

Use of Economic Analysis in Price-fixing Cases

Prepared by Richard Shin

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Cartels

- Agreements to restrain competition among themselves in order to attempt to act like a monopoly
- Reason for cartels
 - ◆ To earn higher profits—monopoly profits—usually achieved through lower outputs and higher prices

Economic Theory

■ Cartel Problem or Prisoners' Dilemma

		Firm B	
		Collude	Cheat
Firm A	Collude	50,50	30,60
	Cheat	60,30	40,40

Examples of Cartels

- An agreement on quantity of production
- An agreement on prices
- An agreement on a pricing formula
- An agreement to eliminate discounts
- An agreement to credit terms to customers
- An agreement not to reduce prices without notifying other cartel members

Examples of Cartels 2

- An agreement to buy up excess products offered at low prices
- An agreement to appoint a single sales agency to handle all sales of cartel members
- An agreement to allocate customers among cartel members
- An agreement to allocate territories among cartel members
- An agreement to redistribute profits after the fact

Cartels are *per se* illegal in the U.S.

- Clearly harmful
- No significant benefits
- Criminal prosecution in the U.S

Different Stages of Price-fixing (cartel) Cases

- Determining liability and conspiracy period
 - ◆ Little or no economic analysis
 - ◆ Discussion of likely conditions for cartels
 - ◆ Conspiracy period puts a bound
- Measuring the volume of commerce affected by the conspiracy and assessing fines
- Measuring damages to injured parties
 - ◆ Mostly econometric or data analysis
 - ◆ More detailed analysis of damages to individual claimants

Determining Liability and the Conspiracy Period

- Mostly done by wiretapping, internal documents, and insider information
- Newer economic analysis on conspiracy period
 - ◆ Empirical analysis of conjectural variation models under monopoly, duopoly, oligopoly or competition
 - ◆ Not been used in court
 - ◆ Helpful in determining conspiracy period
 - ◆ Various theories of oligopoly behavior

Conditions Conducive to Feasible Conspiracy Agreement

- Homogeneous or commodity product
- Small number of producers
- Similarity among producers (costs, product mix, etc.)
- Inelastic demand—no close substitutes
- Barriers to entry
- Available mechanism for detection and penalties

Sophisticated Price-fixing in Highly Differentiated Market

- Vitamins case
 - ◆ 2 companies punish Japanese and Chinese producers by predatory pricing
 - ◆ Reported sales to calculate market shares
 - ◆ Make violators buy back quantities equal to unsold shares of rivals at the existing prices
- Look for Joint ventures as the first sign

Measuring the Volume of Commerce and Assessing Fines

- Determine Volume of Commerce
- Determine Culpability Score based on Sentencing guidelines
- Determine minimum and maximum multipliers
- Recommend a fine level considering seriousness of offense, profitability of the conspiracy, deterrence effect, etc.

Mitsubishi is fined \$134 million in Graphite electrodes case

- Convicted February 2001 of price-fixing and allocation of sales—aiding and abetting of price-fixing conspiracies
 - ◆ Mitsubishi did not own graphite electrode manufacturing but bought 50% of UCAR International's stock
 - ◆ Mitsubishi was a trading house for several Japanese manufacturers
 - ◆ Mitsubishi encouraged UCAR to fix prices and facilitated cartel meetings
- USDOJ is serious about bring cases under the aiding and abetting statute

Graphite Electrodes -- U.S. v. Mitsubishi

Base fine	
50% of affected sales of UCAR	\$168,150,000
Mitsubishi's sales of graphite electrodes	\$7,300,000
Volume of Affected Commerce	<u>\$175,450,000</u>
Base Fine (20% of volume of affected commerce)	\$35,090,000
Culpability Score. [U.S.S.G. §§ 8C2.5 and 8C2.6]	
Base level [§8C2.5(a)]	5
200+ employees and high-level personnel involved [§8C2.5(b)]	3
Prior criminal history [§8C2.5(c)]	2
No effective program to prevent and detect violations [§8C2.5(f)]	0
No acceptance of responsibility [§8C2.5(g)]	0
Total Culpability Score	10
Minimum and Maximum Multipliers [§8C2.6]	2.0 - 4.0
Guidelines Fine Range [§8C2.7]	\$70,180,000 - \$140,360,000
[base fine x multipliers]	
Fine Imposed	\$134,000,000

Other Major Fines

- 33 fines are above \$10 million
- 27 of these are foreign corporations

Fiscal Year	Fine
1987-1996	\$29,000,000 per year
1997	\$205,000,000
1998	\$265,000,000
1999	\$1,100,000,000
2000	\$150,000,000

ANTITRUST DIVISION
Sherman Act Violations Yielding a Fine of \$10 Million or More

Defendant (FY)	Product	Fine (\$ Millions)	Geographic Scope	Country
F. Hoffmann-La Roche, Ltd. (1999)	Vitamins	\$500	International	Switzerland
BASF AG (1999)	Vitamins	\$225	International	Germany
SGL Carbon AG (1999)	Graphite Electrodes	\$135	International	Germany
Mitsubishi Corp. (2001)	Graphite Electrodes	\$134	International	Japan
UCAR International, Inc. (1998)	Graphite Electrodes	\$110	International	U.S.
Archer Daniels Midland Co. (1997)	Lysine & Citric Acid	\$100	International	U.S.
Takeda Chemical Industries, Ltd. (1999)	Vitamins	\$72	International	Japan
Bilhar International Establishment (2002)	Construction	\$54	International	Liechtenstein
Daicel Chemical Industries, Ltd. (2000)	Sorbates	\$53	International	Japan
ABB Middle East & Africa Participations AG (2001)	Construction	\$53	International	Switzerland
Haarmann & Reimer Corp. (1997)	Citric Acid	\$50	International	German Parent
HeereMac v.o.f. (1998)	Marine Construction	\$49	International	Netherlands
Sotheby's Holdings Inc. (2001)	Fine Arts Auctions	\$45	International	U.S.
Eisai Co., Ltd. (1999)	Vitamins	\$40	International	Japan
Hoechst AG (1999)	Sorbates	\$36	International	Germany
Showa Denko Carbon, Inc. (1998)	Graphite Electrodes	\$32.5	International	Japan
Philipp Holzmann AG (2000)	Construction	\$30	International	Germany

ANTITRUST DIVISION
Sherman Act Violations Yielding a Fine of \$10 Million or More

Defendant (FY)	Product	Fine (\$ Millions)	Geographic Scope	Country
Daiichi Pharmaceutical Co., Ltd. (1999)	Vitamins	\$25	International	Japan
Nippon Gohsei (1999)	Sorbates	\$21	International	Japan
Pfizer Inc. (1999)	Maltol/Sodium Erythorbate	\$20	International	U.S.
Fujisawa Pharmaceuticals Co. (1998)	Sodium Gluconate	\$20	International	Japan
Dockwise N.V. (1998)	Marine Transportation	\$15	International	Belgium
Dyno Nobel (1996)	Explosives	\$15	Domestic	Norwegian Parent
F. Hoffmann-La Roche, Ltd. (1997)	Citric Acid	\$14	International	Switzerland
Merck KgaA (2000)	Vitamins	\$14	International	Germany
Degussa-Huls AG (2000)	Vitamins	\$13	International	Germany
Akzo Nobel Chemicals, BV (2001)	Monochloroacetic Acid	\$12	International	Netherlands
Ueno Fine Chemicals Industry, Ltd. (2001)	Sorbates	\$11	International	Japan
Eastman Chemical Co. (1998)	Sorbates	\$11	International	U.S.
Jungbunzlauer International AG (1997)	Citric Acid	\$11	International	Switzerland
Lonza AG (1998)	Vitamins	\$10.5	International	Switzerland
Akzo Nobel Chemicals, BV & Glucona,	Sodium Gluconate	\$10	International	Netherlands

International Vitamin Cartel

- **Conspiracy Period: 1/1990 to 2/1999**
- **Hoffmann-La Roche**
 - ◆ **Criminal Fine: \$500 million**
- **BASF**
 - ◆ **Criminal Fine: \$225 million**
- **Rhone-Poulenc**
 - ◆ **No Criminal Prosecution**

Measuring Damages

- Calculating the “butfor” prices and output levels
 - ◆ What would have been the price if the price-fixing conspiracy had not taken place during the conspiracy period?
- Using Pricing pattern over time including the conspiracy period

Reasons for Price Changes other than a Price-Fixing Agreement

- Changes in demand conditions
- Changes in supply conditions
 - ◆ Changes in costs
- Changes in industry structure
- Changes in regulatory structure

Use of Capacity/Utilization

- Restrict supply by taking plants offline
- Typically, withhold capacity that would have been built
 - ◆ E.g., industrial silicon—competitors were paid not to put a plant on line
- Capital intensive or some bottleneck
 - ◆ Purchase of tobacco is the bottleneck
 - ◆ Auctioning process allows only a few bidders, but is sanctioned by government

Estimating the “Butfor” Price

- Price may vary widely depending on the method chosen
- Forecast approach
 - ◆ Estimate a price equation outside the conspiracy period and apply to the conspiracy period
- Dummy Variable approach
 - ◆ Use dummy variable to identify difference between prices during conspiracy period and prices during nonconspiracy periods

Estimating the “Butfor” Price

- Counterfactual estimation of prices
 - ◆ Examining similarly situated business conditions
 - ◆ Use of margin analysis—calculate margins for some period before the conspiracy and apply it to the conspiracy period
 - ◆ Only accounts for the cost side but not the demand side

Complications 1

■ Lingering effect

- ◆ Even if the conspiracy is over, price may remain high for some time period
- ◆ This period depends on the market adjustment process
 - ◆ E.g., large number of firms with excess capacity—shorter adjustment period
- ◆ How to determine the lingering effect period?

Complications 2

- Monopolist in the market
 - ◆ Agreement may have kept participants out of each other's market or maintain status quo
- Checking for robustness of the results
 - ◆ May need to reinforce the model with depositions, business records, letters, product shipment data
 - ◆ Find out what people are saying what they were doing from customers and suppliers
- Role of imports in the market

Punishment Should Fit the Crime

- Use of economic/econometric analysis ensure more accurate assessment of damages