Effects of Mergers on Incentives for New Technology Adoption

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Context

• Two mergers stopped by regulators
  • Advanced technology adoption
  • AT&T purchase T-Mobile’s U.S. assets (2011)
  • GE-Honeywell (2001)

• Were regulators right that
  • Consolidation trumps technology?
  • Rivals won’t upgrade?
AT&T and T-Mobile

- Merge two of four largest
  - AT&T 98.6 million connections
  - T-Mobile 33.6 million connections
  - Together 90% of U.S. homes
- DOJ petitions to stop (Sept. 2011)
Leadership in Infrastructure Policy

“Market” Shares

Pre-merger 2010

- AT&T: 32%
- Verizon Wireless: 31%
- Sprint Nextel: 17%
- T-Mobile: 11%
- MetroPCS: 3%
- Others: 6%

Post-merger? (2010 data)

- AT&T: 43%
- Verizon Wireless: 31%
- Sprint Nextel: 17%
- MetroPCS: 3%
- Others: 6%

Source: FCC 15th Report
DOJ Press Release

“...would substantially lessen competition... resulting in higher prices, poorer quality services, fewer choices and fewer innovative products...”

• T-Mobile is
  • innovative
  • disruptive and challenger
  • positioned to be affordable to average customer
AT&T/T-Mobile argument

• Need radio spectrum for faster migration to 4G
  • Have HSPA+. Want LTE.

• Is this true?

• Wouldn’t greater concentration decrease adoption incentive?
GE-Honeywell

- US and Canada approve
- EU rejects
  - Portfolio Effects, i.e., combined products provide unique value
  - And rivals cannot match

- How does higher quality affect rivals?
Our Approach

- Assume 3 firms compete à la Cournot
  - Exogenous merger of two firms
- Test merger’s impacts
  - Incentives to adopt advanced technology
  - Rivals’ incentives to adopt
  - Fixed cost thresholds
- Also other forms of competition
Impact of Single Firm Adopting Higher Technology in 3-Firm Market

Firm 1’s reaction function
- Advanced technology
- Standard technology

Firm 2’s + Firm 3’s reaction function
- Standard technology

Graph showing the impact of Firm 1 adopting higher technology in a 3-firm market, comparing reaction functions between standard and advanced technology.
Impact of Single Firm Adopting Higher Technology in 2-Firm Market

Firm $m$’s reaction function

Firm 2’s reaction function standard technology

Firm $m$’s reaction function advanced technology

Firm 2’s Output
Comparison of Threshold Fixed Costs with Cournot Interactions and Varying Marginal Costs
Why?

• Merger increases the number of customers for covering fixed costs
• Merger allows capture of greater portion of economic value
Duopolist Reaction Functions in Cournot, Bertrand, and Mixed Competition Expressed as Prices
Comparison of Pre-Merger and Post Merger Technology Adoption vs Marginal Costs, No Network Effects

Effects on Marginal Costs

Fixed Cost Thresholds, 2-firm minus 3-firm

- Cournot
- Bertrand
- Mixed
Comparison of Pre-Merger and Post Merger Technology Adoption vs. Marginal Costs, No Network Effects

Threshold Fixed Costs, 2-firm minus 3-firm

Effects on Marginal Costs

- Cournot
- Bertrand
- Mixed giving way to Cournot
Comparison of Pre-Merger and Post Merger Technology Adoption vs Marginal Costs, No Network Effects, with low-quality rival
Comparison of Technology Adoption vs. Marginal Costs, No Network Effects, for Duopoly where Rival has Upgraded

![Graph showing the comparison of technology adoption vs. marginal costs, with different scenarios and thresholds.](image-url)
Conclusions

• AT&T and T-Mobile appear to have been correct that merger would speed 4G

• EU possibly wrong that rivals would not innovate to match GE-Honeywell
Thank you

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