

Economic Analysis and the Fight Against Cartels: Developing an Effective Screening Program

Joe Harrington (Johns Hopkins University)

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Introduction

Stages in the fight against cartels

- **Detection** of suspected cartels
- **Prosecution** of cartels
- **Penalization** of convicted cartels
- **Evaluation** of enforcement policies
 - More cartel convictions, more leniency application do not necessarily imply fewer cartels.
 - Is the policy reducing the frequency and extent of cartels in the economy?

Introduction

- Stages in the detection of a cartel
 - ① Screening - identifying markets that are likely to have a cartel.
 - ② Verification - systematically distinguishing between collusion and competition.
- *Economic screening* uses market data to identify markets likely to have a cartel.
 - Structural screening
 - Behavioral screening

Introduction

- *Structural screening* identifies markets that have traits conducive to collusion.
- Factors include:
 - fewer firms
 - more homogeneous products
 - less volatile demand
 - more excess capacity
- Weakness: Structural screening produces too many false positives
 - The "ideal" market for collusion - two firms, homogeneous products, stable demand, etc. - is likely not to have a cartel.
 - There are many omitted factors that influence whether a cartel forms.

Introduction

- *Behavioral screening* identifies collusive patterns in firm conduct and outcomes (prices, sales, etc.)
- Screening of other forms of illegal activity
 - tax evasion (too many deductions given income, etc.)
 - insider trading (excessive trading volume prior to release of information)
 - credit card fraud (anomalous spending patterns).
- Comparison of screening methods
 - Structural screening identifies markets for which *a cartel is likely to form*.
 - Behavioral screening identifies markets for which *a cartel has formed*.

Introduction

Overview of Behavioral Screening

- Behavioral screening requires
 - data to analyze
 - knowing what to look for in the data
- What to look for?
 - Structural break - significant change in the pattern of prices and market shares.
 - Collusive marker - behavioral pattern which is more likely to arise when firms are colluding than when they are competing.

Screening Methods

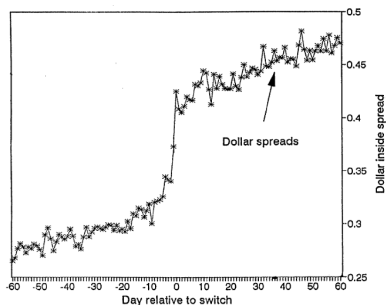
Searching for a Structural Break

- Collusion necessarily entails a change in the data-generating process for price (and often market shares).
- Change can come from
 - cartel birth or death
 - adoption of facilitating practices that make collusion more effective
- Search for changes in
 - average price
 - variance of price and market share
 - relationship among firms' prices.

Screening Methods

Searching for a Structural Break

- Market: Nasdaq (buying and selling of securities) (Christie and Schultz, 1999)
- Firms are market-makers who buy and sell shares.
- Price-cost margin is, approximately, the bid-ask spread.



- Firms paid damages of US\$1 billion (10% bounty = \$100 million!)

Screening Methods

Searching for a Structural Break

- Event: Creation of a trade association
 - Trade associations have been used as a cover for cartel meetings.
 - Amino Acid Manufacturers International Association was formed by members of the lysine cartel.
- Tests: Around the time of the creation of the association,
 - is there a change in the relationship among firms' prices?
 - are average prices higher?
- Procurement auctions for road repair
 - Firms formed the Asphalt Refiners Association.
 - Oklahoma Highway Department soon started receiving identical bids.

Screening Methods

Searching for Collusive Markers

- Cartel leaves a trail of clues
 - Successful collusion requires the cartel to solve a set of problems.
 - Collusive markers emerge from how cartels solve these problems.
- Maintaining internal stability - all cartel members need to find it optimal to comply with the collusive agreement.
 - monitoring compliance - fewer prices
 - punishing non-compliance - inter-firm sales, periodic price wars
 - distributing the gains from collusion - stable market shares, refusal to bid, bid rotation
- Avoiding detection
 - Limited communication among cartel members - less frequent price changes, more periodic price changes
 - Vitamins: cartel produced more regular price changes

Screening Methods

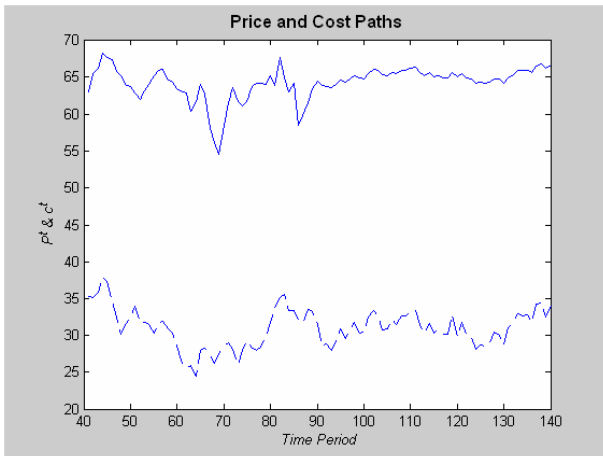
Searching for Collusive Markers

- Simulated model of cartel formation and pricing.
- Cartel endogenously forms when it is profitable.
- Price changes over time due to
 - changes in cost
 - changes in intensity of competition (competition vs. tacit collusion)
 - cartel formation.

Screening Methods

Searching for Collusive Markers

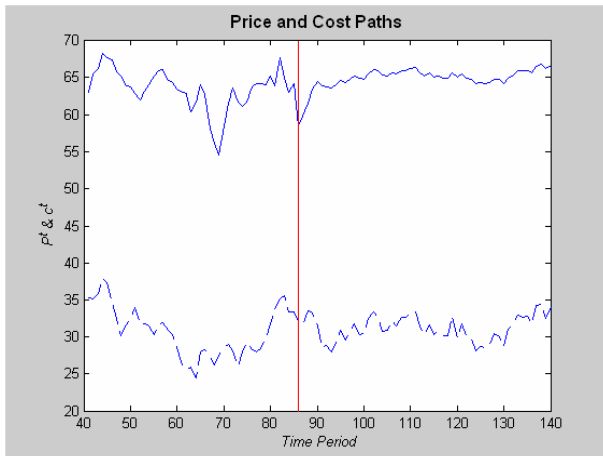
Where is the cartel in this price series?



Screening Methods

Searching for Collusive Markers

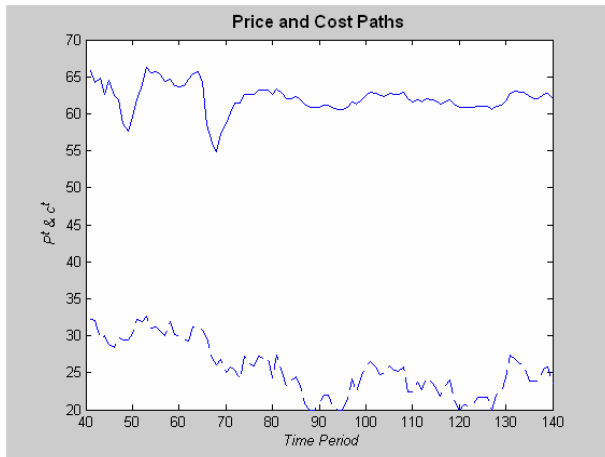
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Screening Methods

Searching for Collusive Markers

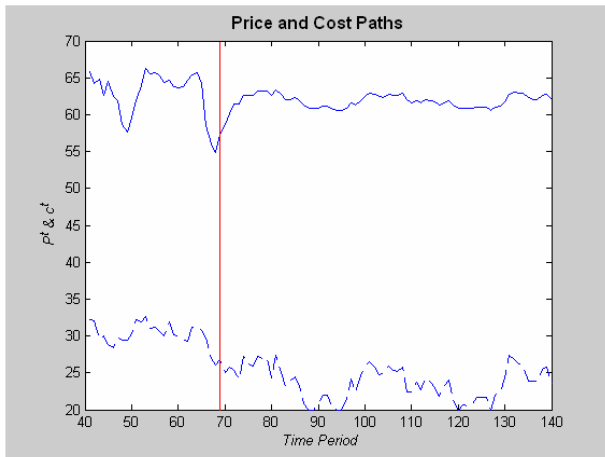
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Screening Methods

Searching for Collusive Markers

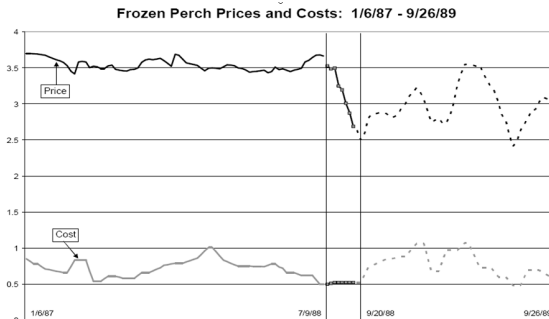
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Screening Methods

Searching for Collusive Markers

Collusive Marker: Low price variance



← — Collusion — → ← — Competition — →

Frozen perch cartel (Abrantes-Metz et al, 2005)

Screening Public Procurement Auctions

Why Focus on Public Procurement Auctions?

- Public procurement auctions encompass 45-65% of government expenditure and 13-17% of GDP (International Institute of Sustainable Development, 2008).
- Bidding rings have been commonly observed at procurement auctions.
- Data is available.
- There exists a set of empirical methods for identifying collusion at procurement auctions.

Screening Public Procurement Auctions

Screening Methods

Collusive Marker: Bids respond to cost and demand factors in a manner contrary to the theory of competition.

Case: Procurement auctions for the supply of milk to a school district (Porter and Zona, 1999)

- Result: Bids for some bidders were *decreasing* in the distance between the bidder's processing plant and the school district.
- Contrary to the theory of competition: Price is decreasing in cost.
- Consistent with a theory of collusion:
 - In markets for which they had the nearest plants, cartel members colluded and set high bids.
 - In markets for which non-cartel members had the nearest plants, cartel members competed and set low bids.

Screening Public Procurement Auctions

Screening Methods

Collusive Marker: Lowest bid behaves differently than the non-lowest bids.

- Distinct forces determining the lowest bid and non-lowest bids
 - Designated cartel member's bid is designed to maximize expected profit (compete with non-cartel members' bids)
 - Other cartel members' bids are designed to avoid winning and avoid creating suspicions.
- Case: Procurement auctions for highway construction contracts (Porter and Zona, 1993)
 - Estimated how a bid depended on cost factors (such as capacity and distance).
 - Result: Lowest bid responded to these factors differently than non-lowest bids.

Some Questions about Screening

Can firms manipulate a screening test?

- Some tests can be fully manipulated but a cartel must be smart enough.
- Some tests can be partly manipulated but only at a cost to the cartel.
 - A cartel can reduce the power of the test but only by reducing cartel profit, making their behavior look more competitive.
 - Manipulation will reduce, but not eliminate, the power of such tests.

Some Questions about Screening

Why engage in screening when there is a leniency program?

- Leniency programs and screening are complements, not substitutes.
- *Screening enhances the efficacy of a leniency program:* The more likely a cartel member believes it'll be caught, the more likely it is to apply for amnesty.
- *A leniency program enhances the efficacy of screening:* If a competition authority discovers a suspected cartel, those suspicions might induce a firm to apply for amnesty.

Concluding Remarks

- Screening for cartels is a promising tool to shut down cartels and deter cartel formation.
- Focus behavioral screening on
 - markets with structural characteristics conducive to collusion (structural screening)
 - markets for which collusion has been previously observed
 - public procurement auctions.
- Screening is not intended to deliver evidence to convict colluders, but rather to
 - identify markets worthy of investigation
 - induce cartel members to come forward under a leniency program
 - deter cartels from forming.