Empirical Modeling

- Traditional S-C-P Models
  - High CR implies anticompetitive behavior
  - Anticompetitive pricing inferred from accounting measures of profitability
- New Empirical Industrial Organization
  - Microeconomic foundations
    - Structural models – market equilibrium
    - Game Theory applications
  - Measures difference between actual price and competitive price
  - High CR doesn’t necessarily imply anticompetitive behavior

Basic Modeling Assumptions

- S-C-P Basic Assumptions
  - Economic price-cost margins are directly observable in accounting data.
  - Cross-section variation in industry structure easily captured by a few observable measures.
  - Empirical work should focus on relationship between structure and performance.
- NEIO Basic Assumptions
  - Shift in focus of IO empirics (Appelbaum, Bresnahan, Lau (1979, 1982))
  - Typically based on time series data from single industries or closely related markets
  - Econometric model of an industry
  - Industries have unique characteristics that affect firm conduct
  - Firm and industry conduct are unknown parameters to be estimated
  - Data can choose among alternative hypotheses, including perfect competition.
  - Goal: Estimate parameters that directly measure degree of imperfect competition or specific pricing behaviors

Traditional Structure-Conduct-Performance

- PCM = f(CR, Advertising, Min. Efficient Scale, Capital Intensity, Market growth rate, Policy, Firm Structure)
  - Reduced form estimation
  - Market power effects directly observable
  - Possible proxies for market power: price-cost margin, profits, rate of return
  - Focus: Variations in market power effects due to in endogenous variables ... advertising, concentration ratio, etc.
Traditional S-C-P Findings

? Parker and Conner (1979)
  ? CR4 and Advertising/Sales—significant positive effects on Price-Cost Margin

? Rogers (1985)
  ? Rising significance of CR4 and falling significance of MES over time

? Rogers and Petraglia (1994)
  ? Presence of cooperatives negatively related to PCM

  ? Cattle feedlot prices positively correlated with number of buyers

Schmalensee—Cross-sectional studies.....guide construction and analysis of particular industries.

NEIO Models

? Nature of oligopoly interaction in the real world
  ? Price and Quantity determination in oligopoly/oligopsony
  ? Advertising as strategic variable in 2 stage game
  ? Formation and enforcement of tacitly collusive agreements
  ? Degree of single-firm market power under product differentiation (Product level elasticities – Demand System)

? Size & determinants of firm and industry price-cost margins
  ? Econometric estimation
  ? Nonparametric estimation (mathematical programming)

Econometric Estimation

U Industry level (with or without firm level equations)
U SYSTEM ESTIMATION using non-linear estimation technique
  Y Downstream demand for product
  Y Upstream supply of product
  Y Other input demand equations for both Upstream and Downstream
“Typical” NEIO Model

- Unknown parameters
  - Cost parameters
  - Demand parameters (Monopoly Case)
  - Firm Conduct

- Observable, Endogenous (Time Series)
  - Industry price
  - Firm or industry quantity
  - Cost and Demand shifters
  - Input prices, public policy, others

NEIO Findings

- Meat packing industry:
  - Significant but small market power exertion
  - U.S. Pear processing:
    - Oligopoly power in sale of fruit cocktail
      - Wann and Sexton (1992)
  - Taiwanese tomato processing
    - Near perfect monopsony
      - Huang and Sexton (1996)

IO Applications to U.S. Beef

- Have vertical coordination changes resulted in market power? Ward and Stephens (2000)
  - \( P_{UP} = f(\text{Structural parameter, } P_{\text{Down, rising}}, P_{\text{Down falling}}) \)
  - Plant level cost analysis, nonparametric method
  - \( F(\text{output price, input prices and quantities (i.e. materials, labor, energy, capital, live cattle)}) \)
**IO Applications to U.S. Beef**

  - Farm/Wholesale Beef Price Margin = f(Labor, Energy, Transportation, Market power component, efficiency component)
  - Estimate jointly with cattle supply equation

- Definition of Regional Cattle Procurement Markets: Hayenga, Kootz & Schroeder (1996)
  - F(Distance, ProcurementOverlap, Cash purchases, Slaughter, Available price data, Same parent firm)
  - Dickey-Fuller Cointegration test

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**Beef Packing Plant Location**

- Major states (29 plants)
- Fringe states (9 plants)


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**Is there Monopsony Power in Beef Packing?**

- UGIPSA Funding
- ULove, Burton, Raper, and Shumway
- U38 major packing plants
- UWeekly plant level cost information for one year
- U5 different tests for anti-competitive cattle prices (Nonparametric methods)
- UMonopsony power in 3 “fringe” plants, 3 “major” plants
“Only theory can separate the competitive from the anticompetitive.”

Robert Bork, The Antitrust Paradox