Current Practice: Horizontal Merger Guidelines

- Define Relevant Market
  - Detailed Algorithm, SSNIP Test
- Measure Market Shares, HHI, \( \Delta HHI \)
- 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

Unilateral Effects #3
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

Unilateral Effects #4
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 $\rightarrow$ Lower Costs $\rightarrow$ Lower Prices
• Which Force is Stronger?
  – Focus on Direction of Price Change, Not Magnitude
Cannibalization

- Merging Firms A, B w/ Profits $\pi_A$, $\pi_B$
- 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 $\Delta X_1$
  – Quantity of Product 2 Falls By $\Delta X_2$
  – $D_{12} = \Delta X_2 / \Delta X_1$, 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

Unilateral Effects #17
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

\[ R = \frac{\varepsilon}{\varepsilon - 1 + \left( \frac{p}{\varepsilon} \right) \left( \frac{d\varepsilon}{dp} \right)} \]

- Bulow and Pfleiderer (1983), JPE

- Can Be Substantial in “Competitive” Market
  - \( R = \frac{P}{C} \) with Constant Elasticity @ Profit Max

Unilateral Effects #19
Pass-Through Rate

- Pass-Through Rate for Single Firm

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

- At Profit-Max Price

- Note: Market Definition Using SSNIP Test
  Also Depends Upon Pass-Through Rate

Unilateral Effects #20
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 $C_2 \rightarrow$ 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

Unilateral Effects #28
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