The New Economy, Networks, and Digital Convergence

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Course Outline

This course analyzes the economics of the “new economy,” networks, the Internet and of related industries such as telecommunications and cable television. The emergence of the Internet has allowed for new business models. These electronic trade models take advantage of the search capabilities and economies of scale of the Internet. In this course, we will study key strategic issues facing companies that utilize these new business models. For example, we will study technology transitions in distribution of digitized music and video as electronic downloads in contrast with distribution in physical form (CD, DVD, Blu-Ray) in stores or by mail. Further, we will discuss distribution of physical goods (for example books, TVs) based on search at “virtual stores” (such as Amazon.com) in contrast with traditional “brick and mortar” stores. We will also analyze the merits of the various pricing methods used (a-la-carte, bundled, subscription).

Going deeper on the creation and format of digital goods, we will analyze a firm’s decision on whether to provide products that are compatible with those of competitors, or instead to engage in technical standards wars such as VHS vs. Beta in video players in the 1980s, Windows vs. Mac vs. Linux in operating systems for PCs, MP3 vs. WMA vs. RealAudio in digitized music, and HD DVD vs. Blu-Ray in the last two years. Applying models from the economics of networks, we will discuss the pros and cons of being compatible with competitors. In networks and in many industries with complementary goods, we observe “network effects,” that is, that goods are more valuable if more units are sold. For example, a PC operating system (such as Windows) is more valuable when it has bigger market share, and similarly for search engines and digital music and video formats. We will show that this common feature in the new economy results in significant inequality in the size of firms, very large profits for the top firms (Microsoft, Google, Oracle) and tiny profits for almost all other companies. In this context, we will discuss the antitrust issues that arise from the dominant positions of the top firms in these markets, focusing on the Microsoft antitrust case among others.

We will also study the evolution of the Internet and the infrastructure industries on which it is based. We will look at modern telecommunications, the crucial antitrust intervention that resulted in the 1981 breakup of AT&T, the reform attempted by the Telecommunications Act of 1996, and the emergence of cellular and other mobile telecommunications. We will study the emerging “intermodal” competition between bundles of services (voice, Internet, and prepackaged video) provided by either telecom or cable TV, and the traditional alternative stand-alone services.

Finally, we will discuss recent and proposed mergers and cooperative agreements such as the (withdrawn) agreement between Yahoo and Google for cooperation in ads placement, and the prospect of an acquisition of Yahoo by Microsoft, TimeWarner, or others.
Invited Speakers
- Vint Cerf, Internet Evangelist, Google, father of the Internet (invited)
- Ira Rubinstein, NYU Law School, former Microsoft (invited)

Requirements. This course is intended for MBA students who have completed the core microeconomics course. Law students may take the course with consent of the instructor. Students are expected to participate in class. Students will submit a paper in lieu of a final exam. After the midterm, student groups will start presentations on the preliminary versions of their final paper.

Readings. There are no required textbooks. We will rely on the package of notes and readings that are available to download. The following books will also be on reserve at the library.


Detailed Outline

A. Unregulated Network Markets
1. Introduction and Discussion of Digital Convergence (1/2 week)
   - What is the information superhighway
   - What is digital convergence, what markets it affects and how
   - What are the new business models facilitated by the Internet

Readings
- Economides, Nicholas, notes to be distributed

2. A Primer on the Economics of the “Old” and the “New” Economy (2 weeks)
   - What do we know from the “old economy”
     - Perfect competition
• Concentrated markets; monopoly; oligopoly; market power
• Horizontal and vertical relations between markets
• The “new economy”
• Network effects
  • Nature and causes
  • Complementarity
  • Technical compatibility
  • Networks and network structure
• Market structure with network effects
  • Upward-sloping demand curve
  • Critical mass
  • Fast expansion of new networks compared with non-network innovations
  • Winner takes most: extreme inequality in market shares and profits in network industries
  • Importance of installed base
  • Lock-in and path-dependence
  • Entry barriers
  • Examples / cases
  • Compatibility
    • FAX
    • Voice Telecommunications
  • Incompatibility
    • Beta v. VHS
    • CD v. LP
    • Windows vs. Apple OS vs. Linux
    • PC audio formats (MP3, WMA, AU, RM, etc.)
    • Video formats (MPEG, AVI, WMV, etc.)
    • IM formats
    • New DVD formats (Blu Ray, HD DVD)

Readings
• Class notes 1
• Class notes 2
• Network Economics Slides
• Economides, Nicholas The Economics of Networks, International Journal of Industrial Organization, vol. 16, no. 4, pp. 673-699 (October 1996).

3. Public Policy: Antitrust and Regulation (1/2 week)
• Main antitrust laws
  1. Sherman Act, Clayton Act; FTC Act;
2. **Horizontal Merger Guidelines**
   - Sectoral Regulation
   - Application of antitrust law to telecommunications

**Reading**

4. **Application of Network Economics to the Computer Industry (1 week)**
   - The market for operating systems for personal computers
     - The role of compatibility
     - Microsoft
       - Antitrust suits (US and EU)
       - Allegations
       - Defense
       - Rulings
       - Remedies

**Readings**
- Presentation on the Microsoft Antitrust case
- The Microsoft Antitrust Case For MBA Students
- NYU conference on US v. MS, including streaming video of all presentations featuring (among others) Assistant Attorney General for Antitrust Doug Melamed, NY Assistant Attorney General for Antitrust Harry First, Microsoft counsel Rick Rule and Former Solicitor General Boyden Gray
- Discussion on US v. MS on PBS TV with host Jim Goodale, Prof. Nicholas Economides, and Prof. Eleanor Fox, in streaming video, first broadcast on November 16, 2000
- Story in Wired magazine on Microsoft’s proposal for Apple allow clones

5. **The Internet (2 weeks)**
   - Structure of the Internet; ISPs; servers;
   - The Internet backbone
     - Structure
     - Pricing
     - Competition issues
     - Information portals: Google, Yahoo, etc.
   - Local Internet access
     - Net neutrality, two-sided pricing
     - Network management
   - Invited speaker Vint Cerf

   - Cybersecurity, privacy, anonymity
   - Invited speaker Ira Rubinstein
Reading


6. Electronic Commerce (1/2 week)

- Facilitation of transactions
- Information goods
- Content dissemination of information goods
  - Dissemination of video content
- Electronic money and payment systems

Reading

- Class notes

7. Technology Transitions in Information Delivery (1 week)

- Netflix vs. traditional movie rental
- Electronic distribution of music
  - Piracy
  - Peer to peer; Napster and Torrent

Readings

- The Music Industry and the Internet, HBS case
- Netflix, Stanford case

B. Regulated Network Markets; Telecommunications

8. Structure of the Telecommunications Network and Markets (1 week)

- Types of telecommunications and related services
- Markets and relationships across markets; pricing
- End-to-end (final services) markets
- Residential
- Business
- Voice
- Data
- Internet
- Price discrimination
- Intermediate markets; termination access; resale
- Equipment markets
Readings
- Class notes

9. **History of Telecommunications** (1/2 week)
- Invention of the telegraph; facsimile; race to standardization
- Invention of the telephone; early years
- The years of competing telephone networks
- Consolidation into AT&T and GTE

Readings

10. **Cable Television** (1/2 week)
- History; deregulation and re-regulation
- Fiber to the home and fiber to the curve
- Bundling of channels
- Bundling of cable TV and phone services

Reading

11. **Government Intervention and Antitrust Actions Against AT&T** (1 week)
- Creation of the Federal Communications Commission (1934)
- Regulation of telecommunications and Cable
- The Kingsbury commitment
- US v. Western Electric (1949)
- Breakup of AT&T
• Modified Final Judgment; restrictions on companies in the lines of business they can participate
• Vertical price squeeze; why local telephone companies were not allowed in long distance

Reading

12. The Post AT&T-Breakup Years (1984-1996) (1/2 week)
• Long distance market becomes competitive
• Wireless markets become prominent
• Local exchange carriers are unexpectedly profitable
• FCC auctions spectrum for pagers and cellular phones; PCS is introduced
• Broadband spectrum auctions; PCS

Reading

13. The Telecommunications Act of 1996 and its Implementation (1 week)
• Logic of the 1996 Act
• Entry into local service; Sections 251, 252
• Entry into long distance service; Sections 271, 272
• Universal service; new way to raise the subsidy
• Guidelines for the implementation of the Act
• The failure of the implementation of the 1996 Act
  • Legal disputes
    • FCC; PUCs
    • Federal and State courts
• Intermodal competition

Readings
• The Telecommunications Act of 1996

14. Mergers, Consolidation and Spin-offs: the Future Telecommunications and New Economy Landscape
• RBOC Mergers
• SBC-Pacific Bell
• Bell Atlantic-NYNEX
• SBC-SNET
• SBC-Ameritech
• Bell Atlantic-GTE forming Verizon

• Long Distance and Other Mergers
  • Qwest-LCI
  • MCI-WorldCom
  • AT&T-TCG
  • AT&T-TCI
  • AT&T-MediaOne
  • Qwest-US West
  • MCI-WorldCom with Sprint (failed, not receiving antitrust approval)
  • AT&T breakup (into AT&T, AT&T wireless, and AT&T Broadband)
  • AT&T Broadband-Comcast

• RBOCs with Long Distance Carriers
  • SBC-AT&T
  • Verizon-MCI

• Wireless Mergers
  • AT&T Wireless-Cingular
  • Sprint-Nextel

• Mergers Across Media
  • AOL with Time-Warner

• Consolidation in Internet Search
  • Yahoo-Microsoft?

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