Mergers with Unilateral Effects: An Economic Alternative to Market Definition

Joseph Farrell and Carl Shapiro
U.C. Berkeley

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Current Practice: Horizontal Merger Guidelines

- Define Relevant Market
  - Detailed Algorithm, SSNIP Test
- Measure Market Shares, HHI, ΔHHI
- Invoke Structural Presumption (?!)
- Competitive Effects (Merger Simulation?)
- Entry and Repositioning, Efficiencies
- Consumer Welfare Standard

Differentiated Products Mergers

- Wide Class of Mergers
  - Computer Hardware and Software
  - Branded Consumer Products, Retailing
  - Consumer Durables
  - Information Content
- Focus on Pricing Competition
  - Same as Merger Guidelines
- Paper Addresses Innovation Competition

Today: Alternative Method of Establishing Presumption

- Differentiated Product Mergers
  - Unilateral Effects Theory
- Create New Option for Government
  - Not Meant to Supplant Current Approach
- Presumption is Rebuttable
  - No Change in “Back-End” Analysis

Market Definition/Concentration: A Mismatch for Unilateral Effects

- Well-Suited for Coordinated Effects
  - Historical Roots of Hypo Mono Test
- Circuitous at Best for Unilateral Effects
  - Can Be Misleading, Uninformative
  - Can Distract from Central Question
- Introduces Various (Arbitrary) Parameters
  - SSNIP, HHI Thresholds, 35% Safe Harbor

Market Definition: Problems in Practice

- Difficulty Defining the Relevant Market
  - Oracle/PeopleSoft
- Abuse of Critical Loss Methodology
  - Sungard/ComDisco
  - Whole Foods/Wild Oats
- Decline of Structural Presumption
  - Lower Payoff to Market Definition Exercise

Goal: Simple Test Diagnostic

- Market Concentration, HHI, Comports with Simple Cournot Model
  - Marginal Revenue Lower if Share Large
  - Output Choices for Homogeneous Product
  - But Underlying Idea is Robust
- Our UPP Test Derived from Simple Bertrand Model
  - Pricing Choices for Differentiated Products
  - Underlying Idea is Very Robust

Basic Merger Tradeoff

- Merging Firms Stop Competing with Each Other
  - Generically Encourages Higher Prices
- Joint Management of Combined Assets
  - Synergies → Lower Costs → Lower Prices
- Which Force is Stronger?
  - Focus on Direction of Price Change, Not Magnitude

Cannibalization

- Merging Firms A, B w/ Profits π_A , π_B
- Firm A Competitive Choice Variable S
- Competing Sells More: $X_A'(S) > 0$
- Competing Hurts Firm B: $\pi_B'(S) < 0$
- Merger Internalizes Impact on Firm B
- Equivalent to Cost Increase for Firm A
  - $TAX_A = [-\pi_B'(S)]/X_A'(S)$
  - Measure Initially at Pre-Merger Levels

Simple Underlying Model

- Firm A, Product 1; Firm B, Product 2
- Pre-Merger Prices: P_1 ,P_2
- Pre-Merger Marginal Costs: C_1, C_2
- D_{12} = Diversion Ratio to Product 1 from 2
  - Price of Product 1 Falls Slightly
  - Quantity of Product 1 Rises By ΔX_1
  - Quantity of Product 2 Falls By ΔX_2
  - $D_{12} = \Delta X_2/\Delta X_1$, Close Cousin of Cross-Elas

Pricing Cannibalization

- Merged Entity Will Internalize Cannibalization of Product 2 by Product 1
- Creates Opportunity Cost of Selling Product 1
- Quantify Opportunity Cost:

$$D_{12} (P_2 - C_2)$$

- Measured at Pre-Merger Prices, Costs

Merger Efficiencies

- Reduction in Marginal Cost of Product 1
  - Measure as Fraction of C_1, EC_1
- All Mergers Get Automatic Credit
  - Automatic Credit Rate E is Policy Parameter
  - Based on General Merger Synergy Evidence
- Efficiencies Considered at Front End
  - Relegated to Back End in Merger Guidelines

Will Merger Create Upward Pricing Pressure (UPP)?

- UPP Created for Product 1 if MC_1 Rises
  - Higher MC Generally Leads to Higher Prices
  - Very General Principle
- MC_1 Increase: Opportunity Cost Term
- MC_1 Decrease: Merger Efficiencies
- Does MC_1 Rise or Fall?

Simple Diagnostic Test for UPP

$$D_{12}(\bar{P}_2 - \bar{C}_2) > E\bar{C}_1$$

- Measure Variables at Pre-Merger Levels

Test for UPP in Symmetric Case

$$D > E\left(\frac{1-\bar{M}}{\bar{M}}\right)$$

- M = (P-C)/P, Gross Margin
- Example: M = 1/3, E = 10%, Get D > 20%

UPP Leads to Higher Prices

- Proposition 1: If UPP for Product 1 and 2, Merger w/ Default Efficiencies Leads to Higher Prices
  - Simple Bertrand Duopoly Model
  - Holding Fixed Prices of All Other Goods
- Underlying Concept is Very Robust
- Not Trying to Quantify Price Increase

Is the Price Increase "Significant"?

- Test Does Not Attempt to Quantify Price Increase for Product 1
  - Key Source of Simplification
- Harm to Competition is Significant Enough to Outweigh Presumed Efficiencies
  - Efficiencies Integrated into Simple Test
- Strict Consumer Welfare Standard
  - Embraced by Agencies and Courts

Why Not Estimate Price Increases?

- Inherently Much More Complex
- Requires Information on Rate at Which Costs are Passed Through to Prices, R
  - Internalization Creates Opportunity Cost
  - See Proposition 2 in Paper
- R Depends Upon Oligopoly Behavior
- R Depends Upon Curvature of Demand

Pass-Through Rate

- Pass-Through Rate for Single Firm
  - Holding Fixed All Other Prices

$$R = \frac{\varepsilon}{\varepsilon - 1 + (p/\varepsilon)(d\varepsilon/dp)}$$

  - Bulow and Pfleiderer (1983), JPE
- Can Be Substantial in "Competitive" Market
  - R = P/C with Constant Elasticity @ Profit Max

Pass-Through Rate

- Pass-Through Rate for Single Firm

$$R = \frac{1}{2 + M[\frac{pX''(p)}{X'(p)}]}$$

  - At Profit-Max Price
- Note: Market Definition Using SSNIP Test Also Depends Upon Pass-Through Rate

Test is Well-Rooted in Economics

- Based Directly on General Economic Principle: If Costs Rise, Price Will Rise
- Focus on Change Resulting from Merger
  - No Attempt to Explain Price Levels
- Does Not Involve Arbitrary Parameters
- Does Not Involve Drawing Artificial Boundaries, Elaborate Algorithms

Test Concept is Very Robust

- Upward Pricing Pressure on Product 1 if Marginal Cost of Product 1 Rises
- Very Robust With Respect To:
  - Shape of Demand System
  - Form of Oligopoly Conduct
- Market Definition and Merger Simulation Both Depend Upon Demand Shape
- Merger Simulation Assumes Static Bertrand

Data Requirements are Realistic

- Measure Prices and Marginal Costs
  - Routinely Done in Mergers
  - Need Margins for Critical Loss
  - Yes, MC Can Be Estimated Accurately
- Measure Diversion Ratio
  - Diversion Ratio is the Key Parameter
  - "As Simple as Possible, But No Simpler"
  - Look at Diversion to All of Firm B's Product

Test is Practical

- Need to Measure Only a Few Variables
  - Prices, Costs, Diversion Relate Directly to the Merging Parties
  - Much More Focused Than Hypo Mono Test
  - No Need to Measure Sales by Other Firms
- Firms Often Track Margins, Diversion
  - Can Use Marketing Documents and Studies
  - Reduces Scope for Litigation Distortion

Test is Transparent

- Logic Easily Explained to Judges
  - Far Simpler Than Hypo Mono in HMG
- Captures "Loss of Competition" Logic
- One Simple Test Formula
  - Comparable to HHI, ΔHHI Thresholds
- Amenable to Sensitivity Analysis
- No Black Box
  - Compare with Merger Simulation

Test Subject to False Negatives

- Higher P_2 and Lower C_2 → Higher Opportunity Cost, D_{12} (P_2 - C_2)
  - Plus These Effects Interact Positively
- See Werden (1996) JIE
  - "A Robust Test for Consumer Welfare Enhancing Mergers Among Sellers of Differentiated Products"
  - No Need for More Demand System Info

Refined Version of Test

- Accounting For Higher Margins and Feedback Effects Using Werden (1996)
- Symmetric Case

$$\frac{D}{1-D} > E\frac{1-\bar{M}}{\bar{M}}$$

- Adds Factor 1/(1-D) on Left-Hand Side
- More Accurate, But Less Transparent

Direct Rebuttal

- Measurement of Diversion Ratios, Margins
- Mixed Test Results
  - UPP for Product 1, Not for Product 2
- Complementary Products
  - Firm B Owns Complement to Product 1
  - Offsetting Incentive to Lower Price
  - Analogous Calculation of Margin on Complement and Stimulus to Complement

Full Analysis of Competitive Effects

- Presumption Carries Real Weight
  - Strength Depends Upon Test Score
- Back-End Analysis = Current Practice
  - Entry and Repositioning; Efficiencies
  - Non-Price Dimensions of Conduct
  - All Manner of Idiosyncratic Factors
- Either Side Could Predict Price Effects
  - Merger Simulation; Natural Experiments

Could This Happen?

- Would New Diagnostic Test:
  - Represent Radical Change?
  - Reflect Current Agency Practice?
- One View of Current Agency Practice
  - Look at Loss of Head-to-Head Competition
  - But Need to Conform to Guidelines in Court
  - So Reverse Engineer Market Definition
  - Useful Discipline or Distracting Obstacle?
- First Step: Revise Guidelines