

**The Economics of Collusion**

**Cartels and Bidding Rings**

**Robert C. Marshall and Leslie M. Marx**

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## 2 Narrative of a Cartel

### 2.1 The Story Begins

Consider an industry with four firms, where two of the firms are divisions of major multi-product parent corporations and the division managers are essentially independent and autonomous decision makers.<sup>1</sup> There is no real threat of entry because of the capital intensive nature of the industry in conjunction with the learning-by-doing nature of the production process. There are no reasonable substitute products for the commodity made by these firms. No suppliers have any degree of bargaining power against any of the firms, and the same is generally true for buyers, although there are some large European buyers. The commodity that the firms make is sold internationally. It is relatively inexpensive to transport—it has a high value to weight ratio. The commodity made by any firm is physically and chemically identical to that made by any of the other firms. Each firm has a sales force and distribution network that allows it to sell its product worldwide. One of the firms has a substantial production facility in East Asia, another firm has production in western Europe, another in eastern Europe, while the fourth has production solely in the United States.<sup>2</sup>

Some of the firms might be communicating at an early stage to try to reach some “understandings” on pricing and markets. Some of these bilateral discussions have a minor effect, but the sales forces of each

1. This corporate structure plays a role in the exposition in chapter 4.

2. This description fits the stylized facts of the vitamins industry at the time of its cartelization. To give an example with four firms, there were four manufacturers of vitamin E 50% adsorbate feed grade in 1990: Hoffmann-La Roche, BASF, Rhône-Poulenc, and Eisai, all participated in the cartel. For a summary of the vitamins industry and description of the cartel, see Marshall, Marx, and Raiff (2008, especially app. A).

firm continue to seek incremental market share by competing against the other firms on the basis of price.<sup>3</sup>

The world economy experiences a slowdown, and each firm finds itself with ever more excess capacity and an increasingly hungry sales force. Prices start to tumble as each firm goes after new business as well as the business held by each of the other three. In a relatively short period of time, none of the firms is earning a profit that it views as satisfactory.<sup>4</sup>

## 2.2 Initiation of the Cartel

The largest firm of the four asks for a meeting to discuss the state of the market.<sup>5</sup> The other three are reluctant because they are aware that antitrust laws look dimly on such meetings.<sup>6</sup> It could be at the location of an accounting or consulting firm that specializes in helping firms with such discussions.<sup>7</sup> Or, it could be after the conclusion of a trade association gathering.<sup>8</sup> The conversation quickly turns to the currently

3. The EC decision in *Soda-ash—Solvay* applies to the period 1987 to 1989, but prior to that, as stated in the decision at para. 40, "During 1986 Solvay realised that CFK was applying a policy of price cutting in order to retain or regain market share."

4. Related to Biotin: "By the early 1990s the price of biotin was declining. Representatives of Roche had been telling Japanese companies during their regular visits to Japan that they should cooperate with Roche and avoid unnecessary competition. During their individual visits, on technical matters, to Tanabe the Roche executives had started tentatively to explore the topic of target prices for biotin. Tanabe refers also to later meetings in March and May 1991 in which Roche 'tried to introduce target prices.' In Europe Roche's solicitations were expressed in blunter terms: according to Merck, Roche insisted that it (Merck) should come to a 'biotin meeting,' in which Merck should represent BASF since the latter took almost all Merck's production under coproduction arrangements; as a non-producer of biotin, BASF was not invited. The first known multilateral meeting of the five producers was held in Lugano, Switzerland, on 14 October 1991 at the initiative of Roche who chaired the proceedings. The participants were representatives from: Roche, Lonza, Merck, Sumitomo, and Tanabe." (EC decision in *Vitamins* at paras. 484-87)

5. As described in footnote 4 in this chapter, in biotin "Roche insisted that it [Merck] should come to a 'biotin meeting.'" (EC decision in *Vitamins* at paras. 484-87)

6. As described in footnote 4 in this chapter, cartels have often chosen to meet in Switzerland.

7. The EC decision in *Organic peroxides* at para. 92 describes the role of AC-Treuhand, a Zurich-based entity, that "organised meetings of the members of the agreement, often in Zurich." On third-party facilitation, see the appendix to chapter 6.

8. Related to amino acids: "ADM further proposed that the producers attend trade association meetings quarterly to adjust their price and sales volumes according to their agreements. It explained how forming an industry association could provide a seemingly legitimate, but artificial, reason to meet, and thus conceal the fact that purported competitors were secretly meeting to discuss prices and sales volumes. ADM described

ruinous nature of competition in the industry and the need to curb the price-cutting actions that underlie the problem.<sup>9</sup>

The largest firm explains that everyone will be better off if prices are elevated and continue to rise over the next several years. The smallest firm is skeptical, but it too sees that given the current state of affairs, its profits are not satisfactory. If it were making an acceptable profit, it would probably break off the conversation at this point. But the intense interfirm rivalry that has been brought on by the poor state of the market has essentially eliminated profits.<sup>10</sup>

how to have 'official' and 'unofficial' meetings. ADM explained that while attending an official industry association meeting, one person would book a hotel suite and quietly notify the others, and then they would secretly meet to discuss prices and sales volumes away from the official meeting. The participants agreed to proceed in this way." (EC decision in *Amino acids* at para. 122) Also, as indicated at paras. 112-113, the amino acid producers' association was established explicitly to serve the cartel's purposes.

Related to citric acid: "The timing of the cartel meetings was usually set to coincide with those of the general assembly of the trade association ECAMA since all cartel participants were members of this association. The companies would typically meet the evening prior to the official [European Citric Acid Manufacturers' Association (ECAMA)] meeting." (EC decision in *Citric acid* at para. 87)

Related to carbon brushes: "SGL also lists several meetings of the AEGEP as forums that were used for cartel meetings in the early nineties." (EC decision in *Electrical and mechanical carbon and graphite products* at para. 174) Further, "What can be deduced from the available evidence is that a number of meetings of the ECGA Graphite Specialties Electrical and Mechanical Committees coincided with meetings of the cartel's Technical Committee. . . . A similar correlation exists between ECGA General Assembly or Board of Directors meetings and Summit meetings of the cartel, as evidenced by the ECGA meetings on 23-24 October 1997, 20 April 1998, and 17-18 May 1999, all of which were used by the cartel to organise Summit meetings. It would therefore appear evident that cartel members took the opportunity of official ECGA meetings to meet, often both before and after the ECGA meeting, among themselves to co-ordinate their anti-competitive activities. Indeed, for at least some members of ECGA, the usefulness of the existence of ECGA, or at least of its Graphite Specialties Committee, appears to have been largely determined by its function of providing a legitimate cover for meetings of representatives of the members of the cartel. After Carbone Lorraine had left the cartel by the middle of 1999, a Technical Committee meeting of the cartel on 4 October 1999 discussed the question 'Is the umbrella of E.C.G.A. still be needed [sic]?' (EC decision in *Electrical and mechanical carbon and graphite products* at para. 177)

9. "On the subject of the exchange of information between [high-level representatives] . . . BPB stated that, at that meeting, the representatives of BPB and Knauf 'reached an understanding that it was in the interests of BPB, Knauf and the industry as a whole (including, ultimately, the interests of consumers) for the ruinous price war to end and for producers to attempt to compete at more sustainable economic levels.'" (EC decision in *Plasterboard* at para. 55)

10. According to the EC decision in *Vitamins* at paras. 293-95 related to vitamin B<sub>5</sub>: "The background against which the cartel was formed, suggests Daiichi, was a steady drop in prices for vitamins of the B complex during the 1980s and the weakness of the dollar in 1989 to 1990, leading to zero profitability for Roche in these products."

The large firm starts to flesh out the details of how to successfully elevate prices, and the other three are willing to listen.<sup>11</sup> Some of their willingness stems from the fact that the large firm is known to have successfully elevated prices in some of its other product areas, and the three firms have heard that this came from cooperation among rivals that was spearheaded by the large firm.<sup>12</sup>

The large firm points out that its plan will not work unless the firms are willing to act in solidarity to accomplish higher prices. Such solidarity will require regular communication.<sup>13</sup> Information will need to be shared among the firms. Some of this information would be zealously guarded by each of the firms if they were just acting alone and not trying to cooperate. They need to talk about particular customer accounts, particular geographic areas of the world, and how to divide the world market among themselves.<sup>14</sup> They need to talk about the

11. According to the EC decision in *Vitamins* at para. 567, "the collusive arrangements in the various vitamins were not spontaneous or haphazard developments, but were planned, conceived and directed by the same persons at the most senior levels in Roche and the other undertakings."

12. According to the EC decision in *Vitamins* at para. 2, Roche participated in the cartelization of all twelve vitamins considered in that decision, and the start dates range from September 1989 for vitamins A and E to May 1993 for carotinoids.

The firm Ajinomoto spearheaded the cartel in *Food flavour enhancers*, which the EC decision dates from November 1988 to June 1998, and then later was a key player in the cartel in *Amino acids*, which the EC decision dates from September 1990 to June 1995.

The firm SGL Carbon AG was involved in the cartel in *Electrical and mechanical carbon and graphite products*, starting at least in October 1988, then in the cartel in *Graphite electrodes*, starting at least in May 1992, and then in the cartel in *Specialty graphite*, starting at least in July 1993. The EC decisions date the ends of the cartel periods as December 1999, March 1998, and February 1998, respectively.

13. All of the cases we consider in this section describe regular meetings by the cartel members. For example, "The holding of regular and frequent meetings between the participants was a hallmark of the cartel's organisation. Between March 1991 and May 1995 around 20 multilateral meetings were held between the companies on matters directly related to the cartel." (EC decision in *Citric acid* at para. 86) As another example, in the EC decision in *Organic peroxides* at para. 353, one of the principle aspects of the cartel agreement involves "participating in regular meetings and having other contacts in order to agree to the above restrictions and to implement and/or modify them as required." Essentially identical language appears in the EC decision in *Graphite electrodes* at para. 110.

14. The following EC decisions indicate that the cartel allocated customers, geographic areas, and/or market shares: *Amino acids* at paras. 57, 68, 211; *Carbonless paper* at para. 81; *Choline chloride* at para. 64; *Citric acid* at para. 158; *Copper plumbing tubes* at para. 449; *Electrical and mechanical carbon and graphite products* at para. 219; *Food flavour enhancers* at paras. 65, 68, and 172; *Graphite electrodes* at para. 71; *Industrial and medical gases* at para. 101; *Industrial tubes* at para. 195; *Interbrew and Alken-Maes* at para. 243; *Methylglucamine* at para. 43; *Organic peroxides* at para. 353; *Plasterboard* at paras. 72, 126, 229; *Sorbates* at para. 107; *Specialty graphite* at para. 130; *Vitamins* at paras. 2, 590; and *Zinc phosphate* at para. 214.

implementation of higher prices, including the specific actions needed to elevate prices.<sup>15</sup> They need to figure out how to handle disagreements and grievances among themselves.<sup>16</sup>

### 2.3 Market Share Division

The large firm advocates a worldwide market share allocation.<sup>17</sup> The large firm has been monitoring the others through trade statistics that are readily available from governments around the world, trade associations, and private firms that specialize in the collection of such statistics.<sup>18</sup> It has determined that the market shares for the firms in the previous year were 50%, 25%, 15%, and 10%.<sup>19</sup> The large firm proposes

15. The following EC decisions indicate that the cartel implemented price increases: *Amino acids* at para. 53; *Carbonless paper* at paras. 135, 233; *Choline chloride* at para. 64; *Citric acid* at para. 158; *Copper plumbing tubes* at para. 449; *Electrical and mechanical carbon and graphite products* at para. 219; *Food flavour enhancers* at paras. 66, 172; *Graphite electrodes* at para. 50; *Industrial and medical gases* at para. 101; *Industrial tubes* at para. 195; *Interbrew and Alken-Maes* at para. 243; *Methionine* at para. 74; *Methylglucamine* at para. 43; *Organic peroxides* at para. 353; *Plasterboard* at para. 2; *Rubber chemicals* at para. 187; *Sorbates* at para. 281; *Specialty graphite* at para. 130; *Vitamins* at paras. 2, 590; and *Zinc phosphate* at para. 214.

16. The EC decision in *Organic peroxides* at para. 92 describes the role of the firm AC-Treuhand as including that they "acted as a moderator in case of tensions between the members of the agreement and encouraged the parties to find compromises. AC Treuhand would try to stimulate the parties to work together and reach an agreement. 'The message from AC Treuhand was that it would get worse for the participants if they discontinued the discussions.'" (italics in original) See also the appendix to chapter 6.

In *Citric acid*, "After 1993, the cartel decided to hold more technically orientated meetings, known as 'Sherpa' meetings, in order to resolve certain grievances and market 'difficulties.'" (EC decision in *Citric acid* at para. 86)

As described in Stocking and Watkins (1991, p. 333), one of the incandescent electric lamp cartel's two most important administrative agencies was the Board of Arbitration. "The Board of Arbitration, consisting of a Swiss professor of law, a Swiss federal judge, and a technical expert on international cartels, arbitrated all disputes among cartel members, particularly patent claims, royalty payments, and the like."

17. "BASF has described in some detail the September 1989 meeting in Zurich which involved the setting up of the cartel in vitamins A and E. On the first day senior executives responsible for vitamin marketing in each company, together with some product managers, identified the size of the market for vitamins A and E and then agreed the allocation between the four producers of the world and regional markets on the basis of their respective achieved sales in 1988." (EC decision in *Vitamins* at paras. 162-63)

18. The EC decision in *Organic peroxides* at para. 91 describes AC-Treuhand as "a Zurich based entity providing, amongst other things, services such as collecting statistics to enterprises." See the appendix to chapter 6.

19. Related to the vitamin D<sub>3</sub> cartel, "The first meeting, held probably on 11 January 1994 in Basel, was attended by Roche, BASF, and Solvay. They focused in this initial meeting on determining total world demand for vitamin D<sub>3</sub> and their individual shares. A consensus was reached that their respective shares were Solvay 41%, Roche 38% and BASF 21%." (EC decision in *Vitamins* at para. 462)

that these shares be an ongoing allocation of the market for each of the firms.<sup>20</sup>

At this point in the conversation, the three other firms disagree with the allocation. They each assert that their share is larger. The large firm has an accounting/consulting firm present at the meeting that specializes in organizing firms in this manner.<sup>21</sup> The accounting/consulting firm reviews the numbers for the other three. After some debate, the revisions of the market share allocations settle at the following: 48.5%, 25.5%, 15.3%, and 10.7%.<sup>22</sup> The three smaller firms assert that there are regional issues to consider. The firm with production in Asia states a desire for a larger percentage of the Asian market than its worldwide share. There are similar statements made about Europe by two other firms. The large firm notes that there will be efforts made to respect regional customers, but that the overall adherence to the worldwide market share allocation is what really matters.<sup>23</sup>

The large firm explains that there will need to be very regular reporting of production and sales figures to the cartel so that the progress of the market share allocation can be tracked.<sup>24</sup> As the world market changes, as it grows and contracts both worldwide and regionally, there will be perturbations in the sales numbers.<sup>25</sup> Each firm needs to

20. See footnote 17 in this chapter. Also, the EC decision in *Vitamins* at para. 167 states that for vitamin E for 1988, worldwide achieved sales were Roche 46.5%, BASF 28.1%, Rhône-Poulenc 15.2%, and Eisai 10.2%.

21. See the appendix to chapter 6.

22. The EC decision in *Vitamins* at para. 168 states that the worldwide sales figures for 1988 "may have been slightly adjusted to give the allocated quotas." It is not uncommon in the EC decisions to see cartel market shares defined down to 1/10 of one percent. For example, in the EC decision in *Carbonless paper* at para. 99, it is noted of cartel documents that "The market share and growth figures are given with an accuracy of one decimal place."

23. According to the EC decision in *Vitamins* at para. 521, "Variations in share were permitted from region to region provided the overall quota was not exceeded; any excess above quota would have to be offset by compensatory purchases from the aggrieved party."

24. "The managers who attended the European regional meetings had weekly telephone contact in order to monitor the agreements on pricing and sales volumes and to discuss individual customers. Every month they exchanged the volumes of vitamins A and E sold in each national market. Roche provided the others with the monthly sales of Eisai in the European market as a whole rather than for each country." (EC decision in *Vitamins* at para. 188)

25. "There was to be 'parallel development of sales and market share,' i.e., quotas were adjusted in volume terms to take account of increased demand while maintaining the same percentage shares and targets set each year by region. Sales would be monitored and the necessary corrections made quarterly." (EC decision in *Vitamins* at para. 395)

report in at least monthly with production and sales numbers, otherwise it will be increasingly difficult to make sure that by year-end the firms have achieved their allocated market shares.<sup>26</sup> As one firm moves a little ahead and another falls somewhat behind, customer accounts that are in the process of being bid will need to be reallocated from the former to the latter.<sup>27</sup> This will be accomplished by explicitly deciding on the bids to be submitted for these accounts.<sup>28</sup> The large firm explains that bids must be coordinated for all customer accounts if the cartel is to elevate prices.<sup>29</sup> It notes the need to coordinate all bids prior to

"If the exchange of figures shows that the sales of a party in any country have exceeded the quota for any category then that party will modify its sales policy in succeeding months with the object of arriving eventually at a tonnage for the whole of the calendar year which does not exceed his percentage quota." (EC decision in *Organic peroxides* at para. 85)

26. "ADM named Ajinomoto as the office to which each lysine producer would provide monthly sales figures. Ajinomoto's job would be to keep track of the figures so that the producers could make adjustments in their sales to limit the overall annual sales to the agreed maximums." (EC decision in *Amino acids* at para. 122).

27. "There was a discussion between Sewon and ADM concerning the supply to each other's customers in the United Kingdom." (EC decision in *Amino acids* at para. 158).

"In 1994 the rapid increase in demand for vitamin E for human consumption necessitated a revision of the quota allocated to Rhône-Poulenc. To maintain its agreed 16% share of the overall market, Rhône-Poulenc had to increase its sales in the animal feed sector. The producers agreed in August 1994 that the Rhône-Poulenc share of the feed segment be capped at 21%; if the agreed increase in quota in that area did not however give Rhône-Poulenc its full 16% overall, the other two European producers would purchase product from it to compensate for the shortfall. Compensating purchases were made by Roche in 1996 and by Roche and BASF in 1997." (EC decision in *Vitamins* at para. 225)

28. "Customers in specific national markets were regularly allocated by agreeing that the other participating undertakings would offer higher prices than the undertaking to which the customer was allocated." (EC decision in *Choline chloride* at para. 99).

29. "In this last respect, by agreeing that the other companies would offer higher price quotes than the company to which the customer was allocated, the price agreements for individual customers served not only to maintain or increase prices to those customers, and thereby ultimately to that national market, but also to maintain the agreed customer allocations and thereby ultimately the agreed market shares." (EC decision in *Choline chloride* at para. 99)

"Each customer's largest supplier (in terms of sales) set its prices slightly below the target prices agreed with the competitors to make sure that the customer in question made the contract with this supplier. The aim was to prevent shifts in market share at the expense of the incumbent. If, during the negotiations a customer pointed out that a competitor had made a lower-priced offer, the incumbent contacted its competitor and asked for an explanation. If the competitor indeed won the contract and thus gained market share, the losing supplier sought to offset its loss with another customer by offering a lower price than the competitors. In order not to jeopardize the overall success of the coordinated price increase, this supplier informed the competitors that it would apply a lower price than agreed only because this allowed it to offset the market share lost from another customer." (EC decision in *Rubber chemicals* at para. 67)

submission.<sup>30</sup> It notes that this is a high-level activity and cannot be easily delegated within each firm due to the legal issues around their agreement.<sup>31</sup>

#### 2.4 Price Increases and Announcements

The large firm begins discussing pricing and the implementation of price increases. They first review the nature of their customers. Most customers of these firms, especially the large ones, acquire the product through a bidding process. Once a year the customers request bids from three or four of the firms and select a winner based on price and past performance of the firms in servicing their account. But because the suppliers are largely equivalent in terms of service, most of the weight in the evaluation of the bids is placed on price.

30. "Notes by Carbone Lorraine show how Carbone Lorraine, as customer leader, co-operated with Morgan and Schunk to regularly rotate which company would win tenders organised by the Régie Autonome des Transports Parisiens (RATP) in France for a particular type of current collector shoe. Information concerning the bids made by each company cover the period 1983 to 1992. In one table, Carbone Lorraine traces which company won which bids from April 1989 to November 1991 and which company should win which bids in the next three years to arrive at an equal number of bids won by the end of 1994. Another table indicates that a bid scheduled to be won by Carbone Lorraine had to be given to Schunk as compensation for other models." (EC decision in *Electrical and mechanical carbon and graphite products* at para. 141)

"Morgan has provided examples of order confirmations of bids agreed between itself and Carbone Lorraine in 1997 regarding the customer GEC Alsthom, showing that the prices agreed did indeed lead to orders by the client. An example of a complete cycle of bid rigging has also been provided by Carbone Lorraine. The cycle starts with a tender issued by the Régie des Transports de Marseille (RTM) of 27 October 1998. Bids are requested for a number of types of carbon brushes and current collectors. Based on contacts with competitors, Carbone Lorraine then compiled a comparative table, indicating which companies won which bids and for which quantity and price in past years, and co-ordinating with them the bids each would make for the new tender. The agreed winning bids are circled. Carbone Lorraine also prepared a table indicating each company's turnover for each type of product covered by the tender, probably to ensure that the agreements made were 'fair' in terms of total turnover. After having reached agreement with competitors on the prices to be quoted, Carbone Lorraine instructed its sales representative on 16 November 1998 to quote to RTM the prices agreed with competitors. These were indeed the bids that Carbone Lorraine effectively made. Finally, an order from RTM confirms that Carbone Lorraine won exactly the bids it had agreed with competitors. These examples show that the cartel was indeed highly effective in achieving results in the market in respect of tenders, in particular by public transport companies." (EC decision in *Electrical and mechanical carbon and graphite products* at para. 151)

31. A "basic principle" for the graphite electrodes cartel was that "decisions on each company's pricing had to be taken not by the commercial managers but by the Chairman/General Managers only." (EC decision in *Graphite electrodes* at para. 50).

The four firms know that buyers often have divisions within their companies that are devoted to procurement. Procurement is an expensive administrative activity, and the procurement division in any company has a budget constraint. The procurement division must decide how and where to allocate its scarce procurement resources. When confronting unexpectedly high bids, the procurement division is likely to devote considerable resources to resist the price increase.<sup>32</sup>

Resistance to price increases may occur in a number of ways. For example, if the procurement division usually asks for bids from only two or three of the firms, they may instead open the bidding up to all four producers. They may attempt to buy product from third-party vendors such as brokers or dealers, although the viability of this alternative depends on how tightly the four producers are controlling supply to third parties. When evaluating the bids of the four producers, they can try to play one off against the other. For example, one of the bidders may be told that they are not lowest, but if they were to drop their bid by \$.50 per kilogram, then they would be a likely winner. Similar statements may be made by the buyer to the other bidders as well. Without cooperation and established communication among themselves, each of the bidders will then wonder if it can secure the account for just a small price decrease. When times are bad, this may be very tempting. Also, if members of a sales force are on incentive pay that is tied to quantity, the drop in price may occur almost immediately.<sup>33</sup>

32. "That not all customers simply accepted the announced price increases, is evidenced by a fax of 30 April 1996 from the London Underground Ltd. (LUL) to Morgan, stating: 'Unfortunately your price increases are well above the current rate of inflation (i.e., 2.7%) and a full explanation is required. I also note from our files that at a meeting here on 21st September (when LUL again expressed dis-satisfaction with your pricing and stock-holding policy) Morganite agreed to respond within 3 weeks with a full breakdown of costs. This did not happen and we find ourselves no further forward in our relationship than we were this time last year. I would be pleased if you will now provide the information requested together with the factors underlying this year's increase, i.e. increased costs of materials, wages, etc. supported by relevant indices or letters from suppliers.'" (EC decision in *Electrical and mechanical carbon and graphite products* at para. 109)

"The five companies evaluated the impact of the agreed price levels and exchanged information on the acceptance of the price increases in the different regions." (EC decision in *Amino acids* at para. 81)

33. "During this meeting, ADM alluded to the importance of a company controlling its sales force in order to maintain high prices, and explained that its sales people have the general tendency to be very competitive and that, unless the producers had very firm control of their sales people, there would be a price-cutting problem." (EC decision in *Amino acids* at para. 98)

The large firm explains that each of the four firms needs to make announcements to the entire marketplace about price increases.<sup>34</sup> These price increases should be published in leading trade publications for all to see.<sup>35</sup> Most important, the people in the customers' procurement divisions need to see these announcements. The large firm explains that the announcements need to be motivated by some kind of market condition that has recently changed. It explains that this is not an issue because there are many factors changing in the world market each and every day. They will be able to offer the following kinds of "explanations" for a price increase: factor input prices have gone up, demand has increased in a particular region, inflation outpaced expectations, exchange rate fluctuations have been adverse to the producers, new regulatory compliance costs have mandated a price increase, transport costs have increased due to an increase in oil prices, and so on. The large firm explains that there will always be some "explanation" from this menu and that the firms will need to coordinate on one or two before announcing their price increases.<sup>36</sup>

34. See the EC decision in *Amino acids* at paras. 53 and 265 and the EC decision in *Carbonless paper* at paras. 135 and 233. See Marshall, Marx, and Raiff (2008) analyzing price announcement behavior for the vitamins cartel and providing a theoretical model of collusive price announcement behavior.

35. "The parties normally agreed that one producer should first "announce" the increase, either in a trade journal or in direct communication with major customers. Once the price increase was announced by one cartel member, the others would generally follow suit. This way the concerted price increases could be passed off, if challenged, as the result of price leadership in an oligopolistic market." (EC decision in *Vitamins* at paras. 203-204)

"In practice, the new target prices were effectively announced to customers, usually through the specialised press." (EC decision in *Methionine* at para. 278)

36. "With regard to justifications for price increases, a local meeting in the Netherlands on 19 December 1995 came up with the following agreed explanations to 'justify' an impending price increase: 'Explanation for 4% price increase 1. Environmental requirements cost extra. 2. Increase [in price] of raw materials 3. Wages [increased by] 3%.'" (EC decision in *Electrical and mechanical carbon and graphite products* at para. 108)

"After this, they entered into a detailed price discussion concerning Europe. They decided a minimum of DEM 4,25/kg as the European price, and set the prices by each currency. These prices were to be applied for deliveries from 27 April to late June. Afterwards, a price of DEM 4,50 was to be announced. The participants agreed on the explanation to be given to buyers." (EC decision in *Amino acids* at para. 164)

"Producers of cartonboard have usually attempted to justify a proposed price increase to their customers by reference to increases in the costs of raw material, energy, transport, etc." (EC decision in *Cartonboard* at para. 19)

The large firm continues by noting that price announcements should not be simultaneously announced.<sup>37</sup> In addition, the announcements should not always originate with one firm, but rather firms should take turns being the first to announce, with the others following with the same price announcement within a week or two, the exact timing will be decided in cartel meetings.<sup>38</sup> The large firm explains that there will be time, perhaps a month or more, between the announcement date and the date at which the price increase becomes effective.<sup>39</sup>

The large firm also notes that there cannot be any disguised price cuts. Year-end rebates, discounts for defective products, waiving shipping charges, and free samples, to name a few, are all disruptive to the cartel and unacceptable unless agreed to ahead of time by all members, with monitoring in place to ensure compliance.<sup>40</sup> However, the large firm notes that larger buyers are not going to pay the same

37. The EC decision in *Rubber chemicals* at para. 187 describes the cartel's "implementation of the agreed price increases by sequential announcements to customers and/or public, the timing, order and form of which had been previously agreed upon between the competitors."

"An example of differentiated timing of the introduction of price increases is provided by the local meeting concerning Germany of 14 December 1999, where it was agreed: 'Timing: S [Schunk in this case]: 10.03.2000; S.G.L.: 31.03.2000; Mor [Morgan]: 10.04.2000.'" (EC decision in *Electrical and mechanical carbon and graphite products* at para. 107)

"At the general cartel meeting of 2 February 1995 the participants also agreed on a system for launching the price increases according to which AWA would lead the price increases and others would follow. As stated in the minutes: 'AWA will lead announcement of following increases per market. To follow, Koehler AG, Zanders, Stora, Sappi, Torras.'" (EC decision in *Carbonless paper* at para. 233)

38. The EC decision in *Citric acid* at para. 158 describes the cartel as "designating the producer which was to 'lead' price increases in each national market."

The agreement described in the EC decision in *Organic peroxides* at para. 353 included "designating the producer which was to 'lead' price increases in each national market."

The EC decision in *Rubber chemicals* at para. 235 provides this explanation: "It is quite normal that a leader of a price increase loses some market share, which is a risk that the undertaking in question voluntarily assumes in collusive situations like those in question in these proceedings. In this case, by taking turns in leading the price increases implemented in 2000 and 2001, Bayer, Crompton/Uniroyal and Flexsys could level out some of these risks and losses."

39. See Marshall, Marx, and Raiff (2008) providing the data on the timing of price announcements and effective dates for price increases for a range of cartelized vitamin products.

40. The EC decision in *Specialty graphite* at para. 352 describes the cartel as "fixing of trading conditions (premiums, discounts, billing currency, exchange rates)."

See the EC decision in *Industrial and medical gases* starting at para. 240 on the imposition of minimum shipping charges.

price as the smaller buyers.<sup>41</sup> It is natural to discriminate prices based on the size of the account. The large firm notes that they will coordinate on these discounts at the time of discussing their bids. Overall, the large firm notes that any component of pricing that has not been pre-cleared in a cartel meeting will be viewed as a violation of the agreement.<sup>42</sup>

Much of the careful coordination of price increase announcements is designed so as to have customers accept, and not resist, price increases. The large firm explains that it wants the procurement divisions investing their scarce resources in lowering the prices paid for other commodities, not the one they are selling. If a procurement division can demonstrate to a CFO of a company that the price increase was unavoidable by citing increase announcements in the trade press that are uniform across all producers, then resistance is unlikely.<sup>43</sup> Still, the large firm notes that how much and how frequently the price can be increased without generating resistance by buyers is a delicate issue that will require ongoing discussion by the four.<sup>44</sup>

41. "Merck states, 'Moreover, a price increase for the coming year was typically negotiated. It was agreed to increase by agreed percentage points both the list price for MG (established anew annually), which applied at least in Europe to smaller customers . . . , as well as the individually-negotiated prices applicable to larger customers (key accounts).'" (EC decision in *Methylglucamine* at para. 84)

The EC decision in *Electrical and mechanical carbon and graphite products* at para. 219 states that the cartel "agreed on certain surcharges to customers, on discounts for different types of delivery and on payment conditions."

42. "No party will give prices lower than any agreed minimum prices for any product to any new customer; or reduce prices for any product to existing customers without prior discussion with the other two parties." (EC decision in *Organic peroxides* at para. 85).

43. "When BASF's customers resisted the increase, Roche supported the rise by also announcing an increase to DEM 46/kg, announced in 'Ernährungsdienst' of 13 June 1998. According to Daiichi, the concerted increase was unsuccessful because of customer resistance and the huge differential between D-calpan and the equivalent in DL-calpan." (EC decision in *Vitamins* at para. 325)

44. "At the general cartel meetings the participants decided in principle on timing and the amount (in percentage form) of the price increases for each EEA country. They agreed on several consecutive price increases and for some months ahead." (EC decision in *Carbonless paper* at para. 18)

"Participants envisaged having a stepped increase in prices from USD 0,81/lb, to USD 0,95/lb, to USD 1,10/lb, and, if possible, finally to USD 1,20/lb." (EC decision in *Amino acids* at para. 107)

"Aventis states, 'A discussion would follow on prices, in particular whether one of the parties had the intention of increasing its price and to what extent. None of the parties proposed significant price increases as it was understood that a product manufactured since 1956 could only support a gradual and slight increase.'" (EC decision in *Methylglucamine* at para. 85)

## 2.5 Sales Force Issues

The large firm reiterates that resistance by buyers is not good for the four firms because there is a good chance of a mistake by one of the four in the form of a price cut when there is substantial buyer resistance. The large firm explains that this stems from the nature of their sales forces.<sup>45</sup>

The large firm then notes that, up to this point, acting unilaterally each of their sales forces have largely had incentives to expand market share. Ideally, the sales forces at each firm would have incentives to increase profits. However, the sales forces do not trust their management's attribution of cost to a sale, so the compensation of the sales forces is rooted in the revenue from sales. Acting unilaterally, if any firm encumbers its sales personnel from closing a deal with a relatively small price concession, they will risk losing its best sales personnel to a competitor who authorizes them to grant price concessions to close deals. As a consequence, the commissions for all sales personnel have been largely tied to the quantity sold (subject to some limits on the extent of price concessions). In aggregate, this means the sales staff at each firm is rewarded for the acquisition of market share.

The large firm explains, in a somewhat sarcastic tone, that they cannot put out memos to the sales forces that elaborate on the nature of the agreement among the four firms. Rather, the large firm notes that each of the firms must immediately change the incentives for the sales forces. They must implement and clearly articulate a "price before tonnage" incentive scheme.<sup>46</sup> The sales forces will no longer be

45. See footnote 33 in this chapter.

46. "In their 'top-level' meeting in Zurich in September 1989, the divisional chairmen of Roche, BASF and Rhône-Poulenc had agreed to a policy of 'price before volume.'" (EC decision in *Vitamins* at para. 200)

"An illustration of the utilisation of the price targets is provided by Roche's 'pricing sheet' for vitamins A and E issued to the business units in March 1991. The objective for vitamin A was to increase prices in CHF by 5% to 10% for 1991 while balancing out the USD/DEM price differential to discourage brokers. While Managers are instructed to hold the worldwide market at 48%, they are ordered to put "price target before quantity/market share target: do not overshoot quantity by not achieving price target" c.f. the 'price before tonnage' maxim." (EC decision in *Vitamins* at paras. 206-207)

"The key to the success of the price initiatives from 1988 onwards (as the producers realized) was maintaining a near balance between production and consumption. All members of the [Presidents' Working Group (PWG)] were concerned that the relaunched price initiatives should not be undermined by substantial increases in the volume sold. This was referred to by Stora as a 'price before tonnage' policy (Stora Article 11 reply of 14 February 1992). It meant the major producers could agree on price increases in the PWG



rewarded for increasing market share. Rather, their incentives will be tied to obtaining the desired pricing on customer accounts. The large firm notes that there will be deviations from this as the sales forces adjust to the new incentives, but that the four can work out those deviations both "on the fly" and at year-end if need be.<sup>47</sup>

## 2.6 Redistributions

The large firm then explains the nature of redistributions among the four firms. If at year-end they have not achieved their worldwide market share allocations, then a "true-up" will be required.<sup>48</sup> The large firm offers an example. The agreed share allocations are 48.5%, 25.5%, 15.3%, and 10.7%. Suppose that at year-end the realization is 48.5%, 26.5%, 14.3%, and 10.7%. Namely, firm 2 has sold a full percentage point more than its allocation and firm 3 has sold a full percentage point less than its allocation. Then the true-up requires that the second firm buy 1 percent of world market sales from the third firm at current market prices. The large firm explains the beauty of this arrangement and thus, in part, the beauty of the market share agreement. First, the third firm is made whole per the agreement—it will have sold 15.3 percent at the cartel price. It views the true-up as fair and equitable, and sees no reason to take any kind of action that would disrupt cartel stability, such as stealing customers from the second firm by cutting price. The second firm is not happy. It is buying a large amount of a commodity at market prices that it can make in its production facilities

with some certainty that they would be successful. The agreement reached in the PWG during 1987 included the 'freezing' of the west European market shares of the major producers at existing levels, with no attempts to be made to win new customers or extend existing business through aggressive pricing." (EC decision in *Cartonboard* at paras. 51–52)

47. The EC decision in *Industrial and medical gases* at para. 161 indicates that a cartel member, AGA, issued internal instructions to its sales force "to focus on implementing the 5% price increase with existing customers and explaining that competitors could be expected to do the same. Were attacks by competitors nevertheless to lead to price concessions, such concessions should be reported to the management."

48. "The information for the whole year was maintained on a cumulative monthly basis to ensure that each party kept to its agreed market share; if one was seen to be selling more than its allocated quota, it would have to 'slow down' sales to enable the others to catch up. If at the end of the year a producer was substantially ahead of its quota, it had to purchase vitamins from the others in order to compensate them for the corresponding shortfall in their allocation." (EC decision in *Vitamins* at para. 196)

True-ups are described in the EC decision in *Organic peroxides* at para. 85 as: "compensation may be made at the underseller's discretion by the purchase of product/s at prices which reflect the loss of profit suffered by the underseller."

for far lower cost. But the incentive is clear—do not get ahead of your share allocation because you will find yourself having to be on the buy side of a costly true-up. The large firm points out that this keeps everyone in check with regard to the incentive to steal business from one another. At the end of the year, the theft of business from any of the other three is just going to result in a costly true-up for the thief; thus, the theft is without incremental profit.

The large firm notes that there will be other times when they will need to compensate one another. For example, the large firm notes that it wants to launch an ad campaign that advocates the benefits of their product for pregnant women.<sup>49</sup> The large firm notes that all four will benefit from this ad campaign, but without an agreement in place, the large firm does not want to bear all the costs of the ad campaign while garnering only its market share of the benefits. Now they can share in these industrywide expenses.

The large firm explains that simply sending cash to one another is not good, but nothing precludes them from engaging in interfirm transactions at nonmarket prices that are the equivalent of sending cash.<sup>50</sup> For example, suppose that a factor input for the product in question sells currently for \$10/kg. If each of the other three firms buy the input from the large firm at \$30/kg, they are transferring resources to the large firm.

In addition to this mechanism for transferring resources, the large firm explains that they are particularly fond of using seemingly innocent litigation for this purpose. For example, the large firm explains that they might set up "standard" business contracts with one another and then sue each other for breach, using settlements as a way to move resources among themselves. The large firm explains that no one ever objects to costly litigation being resolved by settlement, and the terms are legally kept private by mutual consent, thus providing a way to transfer resources with essentially no possibility of detection. The large

49. "Roche had kept the promise it had made when it set up its own folic acid production facility to double world demand for folic acid, but Takeda had also worked hard at creating new sales routes." (EC decision in *Vitamins* at para. 371)

50. "In 1993, the parties realised that a US producer, Coors, had a larger production capacity for vitamin B<sub>2</sub> than they had estimated in 1991. In order to prevent Coors from disrupting their arrangements by the export of its production surplus, Roche and BASF agreed that the former would contract to purchase 115 tonnes of vitamin B<sub>2</sub> (representing half of Coors's capacity) in 1993. BASF in turn would purchase 43 tonnes from Roche; the burden was thus to be shared in the same 62:38 proportion as their quotas." (EC decision in *Vitamins* at para. 287)

firm explains that later in the working of the cartel they will introduce cross-licensing of patents to assist with interfirm transfers as well,<sup>51</sup> but this is a more advanced topic and not needed right now. The large firm asks that the accountant/consultant remind them to introduce the use of cross-licensing in the second year of the cartel.

The large firm finally notes with regard to interfirm transfers that there is a large customer in Europe. The customer accounts for almost 5 percent of the entire European market. The large firm notes that there will need to be much discussion prior to submitting bids for that business.<sup>52</sup> The procurement division of this buyer is extremely aggressive and savvy. The large firm notes that the four firms may need to engage in what the large firm calls a "counterpurchasing agreement" before the bidding.<sup>53</sup> Namely, the large firm may need to buy a large quantity of product from one or more of the other three even before the bids are submitted to ensure that there are no deviations with respect to the agreed bids at the procurement.

## 2.7 Questions and Answers

After dinner the large firm reviews the general principles of their agreement: ongoing communications to implement price increases and reduce buyer resistance to price increases, modification of within-firm incentives, division of the collusive gain through a market share allocation with redistributions to address deviations from the agreement, and monitoring compliance through regular exchange of information. The large firm also notes that it has the capacity to make almost the entirety of world output on its own. The large firm notes that it can aggressively target the current customers of any of the other three or just sell so much quantity on the market that the world price

51. See Priest (1977).

52. The EC decision in *Food flavour enhancers* at para. 65 describes the cartel's aim of "allocating large clients in Europe."

53. See the EC decision in *Food flavour enhancers* at paras. 64, 69, 112, and 122. For example, para. 69 states: "In order to protect their sales to these major European nucleotides users, Takeda and Ajinomoto also entered into agreements with their main competitors whereby Takeda and Ajinomoto purchased product from their competitors in exchange for which the respective competitors would limit their sales to the main European nucleotides users. As Cheil puts it, 'The Japanese companies (Takeda and Ajinomoto) were to buy nucleotides from Cheil and Miwon (Daesang) respectively. In exchange, the Korean producers were supposed not to sell to the European 'big three' and were to restrict quantity to Japan.'"

tumbles.<sup>54</sup> But, after making this statement, the large firm notes that this is not anything it desires. It is not good for itself and not good for the other three. By cooperating, as the large firm has described, they will all benefit.

The three smaller firms have a number of questions.

- *Question 1:* Why do we have to communicate and meet so much? Why can't we simply set a production quota for each firm at the beginning of the year and agree that no one will breach their allotted production?

- *Answer 1:* It will not work. First, we cannot wait to check back with each other once a year to see if we are all complying with the agreement. There will be violations, some of us will be quite perturbed, and the redistributions required to true-up after one year might be so large that we are unwilling to do them. Also, as the market moves during the year, a set quantity may not be appropriate. If demand suddenly shifts out, no one is going to be content producing a low level of output per their allocation. If demand shifts back, then the allotted quantities will be excessive, and we will want to adjust them downward. How will we do that if we are not meeting and we have not agreed on market shares but only set production quantities? If we produced an agricultural commodity, it might make sense to specify a total acreage to plant for each of us at the beginning of the year and then let the market do what it does.<sup>55</sup> But we are not confronting an agricultural market with a single uniform price and with buyers who are used to price volatility. Our buyers expect some regularity in price, and they will fight sudden price jumps.

- *Question 2:* How can I rely on the information reported by the other firms? I am not saying that they are liars, but we can all see the incentive to misreport our production and sales numbers and thereby chisel on the agreement.

- *Answer 2:* Partly, we will rely on everyone's realization that misrepresenting information could potentially lead to the disintegration of the

54. "AWA's financial and industrial weight enabled him to say that if any of these increases were not passed on AWA would make it its business to push the market right down by applying a price policy that would leave most people high and dry. He showed quite clearly what he was capable of by crushing Binda in Italy." (EC decision in *Carbonless paper* at para. 104)

55. See for example, the description of the rubber industry in Stocking and Watkins (1991).

cartel. Also our accountants/consultants will be doing their best to verify the data you report. You will be confronted with import/export statistics as well as data made available by agents of the accounting/consulting firm who are monitoring the trucks and railcars leaving each of your production facilities. Each of us might be able to get away with a minor misrepresentation, but there will be some explaining to do if your numbers are much less or consistently less than what our accountants/consultants are recording from their sources. If necessary, we can arrange for audits of each other's information.<sup>56</sup>

• *Question 3:* Some cartels post bonds and then use cash penalties rather than using true-ups.<sup>57</sup> Do we need to do that?

• *Answer 3:* If our products were sufficiently differentiated that one firm could not pass the other firm's product off as its own or if transport costs were extremely high, then cash penalties might be preferred over true-ups. But in our case, we can rely on true-ups and other transactions to correct any deviations from agreed-to market shares.

• *Question 4:* We are all aware of antitrust laws. How can we avoid prosecution? We are aware of amnesty programs. How can we trust one another not to "rat out" the cartel?

• *Answer 4:* There are several components to the response. First, our accountant/consultants will keep all records. The accounting/consulting firm will reimburse all of us for all travel expenses when we get together to discuss cartel business.<sup>58</sup> Never submit cartel meeting

56. "Indeed, in the French market meeting held on 6 December 1994 there was some disagreement between the cartel members on the accuracy of price increase and volume information exchanged in the course of the meeting. In order to verify the figures submitted, [an AWA employee], who doubted the figures supplied by Sarrió (Torraspapel), had asked and received permission to audit the information on Sarrió's sales volumes on Sarrió's premises." (EC decision in *Carbonless paper* at para. 106) (Note: AWA was the largest carbonless paper producer in Europe.)

"The auditors of each producer certified the total sales of pipes during the year, and the certificates were then exchanged among the cartel participants." (EC decision in *Pre-insulated pipe* at para. 33)

57. See Stocking and Watkins (1991, pp. 183, 190) on the steel cartel's use of a "common fund." See Stocking and Watkins (1991, pp. 232, 253, 264) on the Aluminum Alliance's use of "guarantee deposits" that were proportional to the members' sales quotas. See Stocking and Watkins (1991, p. 337) on the incandescent electric lamp cartel's payment of penalties guaranteed by the deposit of "indemnity funds" at a Swiss corporation. Finally, see *U.S. v. American Linseed Oil Co.*

58. As described in the EC decision in *Organic peroxides* at para. 92, AC-Treuhand "reimbursed the travel expenses of the participants, in order to avoid traces of these meetings in the companies' accounts." For more on the role of third-party facilitators, see the appendix to chapter 6.

receipts to your firm for reimbursement. Send them to the accounting/consulting firm. That firm will also issue special cell phones for us to use. We will frequently meet in Switzerland, but that will be fine because we will be creating a technical subcommittee of our trade association within the next few days that will be located close to our accounting/consulting firm. If ever asked, our Switzerland trips are to address the important issues on the agenda of that subcommittee. When we meet, no one should take notes. The accounting/consulting firm will keep track of everything.

Let me also note that a large number of cartels have functioned for years without being detected, all the time enjoying high profitability. It is natural to be nervous about what one observes in terms of prosecutions, and authorities boast of each one, but actual apprehensions and prosecutions of cartels are relatively small.<sup>59</sup>

But suppose we do get apprehended one day in the future. Then there will be lots of excitement and commotion, and we will be talking to lawyers frequently. However, in the end, after paying all fines, if we do things right for the next few years, we will be much further ahead financially than if we do not form a cartel now. You hear of triple damages, but the fact is that no one pays triple damages. At best, it is a threat, but it is never realized. Finally, you may be concerned about the threat of jail time. It is a remote possibility, but I think everyone in this room can endure the hardship of a minimum security facility for a brief period. In all honesty, each of us takes bigger risks in terms of potential prosecution with regard to other aspects of our business decisions such as environmental law, product liability, insider trading, or consumer fraud, to name a few. It is our job to walk up to the boundar-

59. As reported in *The New York Times*, "When Kuno Sommer, head of marketing in the vitamins and fine chemicals division of Roche, a key participant in the meetings on citric acid, was questioned by Federal agents in March 1997, he denied that there was any price-fixing in vitamins. Federal agents later discovered, according to the Government's settlement documents, that before the 1997 interview, Mr. Sommer had 'met separately with at least two other high-level Roche executives. At the end of those meetings, it was understood by the individual that if Sommer was asked about Roche's participation in a vitamins cartel, Sommer would lie and deny that such a cartel existed.' By that time, private antitrust lawyers had already begun their own investigation in hopes of winning a huge settlement. Among their findings was a memo Mr. Sommer had written in September 1993 that suggested a continuing price-fixing scheme. 'Good experience with citric acid,' Mr. Sommer wrote before a meeting with Archer executives. 'Next opportunity B<sub>2</sub>. We think it's worth that we explore all possibilities of cooperation. Let's explore cooperation product-by-product.'" ("Tearing Down The Façade of 'Vitamins Inc.'" *New York Times*, October 10, 1999).

ies of what is, and what is not, legal and discretely venture across the line if we think it is in the best interest of our shareholders. The cartel proposed here is just one such discrete venture.

We could also consider forming an export association to cover our communications. In the United States, if firms making a particular product can demonstrate that their export activities will have no bearing on U.S. commerce, then they can form into a legal cartel for the purposes of export. The firms in the export association can discuss and reach agreements about a whole range of issues, where these communications and agreements would be per se violations of the antitrust laws in the United States. Because their discussions and agreements are targeted at foreign countries, the activity is legal within the rules of U.S. export associations. What specifically can be discussed? Examples of activities that may be certified include joint establishment of export prices; exclusive agreements with domestic suppliers and/or foreign representatives; joint export marketing/selling arrangements among domestic competitors; allocation of export markets, territories, or customers; refusals to deal; exchanges of business information; and the joint licensing of technology.<sup>60</sup> Once an export association has been formed, then the members can talk about all of these issues with regard to any foreign country. It is a rather trivial matter for us to choose a single foreign country and designate it as meaning "United States." We will have, to a great extent, cover from antitrust laws through the export association in doing so. And law enforcement agencies would have a remarkably difficult time to learn that, say, "Costa Rica" meant United States for all of us.

• *Question 5:* We each have production facilities in different countries and regions of the world. Why don't we declare those regions as being the sole property of the cartel member who produces there and then divide up the rest of the world by market shares?

• *Answer 5:* With some other cartels this would make sense. It is often more difficult to monitor the activities of firms within their home countries because import/export data are not relevant. If the value to

60. See the website of the U.S. Department of Commerce's International Trade Administration for information on the Export Trade Certificate of Review: "The Export Trade Certificate of Review provides substantive federal antitrust protection and procedural benefits to U.S. firms interested in collaborating on export activities. By coordinating with one another under the legal protection of this program, U.S. firms can reduce their shipping costs, boost their negotiating power, fill large export orders, and develop long-term export business." (<http://trade.gov/mas/ian/etca/index.asp>, accessed October 7, 2011)

weight ratio of our product were low, and transport costs were a big issue, we might allocate home countries to domestic producers.<sup>61</sup> Also, home country allocations are a good way to threaten firms if you think that deviations might be likely.<sup>62</sup> Firms in many industries have good marketing and distribution in their home country, but these essential factors are less well developed for them in foreign countries. Attacking a firm on its home turf is certain to get its attention. In this industry, we have a high value to weight ratio, and we have relatively sophisticated marketing and distribution resources worldwide. Thus, a home country allocation does not seem appropriate. Although we will all do our best to respect home producer incumbency, we must not lose sight of the fact that our worldwide market share allocation is what really matters.

• *Question 6:* The market share allocations make me nervous. Can't we just agree on price increases and leave it at that? Then we do not have to exchange so much information, and we do not have to meet so often.

61. Choline chloride has a low value to weight ratio (see the EC decision in *Choline chloride* at para. 39), and cartel participants agreed to "allocate markets worldwide among the participating undertakings, including an agreement that the North American producers would withdraw from the European market." (EC decision in *Choline chloride* at para. 64).

"Furthermore, at least in 1991, Ajinomoto, Kyowa and Sewon agreed to the home-market principle, i.e., that the local producer should sell as much as possible in its own region." (EC decision in *Amino acids* at para. 211)

The EC decision in *Food flavour enhancers* at para. 65 describes "respecting each other's markets" as an aim of the cartel.

62. "The other participants said that if Sewon persisted in implementing its increase, then they would all increase their sales as well. Moreover, ADM threatened to increase its sales on the Korean market from 1000 t per year to 5000 t per year if Sewon persisted in raising its worldwide sales to 50,000 t. ADM also said that it could force the standard price of lysine down to USD 1,30/kg in order to force Sewon back to the negotiating table." (EC decision in *Amino acids* at para. 148)

"The multinational nature of the industrial gases groups is also important because, as has been shown in the analysis of the market structure in Part I section A.5(c) there is abundant information in the Commission's file that retaliation against competitors which 'steal' customers by undercutting prices is a normal feature in the industrial gases industry. There is also evidence that such retaliation is not necessarily confined to the Member State or region where the 'aggression' was committed. On the contrary, many undertakings consider such retaliation most effective if carried out on a broad basis, preferably on the home market of the 'aggressor' in question. Therefore, an undertaking in the industrial gases sector in the Netherlands which participated in the infringements and failed to respect the agreements depicted in this Decision risked retaliation not only in the Netherlands but in other Member States as well." (EC decision in *Industrial and medical gases* at para. 372)

• *Answer 6:* This will not work. Let's review some basic things. There is a demand curve for our product. It is relatively inelastic, but it still slopes downward. The demand curve does not sit still through time. It moves around, and it does so in a way that is hard to predict. At any point in time, we can set a price, or we can set a total quantity to produce by all of us, but we do not have the luxury of setting both. However, we can set a price and then whatever the corresponding quantity demanded turns out to be, now and over the next year, we can divide that among ourselves per a market share agreement. Note that we cannot set a price and then also set a fixed quantity to divide among us, unless someone has a crystal ball that will tell us market demand conditions over the entire next year.

Suppose that we only agree on a price. My firm wants to sell as much as it can at that price. So do each of your firms. That is bound to lead to price degradation. We have to do something beyond just talking about prices. We have to introduce something that we all perceive as fair but that will also address our natural incentives to chisel on our agreement. That is one of the beauties of the market share allocation. With good monitoring of one another, anyone who chisels on the market share agreement by trying to sell beyond their allotted share will confront a true-up in the near future where they are buying product from another firm at the cartel price. Our joint commitment must be to four things: the price we set, the market share agreement, the complete revelation of relevant information to one another, and the willingness to redistribute gains and losses should issues arise. This foursome will work. Without a market share agreement, we should all go home and return to business as usual, ruinous noncollusive competition among ourselves.

• *Question 7:* Do we need to use the accountant/consultant? I do not want there to be yet someone else involved with this. Can't we do this business entirely among ourselves?

• *Answer 7:* It can be done without the services of the accounting/consulting firm. But that would be a poor choice. If we insist on that, then a couple things must be kept in mind. First, we will be leaving a paper trail as we meet to discuss cartel business. Everyone will need to do what they can to reduce that paper trail.<sup>63</sup> Shred documents as

63. "For this period, price, discount and volume agreements were always concluded orally, either during meetings or by phone. After instructions had been passed on, written notes were destroyed. If anyone sent notes to one of the participants, this person was reminded by phone to destroy the paper." (EC decision in *Copper plumbing tubes* at para. 129)

soon as possible. Keep notes to a minimum. Second, one of us will need to take on the role of being the central collector and depository of information. That firm will be incurring some extra expenses, so we will need to think about providing that firm with payments that otherwise would have gone to the accounting/consulting firm.

• *Question 8:* What about a competitive fringe? When we raise prices, we are potentially going to see some effort by others to enter our industry.

• *Answer 8:* Our market share agreement will apply to the relative shares among the cartel members. If the competitive fringe is small, we can live and let live. If the competitive fringe grows large, we will figure it out as we go. One possibility is to preemptively buy out the competition.<sup>64</sup> If we anticipate growth of the competitive fringe, we can take steps to encumber that growth.<sup>65</sup>

We need to think about potential entry as we consider our price increases. We may all agree that we can increase price by some amount, say 20 percent, but if that increase induces substantial entry into our industry, then we have probably pushed the price increase too hard. We will revisit this issue regularly.

• *Question 9:* Isn't the price announcement strategy, which involves the public announcement of identical price increases, going to catch the eye of law enforcement?

• *Answer 9:* Public law enforcement can only detect a cartel if one of us admits to being in a cartel and presents the law enforcement authorities with condemning documents. There is no industrial equivalent of the NYSE's Stock Watch program, which looks for insider and other illegal trading. The DoJ, FTC, and EC have no resources to monitor price announcements, capacity utilization, market shares, or anything else over a broad range of industries.

Furthermore, we will always prepare for questions from law enforcement authorities at our cartel meetings. We can defeat any investigation into our pricing conduct by the competition authorities by invoking the defense of oligopolistic interdependence and citing "justifications" for

64. The EC decision in *Organic peroxides* at para. 353 describes one principle aspect of the cartel as "the co-ordinated acquisition of competing companies which were not part of the agreement."

65. The EC decision in *Graphite electrodes* at para. 110 describes one aspect of the cartel as "limiting the transfer of technology outside the cartel."

price increases, where the “justifications” have been discussed and agreed upon at our last cartel meeting. We will have our story straight before we are asked, in anticipation of being asked.<sup>66</sup>

• *Question 10:* Do we need market leaders for the various regional and national markets?

• *Answer 10:* It depends. Assigning a cartel leader for individual customers can make sense if the customers are large.<sup>67</sup> We may consider this in the future.

• *Question 11:* In reviewing some of the U.S. Department of Justice and European Commission decisions regarding cartels, it seems clear that there is no one set formula for running a cartel. *Cartonboard* and *Food flavour enhancers* had some noticeably different components to their cartel mechanisms than what is being proposed for us. Why are these components not relevant for us?

• *Answer 11:* We will draw upon the experiences of all cartels. The accounting/consulting firm will be a big help in that regard. They have assisted numerous cartels in many industries. Their knowledge about what works, and what does not work, far exceeds the highly censored and incomplete information in U.S. Department of Justice and European Commission decisions.

You mentioned *Cartonboard*. That is a 24/7 production process where firms are either producing full-out or nothing. That production process has a big impact on the implementation of a collusive agreement. A supply restriction can only be implemented by shutting down production facilities. This is a highly visible and lumpy way to restrict supply. In *Cartonboard*, once the supply restriction had been in place, much less monitoring of production was required because firms just returned to 24/7 production. Our production process is not 24/7. We have much greater flexibility in terms of weekly capacity utilization. As a consequence, monitoring of one another is much more important for us.

66. The EC decision in *Cartonboard* at para. 73 describes how cartel members believed they could use oligopolistic interdependence as a defense for certain of their actions. For the text of this paragraph, see chapter 4.3.

Recent research by Marshall, Marx, and Raiff (2008) identifies differences between noncooperative and collusive price leadership.

67. On the assignment of market leaders or account leaders, see the EC decisions in *Industrial tubes* at para. 195, *Copper plumbing tubes* at para. 449, and *Electrical and mechanical carbon and graphite products* at para. 219.

You also mentioned *Food flavour enhancers*. That cartel confronted a small number of very large purchasers. The central cartel problem was how to construct credible and stable ways to avert cheating by cartel members. In that case, undercutting the cartel and winning a contract from a firm that purchased 25 percent of total output would be difficult to correct after the fact. Even our largest buyer is relatively much smaller, and they purchase frequently. We have to be concerned about the temptation to cheat, but the payoff is small relative to what it was in *Food flavour enhancers*. Therefore, the counterpurchasing agreements that occurred in *Food flavour enhancers* are something that we will probably not do except perhaps for our largest customer, although the accounting/consulting firm understands when and how to do them, and they may recommend that we consider them at some future date.

• *Question 12:* If we are criminally prosecuted, what will the economic experts be looking for with regard to establishing civil damages?

• *Answer 12:* They will likely be looking for a benchmark period where they can be fairly certain we were not colluding. They will use the benchmark period to create a but-for prediction of prices during the period in which we admit collusion. There are two aspects of this that we will use to our advantage should we get to that point.

First, the public authorities want big criminal fines. But, to get us to agree to big criminal fines, we will want to specify a number of things such as the period of the collusion, the buyers who were affected, the product scope of our agreement, and perhaps the geographies where the cartel operated. The public authorities will likely yield to our requests with regard to the latter components of a plea agreement because they want the big criminal fines, but these latter components will be structured in a maximally disadvantageous way for civil plaintiffs so that, in aggregate, what we pay in criminal and civil fines will be much lower.<sup>68</sup>

68. “Canada added that in its experience in negotiations of plea agreements and fines the competition authority might be willing to narrow the scope of the guilty plea in light of possible subsequent civil action, and might seek a relatively higher fine to compensate for the reduced charge to ensure that the fine was adequate in light of the volume of affected commerce. In the consent agreement the level of the fine might appear distorted because the trade off struck between lesser charge and higher fine might not be apparent to the outside observer.” (Organisation for Economic Co-operation and Development, Working Party No. 3 on Co-operation and Enforcement, October 13, 2006, “Private Remedies: Class Action / Collective Action, Interface Between Private and Public Enforcement,” DAF/COMP/WP3/M(2006)2/ANN3 at para. 45)

Second, we need to purge from our records all information that would allow a reasonable estimate of a but-for price from a benchmark period. All older transaction data needs to be discarded, or transferred to our accountant/consultant, who can archive it should you need it for some purpose in the future. You will not be able to access that data without going to the firm's Swiss location and working there.

### 3 Narrative of a Bidding Ring

#### 3.1 Preamble

This chapter deals with collusion at auctions by bidding rings. Bid rigging is a violation of the Sherman Act for both auctions and procurements. A large amount of bidding in the United States occurs at auctions, especially ascending-bid auctions.<sup>1</sup> For example, tobacco, timber, art, antiques, the assets of many bankrupt firms, and numerous other commodities are sold via ascending-bid auctions.<sup>2</sup>

In this chapter, we provide a fictional account of a bidding ring operating at an ascending-bid auction. Footnotes indicate similarities between our story and known bidding cartels, including stamps,<sup>3</sup> antiques,<sup>4</sup> machinery,<sup>5</sup> and real estate.<sup>6</sup>

In the previous chapter, we focused on cartels. In order for an industrial cartel, such as the vitamins cartel, to implement a collusive scheme,

1. First-price sealed-bid auctions and procurements account for a significant amount of economic activity as well. Bidder collusion is common at these. In chapter 1, we provide an example of collusion at a first-price sealed-bid auction. Compared to first-price sealed-bid collusive mechanisms, mechanisms for collusion by bidders at ascending-bid auctions provide a better vehicle for explaining how bidders accomplish the suppression of competition.

2. Theoretical results for ascending-bid auctions also apply to procurements conducted via "reverse auctions," where the bids decline until there is only one supplier willing to provide the good at the indicated price.

3. *NY et al. v. Feldman et al.*, 210 F. Supp.2d 294 (S.D.N.Y. 2002) (hereafter, *NY v. Feldman*).

4. *U.S. v. Ronald Pook*, No. 87-274, 1988 U.S. Dist. LEXIS 3398 (E.D. Pa. April 18, 1988) (hereafter *U.S. v. Ronald Pook*).

5. *U.S. v. Seville Industrial Machinery Corp.*, 696 F. Supp. 986 (D.N.J. 1988) (hereafter *U.S. v. Seville Industrial Machinery*).

6. *District of Columbia, ex rel. John Payton, Corporation Counsel v. George Basiliko, et al.*, No. 91-2518, 1992 U.S. Dist. LEXIS 1260 (D.C. February 10, 1992) (hereafter *District of Columbia v. George Basiliko*).