TP5 - Distribution Networks

The Economics of Copyright, The Internet and Network Industries

Michael Pollitt

Outline

• Efficiency and ‘Distribution’
• The Economics of Copyright
• Napster’s Effect on Record Companies
• The Economics of the Internet
• The Economics of Networks
• Network Industry Economics
• Next Steps
Economic concepts relevant to network industries

- Market power: monopoly and monopsony
- Economics of scale
- Vertical integration
- Price discrimination
- Strategic and innocent entry barriers
- Consumption externality
- Congestion effects

Reminders from Demsetz

‘An owner of property rights possesses the consent of his fellow men to allow him to act in particular ways.’ Demsetz, 1967, p.347.

‘I have argued that property rights arise when it becomes economic for those affected by externalities to internalize benefits and costs.’ Demsetz, 1967, p.354.
Efficiency and ‘Distribution’ Trade-offs

- Patents and copyright are justifiable on efficiency grounds - they promote innovation and overall economic welfare.
- However they give rise to ‘distributional’ consequences - sellers are richer and consumers poorer than otherwise.
- A major issue in patents and copyright is whether they result in a fair ‘distribution’ of benefits between consumers and producers.
- The perception of fairness may depend on the cost and originality of the invention e.g. patenting genes.
- Consumers may be unwilling to accept the responsibility of paying if they perceive that the rewards to producers are disproportionate to their added value e.g. with recorded music.

The Economics of Copyright

- Key issue is efficiency of system vs the ‘distributional’ consequences.
- This gives rise to the optimal length and optimal scope of copyright protection.
- Length = number of years for which legally enforceable monopoly rights can be enforced.
- Scope = the amount of ‘fair use’ that should be permitted without recourse to copyright owner e.g. private copying of TV programmes for later viewing.
- In general it is accepted that copying for ‘time’ and ‘space’ ‘shifting’ is ‘fair use’. 
The Economics of Copyright

• The economic rationale for ‘fair use’ is that it increases the welfare of the consumer without seriously reducing the welfare of the producer and it saves on transaction costs of negotiating with copyright holder.
• Legal case for copyright can include moral right to benefit from created work.
• However we should remember that other incentive mechanisms have been devised to incentivise innovation and these may yield higher social welfare. e.g. state funding for innovators, prizes for innovation, in house innovation.
• Is copyright necessary? Is music the same as ethical drugs?

The Economics of Copyright

• Landes and Posner (1989) argue that the optimal level of copyright protection depends on:
  – The response of the number of works created to increase in protection (1)
  – The value of each extra work (2)
  – The response of the total cost of creating works with respect to number of works (3) and the degree of copyright protection (4)
  – Increases in 1 and 2 raise the optimal level of protection, increases in 3 and 4 reduce it.
• The reason for limiting intellectual property is to reduce monopoly profits and to reducing tracing costs.
• Why have increasing copyright length and fixed date after death of author?
  – Falling cost of copying should raise optimal degree of protection.
  – All works should come out of copyright at same time to prevent problems of determination of publication date and competition between old and new eds.
The Economics of Copyright Enforcement
(Landes and Lichtman, 2003)

• Should we prefer indirect liability or direct liability for copyright infringement? Napster held to be indirectly liable.
• Indirect liability has the advantage of low transaction costs of enforcement and avoids random suing of individuals (e.g. may be easy for manufacturers of hardware to comply).
• However it restricts utility of devices or it raises the price of the hardware (due to royalty payments to copyright holders).
• It may lead to new technologies to circumvent lawsuits (e.g. offshore location or no central server).

How does illegal copying affect the legitimate music market?

• Three sources of income in market:
  – Hard Copies
  – Broadcasts
  – Live Performances
• Most artists make most of their money from live performances
• Profits may fall because:
  – Losses in distribution channel (competitor network has arisen)
  – Illegal copies displace legitimate sales
  – Losses on falling radio audiences due to online listening
  – Unit of sale has changed reducing demand for pre-bundled products i.e. move from compilation to single track
Lessons from history
(Silva and Ramello, 2000)

- For three decades the recorded music industry has been subject to illegal copying using tapes but sales have continued to grow.
- Copying only effects the full price segment of the market where established artists make additional money from royalties.
- There are demand network externalities from copies. Sampling does lead to purchases of a full price copy. This is particularly the case in developing countries as income grows.
- Demand network externalities increase the demand for live performances from the artists.

Lessons from history

- Illegal copies have served a useful function for the record companies, in being a credible commitment to not reduce prices in the future. Consumers buy the high price version now knowing that there is little incentive for the record companies to discount it in the future.
- Illegal copies create a new generation of listeners who will purchase full price versions in due course (esp. students).
- Napster may be different to tapes because the quality of the reproduction is identical to the original and hence high willingness to pay individuals have no incentive to pay more for quality.
Have MP3 downloads damaged the US record industry?


Source: Liebowitz, 2003, p.11.
Have MP3 downloads damaged the US record industry? (Liebowitz, 2003)

• Explanations for recent decline in sales:
  – Format Changes - no evidence that new format leads to decline.
  – Prices and Incomes - price unchanged and small income effect.
  – Media Portability - virtually unchanged recently though big effect in the 1980s.
  – Tastes in Music - Tour revenues up since 1999; radio listening has fallen but not in most downloaded categories.

• Overall, evidence not consistent with other explanations.
• Issue, how far will sales fall: at the moment every 5-6 MP3 album displaces sales of one CD (?)

Is illegal file swopping economically beneficial?

• Establishing that the record companies have lost sales due to Napster is not sufficient.
• We need to establish whether incentives to create music and to distribute it have fallen. There is no evidence that this is yet the case.
• Even if this is the case we then need to set the welfare reducing costs of Napster against the convenience benefits
• Romer (2002) estimates that the benefit of illegal copying is equal to the whole revenue of the worldwide record industry (USD 37bn in 2000). This is because the cost of legitimate music is so high relative to file downloads.
The Economics of the Internet
(with acknowledgement to Begg, Dornbush, Fischer, 2003)

- Four key features of the internet are important:
  - experience
  - overload
  - switching costs
  - network externalities

Basic Architecture of the Internet

- Carriage providers - computers, cables, satellites
  - e.g. Worldcom
- Content providers
  - e.g. BBC
- Portals - the site you visit to navigate the Net
  - e.g. Google
- Gateways - the way you get on to the Net
  - e.g. ISPs
Experience products

- An experience good or service is one that must be sampled before the user knows its value
  - information is nearly always new
  - marketing needs careful attention
    - free samples
    - previews
    - establishing reputation

Information overload

- … arises when the volume of available information is large
- …but the cost of processing it is high

- screening devices become crucial
  - quality assurance mechanisms are important
  - large, established firms have a reputational edge
**Switching costs**

- … arise when existing costs are sunk
- The biggest switching costs are the value of time taken to investigate a new supplier.

- The problem is that those with most money have higher switching costs, this leads to greater need for advertising and increased returns to scale in internet content provision.

- Smart suppliers devise strategies for locking in their customers
  - e.g. air miles, supermarket reward cards

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**Network externalities**

Suppose $D_1$ represents the demand curve for a product exhibiting network externalities.

With price at $P_1$, demand is limited.

If price is reduced to $P_2$, more people find the network attractive so not only is there a move along the demand curve, but there is a shift in demand.

Long-run demand is more elastic ($DD$).
Information: the supply side

- Given substantial economies of scale, we expect monopoly suppliers of information products:
  - Dominant firm with competitive fringe
    - e.g. Microsoft
  - Niche market monopolies

- Thus after an initial period of experimentation the firms gaining most from the internet are large established firms, with a few start-ups that have managed to grow large e.g. Netscape, Amazon.
- However there will always be a fringe of small firms with a few key clients or who subsidise their internet operation because of personal preferences.

Pricing information products

- Strategies for pricing information products:
  - two-part tariff
    - an annual charge to cover fixed costs, and a small price per unit related to marginal costs
  - versioning
    - the deliberate creation of different qualities to facilitate price discrimination
  - bundling
    - the joint supply of more than one product to reduce the need for price discrimination
**Competition vs. collaboration**

- A strategic alliance is a blend of co-operation and competition, in which a group of suppliers provide a range of products that partly complement one another
  - e.g. Microsoft and Intel = Wintel
  - Airline alliances: One World, Star
  - AOL-Time Warner

- Strategic Alliances are an important lock-in strategy for internet firms for consumers who highly value one-stop shopping (i.e. have high opportunity cost of time).

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**From Internet Economics to Network Economics**

- Is the internet an economic revolution? Are bits different from atoms?
- Microeconomics is not about technology. It is about the behaviour of individuals subject to tastes, technology and market structure.
- The structure of analysis is not affected by the internet.
- However there are some interesting economics of networks (though networks are not that new in economics).
- Network externalities arise from consumption externalities. Networks require critical mass to get going. See Figure.
Systems competition and networks effects (Katz and Shapiro, 94)

- Determinants of success of networks include: expectations, co-ordination and compatibility
- Adoption externalities exist in hardware/software networks and communications networks.
- Network owner needs to be able to capture benefit of sales over network if there is to be optimal expansion.
- Strategies to attract new users include:
  - Opening market, rent hardware, vertical integration, sunk costs in low marginal cost software/hardware, penetration pricing, reputation.
**Systems competition and networks effects**

- Competition between systems e.g. VHS vs Beta
  - Tipping likely given network externalities
  - Restrained by consumer heterogeneity and product differentiation
  - Intense competition likely in early stages
  - Exclusive contracts can reduce concentration
  - Inertia possible as people don’t switch
- Old system may survive because it is cheap or regulated.

**Systems competition and networks effects**

- Benefits of compatibility (e.g. PC vs Apple)
  - Economies of scale
  - Learning
  - Technology spillovers
  - Variety of components
  - Economies of scale in home production
  - Less danger of stranded costs
- Costs of compatibility
  - Adaptors costly
  - Loss of variety of systems
**Systems competition and network effects**

- Compatibility shifts locus of competition from network size.
- Obviously superior firms don’t want compatibility (e.g. Microsoft)
  - Reputation, product differentiation, installed base
- If different firms have advantages then compatibility desirable
- Is government intervention warranted to promote optimal configuration of networks?
  - Private solutions are possible to compatibility problems.
  - Governments don’t necessarily work in best interests of society (incumbents provide campaign funds).
  - Lack of information for governments to make intervention decisions (market moves too quickly for standard selection).

**Relating to Napster**

- Napster represents an alternative network over which music services can be distributed.
- There is an old and a new network for the distribution of music services (this situation exists in telecom networks, electricity networks and transport networks).
- The interesting issues that Frank Field raised where who decides how any new network standards should be set.
- Is it obvious that the incumbent record companies should have a say in this?
‘Old’ issues which Napster case raises

- **Competition** - what are the benefits of this even if it means loss of existing networks and new fixed costs?
- **Market design** - who gets to design the market rules and what effects will this have on the outcome?
- **Regulation** - given that there may be monopoly power, how do we determine a fair price for products?
- **Company strategy** - in the face of a radical change in market conditions how should incumbent companies respond?

What do Record Companies do?

- Every company must have a reason to exist and hence some core competence.
- A core competence (Prahalad and Hamel, 1990):
  - provides access to a wide variety of markets
  - should make a significant contribution to the perceived customer benefits of the product
  - should be difficult to imitate
- The example of Microsoft
- What are the core competencies of record companies now?
- Firms are social constructs which are created for a socially useful purpose, once they have served this purpose they should be closed down.
Final Thoughts:  
Mapping to Lessig’s ‘Code’

- **Law** - The Economics of Property Rights  
  (lecture 3)

- **Markets** - Competition  
  (lecture 4)

- **Architecture** - Market Design  
  (lecture 5)

- **Norms** - Appropriate Regulation  
  (lecture 6)