Using Field Experiments to Explore Collusion in Open Air Markets

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Two Facts

1. Even though most economists would agree that open air markets serve an important function (both historically and today), there is a dearth of studies exploring the economics of open air markets.

2. Exploring questions within the area of collusion has proven difficult. Even questions as simple as “are large coalitions more fragile than small coalitions?” have proven difficult to address empirically with field data.

Some advance can be made if the data generating process is taken into one’s own hands.

Underlying Idea

Lab Field Experiments Models Using Nat. Data

A deeper economic understanding is possible by taking advantage of the myriad of settings in which economic phenomena present themselves.

In many cases experimentation in small-scale field settings is quite useful in developing a first understanding when observational data is limited or experimentation in more "important" markets is not possible.

After which, one explores how the key features of the studied domain compare to more distant domains.

Strategy of this Study

- Through my interactions in various open air markets in a large metropolitan area, I learned that certain collusive arrangements exist
- Begin with lab treatments that replicate how collusion has been explored in the lab
- Build a bridge to the naturally-occurring market
- Field approach: undertake experiments where important factors are identifiable and arise endogenously

  Impose remaining controls
- Experiments conducted from May 2005-present

In following this strategy, I can

- Examine the economic underpinnings of open air markets
- Explore bilateral negotiation markets with and without seller communication
- Provide some insights on a few comparative statics of interest within the collusion literature
- Compare behavior in the lab and the field

An open-air market

Some Details

- When running experiments to explore underpinnings of open air markets, peculiar behaviors led me to suspect collusion amongst certain sellers.
- Small numbers of sellers provide homogeneous goods that are jointly purchased from middlemen, certain barriers to entry exist, and seller communication is continual.
- My mole informed me of collusive agreements in the field for some standardized goods (i.e., certain goods have a marginal cost of $x, sell for no less than $2x).
- I learned of 27 distinct sellers across 8 different markets being part of an agreement (groups of 2-4 and across goods).

A Natural Field Experiment

- **Confederates approached various sellers and bargained for the good of interest (in the spirit of List, 2004, QJE; 2006 JPE).**
- **Actually purchasing the goods (CDs, DVDs).**
- **Some sellers in this treatment were also in other lab or field treatments.**

Summary Comparative Statics

- 2 person arrangements have less cheating than 4 person groups.
- People cheat less when they have collusive arrangements with a partner in more than one market.
- People cheat more on high volume, busy, days.

Treatment versus selection?

“Framed Field Experiment”

Execute similar treatments to the natural field experiment, but randomly vary:

A. **Group size**
B. **Group composition**
C. **Cheating profits**
D. **30 minute vs. 3 day experiment**
E. **etc.**

Bridge

Lab/ Artefactual		Framed	Natural	
LabIS	LabIM	NC, C, Symm	Table	Field
LabIIS	LabIIM	NCAsymm	2sellers	
LabIIIS	LabIIIM	CAsymm	HighStakes	
LabIIISC	LabIIIMC	Inf		
		Noprice		
		Shock		

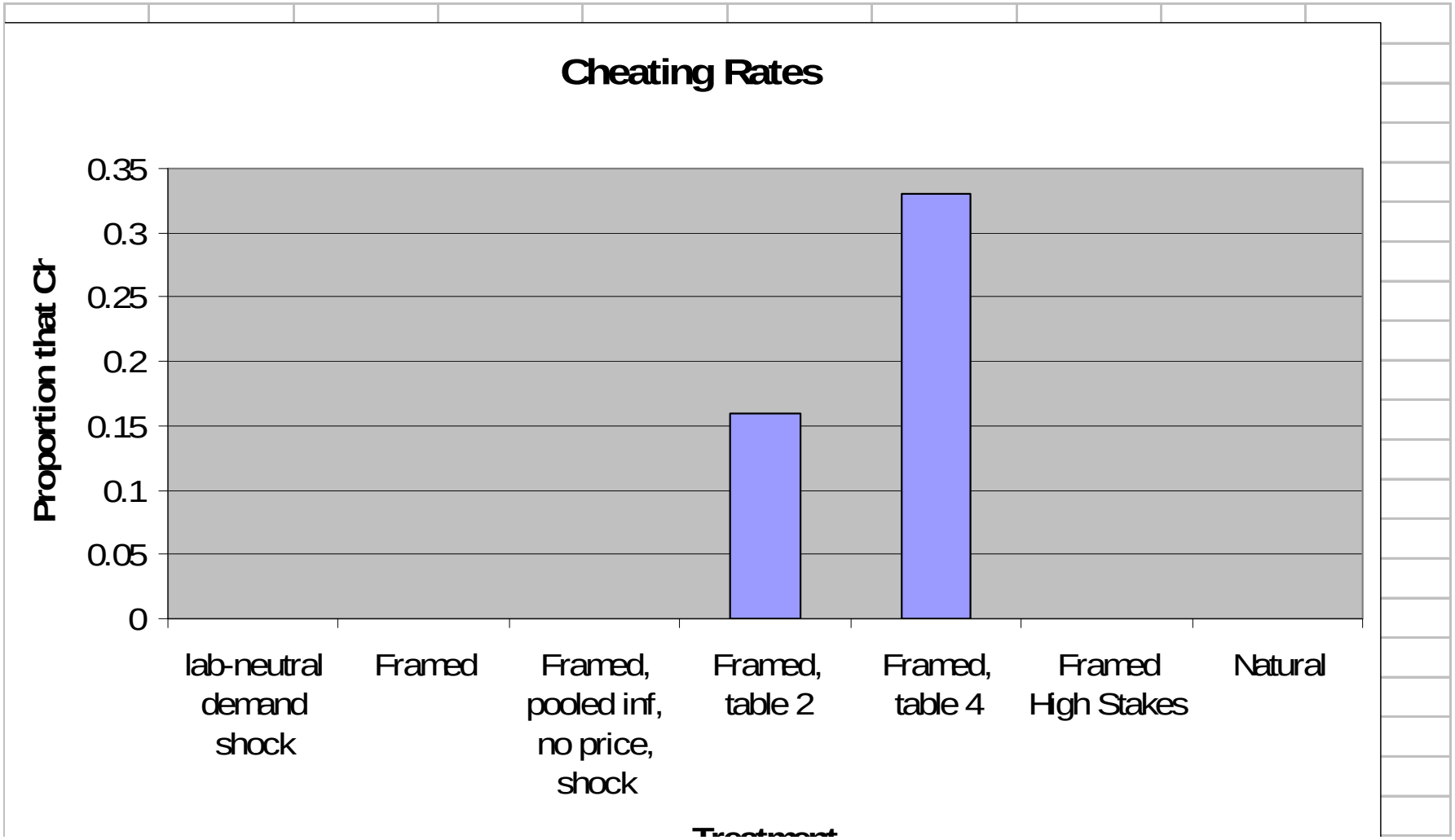
Summary Comparative Statics

- In natural field experiment: 2 person arrangements have less cheating than 4 person.

Treatment versus selection?

Framed field treatments can help since group size is randomly determined.

2 Versus 4 Sellers



Another Comparative Static

- In natural field experiment: People cheat less when they have multiple collusive arrangements with a partner.

Treatment versus selection?

Framed results add inferential power since groups are randomly composed:

a. number of outside agreements is not correlated with cheating rates in the FFE
b. cheating rates are much higher when groups do not have collusive ties outside the experiment

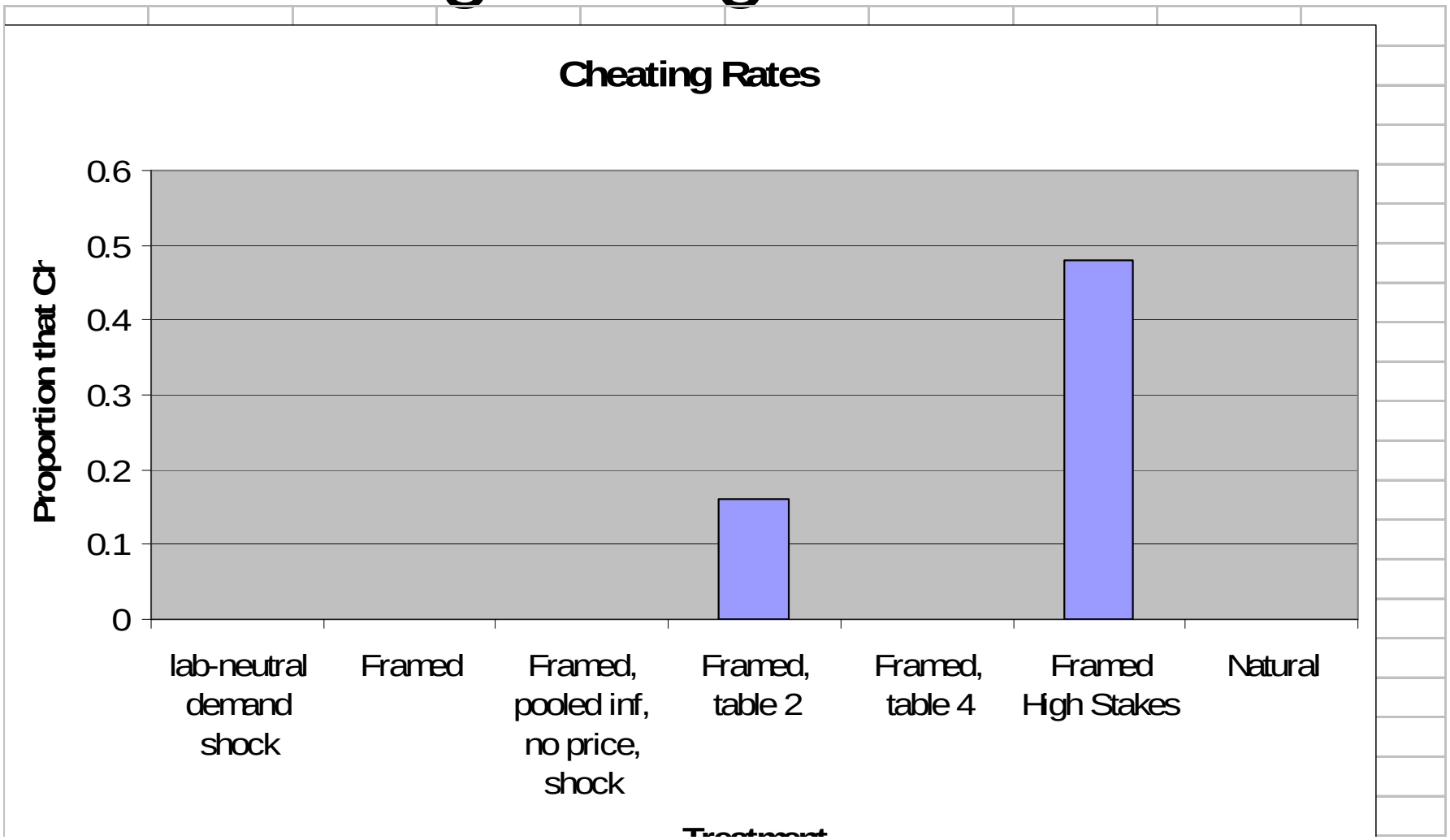
Further Comparative Static

- In natural field experiment: People cheat more on high volume, busy, days.

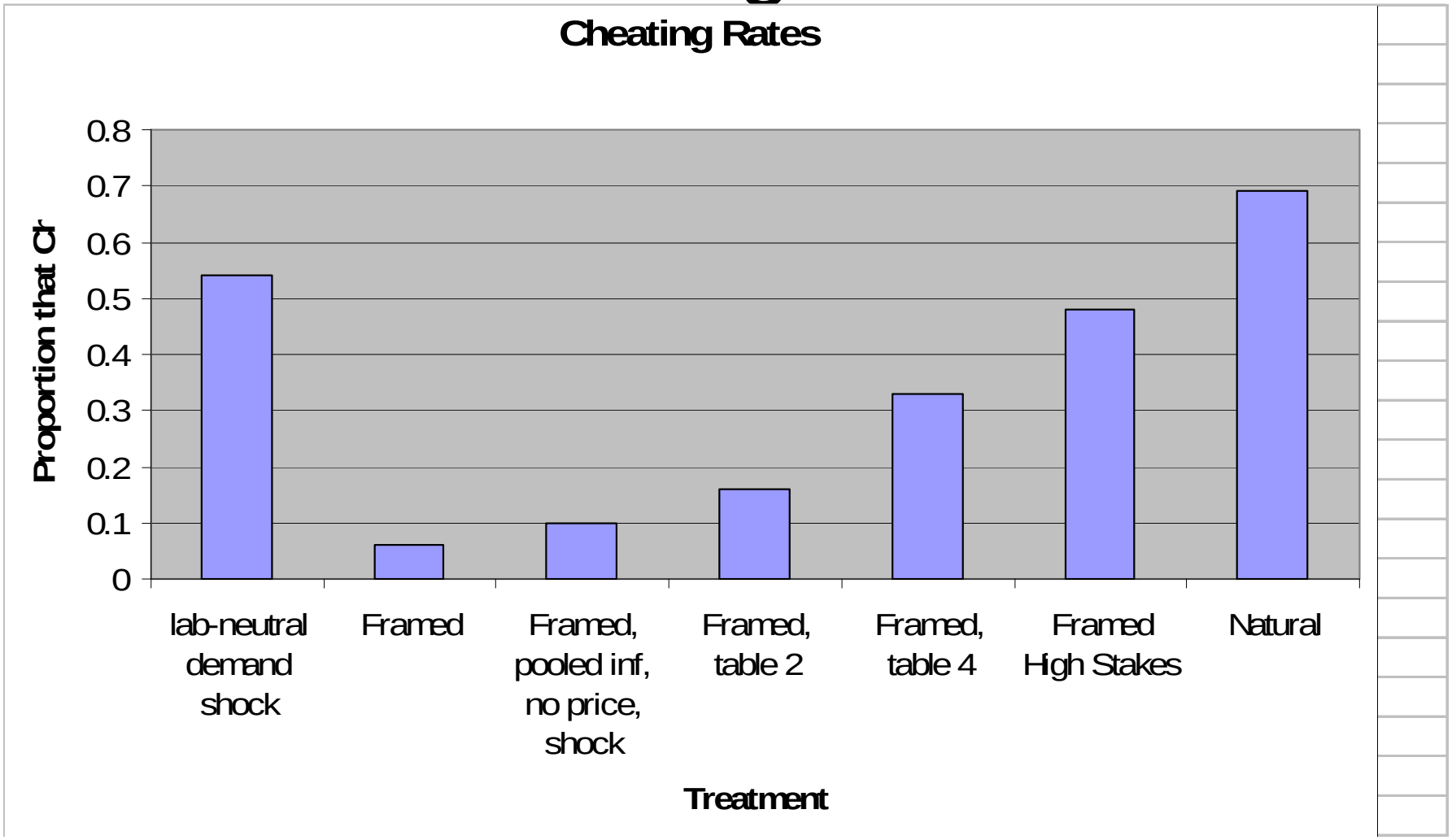
What does this mean?

Framed results—raise gains to cheating (high stakes) and cheating rates increase.

Moving to Higher Stakes



Bridge


Cheating Rates
Proportion that Cr
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
lab-neutral demand shock
Framed
Framed, pooled inf, no price, shock
Framed, table 2
Framed, table 4
Framed High Stakes
Natural
Treatment

Summary Figures

Table 6 Framed and Natural Field Experimental Data Summary

Treatment	Percent that Cheated		Price Deviation From Agreement	Percent	Surplus
	Neg.	Trans.	Trans.	Trans.	Captured
Framed (pooled)	---	9.6%	6.4%	47%	61%
FramedTable	18.4%	33%	12.8%	64%	77%
Framed2Sellers	7.8%	16%	11%	58%	72%
FramedHigh	29%	48%	16%	69%	84%
Natural Field	46%	69%	19%	81%	90%

Methodological Summary

- Combining insights across the bridge permits much stronger inference than any portion of the bridge could in isolation.
- In this setting, sterile lab experiment with students does the best, in aggregate, of predicting field cheating rates.
- Dealer behavior is not well correlated across the neutral lab and field settings; but the best predictor of cheating in the NFE is cheating in the lab (context) and FFE.

Concluding Thoughts

A. Field experiments take many shapes and forms and all might not fit neatly into the guideposts herein.

http://www.fieldexperiments.com/

Their usage should continue to grow as we recognize and take advantage of settings where economic phenomena present themselves.

Concluding Thoughts

B. Data, thus far, suggest that representativeness of the environment *appears* more important than representativeness of the population for some key games.

We can learn a lot from doing more sampling of environments and stimuli that people actually encounter.

We, sometimes, generalize our results to both a population of situations and a population of people when we typically only speak to the issue of the latter.

An Example

- A recent EPA contingent valuation study explored whether men or women surveyors obtained higher stated values.
- What did they do?
- Spent gads of money to choose carefully a representative sample of respondents.
- Had one man and one woman survey!

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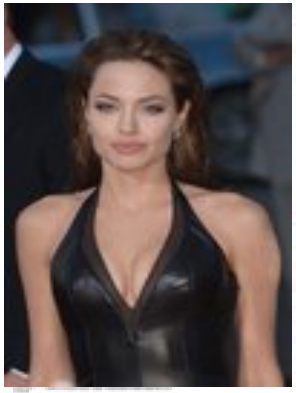

EPA’s inference would be much different across these scenarios.