission of cartel activity than the risk of imprisonment for corporate officials. Corporate fines are simply not sufficient to deter would-be offenders. For example, in some cartels, such as the graphic electrodes cartel, individuals personally pocketed millions of dollars as a result of their criminal activity. A corporate fine, no matter how punitive, is unlikely to deter such individuals.' Mr. Scott Hammond is the Director of Criminal Enforcement at the US Department of Justice. In interpreting his remarks it is worth bearing in mind that the maximum fine under US law for individuals convicted in engaging in cartel behaviour is \$350,000 which given recent trends in executive compensation is likely to be much less than the potential stock-option and other gains paid to an executive whose firm's profits have increased due to participating in a cartel.

The law and economics perspective explains why national anti-trust enforcement may be particularly ineffective in deterring international cartels. First, the ability of executives to organise cartels (including meeting, writing and storing agreements) in locations outside the direct jurisdiction of the national anti-trust authority where the cartel's effects are felt can effectively reduce the probability of punishment p to zero. For example, in 1994 the US case against General Electric, which along with De Beers and several European firms were thought to be cartelising the market for industrial diamonds, collapsed with the trial judge citing the inability of US enforcement authorities to secure the necessary evidence from abroad. Second, constraints on the ability to collect evidence and to interview witnesses abroad implies that the probability of punishment p is lower than it might otherwise be. Increasing the fines f imposed may not, given the substantial reduction in p and the limits imposed by bankruptcy, be sufficient to deter collusion. In sum, supplying the right deterrent is more difficult when conspirators can hatch their plans abroad.

Third, in a world of multiple markets the gain from cartelising a single additional market may well exceed the cartel profits from that market alone. As the number of markets in which a cartel operates increases, each cartel member can be more successfully deterred from cheating on the cartel agreement in *any one market* by the threat of retaliation by other members in *all the markets* in which the cartel operates. This 'multi-market effect' implies that the extension of an international cartel into a new market can heighten collusion in all of the cartel's markets. Therefore, the fine that will deter collusion in the new market must include the increase in the cartel's total profits, not only on the extra profits being earned in the newly cartelised market. At present, even those anti-trust authorities that base their fines on the illicit gains from cartelisation do not consider the harm done outside their jurisdiction and so current practices are unlikely to deter multi-market cartels.

Finally, the effectiveness of national leniency programmes is compromised by firms' participation in cartel activities in many nations. A firm may be reluctant (to say the least) to apply for leniency in a single jurisdiction if that leaves them potentially exposed to penalties in other jurisdictions. Furthermore, even though a firm may be willing to offer evidence on cartel activities in many nations, a national anti-trust authority will only value information on activities within its jurisdiction. Both factors reduce the benefits of seeking leniency.

5. RECENT TRENDS IN INTERNATIONAL CARTEL ENFORCEMENT

The 1990s saw a sea change in official attitudes towards cartel enforcement. At the start of the decade, only one industrial nation – the United States – was taking aggressive action against international cartels, and these actions were criticised

by other governments as an improper extraterritorial application of domestic anti-trust law.²⁵ By decade's end, several high profile enforcement actions have convinced policymakers in other industrial countries that stronger measures against international cartels ought to be taken. Consequently, corporate leniency programmes have been revised or introduced in several countries, international norms for and reforms of cartel enforcement have been proposed at the OECD, and bilateral cooperation developed between selected jurisdictions.

Much of this change had its origins in the events that followed the revision of the US corporate leniency programme in 1993. As noted above, this revision led to a dramatic increase in international cartel prosecutions. Although US enforcement actions were motivated by their effects within US borders, the potential cross-border effects of these cartels and the substantial evidence proffered during leniency requests did not go unnoticed in other nations.²⁶ The European Commission introduced its own corporate leniency programme – but its success has been less impressive than its US counterpart in part because automatic amnesty is not assured to the first firm that reports cartel behaviour.²⁷

Although cartel enforcement has increased in both the EU and in Japan, investigations remain hampered in both jurisdictions, albeit for different reasons. It has proved too difficult to reconcile the underlying tenets of the Japanese legal code with the introduction of a corporate leniency programme. This restricts the flow of information on cartel behaviour to the Japanese Fair Trade Commission (JFTC), and is a source of considerable concern, as the JFTC appears to devote few resources to other means of uncovering cartels. That said, Japan (and Korea) have recently reduced the number of permitted exceptions to their anti-cartel laws.

More vigorous enforcement in the EU has been impeded by the inability of European Commission (EC) officials to search the private homes of business executives resident in Europe for evidence of cartel agreements. Worse still, European Community Law only allows civil sanctions on undertakings (such as firms). Individuals cannot be sanctioned for anti-trust offences under Community Law but can be subject to penalties under the appropriate national laws. Even so, since the late 1980s the EC has prosecuted over twenty international cartels with rising fines to above 100 million ECUs in recent years.

²⁵ Concerns about extraterritorial applications of these US laws reached a point where several industrial countries actually passed 'blocking statutes,' whose intent was to prevent their anti-trust authorities, police and other national investigative agencies, and firms from cooperating with US enforcement actions outside American borders.

²⁶ US officials have, through speeches, interviews, and written articles, extensively discussed their enforcement record in this area. In part, this effort is motivated by the view that the deterrent effect of the US enforcement regime depends somewhat on its public profile. Many of these speeches can be downloaded from the web site of the Antitrust Division of the US Department of Justice (www.usdoj.gov/atr).

²⁷ It is noteworthy in this respect that the German and British competition policy authorities have chosen to revise their corporate leniency programmes along US, not EC, lines.

Recognition of the difficulties faced by national anti-cartel authorities in investigating international cartels has led to several initiatives between governments and within the OECD. Recent experience suggests that there are two circumstances where bilateral cooperation offers the most promise (by raising the probability of an international cartel being punished). First, if a nation's laws make cartelisation or conspiracies to cartelise criminal offences, then that nation may be able to invoke the provisions of any Mutual Legal Assistance Treaties (MLATs) that it has signed with other nations. These treaties differ in scope (including coverage of anti-trust offences) and in the commitment to extend bilateral cooperation. The US-Canadian MLAT, signed in 1985, is perhaps the best example of how this form of bilateral cooperation has been effective in prosecuting international cartels (Waller, 2000). Of course, this mechanism is only available to those jurisdictions that have signed MLATs that cover anti-trust matters.

The second route by which cooperation between national anti-trust officials is effected is through explicit bilateral agreements on anti-trust matters. This route is very much in its infancy, and is best characterised by the 1999 agreement between Australia and the US. This agreement provides for each party to the agreement to request assistance from the other party irrespective of whether the alleged corporate actions in question are criminal acts under the requested nation's law. The bilateral assistance envisaged at the time of signing includes providing, disclosing, exchanging, and discussing evidence as well as taking various steps to secure evidence from persons, undertakings, and other entities. Even more recently, a working group of officials from competition policy authorities in the Nordic countries proposed enacting legislation to enable them to exchange pertinent information in cartel cases (OECD, 2000).

A critical stumbling block in most bilateral cooperative efforts is the exchange of business information or what many legal practitioners refer to as 'confidential business information.'²⁸ The fear that corporate secrets and future planning will, if shared with a foreign anti-trust authority, be used inappropriately or leaked to rival firms has long resulted in many bilateral cooperation agreements on anti-trust matters containing very restrictive provisions for the exchange of confidential business information and very broad understandings of what information is considered confidential. But cartel investigations typically refer to prior (and occasionally current) corporate practices; the evidence required is largely documentation of meetings and agreements between conspirators; prosecutions generally do not require reference to firms' forward-looking strategic plans. Thus, the fear that legal future plans will be exposed appears to

²⁸ In the view of some this stumbling block has seriously circumscribed cooperation between the EC and US in cartel investigations, see Stark (2000) and Waller (2000).

be exaggerated.²⁹ Finally, existing international cooperation on tax and financial securities permits for far more exchange of business information than under bilateral anti-trust agreements, especially when there is the suspicion that fraud or some other illegal act has taken place. The extension of cooperation to anti-trust matters can easily build on these existing practices.

Many of the recent reforms in national anti-cartel enforcement and in bilateral cooperation must be seen against the backdrop of significant and ongoing discussions at the OECD. In 1998 these discussions culminated in the Council of the OECD adopting a 'Recommendation ... Concerning the Effective Action Against Hard Core Cartels.'³⁰ The essence of this recommendation is two-fold: to call upon member nations to enact anti-cartel laws that can effectively deter cartelisation and to lay out common principles to guide cooperation between anti-trust authorities – cooperation which the Recommendation clearly endorses as in OECD members' interests. In 2000, the OECD issued another report documenting the steps taken since the Recommendation was adopted. This report noted that while some nations had eliminated exemptions to their cartel laws, revised corporate leniency programmes, or allowed greater exchange of business information, less progress has been made on facilitating bilateral cooperation on cartel investigations than had been hoped. Nevertheless, these OECD initiatives demonstrate an emerging consensus on the undesirability of international cartels.

Taking together the conceptual concerns (raised in Section 4) about the effectiveness of national enforcement measures against international cartels, and the promising yet nascent bilateral cooperation described above, we conclude that at present the cumulative effect of national enforcement systems is unlikely to provide sufficient deterrence to international cartels. Several options for reform are considered in the next section.

6. OPTIONS FOR REFORM

Any proposed reform to international cartel enforcement should be assessed, in large part, on the deterrent it provides to firms to cartelise markets in the first place. That deterrent's strength depends on the firms' perceptions of the probability of getting punished and the size of any expected penalty. Although the pecuniary gains from cartelisation may result from raising prices across the globe, recent enforcement experience suggests that much of the evidence and many of the people responsible for cartelisation are to be found in the nations where the headquarters of globally-oriented firms are located. Table 1 shows that those

²⁹ A recent detailed analysis of the arguments advanced in support of restricting the exchange of business information in cartel investigation by the OECD came to a similar conclusion, see OECD (2000).

³⁰ This recommendation is reproduced in an appendix to OECD (2000).

headquarters tend to be situated primarily in industrial nations. This suggests that although calculations of the pecuniary harm should in principle shift from the national to the global, reforms to the 'investigative technology' probably need only focus on cooperation between the industrial nations.

It is tempting to advocate creating a global enforcement authority with powers to collect evidence, conduct interviews, and then compute the global gains from cartelisation and levy the appropriate fines. In principle such a proposal could overcome the deficiencies of the current system of national enforcement and bilateral cooperation. However, at this juncture no nation appears ready to pool sovereignty in such an aggressive manner, or to allow its citizens and firms to be punished by such a body. The EC's relatively weak enforcement powers against cartels are a testament to the reluctance of EU members, who have been pooling sovereignty in other areas for decades, to cede powers in cartel cases – even though the distortions to the free flow of goods and services across European borders that cartels can engender are widely acknowledged. Without denying the intellectual appeal of such a far-reaching solution, we turn our attention to more modest and perhaps more likely reform options.

The first and least ambitious reform option would involve extending the US-Canada or US-Australia bilateral cooperation agreements on anti-trust to all industrial countries. Such a reform would go some way to remedy the current deficiencies in evidence collection and information sharing, increasing the probability of cartel members being caught and punished. To ensure some degree of uniformity in the agreed forms of bilateral cooperation, this reform would probably be best effected through the signing of a plurilateral agreement between these industrial nations, rather than through multiple bilateral agreements.³¹

The second option builds on the first and tries to address the deficiencies of the current system of national corporate leniency programmes. The plurilateral agreement (discussed above) would be amended in two ways. First, a provision should be introduced so that firms can simultaneously apply for leniency in multiple jurisdictions and have those applications evaluated on the totality of the evidence of cartelisation presented. Second, to reduce the uncertainty faced by the 'first' firm to come forward with evidence about a currently uninvestigated international cartel, corporate leniency programmes should state *minimum* degrees of relief from penalties. Such a reform would further increase the incentive of any cartel member to 'defect', making cartelisation harder to sustain.³²

³¹ However, such an agreement would require considerable changes to the EC's anti-cartel enforcement system.

³² These first two reform options do not rule out expanding the agreement to allow one anti-trust agency to take the lead in a cartel investigation that might have ramifications for multiple jurisdictions, with other parties to the agreement providing whatever assistance is necessary. This might economise on enforcement resources, potentially enabling more actions to be taken within given budgets.

Although these two reform options can be thought of as improving the investigative technology, the pecuniary gains from cartelisation would still be calculated on a nation-by-nation basis. The third option takes initial steps to remedying this deficiency. Once the investigation turns to the matter of calculating pecuniary gain, this inevitably controversial step could be turned over to a pre-selected panel of qualified and independent experts, who reside in the signatories to the plurilateral agreement. This panel would present estimates (with associated estimated standard deviations) of the cartel's gains across all the affected nations that are parties to this agreement.³³ The panel would break down its estimate of the total gains to the cartel from each nation's markets, which enforcement authorities would take into account when penalising cartel members.

The obvious disadvantage of this latter reform option is that gains from cartelising non-signatories' markets are not taken into account. Given the non-trivial amounts of information required to come up with a sensible estimate of cartel's pecuniary gains, it is naïve to blithely insist that any supranational panel estimate the global consequences of a cartel. Instead, this plurilateral agreement should have open accession clauses to enable non-members that have developed both national enforcement capabilities and which have attained a pre-specified degree of international anti-cartel cooperation to join. Furthermore, thought could be given to informing non-signatories that their interests are affected by a cartel in return for a commitment to treat leniently any firm that has volunteered information during the investigation.³⁴

Furthermore, a reform process could unfold over time in which industrial countries move from their current arrangements to the first through third options. Strengthening national anti-cartel laws and commitments to enforcement are a necessary prerequisite. The enhanced cooperation will foster trust between anti-trust agencies, which is essential if agencies are to have any faith in the intent and capacity of others to use the ample discretion built into most anti-cartel laws to successfully conduct international cartel investigations. Admittedly such a process would not lead to the creation of a supra-national anti-cartel agency, but it does not prevent such an agency from being created eventually. Furthermore, the experience of mutual cooperation and assistance, combined

³³ The panel would have access only to that evidence which is required to compute these estimates and would be supported by qualified staff.

³⁴ Even though the gain calculation would take into account the cartel's effects in a number of signatories' markets, the fines and penalties in this third reform option would still be imposed by national authorities. This does not violate the apparent unwillingness of nations only to penalise cartel members for the harm done in their own jurisdictions. Requesting that signatories impose fines on the worldwide pecuniary gain – which includes the cartel's gains in non-signatories markets – flies in the face of this established practice. Countries that allow private civil suits for damages could also expand their jurisdiction in international cartel cases to allow consumers in countries that were not party to plurilateral agreements to seek redress in the home countries of the cartel members.

with increasing harmonisation of anti-trust laws would provide the basis for nations to create such an agency if they should choose to do so.

An alternative to these three reform options might be a plurilateral or multilateral agreement at the World Trade Organisation (WTO). Such an agreement could involve commitments to enact and enforce an anti-cartel law, and to cooperate with investigations launched abroad. As there is less than ten years of experience with international anti-cartel investigations, it is doubtful that best practices in enforcement have evolved to such a stage that they could be codified in an agreement. Investigative and prosecutorial discretion are likely to remain and it is not obvious how a WTO dispute panel might assess whether a government used that discretion in a manner entirely consistent with the agreement. The likely outcome is that only those anti-trust authorities that have not followed certain minimal procedural steps would be found in violation, an outcome that is unlikely to result in significant increases in the probability that cartel members will be punished. Finally, such a WTO agreement would still not ensure that the penalties for cartelisation are based on the worldwide pecuniary gains.

A WTO agreement could be crafted (or the GATT agreement amended) to explicitly address two forms of privately-orchestrated and trade-related cartels.³⁵ First, laws which permit recession cartels, where firms under considerable competitive pressure – potentially from imports – to engage in market division, could be banned on the grounds that the WTO has already well-established safeguard mechanisms.³⁶ Second, disciplines could be placed on legally-sanctioned export cartels. Given the discussion in Section 3 there appears to be a justification for letting small firms share the considerable fixed costs of marketing and exporting; the objective should be to prevent such arrangements from resulting in consumer welfare losses. Two disciplines could be imposed on laws granting exemptions for export cartels: notification and unimpeded entry. Notification would involve the publication of the names of the members of such cartels, which will facilitate monitoring by anti-trust officials in the importing country. A requirement that entry to such arrangements be unimpeded would help both reduce any market power that is enjoyed by existing members, and make coordinating any restrictive business practices more difficult.

³⁵ It is a separate, and important, matter whether WTO-disciplines should be imposed on state-run export cartels. Arguably these cartels can distort trade flows and the allocation of resources, just like privately-run cartels. Furthermore, since governments (and not firms) are signatories to WTO agreements then it could be argued that disciplines against state-run cartels would be easier to enforce than those requiring governments to take action against domestic privately-run cartels.

³⁶ For an overview of the legal statutes on recession cartels in industrial nations see Waller (1996).

7. CONCLUSION

International cartels are a non-trivial impediment to the flow of goods and services across borders. Recent enforcement experience suggests that widespread cartelisation in some industries has affected many nations' markets. This might not be a concern if national anti-trust laws provided a sufficient deterrent to international cartels – however, both *a priori* reasoning and the fragmentary record of international cooperation in this area suggests that this is not the case. In particular, three aspects of cartel enforcement need reform. First, the probability of a cartel being punished is considerably reduced by the current patchwork of bilateral cooperation agreements on evidence collection and sharing with foreign jurisdictions. Second, penalties based on national assessments of the pecuniary gains to cartelisation are unlikely to deter cartels that operate in many countries' markets. Third, vigilance should not end with a cartels' punishment, as former price-fixers often try to effectively restore the *status quo ante* by merging or by taking other steps that lessen competitive pressures and raise prices. Unless a pro-efficiency approach drives all competition policy enforcement, the benefits created by keen international cartel enforcement will be eroded by lax enforcement in other areas.

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