Discussion: Product Differentiation and Oligopoly: a Network Approach

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Overview

Question: What are the welfare costs of the oligopoly power of U.S. public firms?

Contribution: propose and calibrate a new GE model of hedonic demand; divorced from standard industry classifications used in macro (*)

Findings:

1. Costs of oligopoly power increased from 8.5% to 11% from 1997-2017
2. Firms capture greater share of total surplus in 2017 compared to 1997
3. Declining IPO rate contributes significantly to declining consumer surplus (*)

Utility Function: Generalized Hedonic-Linear Demand

$$U(\mathbf{x}, \mathbf{q}, H) = \alpha \cdot \sum_{j=1}^{k} \left(b_j^x x_j - \frac{1}{2} x_j^2 \right) + (1 - \alpha) \cdot \sum_{i=1}^{n} \left(b_i^q q_i - \frac{1}{2} q_i^2 \right) - H$$

where:

- q_i is output consumed from firm i
- x_j is total consumption of characteristic j (that is, $x_j = \sum_i a_{ji} q_i$)
- α is horizontal differentiation
- b_j^x and b_i^q are characteristic- and firm-specific taste parameters
- H is labor supply

Model

- Oligopolists $i \in \{1, \ldots, n\}$ characterized by $(\vec{a}_i, b_i, c_i, \delta_i)$
- Cournot competition among these firms
- Weighted network game methodology to solve for equilibrium output $\mathbf{q}$

Theoretical results:

1. Markups increase in a firm's "uniqueness" in product space and in firm size
2. Consumer surplus is separable
3. Can add an additional representative firm to capture private and foreign firms

Benefits of this approach: highly tractable, rich heterogeneity, tight mapping to observables, only need to calibrate a few parameters (α, Δ)

Market Structure Counterfactuals

In closed form:

1. Cournot baseline
2. First-best
3. Second-best
4. "Resource efficient"
5. Monopoly: same product offerings, single decision-maker picks $\mathbf{q}$ to max $\mathbf{\Pi}(\mathbf{q})$
   - Merger/common ownership: coordinated supply decisions among subset of firms

Additional exercise:

6. Role of declining IPOs: add extra firms identical to new entrants to keep rate of startup IPOs to acquisitions fixed at 1997 level

Comment 1: Sources of Time Trends in Oligopoly Power

Can we decompose the rise in the deadweight losses into:

1. Extensive: Entry and exit
2. Intensive: Changes in product differentiation among incumbents
   - Perhaps summarize trends in 2-dimensional space
3. Intensive: Changes in tastes (b_j^x, b_i^q) and costs (c_i)

The paper focuses mainly on the contribution of declining entry. But what is it about IPO that gives a firm pricing power? And how important is exit?

Comment 2: A Measure of Our (Macro) Ignorance

- Departs from standard macro in two ways:
  1. Demand system (GHL vs. CES/nested CES)
  2. Richer product market rivalries (cosine similarities vs. NAICS/SIC)
- Suggested counterfactual: Implement a version of the model with $\mathbf{A}$ given by k binary NAICS/SIC industry characteristics
- Compare deadweight losses with standard industry classifications to full network specification

Final Thoughts

- Really, really excellent and novel paper
- Many interesting and *tractable* extensions: common ownership, labor market power, multi-product firms, dynamics of product space itself
- Quite elusive: root cause of rising oligopoly power
  - Paper points to rising entry costs/declining IPOs
  - I hope it can go even further