Market Definition and Market Power

Global Antitrust Institute
Hawaii
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Overview

• Defining market power
  – Downward sloping demand does not imply antitrust relevant market power

• Market Structure & Market Power

• Market definition mechanics
  – Hypothetical Monopolist Test (HMT)
  – Measuring closeness of competition instead of number of firms

• Customer Testimony & Market Power
Antitrust Market Power
Defining “Market Power”

• “Market power is the ability to raise prices above those that would be charged in a competitive market.” 
  – *Supreme Court in NCAA n.38* (1984)

• “A merger enhances market power if it is likely to encourage one or more firms to raise price, reduce output, diminish innovation, or otherwise harm customers as a result of diminished competitive constraints or incentives.”
The purple-shaded area reflects lost consumer surplus from paying higher prices and not getting some valuable output.
Does Starbucks Coffee Enjoy Market Power? Monopoly Power?

• Is demand downward sloping?
• Does he face competition?
• Is there a difference between market power and monopoly power?
• Does my employer have market power?
• Landlord?
Market Structure and Market Power
Intellectual History of Structural Economic Thinking

• Much of industrial organization economics has been directed at studying whether there is a systematic relationship between the number of firms and prices.

• Analytical foundations in Cournot model

• 1950s-60s: Structure-Conduct-Performance Paradigm
  - Relationship Between Concentration & Price
  - Market Structure Predicts Performance
  - Barriers to Entry
Cournot: # of Firms, Prices, and Output

- Competitive Quantity
- Oligopoly Quantity
- Monopoly Quantity
- Competitive Price = MC
- Monopoly Price
- Oligopoly Price
The Rise of the SCP Paradigm

• Joe Bain and other Harvard Economists (1940-1960)
• **Structure**: # of buyers and sellers, barriers to entry, product differentiation, vertical integration
• **Conduct**: Advertising, R&D, pricing, merger, contracts, collusion
• **Performance**: price, efficiency, quality, profits, welfare

• Concentrated market structure thought to be very useful predictor of performance and advocated significant antitrust intervention
The Fall of the SCP Paradigm

- Empirical evidence shows that SCP paradigm work relating market structure and profit does not exhibit systematic relationship
  - Demsetz, Brozen, others
- Market structure very poor predictor of competitive performance, including price, output, innovation
- So what else can we do?
Market Definition
Why Define Markets?

- Old antitrust rationale: count the number of firms competing in the market to make predictions about post-merger prices
- Modern rationale: to identify the nature and sources of competition and how the conduct or transaction at issue might affect consumers
  - Who competes in this space?
  - Which firms constrain each other’s pricing decisions?
  - Which are closest substitutes to a significant fraction of consumers?
Are Starbucks and Folgers Competitors? Close Competitors?

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>QUALITY</th>
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<td>HIGH</td>
<td>LOW</td>
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[Diagram showing various coffee brands along a product-quality axis.]
Economic Tools for Market Definition

• Older approach
  – Practical indicia of functional interchangeability between or among products

• Modern economic tools
  – Hypothetical Monopolist Test ("HMT")
    • The SSNIP Test is the most common method of implementing the HMT
  – Critical Loss Analysis
The Hypothetical Monopolist Test

“A group of products and a geographic area such that a hypothetical profit-maximizing firm likely would impose at least a “small but significant and nontransitory” increase in price.”

• Depends mostly on demand substitution but supply substitution also matters.
• Not designed to test whether a firm is already exercising significant market power or dominance
Hypothetical Monopolist Test: Conceptual Underpinnings

• Suppose there are three potential goods in a market: 1, 2, and 3
• How to we determine whether products 2 and 3 belong in the same market as product 1

Products in the market: 1, 2?, 3?

Products outside the market: 2?, 3?
Hypothetical Monopolist Test: Conceptual Underpinnings

• Could an hypothetical monopolist of product 1 profitably sustain a small but significant and non-transitory increase in price?
• If yes, the market includes only 1.
• If no, the relevant antitrust market must include products 2 and/or 3.
• How to identify products 2 and 3?
• The ones that are closest in “product” space to product 1.
Modern Competitive Effects Analysis: Introduction to Unilateral Effects
Modern Approach

• Measure intensity and closeness of competition rather than counting the number of firms
  – Implicitly assumes competition from all firms “inside” the market is identical

• Measuring upward pricing pressure
  – Unilateral pricing effects analysis
Williamson Tradeoff Model

The diagram illustrates the tradeoffs in pricing and cost within the context of post-merger and competitive environments. It shows the loss of consumer surplus and gain to producers due to cost savings. The axes represent quantity and price, with competitive and post-merger price levels distinguished. The high unit cost intersects with the demand curve, indicating a point of high price and low quantity, while the low unit cost intersects with a lower price and higher quantity, representing a competitive equilibrium.
Understanding Terms

• Consider the merger of Firm A with Firm B
  – Firm A sells Product 1
  – Firm B sells Product 2

• **Diversion Ratio (DR\(_{12}\))**: the percentage of unit sales lost by Product 1, when its price rises, that are captured by Product 2
  – Related to cross-elasticity of demand
  – Consider a small increase in \(P_1\) which causes, in turn, a reduction in the unit sales of Product 1
  – Some of these lost sales will be diverted to Product 2

• **Value of Diverted Sales (VDS)**: \(DR_{12} \times (P_2 - C_2)\)
  – The number of units diverted to Product 2 multiplied by the margin between price and incremental cost on that Product
  – Intuitively, the VDS is the *opportunity cost* of the merged firm selling an additional unit of Product 1
Pre-Merger Pricing – Relationship Between Margin and Elasticity

Demand (Quantity = 14 – Price)

$\frac{P}{Q}$

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$P_1$

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The Role of Margins and Diversion Ratios Graphically

**Price-Increase Benefit/Cost Analysis**

**Pre-Merger**
- **Benefit** = $3.5
- **Cost** = $3.5
- Net Benefit = $0

**Post Merger**
- **Benefit** = $3.5
- **Cost** = $3.5 – Recaptured Diversion
- Net Benefit = Recaptured Diversion
UPP in the HMGs

“Adverse unilateral price effects can arise when the merger gives the merged entity an incentive to raise the price of a product previously sold by one merging firm and thereby divert sales to products previously sold by the other merging firm, boosting the profits on the latter products. Taking as given other prices and product offerings, that boost to profits is equal to the value to the merged firm of the sales diverted to those products. The value of sales diverted to a product is equal to the number of units diverted to that product multiplied by the margin between price and incremental cost on that product.”
UPP & GUPPI

• Recall *Value of Diverted Sales* is an indicator of UPP and is an opportunity cost of the merged firm selling an incremental unit of Product 1

  - \[ VDS = DR_{12} \times (P_2 - C_2) \]

• The next step is to “scale” this measure of UPP in proportion to the price of Product 1 (\(P_1\))

• This gives: \[ \frac{[DR_{12} \times (P_2 - C_2)]}{P_1} \]

  – This is known as the “*gross upward pricing pressure index,*” or GUPPI

  – “Gross” because it does not include downward pricing pressure actors such as efficiencies
Example: Proposed Merger of Jos A Bank & Men’s Wearhouse
Antitrust Questions

• Will JAB and MW be able to raise prices after the proposed merger?
  – How do we know?

• Who do JAB and MW compete against?

• Is competition between JAB and MW more closer (more “intense”) than competition with other men’s suit outlets?
Market Shares

• Men’s Suits:
  – MW = 20%
  – JAB = 19%
  – Macy’s = 7%

• Suggests based on *structure*, the post-merger firm will have about 40% of the market

• Is market share a good predictor of ability to raise price after the merger?

• What type of evidence would help us better predict post-merger ability to raise price?
Economic Evidence to Evaluate Mergers

• Counting firms and shares is generally a very crude measure of competition

• MW collected real estate information on 11 competitors in the ordinary course of business
  – Belk, Bon-Ton, Brooks Brothers, Boscov’s, Dillards, JCPenny, Jos. A. Bank, Kohls, Macy’s, Men’s Wearhouse, Nordstrom
  – Store opening dates for JAB; sporadic opening dates for Macys

• What do we infer from this evidence?
Competitor Counts

Source: MW real estate survey of 11 competitors and more than 6000 stores across 253 CBSAs. Competitors include Belk, Bon-Ton, Brooks Brothers, Boscov’s, Dillards, JCPenny, Jos. A. Bank, Kohls, Macy’s, Men’s Wearhouse, Nordstrom.

Note: Counts exclude myriad competitors that sell suits.
More Economic Analysis

• One way to test whether a JAB/ MW merger would allow the post-merger to raise price is to Examined effects of MW store openings on JAB’s quantity of suits
  
  – Are JAB and MW especially “close” competitors so that a merger would result in loss of competition and higher prices for some group of consumers that would not substitute to other stores

  – We expect MW entry to result in lower JAB sales --- they are substitutes after all --- but does a large fraction of JAB sales switch to MW when it enters?

• 89 total MW entry events to analyze
Summary of Pooled Diff-N-Diff Results

Histogram of Effect on JAB of MW Entries

% Change in JAB Suits Quantity

Density
Market-by-Market Diff-N-Diff Summary of Effects of MW entry on JAB
10 Mile Treatments, 30 Mile Control Group
Events with no Cannibalization

Not Significant  Significant at the 10% Level  Significant at the 5% Level  Significant at the 1% Level
Merger Simulation
What is a merger simulation model?

• Model of competition in an industry that allows the effect on prices of increased concentration to be measured directly

• Requires assumption of oligopoly interaction: Typically based on Bertrand differentiated products model

• Necessary inputs: pre-merger elasticities, marginal costs, prices
Steps to Merger Simulation

(1) Choose form of oligopoly interaction
   - Choose consumer demand

(2) Calibrate model to perfectly predict pre-merger conditions
   - Prices, shares, elasticities

(3) Compute the post-merger equilibrium, which internalizes the competition among merging products
Presumptions of Merger Simulation

• Merger simulation presumes that the fundamental nature of the competitive interaction is not changed by a merger.

• Merger simulation presumes that everything “outside the model” is unaffected by the merger.
Benefits of Merger Simulation

• Discipline of equilibrium prediction
• Assumptions can and should be tested against the established facts
• Modeling indicates:
  • why price effects are large or small
  • how experts reached different conclusions
  • where resources should be concentrated
• Calculation replaces intuition
Problems with merger simulations – elasticity issues

Relatively small inaccuracies in elasticity estimates can have significant effects on predicted post-merger price rises

Example

- 4 firms pre-merger
- Firms 2 and 3 merging
- Market shares of 63%, 16%, 5% and 15% respectively
- Elasticities as follows:

<table>
<thead>
<tr>
<th></th>
<th>Firm 1</th>
<th>Firm 2</th>
<th>Firm 3</th>
<th>Firm 4</th>
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<tbody>
<tr>
<td>Firm 1</td>
<td>-1.5</td>
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<td>0.12</td>
<td>0.04</td>
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Problems with merger simulations – elasticity issues

- Predicted post-merger price rises under three alternative functional forms are

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<tr>
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<td>17.1</td>
<td>28.2</td>
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<tr>
<td>Firm 4</td>
<td>0.2</td>
<td>1.5</td>
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Problems with merger simulations – elasticity issues

- Predicted post-merger price rises as own-price elasticities vary by +/- 10%

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<tr>
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<th>Δ $\varepsilon_{ii}$</th>
<th>Before</th>
<th>After</th>
<th>% Change</th>
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<td>Firm 3</td>
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<td>4.3</td>
<td>17.1</td>
<td>4.8</td>
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Merger Simulation and GUPPIs

• GUPPI does not assume oligopoly interaction of form of demand

• Recall that GUPPIs simply calculated the value of diverted sales – scaled to monetary units – but DO NOT estimate actual price increases

• GUPPI and linear demand
  – Poor man’s merger simulation
  – First-order approximation
Simulation Critiques

• Merger simulations omit important factors
  – Barriers to entry and expansion
  – Buyer power
  – Potential for post-merger coordination
• Always predicts a price increase
  – Can compute marginal cost reduction necessary to offset price increase
• Empirical validity of predictions in question
• Too complicated for generalist judges?