



# Technology Markets

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- *Technology markets in recent antitrust cases:*
  - *FTC v. Rambus (“synchronous DRAM”)*
  - *FTC v. Montedison and Shell Oil (“polypropylene”)*
  - *FTC v. Summit and VISX (“photorefractive keratectomy”)*
  - *DOJ v. American National Can and KMC Maschinen (“laminated tube-making”)*
  - *DOJ v. Gemstar-TV Guide (“interactive program guides”)*
  - *European Commission re: Digital and Olivetti (“RISC”)*
  - *Gemstar v. EchoStar, Pioneer, and Scientific-Atlanta (“interactive program guides”)*

# Market Definition: IP Guidelines

- *A technology market consists “of the intellectual property that is licensed . . . and its close substitutes – that is, the technologies or goods that are close enough substitutes significantly to constrain the exercise of market power with respect to the intellectual property that is licensed.” IP Guidelines, Sec. 3.2.2.*
- *A technology market can constitute a relevant antitrust market when “rights to intellectual property are marketed separately from the products in which they are used.” IP Guidelines, Id.*

# Market Definition: Derived Demand

- *What conditions will tend to cause IP to constitute a technology market?*
- *Demand for IP is a derived demand*
- *Apply Marshall's four laws of derived demand*
  - *Demand for product using the IP is relatively inelastic*
  - *Cost of the IP is a relatively small percentage of the total cost of the final product*
  - *Substitute technologies are unavailable or inefficient*
  - *Other inputs have relatively inelastic supplies*

# Market Definition: Practical Problems

- *Firms generally own a portfolio of patents and often license them together (“portfolio licensing”)*
- *The portfolio of patents often will include substitute and complementary technologies*
- *In many cases, no transactions will exist for the license of either an individual patent or a group of substitute patents*

# Assigning Market Shares in a Technology Market

- *Principle is to use “best indicator of firms’ future competitive significance.” HMG.*
- *Assigning market shares for technology markets can be challenging*
  - *Often no direct way to assign shares on the basis of royalty payments (e.g., because of cross licensing)*
  - *Portfolio licensing can lead to outcome that no transactions occur for individual patents or groups of substitute patents*
  - *No useful measure of a firm’s capacity or shipments*

# Assigning Market Shares in a Technology Market

- *1/N method of assigning market shares:  
Advantages*
  - *Simple to compute*
  - *Likely indicates firms' future competitive significance if patent portfolios can be used to “produce close substitutes at comparable costs” IP Guidelines*

# Assigning Market Shares in a Technology Market

- *1/N method of assigning market shares: Disadvantages*
  - *Not likely to indicate firms' future competitive significance if patent portfolios cannot be used to “produce close substitutes at comparable costs”*
  - *This condition likely to obtain since*
    - *Patent portfolios differentiated*
    - *IP suppliers differ in ability to support implementation of technology*
    - *Downstream markets often have consumer lock-in due to either network effects or switching costs*

# Assigning Market Shares in a Technology Market

- *Use technology choices by manufacturers in downstream markets to assign market shares*
- *That is, examine the relative success of competing technologies in downstream markets*
  - *Advantages:*
    - *Better able to measure differentiated nature of patent portfolios, thus more likely to indicate firms' future competitive significance*
    - *Likely to hold in most cases since patent portfolios are highly differentiated*

# Assigning Market Shares in a Technology Market

- *Use technology choices by suppliers in downstream markets to assign market shares*
  - *Disadvantages:*
    - *Difficult to implement if downstream products made with complementary technologies from two or more IP providers*
    - *Differential competitive performance of downstream firms may bias estimate of upstream IP suppliers' future competitive significance*

# Measuring Monopoly Power in Technology Markets

- *Structural approach*
  - *Market shares, market concentration*
  - *Barriers to entry*
    - *Invent around existing IP*
    - *Defend patent infringement claims*
    - *Cost of indemnifying downstream producers*
    - *Cost to produce downstream products with new technology*

# Measuring Monopoly Power in Technology Markets

- *Performance approach*
  - *Evaluate changes in royalty rates (assume marginal costs not possible to measure but constant)*
  - *Licensing practices and changes in such practices*
    - *Tie-ins: use of IP conditioned on use of other products*
    - *Tie-outs: total payments increase when quantity demanded decreases*
    - *Long-term contracts exceeding length of patent life*