



Merger Simulation in an Administrative Context

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Topics

- What is Different in the Administrative Context?
- Simple Simulations
 - Screens and Presumptions
- Complements to Comprehensive Simulations
 - Unilateral Effects of Horizontal Mergers
 - Coordinated Effects of Horizontal Mergers



Academic vs. Administrative Context

- Simulation in an academic context
 - More comprehensive to increase precision
- Simulation in an administrative context
 - Generalist decision-makers
 - Guidance to merging firms
 - Calls for using simple simulations too

Enforcement Issues in the US: Administrative Context



- Unilateral effects
 - Shaky ground in the courts
 - *Staples* (1997), *Oracle* (2004); *Whole Foods* (2007)
 - Litigation dilemma
 - Late 1970s US brewing
 - Bud = 25%; Bud + Miller + Schlitz = 55%
 - Pabst, Coors, Stroh: nat'l firms with 5-15% shares
 - Pabst constrains Bud
 - Simulation: post-merger $\Delta P > 10\%$
 - Inadequate guidance
 - Market shares measure buyer first choices
 - Unilateral effects turn on buyer second choices



Common Problems in the US: Administrative Context Cont'd

- Coordinated effects
 - Limitations of “dinner party story”
 - Empirical support limited
 - No critical concentration ratio
 - Other factors matter too
 - What is the mechanism?
- Can simulation help?
 - Advantages of comprehensive simulations
 - Advantages of screens and presumptions



Unilateral Effects

- Economic issue
 - Premerger price s.t. $\Delta P^1 Q^1 = (P^1 - C^1) \Delta Q^1$
 - Post-merger, incentive to raise P^1 because $\Delta P^1 Q^1 + (P^2 - C^2) \Delta Q^2 > (P^1 - C^1) \Delta Q^1$
 - Both P^1 and P^2 may rise
- Intuitions
 - Recapture lost profits
 - Increase in opportunity cost
 - Removing competitive constraint



Simulation of Unilateral Effects

- Basic comprehensive model
 - Premerger: $L = -1/\varepsilon$ [n equations]
 - Assumes Bertrand-Nash conduct
 - Postmerger: $L = -1/\varepsilon$ $i \neq 1, 2$ [n-2 eqns]
 $L^1 = -1/\varepsilon^{11} - L^2(\varepsilon^{12}/\varepsilon^{11})(Q^2P^2)/(Q^1P^1)$
 $L^2 = -1/\varepsilon^{22} - L^1(\varepsilon^{21}/\varepsilon^{22})(Q^1P^1)/(Q^2P^2)$
- Simulation in this framework
 - Estimate/calibrate demand & cost, solve



Comprehensive Simulation Can Increase Precision

- Synthesize information
- Metric for anticompetitive concern
- Identify critical parameters
- Identify subtle effects in dense markets
- Account for pre-merger rivalry and post-merger reactions
- Tradeoff harm against efficiencies



Comprehensive Simulation in Administrative Context

- Difficult and time-consuming
 - Approach tailored to industry, information
 - Judgment calls consider tractability
 - Technical problems: internal consistency, discrete changes in price and output
- Poor fit with administrative process?
 - Short window to decide to seek addt'l info
 - Lack of guidance: firms can't anticipate
 - Too complex for generalist judges?

Unilateral Effects Screens and Presumptions

- Candidate screens
 - $\Delta P^1/P^1 \geq d^{12}(P^2-C^2)(P^2/P^1)/2$ (Shapiro)
 - $d^{12}(P^2-C^2) \geq EC^1$ (Farrell & Shapiro)
- Accounts for “first order” issues
 - Buyer substitution & profit recapture, not rivalry, repositioning, efficiencies
- More easily applied & gives guidance
 - But how much error in practice?



Simulation of Coordinated Effects Less Developed

- Comprehensive simulation approach?
 - Specify non-cooperative oligopoly solution
 - Compute post-merger cooperative equilibrium
 - Nash barg.? Balanced temptation ? Focal rule?
 - Incentive constraint: no firm prefers to cheat
- Simple simulation methods in administrative context
 - Maverick as basis for presumption



Incomplete Coordination and Mavericks

- Coordination: imperfect & incomplete
 - Punishment limited
 - No side payments
 - Cheating may be costly to deter
 - *E.g.* negative demand shocks lead to price war
 - Hard to reach consensus without communication
- Mavericks: indifferent to cheating
 - Likely only one maverick



Coordination: Premerger Incentive Constraint

Industry output $Q(P)$, price P

Cost and capacity may differ across firms

Firms reach consensus on price, shares

Each firm prefers coordination to cheating

Cheater charges $P - \varepsilon$, sells k for t periods

- $(P - C)sQ / (1 - \delta) \geq (P - C)kt(1 - \delta^t) / (1 - \delta)$
- $sQ(P) / kt \geq (1 - \delta^t)$

Mavericks Constrain Coordinatin

- $sQ(P)/kt \geq (1-\delta^t)$ for all firms
- sQ/kt intuition: benefit from continued cooperation vs. ability to expand inexpensively before rivals react
- Max coordinated price just deters cheating by maverick (min sQ/kt)
 - $P \leq$ joint profit-maximizing price
 - Coordination is incomplete



Merger Can Relax Constraint Imposed by Maverick

- $(s^1 + s^2)Q(P)/(k^1 + k^2)n \geq (1 - \delta^t)$
- If merged firm remains the maverick, constraint satisfied at higher price
- If merged firm no longer the maverick, new maverick may allow price to rise
- In principle, could simulate price rise
 - Outside model: if non-mavericks merge alter maverick incentives, create maverick

Coordinated Effects Presumption



- Short of simulation: presumption against merger involving maverick
 - If firms coordinating pre-merger (incompletely), will merger make worse?
 - Ways to identify maverick
 - Structural features, nat'l experiment, conduct
 - Presumption when can't identify maverick
 - Random merger w/maverick: prob = $2/n$
 - Probability higher if reduces asymmetries



Simple Simulations Address the Administrative Context

- Comprehensive simulation
 - Academic context values precision
 - Min error costs; tractability, info constraints
 - Analogous to unstructured standard
- Simple simulation as supplement
 - Administrative context also values accessibility and guidance
 - Minimize administrative costs, if error limited
 - Screen, presumption resemble bright line rule



Concluding Comment

- Simulation in an Administrative Context
 - Encourages Screens and Presumptions
- US Horizontal Merger Guidelines (proposed April 2010)
 - Unilat'l: value of diverted sales ($\Delta Q(P^2 - C^2)$) as indicator of upward pricing pressure
 - no metric/standard proposed
 - Coordin'td: presumption from HHI & ΔHHI
 - also recognize role of maverick