

# Competition Policy in Networks Industries

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*What are you talking about?*

Alternative Title:

# Competition Policy in Industries Subject to *Network Effects*

- **Network Effect:** The value of a good or service is more valuable to any given consumer the greater the number of other consumers of that good or service.
- Demand-side economies of scale.
- Effects v. externalities.
  - Whether network effects are externalities depends on the nature of pricing.

Why should we care?

Industries with network effects are important.



# Network effects can have strong effects on competitive dynamics.

- Proprietary v. shared network effects.
  - The role of compatibility.
- Network effects can generate feedback effects that raise competitive concerns:
  - **Tipping:** tendency of one network to pull away from rivals once it has gained an initial edge (*e.g.*, Blu-ray high-definition video discs v. HD DVD).
  - **Chicken-and-Egg Problem:** each potential user waits for others to join before him- or herself joining.
  - **Lock-In:** users continue to patronize current provider even though another provider offers a potentially more valuable product or service.

# Network industries raise interesting issues for competition policy.

- How to account for novel sources of market power?
- How to account for Schumpeterian Competition “for the market”?
- Is more competition better?
- Is there a greater possibility of successful predation and exclusion?
- How to treat firm conduct regarding product compatibility and standardization?

# The Microsoft Cases

- Alleged Source of Market Power
  - Applications Barrier to Entry
- Schumpeterian Competition for the Market
  - One of the few points on which the two sides agreed.
- Alleged Anticompetitive Conduct
  - Block middleware from achieving application portability; resulting compatibility would have facilitated entry by rival operating systems.
  - Create fear, uncertainty, and doubt (highlighting the importance of user expectations).





# Two Views on Network Effects and Competition Policy

1. Network effects raise the possibility of tipping to monopoly, and, thus, require constant vigilance and active intervention by competition policy authorities.
2. Network effects create complex competitive dynamics that enforcers cannot understand, and, thus, competition policy authorities should seldom intervene.

People holding both views claim support from the Microsoft example.

*What are you going to do with the rest of your scheduled time?*

# Competition policy in network industries is competition policy.

- In other words, we confront the standard range of issues, although with some twists.
- Stages in the analytical process:
  - Market Definition
  - Assessment of Market Power
  - Assessment of Competitive Effects
    - Comparison of actual and but-for worlds.
    - What standard or metric to use in the comparison?

# First, more terminology.

- Same-side network effects.
  - Real or Direct: communications networks, languages.
  - Virtual or Indirect: hardware-software paradigm, such as mobile OS and applications.
- Cross-platform network effects.
  - Members of one group of users cares about presence of members of another group of users (*e.g.*, viewers and advertisers on a media platform).
- Relationship
  - Cross-platform effects arise in virtual effects but one can have cross-platform effects without virtual network effects.

What about two-sided markets?

*A Tasty Two-Sided Market*

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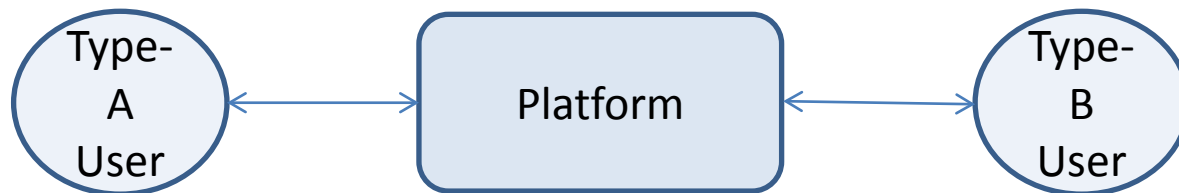
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# A Definition for Today

- **Placeholder Definition:** A market is two-sided if there are cross-platform network effects in one or both directions.
- There is a lot more to discuss about the question of how to define two-sided markets... that's what beer was invented for.



# The Importance of Multi-homing

- **Multi-homing:** user's practice of participating on two or more platforms simultaneously.
  - *e.g.*, merchants accept multiple networks' credit cards, video game developers write versions for multiple brands of game console.
- Can weaken positive-feedback cycle.
  - Reduces forces toward tipping.
  - May help overcome the chicken-and-egg problem (*e.g.*, allowing DVDs to enter against VHS).
- Networks' conduct can affect the degree of multi-homing.
  - *e.g.*, exclusive contracts between video game developers and console manufacturers.



# **MARKET DEFINITION & MARKET POWER**

# Two-Sided Market Definition

- Market definition has been disputed in a variety of matters involving the payment industry.
  - Confusion regarding vertical structure and two-sidedness.
  - Debate regarding change in price *level* v. price *structure*.
- Consider a firm pricing a transaction service to two distinct user groups,  $b$  and  $s$ :

$$\pi = D(p_b, p_s)\{p_b + p_s - c\}.$$

- Standard Framework: Assess whether a hypothetical monopolist would find a Small but Significant, Non-transitory Increase in Price (SSNIP) to be profitable.
  - Notice that profits depend on revenues from both sides.

# Possible Pitfalls

- Evans and Noel (2008) point out that  $D(p_b, p_s)$  is not a standard demand function.
  - Equilibrium correspondence reflecting institutional structure and user expectations.
- Failure to recognize this point can lead to problems.
  - Focusing on the demand function of only one side of the market may miss feedback effects and lead to overly narrow markets.
  - Confusing  $D$  with a traditional demand function may lead to mis-estimation of elasticities and to overly broad markets.
  - Take care in interpreting diversion among hypothetical monopolist's different networks: the external benefits generated by a given user can vary by network.

# A Two-Sided SSNIP Test

- Which price(s) to change?
  - Fine-tuned analysis: consider the optimal price changes to both sides simultaneously. (Advocated by Emch and Thompson (2006).)
  - Conservative (for plaintiff) approach: consider increase in price to one side of the market while holding the other constant (can lead to overly broad markets).
  - What not to do: look solely as change in *structure*.
- The Cellophane Fallacy for price level and structure.
  - Could lead to overly broad market definition if harm to competition has already occurred.
  - Could lead to overly narrow market definition *only* if harm to competition has already occurred.

# Focusing on one side without losing sight of the other.

- Filistrucchi, Geradin, van Damme, and Affeldt (2013):
  - Recommend a single, two-sided market in transactions markets (*e.g.*, payment networks).
  - Recommend two, interrelated markets in non-transactions markets (*e.g.*, advertiser supported media) even if there is no nominal price on one side.
- Perhaps the most important point regarding market definition is to use it as a guiding framework not a set of blinders.
  - Thoroughness and common sense are good things.

# A Two-Sided Cartel: One –Sided Harm?

Consider a group of realtors who collude to raise the prices they charge to property sellers but dissipate the profits in the form of higher quality services to buyers.



# A one-sided focus on harm can be appropriate.

- It is meaningful to talk about one-sided harm to competition or an increase in market power with respect to one side of the market.
- However, the analysis should also account for the larger picture.
- We should also recognize that perfect competition on the more-competitive side is highly unlikely.
- Wright (2004) advocates taking these effects into account in a different way, rather than discussing one-sided market power.

# Is market share a good measure of market power?

- Concentration analysis always is only a starting point.
- In a market with single-homing on one side, there is a sense in which each network is a monopolist for access to its customers.
  - *e.g.*, Ambrus and Reisinger (2006), Anderson and Coate (2005), and Armstrong (2006).
- Issue for interpretation of market shares when some consumers multi-home and others do not.
- Distinction between raising price and imposing vertical restraints that trigger fixed costs.
  - U.S. Supreme Court distinguishes “control prices” from “exclude competition” in defining monopoly power.



# **THE WELFARE STANDARD**

# Role of Process in Assessing Welfare

- Economists often focus on uni-dimensional welfare measures, such as consumer or total surplus.
- EU and US competition policy is concerned with protecting the competitive process.
  - In other words, it matters how a given end-state has been achieved.
  - Stark example: U.S. Supreme Court has blessed monopoly pricing as long as the monopoly was obtained on the merits.
- This distinction can be of practical significance and a means for dealing with complexity.
  - *U.S. v. Visa et al.* focused on harm to competitive process rather than detailed projections of prices and quantities.

# **PREDATORY PRICING & EXCLUSIVE CONTRACTS**

# Predatory Pricing

- Network effects can facilitate predation.
  - Non-network markets: what stops the prey's assets from being reused after the predation is over?
  - Network markets: once feedback effects have started, it is hard to reverse. (Farrell & Saloner (1986), Farrell & Katz (2005 ).
- Network effects can make predation hard to detect.
  - There are non-predatory reasons to price below cost.
  - Market may tip to monopoly even absent predation.
  - Predation can be successful without triggering exit.
- Similarities to learning-by-doing markets.
  - Cabral and Riordan (1994 and 1997).

# More Problems

- Cost-based tests miss the point:
  - Above-cost predation is possible if predation means sacrificing short-run profits to weaken rival and doing so in a way that lowers welfare.
- Ordover-Willig Test (1981) does not work.
  - Test asks if action would have been profitable if entrant had no reentry costs: but network effects play the role of making reentry difficult.
- Effects of policies can depend strongly on nature of user expectations.
  - Makes it difficult to design welfare-improving tests that do not require more information than is likely to be available.

# Predatory Price Structures

- Hoernig (2007) demonstrates that price *structure* can also be used in a predatory fashion.
  - Considers on-net and off-net pricing by a mobile services provider under a calling-party-pays regime.
- Dominant service provider can raise its off-net/on-net price differential to lower rival's profit:
  - Higher off-net price reduces rival's profits when access charges are greater than cost.
  - Lowering either on-net price (linear tariffs) or fixed fee (two-part tariffs) leads to higher off-net prices.
- Could price structure matter for predation in “standard” transaction markets?

# Exclusive Contracts

- ATMS, video games, and FTD have had exclusives.
- Simple intuition: network effects play the role of economies of scale in traditional models—if incumbent can sign enough users to exclusive contracts before entrant arrives, entrant will stay out.
- But this requires some other fixed cost, or else the entrant would hang around.
- Demand- and supply-side EOS magnify each other.
  - A small fixed cost can have a big effect by eliminating entrant as a competitive constraint.
- Extension of *e.g.*, Rasmusen *et al.* (1991) and Segal and Whinston (2000).

# Exclusive Contracts without Fixed Costs

- Doganoglu and Wright (2010) show that effects can arise even when there are no fixed costs of entry: entrant comes into market, but is weaker.
- *Targeted* exclusive contracts make incumbent more attractive and entrant less attractive even though entry occurs: allows incumbent to exploit remaining users.
- In a two-sided context, one side is more willing to sign exclusive contracts if it knows other side will multi-home.



**COMPATIBILITY**

# Compatibility's Effects on Competition

- Price Competition:
  - Simple model: can soften competition when suppliers are symmetric and strengthen when asymmetric.
  - Complex effects in a dynamic model: Chen, Doraszelski & Harrington (2009) find that suppliers will price to maintain incentives for compatibility (*i.e.*, avoid too much asymmetry).
- Standards Competition:
  - Possible weakening if losers have to be allowed in to winning standard for free.
- R&D Competition Generally:
  - Complex effects: incompatibility can discourage trailing firm from innovating or it can encourage the firm to seek big innovations to alter user expectations.

# Exclusionary Behavior & Compatibility

- Network effects may create “dominant” firms. Do they have special duties to deal?
  - *Facebook, Inc. v. Power Ventures, Inc.* suggests “no” in U.S.
- Do standards coalitions have a duty to deal?
  - What if there was initial competition among rival standards coalitions and one has emerged the winner?
  - This type of issue arises in *GSI Technology, Inc., v. Cypress Semiconductor Corp.*
- Mergers and Compatibility
  - In theory, a merger can lead a firm to seek incompatibility instead of compatibility. (Cremer, Rey & Tirole (2000))
  - Issue in proposed MCI-WorldCom merger blocked by EC.

# **CONCLUDING REMARKS**

# Other Topics

- Compatibility and Collusion
  - Should firms be allowed to cooperate to set standards?
- Vaporware
  - Farrell & Saloner (1986): vaporware allows inefficient entry.
  - Choi *et al.* (2010): vaporware provides valuable information.
- Portfolio Competition
  - What happens when *users* on one side of a two-sided market have market power?
  - Substitutes or complements or both?
  - Can one give meaning to “must have” products by distinguishing platform demand from user demand?

# Network effects aren't always important for competition policy.

- Microsoft vociferously argued that network effects or some other form of increasing returns to scale explain why Bing is a less successful search engine.
- Competitive effects of network effects are weak:
  - Most search users do not care about advertisers' presence.
  - Advertisers pay per click, which facilitates multi-homing; US FTC focused on ability to export AdWords files.
  - Features above create ready path for entry or expansion by a network offering a superior product.



# Been there, done that.

- Network effects raise some novel questions but generally raise long-standing questions in difficult combinations.
  - Assessing market power.
  - Detecting predatory and exclusionary behavior.
- Most issues arise in non-network markets.
  - Efficient prices depend on demand and cost conditions (*e.g.*, Ramsey pricing by a multiproduct firm; single-product pricing with non-constant MC).
  - Competition can lower total surplus (*e.g.*, inefficient entry; multi-product oligopoly).
  - Non-predatory prices may be below marginal cost or even negative (*e.g.*, input markets).

# Been there, done that (but we can learn to do it better).

- Fact that issues are not completely novel is a cause for optimism for competition policy.
- Although issues themselves are not entirely new, recent research is providing valuable insights that *are* new:
  - Role of user expectations.
  - Competitive implications of multi-homing.
  - Welfare implications of weakening rivals even if they are not eliminated.
  - Understanding additional dimensions of conduct, such as pricing strategies that distinguish among user groups and network restrictions on user behavior.



# A Final Thought: Managing Complexity

- It can be very difficult to assess what prices are optimal, what the competitive benchmark is, or how various welfare measures will change if certain conduct is banned.
- It is important to remember that complexity and ambiguity are common in competition policy.
- Two-sided markets should not get a free pass from antitrust scrutiny.
- The process element of antitrust standards helps:
  - Assess whether conduct harms the competitive process.
  - A sensible way to avoid analysis paralysis.