



# **Better Antitrust Enforcement Against Cartels: What Can We Learn from Economic Research**

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# Introduction

## *The Focus on Communication in Enforcement*

- **Traditional Theory**
- **What have we learned about the role of communication?**

## *Giving Incentives not to Collude*

- **Detection (what to detect and how?), Conviction, Fines and Punishments**
- **Leniency and its success**
- **Using Economic Analysis for Detection and/or Conviction**

## *Fines: Is there over or under-deterrence*

# Theory: The Standard Collusion Model

The Incentive Condition:

$$(p^c - \varepsilon - c)D(p^c - \varepsilon) - \frac{1}{2}(p^c - c)D(p^c) \leq \delta[\bar{V} - \underline{V}]$$

Benefit from undercutting  
by one unit

Loss from switching  
to a worse equilibrium  
in the future

- “It is an equilibrium! No communication is necessary to sustain it!”
- Danger of collusion measured by how difficult it is to satisfy the constraint
- No distinction between Explicit and Tacit Collusion

# Enforcement: A Focus on Communication

*Evidence about communication between firms*

*Usually evidence about an agreement with at least three parties corroborating the evidence*

*Focus on the proof of an agreement, not on the stability of the agreement*

# Explicit vs. Tacit Collusion

*Stability of Behavior: the same in Theory  
But many equilibria. Is there coordination failure  
that prevents tacit collusion?  
What is the role of communication?*

# Experimental Evidence on Tacit Collusion

*S. Huck et al. / J. of Economic Behavior & Org. 53 (2004) 435–446*

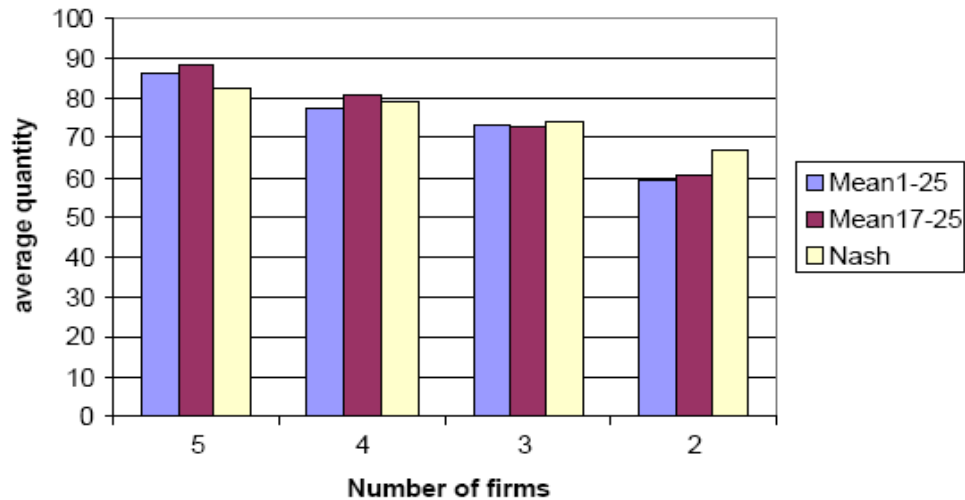


Fig. 1. Predictions and average quantities in rounds 1–25 and 17–25.

# Communication appears to be very important for cartels

*Evidence for communication at the heart of antitrust enforcement against hardcore cartels*  
*Despite this fact incriminating communication often occurs (see Genesove and Mullin 2001)*

# Strategic Uncertainty, Communication and the Theory of Collusion

*There is a plethora of collusive equilibria according to the theory  
The theory does not provide a satisfying answer for how players coordinate on a particular collusive equilibrium.*

- **Cheap talk (Aumann 1990; Farrell 1993; Farrell and Rabin 1996; and Rabin 1994): “Credibility of Selfcommitting Statements”**

Communication crucial for efficiency in simple coordination games (Cooper, De Jong, Forsythe, Ross 1992, Blume and Ortmann 2007, Brandts and Cooper 2007)

Communication about contingent strategies crucial for collusive equilibria  
Efficiency may not be reached with conflicts of interest

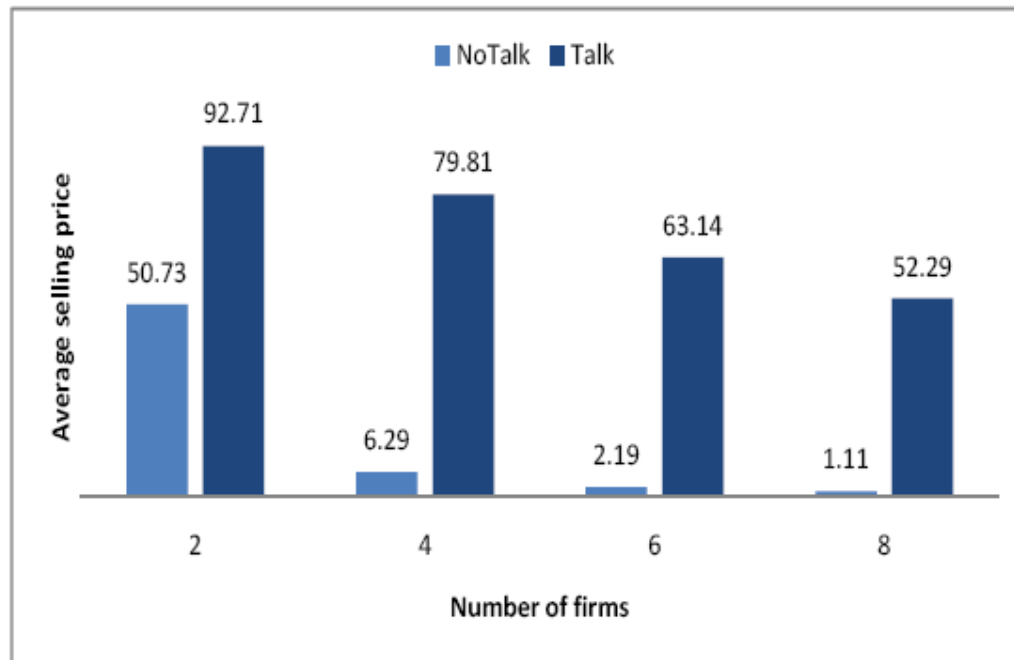
## *The Renegotiation Problem:*

- **If firms can talk, why stick to punishments?**
- **In Collusion Theory we coordinate on an equilibrium that is sustained by a coordination problem**
- **(Bernheim and Ray 1989; Farrell and Maskin 1989; Van Damme 1989; Pearce 1987; Abreu, Pearce, and Stacchetti 1993)**



# Tacit vs. Explicit Collusion

Bertrand model  
With reservation  
Price 100



From Huck and Normann (2011)

# More on Tacit vs. Explicit Collusion

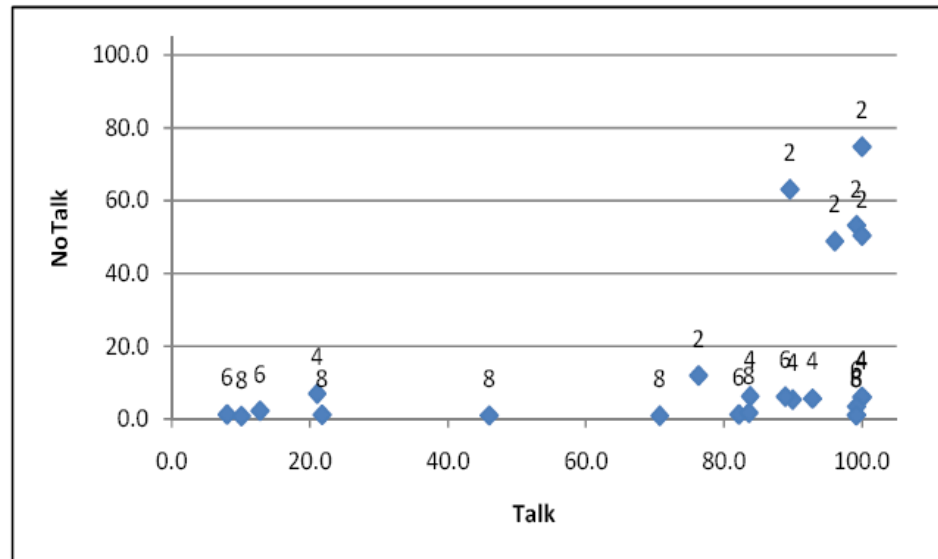
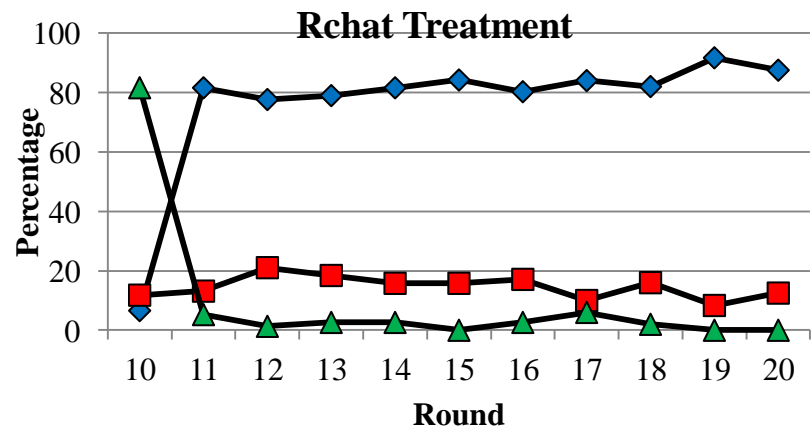
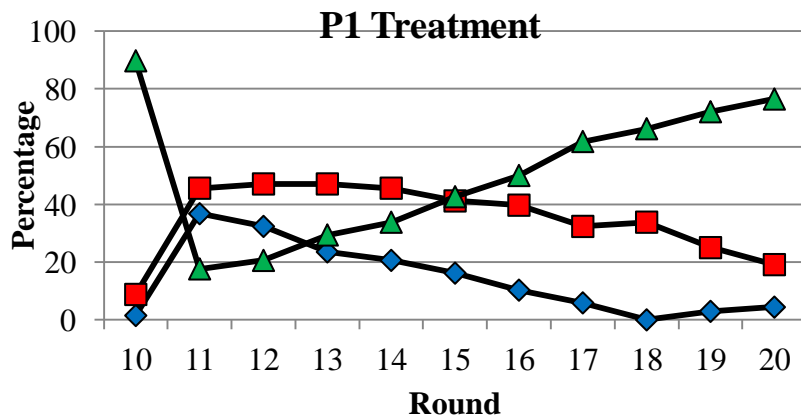
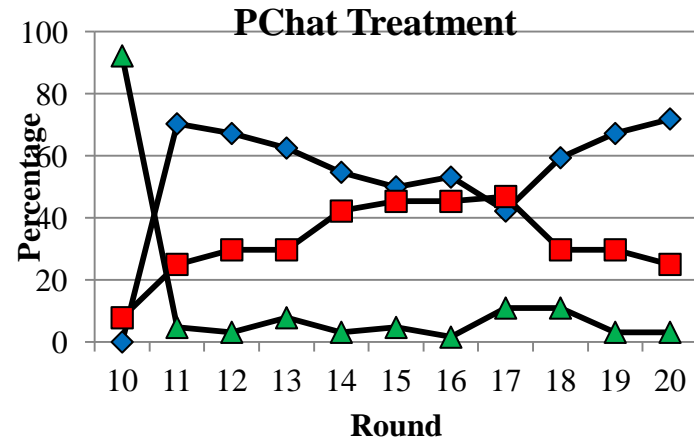
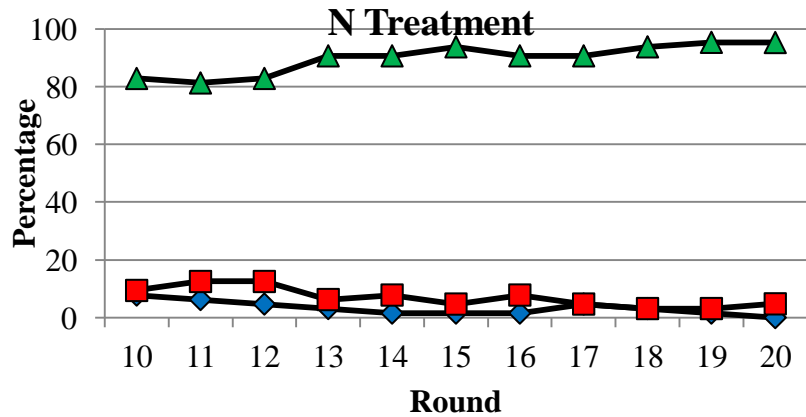


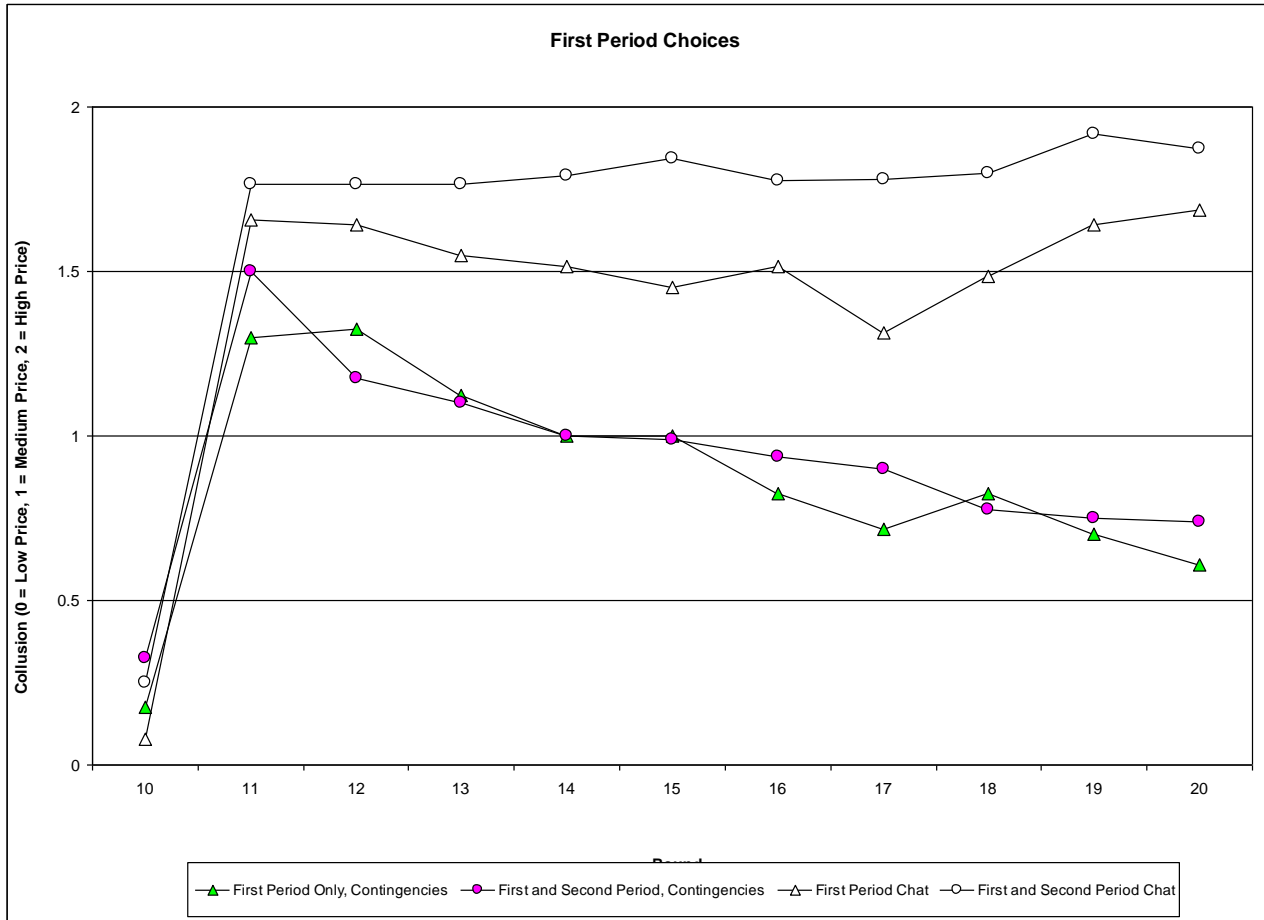
Figure 3: Scatter plot of average selling prices under the NoTalk and the Talk conditions, observed at the market (group) level.

From Huck and Normann (2011)

# Experimental Evidence on Communication



# What can be said matters



# Collusion is a Social Phenomenon

1 if we both choose [Period 1 High] for the first one we both get ecu

2 Yea

1 [Period 2 High] for period 2

2 and then we both can choose [Period 2 High] for the second one

2 yeah

1 making my decision

2 and don't backstab

1 hey

2 if we both choose [Period 1 High] and then [Period 2 High] we get a dollar for the round

1 so i just got screwed, awesome

2 haha

1 don't screw me tho

2 i wont u

1 lol yep [Period 1 High] and [Period 2 High] sounds good

2 sending mine

1 ciao!

1 ^\*%&(\*^)&(\*^(%&

2 im starting to hate people lol

1 ya i know the feeling

2 do you?

1 there are some real jerks out there

2 bcs so did the last person who skewed me lol

1 haha

2 so whats the plan?

1 [Period 1 High] then [Period 2 High]?

2 yea. but if you [Period 1 Medium] tho i'm putting [Period 2 Low] for the nxt one... lol.

1 why would you do that?

2 [Period 1 High] and [Period 2 High]... yes...

1 why would you put anything other than [Period 2 High] for the last one?

this game isn't dependant on how bad other poeple do you are giving up money just to spite someone you will never know

2 if you skew me on the 1st one im skewing you bak no matter what thats why lol

1 that doesn't make any sense

2 lol so you are planning on putting be

\*[Period 1 Medium]

1 of course

2 alright

1 ... lol....

2 dont be stupid

bcs

i will. put . [Period 2 Low]

1 since i know you are going ot screw me on the second one

i'll put [Period 1 High] then [Period 2 High]

no point in doing anything else

might as well get 180

2 i'm choosing

1 right .

# The Power of Verbal Punishment

*Most used non-proposal category: Admonishments*

- “good job, [expletive deleted]”
- “you are a bad person ... I hope someone [expletive deleted] you over as well”
- “you know they shoot you for that in Texas”

*Apology/Rationalization:*

- “sorry about that ... I assumed you would have screwed me over like the last person I had”
- The “I believed you would cheat” defense

# Conclusions for Enforcement

*Communication appears critical to collusion*

*Evidence for communication as a coordination device*

*Evidence that communication can induce social punishment*

*Communication appears crucial to establish a common understanding of a collusive strategy*

*At the same time little evidence that much tacit collusion can be obtained with more than 2 firms*

Enforcement against communication appears sensible

- ***Not an Effects Based Approach!!!***

# Giving Incentives not to Collude

## *Policy Parameters:*

- **Probability of Detection**
- **Probability of Conviction**
- **Level of the Fines**

## *How do we increase detection and conviction?*

- **Leniency**
- **Economic Evidence**



# Leniency Programs

*Leniency undermines cartel stability*

*Leniency can reduce effective sanctions for cartels*

*Multiple rewards undermine the incentive effects of leniency programs*

*Who is detected in a heterogeneous population?  
Do we miss the most important cartels?*

# How Successful have they been in practice?

*The success story:*

- **Enormous improvement in the ability to convict**
- **Designed to increase evidence, not to maximize incentives: multiple leniency awards**

*How good has Leniency been at deterring cartels?*

# Cartel Detection in the US

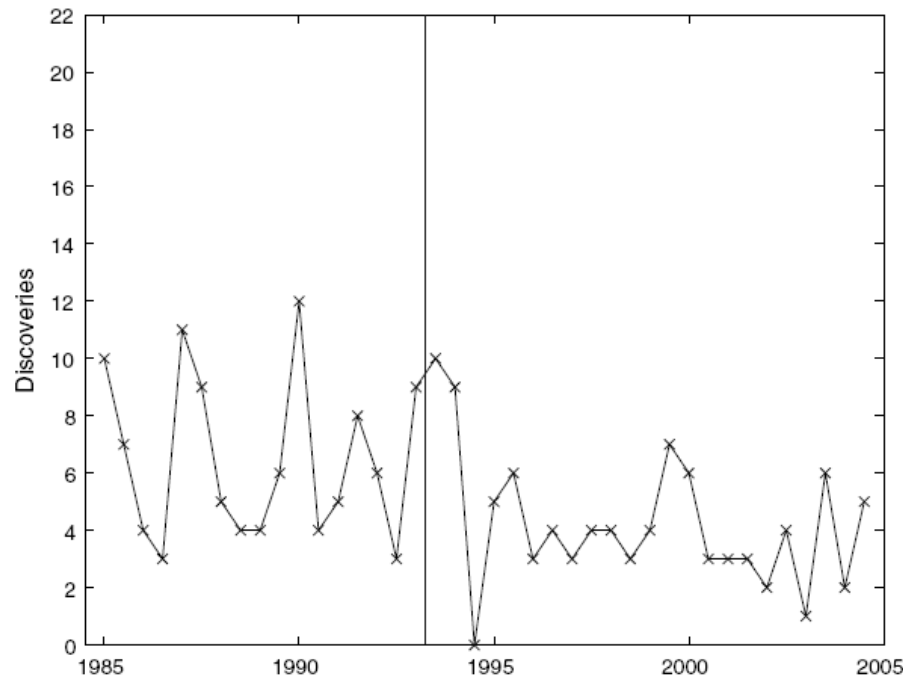
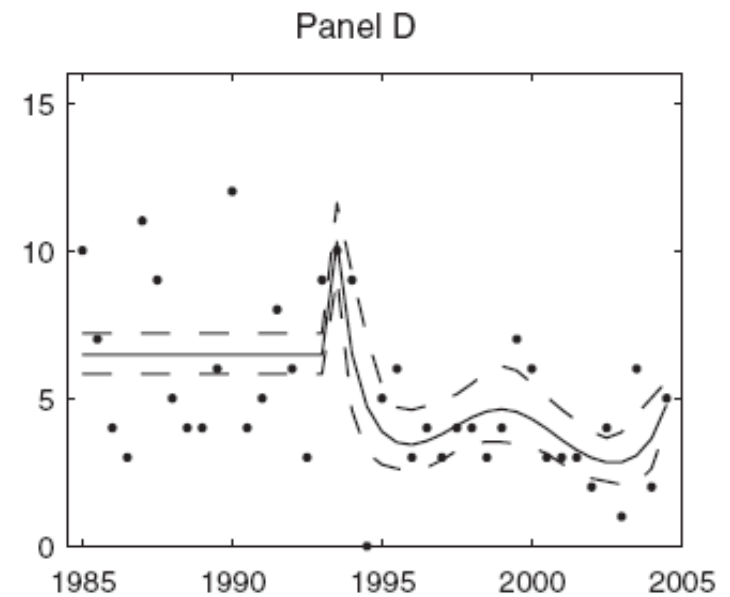
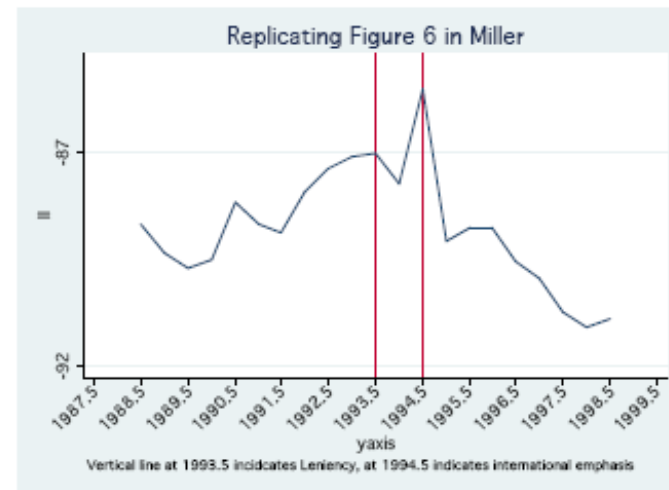
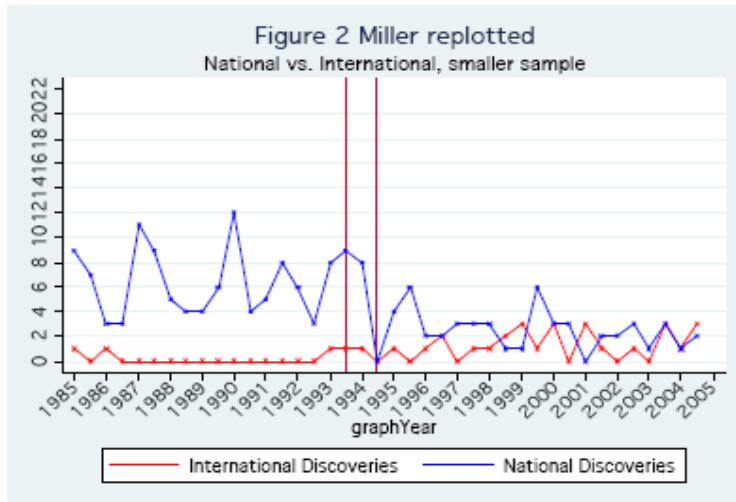


FIGURE 3. THE NUMBER OF CARTEL DISCOVERIES PER SIX-MONTH PERIOD  
(Including only the first cartel per industry)



Miller, AER 2009

# What do we really know about the effects of leniency?



# Experimental Evidence on Leniency Programs

*Leniency Programs Deter some Cartels but Stabilize those that persist*

*The Most Problematic Cartels Survive*

Table 5: Prices, agreed upon prices and price deviations

	L-Faire		Fine		Leniency		Reward
Average price	4.917	<*	5.349	>***	4.845	>*	3.973
Cartel price	4.971	<***	6.144	<***	7.024	>***	5.339
Prices outside cartels	3.5	<**	4.233	≈	4.063	≈	3.567
Agreed upon price	7.689	<***	8.242	≈	8.218	≈	8.512
Rate of price dev.	0.564	>***	0.424	≈	0.373	<***	0.782
Cartel price (1 <sup>st</sup> comm.)	5.929	<***	6.990	>***	6.663	>***	5.483
Agreed upon price (1 <sup>st</sup> comm.)	7.881	<***	8.129	>*	7.886	≈	8.100
Rate of price dev. (1 <sup>st</sup> comm.)	0.590	>***	0.408	≈	0.443	<***	0.717

## Concerns about the effectiveness of leniency programs

*Is leniency given only for cartels that were breaking up anyway?*

*Do we miss more stable cartels?*

*Can leniency be effective without the threat of ex-officio investigations?*

# Using Economics to Detect Cartels

*What is suspicious behavior?*

*Can economics detect cartels?*

*Can economics prove the existence of a cartel?*

*Should we use economics for detection or conviction?*

# An Italian Glass Example: Collusion or Not?

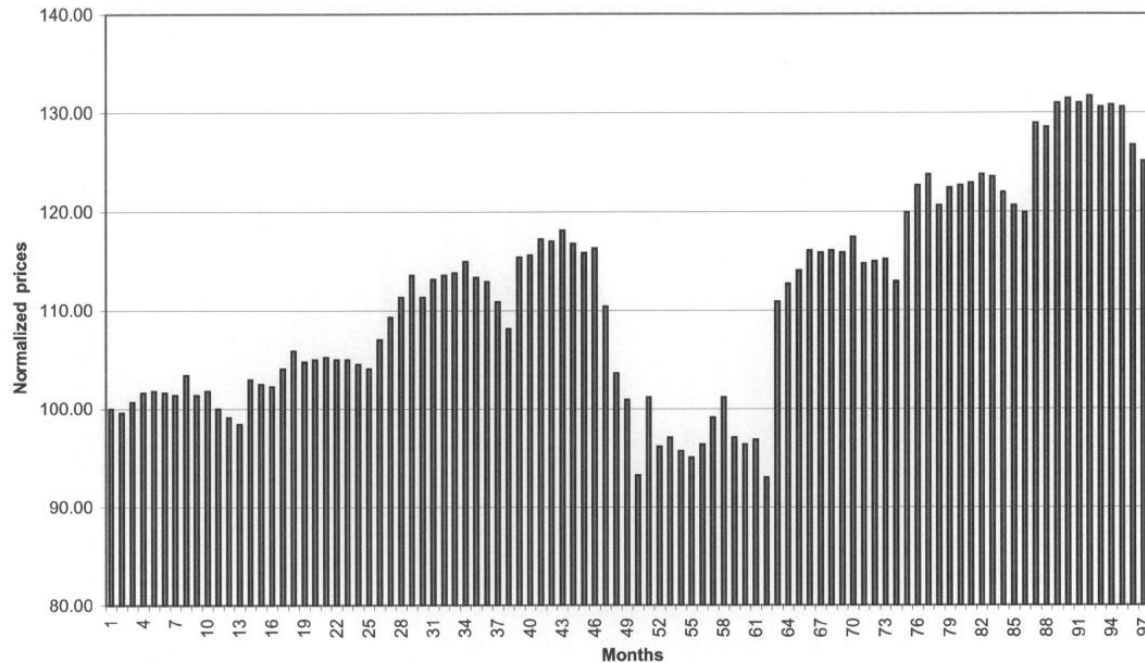
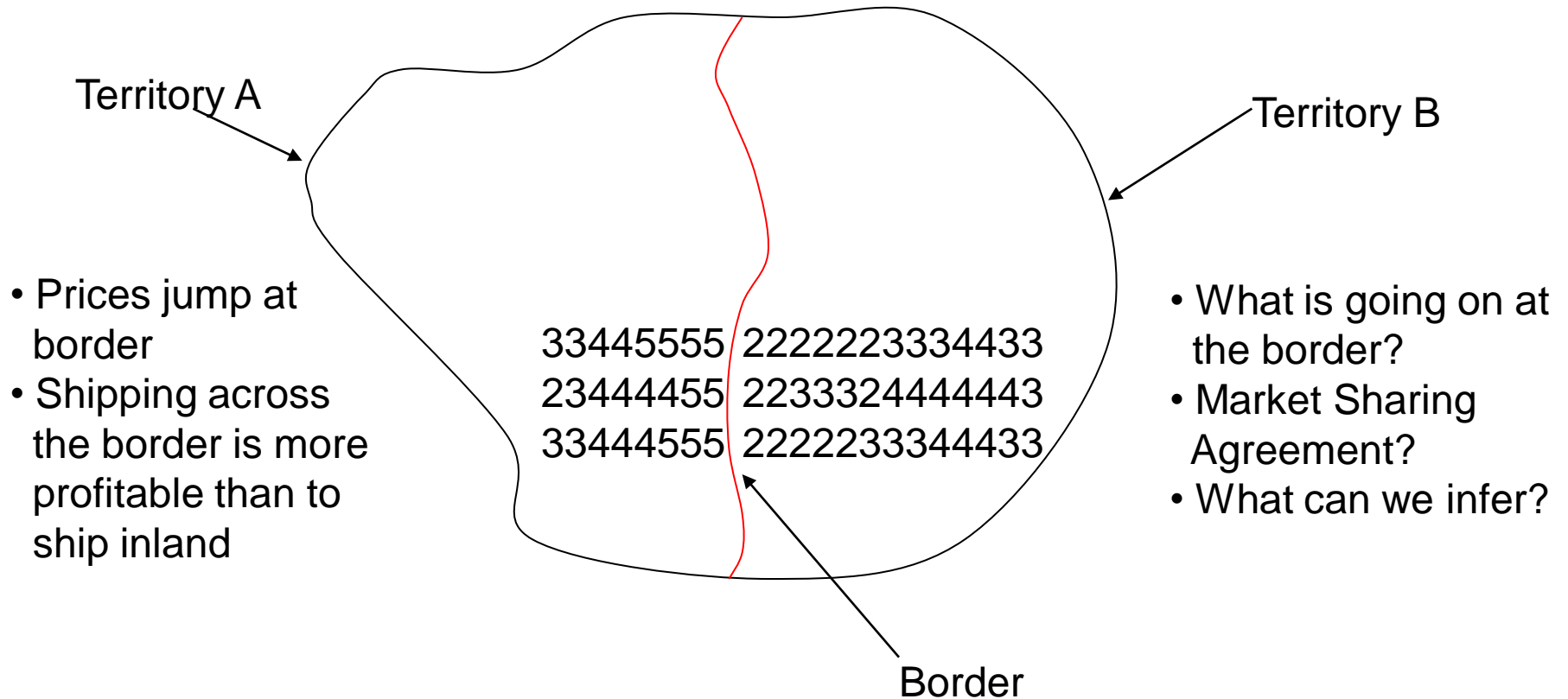


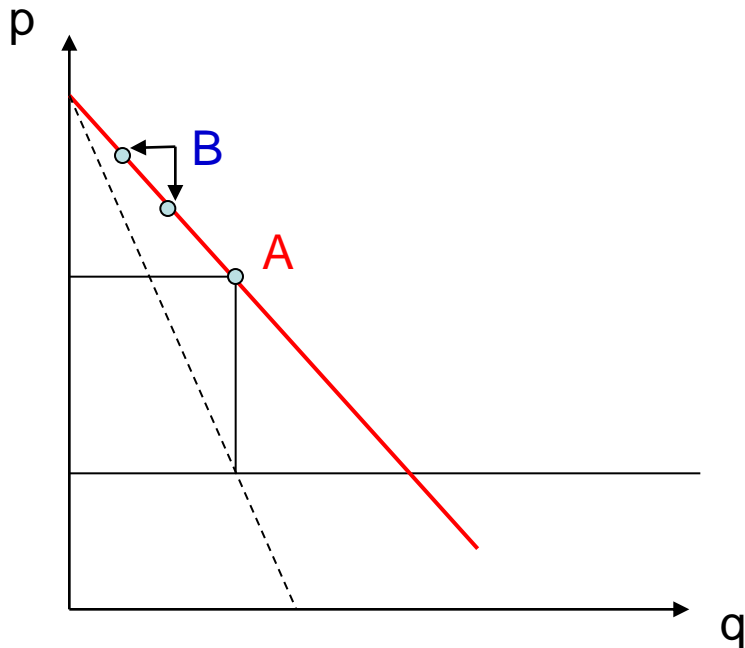
Figure 1. Price path over an eight year period



# Do we have evidence of market allocation?



# Ideal Detection of Behavior



- A firm should not price above the short run profit maximizing price at **A**
- Any point **B** is profit maximizing only, if there is a loss from setting a lower price in the future.
- Pricing at **B** is therefore evidence that tacit collusion is present
- Best possible pricing evidence for tacit collusion: requires knowledge of prices, demand function, and marginal cost

# Screening for Collusive Behavior

*Price Volatility Tests*

*Tests for sudden market price changes*

*Patterns of prices, inconsistent with short run profit maximization*

*Proof or Trigger for investigation?*

# Bringing Together Documentary Evidence and Economic Data

*Example 1: Document of two firms agreeing to increase price by  $x\%$ . The data shows that all competitors increased price by  $x\%$ .*

*Example 2: Agreement to respect borders is documented at border A. Evidence shows that respecting border agreement is irrational from the perspective of short run profits. Same pattern is observed at other borders*

# Pitfalls in combining Documentary Evidence and Economic Data

*Example 1: Industry association chief states: "We should behave in parallel, but without coordinating. The antitrust laws must be respected". (Documentary Evidence) You observe parallel pricing. (Economic Data)*

- **Is this evidence of anticompetitive parallel pricing?**

*Example 2: You observe an agreement to institute an information exchange (Documentary Evidence) and parallel pricing (Economic Data).*

- **Is this evidence of anticompetitive parallel pricing?**

*Example 3: You find documents showing threats to retaliate if competitors do not respect geographical borders and internal documents that firms do not want to enter a territory because of fear of retaliation. Economic Evidence: Large price jump at the border.*

- **Is this evidence for tacit or explicit collusion?**

# The Debate on Over- or Under-Deterrence

*Are Fines too low or Too High*

*Too Low (Connor):*

- **Should marginal cost be the benchmark?**

*Too High or adequate (Boyer and co-authors)*

*Why might incentive effects be low:*

- **Principal-Agent issues: low effect on decision makers**
- **Low Visibility of Fines, small impact on profits**
- **More personal responsibility?**