Mergers, Entry, and Consumer Welfare

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The analysis and conclusions set forth are those of the authors and do not indicate concurrence by other members of the Board research staff or the Board of Governors.

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Horizontal Mergers

Increase market power
Create efficiencies
Spur entry
When does entry eliminate the adverse effects of an otherwise anti-competitive merger?
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- We provide a unified framework. Obtains perhaps surprisingly insights. Excited to share with you.
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- We provide a unified framework. Obtains perhaps surprisingly insights. Excited to share with you.
- Then develop implications for merger review and the likely, timely, and sufficient standard.
Plan for the Talk

- The paper is very mathematical. Presentation goal is to convey intuition $\rightarrow$ graphical analysis.
- Market with 4 incumbents and one prospective entrant. Bertrand competition and logit demand.
- Some generalization is possible.
- All claimed results have been proved, though not all are in the current working paper.
Five Main Results

1. Entry alone does not mitigate adverse effects.
2. Entry and efficiencies (together) can eliminate consumer surplus loss.
3. Requires particular combinations of efficiencies and entry.
4. The profit opportunity for entrants is small.
5. Difficult to determine whether entry will occur.
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Related Literature


   *Mergers might not be profitable if entry is sufficient. Numerical evidence for Bertrand/logit, proof for Cournot.*


   *There exists “critical” cost/quality efficiencies which exactly compensate consumers for loss of competition.*

3. **Efficiencies and Entry:** Cabral (2003), Erkal and Piccinin (2010)

   *Efficiencies reduce profitability of entry. But there are more connections to be developed...*


   *In a Bertrand/logit model, a firm can be characterized by a type that summarizes the quality and costs of all its products.*
Framework and Results
Model as a Three-Stage Game

Agents: Incumbents \((f = 1, \ldots, F - 1)\) and an outsider \((f = F)\).

Differentiated products (logit) and constant marginal costs.

The agents play the following three-stage game:

1. Two incumbents decide whether to merge (possibly with efficiencies).
2. An outsider decides whether to enter the market.
3. All firms in the market compete in prices à la Bertrand and earn profit.

Examine SPE with merger-induced entry. Apply the Nocke-Schutz (2018 ECMA) type-aggregation representation of the model.
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Entrant Type

Merger Efficiency

Indices of Neutrality

Increases Consumer Surplus

Consumer Surplus

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Mergers and Entry
“Compensating Efficiency”
(Werden [1996]; Froeb and Werden [1998]; Nocke and Whinston [2020])
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“Compensating Entrant”
Sufficient to Preserve Consumer Surplus
Indices of Neutrality

Entrant Type

Merger Efficiency

Profitable Merger

Merger Profitability
“Best-Case Entrant” Merger is Profit-Neutral (without efficiencies)
Indices of Neutrality

- Merger Profitability
- Consumer Surplus

Pro–Competitive and Profitable Merger
Important Result: $a < b$
(without efficiencies)
Best-Case Entry Is Insufficient

**Theorem:** In any SPE featuring merger without efficiencies, consumer surplus is lower than in a counterfactual without merger.
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- Holds with Bertrand logit.
Best-Case Entry Is Insufficient

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- Holds with Bertrand nested logit if entrant is in same nest.

(Aside: no post-merger entry in efficient procurement auction models.)
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- Holds with Bertrand nested logit if entrant is in same nest.
- Holds with Bertrand nested logit if entry is in different nest, so long as nesting parameter not too large (proof in progress).
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- Probably mostly true: holds in narrow antitrust markets.
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- Holds with Cournot and arbitrary cost functions (Spector [2003]).
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Best-Case Entry Mitigates Price Increases?
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![Graph showing the relationship between Mitigation and Merging Firms’ Market Shares for 7 Incumbents.](image)
Back on Track: Entry and Efficiencies

Indices of Neutrality

Merger Profitability
Consumer Surplus

Pro-Competitive and Profitable Merger
Entrant Type
Pro-Competitive Merger
Merger Efficiency
Lines
Profit Neutrality
Consumer Neutrality
Lower Efficiency Bound

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“Minimum Efficiencies”
Required for Consumer Gain
(Requires Specific Entrant)
What About the Entrant’s Profit?

Indices of Neutrality

- Merger Profitability
- Consumer Surplus

Pro–Competitive and Profitable Merger

Entrant Type

Merger Efficiency
Indices of Neutrality

- Entrant Profitability
- Entrant Earns Variable Profit
Indices of Neutrality

- Merger Profitability
- Consumer Surplus
- Entrant Profitability

Pro–Competitive Merger
Entrant Type
Merger Efficiency
Anti-Competitive Efficiencies?
Pro-Competitive Merger
Indices of Neutrality
Merger Profitability
Consumer Surplus
Entrant Profitability

Indices of Neutrality
- Merger Profitability
- Consumer Surplus
- Entrant Profitability

Caradonna, Sheu, and Miller
Mergers and Entry
Robustness: The Number of Firms
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Indices of Neutrality
- Merger Profitability
- Consumer Surplus
- Entrant Profitability

Pro–Competitive Merger

Caradonna, Sheu, and Miller  Mergers and Entry 17
Robustness: The Number of Firms

Indices of Neutrality

- Merger Profitability
- Consumer Surplus
- Entrant Profitability

Pro-Competitive Merger
Robustness: The Number of Firms

Indices of Neutrality
- Merger Profitability
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Pro–Competitive Merger
Robustness: The Number of Firms

Indices of Neutrality
- Merger Profitability
- Consumer Surplus
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Pro–Competitive Merger

Entrant Type

Merger Efficiency

6 Incumbents

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Mergers and Entry
Robustness: The Outside Good Share

Outside Good Share: 0.1

Indices of Neutrality

- Merger Profitability
- Consumer Surplus
- Entrant Profitability

Pro–Competitive Merger

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Robustness: The Outside Good Share

Indices of Neutrality
- Merger Profitability
- Consumer Surplus
- Entrant Profitability

Outside Good Share: 0.2

Entrant Type

Merger Efficiency

Pro–Competitive Merger
Robustness: The Outside Good Share

Indicates of Neutrality

- Merger Profitability
- Consumer Surplus
- Entrant Profitability

Pro-Competitive Merger

Outside Good Share: 0.3

Entrant Type

Merger Efficiency

0 a b c d
Robustness: The Outside Good Share

Indices of Neutrality

- Merger Profitability
- Consumer Surplus
- Entrant Profitability

Pro-Competitive Merger

Outside Good Share: 0.4
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Entrant Profitability
(No Efficiencies)

Entrant Profit
Entrant Profitability

Pre-Merger
Entrant Profitability (No Efficiencies)

Entrant Profit

Pre-Merger
Post-Merger
About 10% Higher (Variable) Profit
About 10% Higher (Variable) Profit

With Lower-Bound Efficiencies, Even Smaller Profit Opportunity: 0%-5%
With these entry costs, get entry before the merger.
With these entry costs, no entry.
Leads to Merger-Induced Entry
Suppose entrant's (variable) profit increases from $100 to $103.

Let entry cost (EC) be $500, fixed cost (FC) be $51, \( \delta = 0.90 \).

\[
\Psi(TF) = (1 - \delta) EC(TF) + FC(TF) = \$101.
\]

Merger-induced entry is profitable. With efficiencies might be sufficient.

But if \( \delta = 0.85 \) then \( \Psi(TF) = \$126 \), and entry does not occur.

Even if entry seems feasible, the “confidence interval” for predictions will probably incorporate the possibility (or probability?) of no merger-induced entry.
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**Precision in Forecasting**

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- These items fit together in a unified framework.
Topics For Discussion

The framework is developed for perfect information, (static) Nash equilibria, one-shot game, only cognizable efficiencies.

Standard but also specific! Could consider:

1. Imperfect information.
2. Coordinated effects.
3. Entry dynamics.
4. Fixed cost efficiencies.
5. Divestitures.
Implications for Merger Review

• “Timely, Likely, Sufficient” first appears in the 1992 U.S. HMG. Now in the 2010 U.S. HMG, and adopted by (at least) the EC, CCB. As best we can discern, motivated by a loose intuition that markets self-correct. But the game-theoretical underpinnings are surprisingly weak.

• Our baseline models (Cournot, Bertrand/logit) suggest that entry is never sufficient. In other, more complicated models, entry might be sufficient. This suggests a high evidentiary standard is appropriate.

• On top of that, however, the models suggest that there is no real path to reliably inferring that mergers would induce entry. The confidence bands are just too wide. Unclear how to approach this question.

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... it is time to bid the entry defense *tot ziens*. 
Thank You!