

Cartel Bargaining & Monitoring: The Role of Information Sharing

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The Pros and Cons of Information Sharing
Seminar sponsored by the Swedish Competition Authority
10 November 2006

AGENDA

- **Contemporary International Cartels**
 - **“Determinants of International Cartel Duration and the Role of Organization”**
- **A Closer Look at Organization**
 - **How do cartels structure communication in order to facilitate bargaining and monitoring?**

Determinants of International Cartel Duration

- **Cartel:** Formal association of firms that explicitly agree to coordinate price or output
- **International cartels have producers from more than one country**
 - These cartels are international in *membership*; they may or may not have a global reach
 - Excludes purely domestic cartels
 - Excludes associations of countries (e.g., OPEC)

International Cartel Data Set

- Sample Selection: International cartels existing in 1990 or later convicted by U.S. Department of Justice or European Commission
- 81 cartels, primarily sophisticated manufactured goods and services
 - For 72 of these cartels we collect cartel and market characteristics
- Cartel activity dates from 1971 to 2002

Some Cartels in Our Sample

INDUSTRY	DURATION	INDUSTRY	DURATION
Aluminum Phosphide	1 (years)	Paper, Carbonless	3
Bromine	3	Plastic Dinnerware	1
Cable-stayed Bridges	1	Polyester Staple	3
Carbon Cathode Block	2	Rubber Chemicals	7
Cartonboard	5	Shipping, Cent. W. African	21
Cement	11	Sodium Erythorbate	3
Citric Acid	4	Sodium Gluconate	9
Explosives	5	Sorbates	17
Ferrosilicon	2	Stamp Auctions	22
Fine Arts	6	Stainless Steel	1
Graphite Electrodes	5	Steel Beam	6
Graphite, Isostatic	9	Steel Heating Pipe	4
Laminated Plastic Tubes	9	Steel Tube, Seamless	5
Lysine	3	Tampico Fiber	5
Memory Chips	4	Thermal Fax Paper	1
Methionine	11	Vitamin A	11
Methylglucamine	10	Vitamin C	5
Organic Peroxides	29	Zinc Phosphate	4

- Mean = 7.5 years (std dev 5.4); Median = 6 years

Cartel and Industry Structure

- **Number of Cartel Member Firms**
 - **Mean = 6.7**
 - **Median = 5**
 - **83% had less than 10 members**
- **Industry 4-firm Concentration Ratio**
 - **Average = 79% (sub-sample of 48 cartels)**
 - **17 cartels had C4 over 90%**

Cartels Face Three Key Challenges

- Cartels must
 - *coordinate* on a collusive price and output allocation
 - *enforce* that collusive price and output allocation
 - *prevent* entry from outsiders and growth from non-member insiders
- Cartels break apart because of entry or external shocks, which undermine coordination or enforcement efforts
 - Cartels develop *shock absorbers*

Role of Cartel Organization

- Hypothesis: *Sophisticated internal cartel organization increases cartel duration*
- **Cartels develop monitoring and enforcement mechanisms to prevent and punish defection without expensive punishments such as price wars**

Cartel Organization

Eleven Characteristics

- **Market or customer allocation (81% within sample)**
- **Monitoring of output and pricing (72%)**
- **Agreeing to other terms & conditions of sale (47%)**
- **Standardization of products (6%)**
- **Control of distribution (14%)**
- **Trade association participation (29%)**
- **Bid rigging (22%)**
- **Compensation scheme for exceeding cartel quotas (28%)**
- **Disciplinary actions for cartel violations (13%)**
- **Exclusionary actions to limit entry (26%)**
- **Hierarchical internal structure (39%)**
- *Mean of 11-point organizational index = 3.8*

Empirical Results

Proportional Hazards Model

- Significantly *increased* probability of cartel breakup:
 - Negative economic shocks
 - More than 5 cartel members (controlling for industry concentration)
- Significantly *decreased* probability of cartel breakup:
 - Market allocation and combined organizational index
- Other variables such as exchange rate shocks, measures of financial distress and sector dummies (e.g., chemicals, metals) were not significant

Four Functions of Cartel Communication

- **Reduce strategic uncertainty (cheap talk)**
- **Send signals (some costly, others less so)**
- **Monitor**
 - **Cheap talk and signaling intended to influence collusive terms**
 - **Most cartel information sharing is to monitor**
 - » **Regular, systematic communication is for monitoring**
- **Build trust**

Cartel Communication

Evidence

- **Examination of the qualitative content of organizational index for a sub-sample:**
 - **41 international cartels**
 - **All fined by the European Commission**

Hierarchy & Communication

- **Top executives met 2-3 times per year**
- **Lower level executives met about twice as often**
 - » **Carbon Products**
 - **Summit and Technical meetings**
 - » **Copper Tubes**
 - **Elephants and Sweepers**
 - » **Methionine**
 - **Summit and Staff meetings**
 - » **Organic Peroxides**
 - **Summit and Organizational meetings**
 - » **Steel Heating Pipes**
 - **Popes and Sales**
 - » **Vitamins**
 - **4 levels, with regional and hierarchical structure**

Hierarchy & Communication

- **Two functions of higher level meetings**
 - » **Negotiating terms of agreement**
 - » **Building trust among cartel members**
- **Lower level meetings to implement agreement and monitor compliance**
- **Hierarchical cartel structure allows for high-level information exchange and bargaining to be separated from more micro-level implementation details**

Hierarchy & Communication

Higher Level Meetings

- **Bargaining over terms**
- **Initial terms of agreement: prices and output levels (sometimes also market shares and large customers)**
- **Negotiations often expand to address possibility of cheating in non-price dimensions**
 - **Creates a quasi-judicial framework in which participants enforce and complete the cartel contract**
 - » **Genesove & Mullin (2001): sugar**
 - **Limits detrimental effects of semi-collusion**

Hierarchy & Communication

Higher Level Meetings

- **High-level communication also serves more subtle role of fostering trust**
 - **Cement cartel: “The role of the meetings is to provide the formal structure around which such relationships may blossom.”**
- **Other case studies**
 - **Spar (1994): diamonds**
 - **Baker (1989): steel**

Monitoring

- **More *systematic* information sharing occurs at lower-level meetings**
 - **Monitor agreed-upon terms**
 - **Deter cheating (enforce agreement)**
- **Majority of 41 cartels systematically exchanged information on sales volumes**

Monitoring

Frequency

- **Depends on industry: could be monthly, quarterly, or bi-annually**
- **Example of U.S. electrical equipment conspiracy**
 - **“phases of the moon” rule for small electrical components versus direct communication for turbine generators**

Monitoring

Frequency

- **Supposition (Compte 1998): increases in the frequency of information revelation may aid cheating more than monitoring**
- **Cartels endogenize the timing of both monitoring and punishing**
 - **Cartels increase *both* the frequency of information sharing *and* frequency of possible retaliation**
 - » **In between systematic information sharing and retaliation there is an important intervening *conversation***
 - » **Cartel participants avoid price war punishments because they are expensive and undermine trust**

Monitoring *Third Parties*

- **Why turn to third parties?**
 - **Trust**
 - **Verification**
 - **Aggregation**

Monitoring *Third Parties*

Can Take Many Forms

- **Retired executive**
- **Fides/AC Treuhand**
 - **Cartonboard:** data collected and forwarded to Fides, aggregate data sent by Fides to firms
 - **MCAA:** same system; cartel members met with Treuhand representative twice per year
 - **Organic Peroxides:** Treuhand organized meetings, collected and monitored data, acted as arbitrator...and was fined by EC

Monitoring *Third Parties*

Can Take Many Forms

- **Trade Association**
 - **11 cartels of 41 had active TA involvement**
 - **8 cartels used TA meetings as cover**
 - **In steel beams and cartonboard cartels, TA eventually withdrew from its involvement in early 1990s**
 - *How does this compare to U.S.?*

Trade Associations in U.S.

- **1880s and 1890s: railroads**
- **1918: Webb Pomerene Export Trade Act**
- **1920s: Federal Trade Commission**
- **1930s: National Industrial Recovery Act**
- **Post-World War II**
 - **Rare to see U.S. trade associations directly involved in price-fixing conspiracy**
 - **DOJ provides Business Review Letters**

Trade Associations in EU

- **Guidelines have become clearer since early 1990s**
- **Trade associations know that they are in the spotlight**
- **On the right path, but expect it will take some years before culture changes**
- **Professionalization of trade associations helps**
 - **In U.S. identity of association distinct from member firms**
 - **In Europe it is still the case that key roles in association rotate among high-level executives**

Concluding Remarks

- **Cartels use numerous channels of communication**
 - **Varying levels of structure and formality**
 - **Both informal and systematic**
- **They do this despite the risk**
 - **Information exchange required to reduce uncertainty and build trust**
- **What can we infer about the role of communication in facilitating tacit collusion?**
 - **Vast array of types of communication and regular frequency suggest that inability to communicate may be significant impediment to collusion**