The Impact of Government Policies on the Telecommunications Industry

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Outline

- Mission statement
- Summary of Telecomm. Act of ‘96
- Case studies
  - AT & T divestiture
  - Internet: ADSL & cable modems
  - Network computer
- Conclusion

Mission statement

Examine the impact of government regulation and policies on the telecommunications industry with particular emphasis on the Telecommunications Act of 1996.

Summary of the Telecomm. Act of '96

- Break monopoly in local phone services; allow long distance and local carriers to enter each others service.
- Deregulate telephone, cable, utility industries to compete in telephony, data & video services.
- Additional spectrum for HDTV
- Broadened definition of universal service
- Telecommunications Development Fund
- Communications Decency Act

Goal: Bring about more competition in every market to better quality, lower cost, and provide more choices.

Case Study 1:

AT&T Divestiture

History of a Telephone Monopoly

AT&T, parent company of the Bell System, held its original telephone patent from 1876-1893.

Pre-Divestiture: Why was AT&T regulated as a natural monopoly?

<u>Key goal of providing Universal Service</u>

- Network economies of scale
- Standardization of network and equipment
- Interconnection of customers (early entry by independents failed to connect customers with those of competitors)

<u>Communications Act of 1934</u>

(1) Prohibited telco-broadcast cross-ownership

(2) Granted AT&T immunity from antitrust suits

Pre-Divestiture Deregulation

- **1956 Consent Decree**: govt. drops antitrust lawsuits on condition that AT&T stays out of computer/unregulated industries.
- *Hush-A-Phone*, 1957: Court rules against AT&T's ban of another company's attachment of a mouthpiece hushing device.
- *Carterfone*, 1968: FCC permits subscribers to attach small cordless telephone to AT&T's network. Turning point in AT&T's total monopoly on network & supplying equipment by its subsidiary, Western Electric.

While AT&T's monopoly structure enabled the provision of universal service, its anti-competitive and inefficient practices eventually precluded further growth.

(1) Higher costs & demand for services
(2) Stifled innovation from barriers to entry

Divestiture

MFJ restructuring agreement results in AT&T's divestiture in 1984.
Main Provisions:

- 7 RBOCs: creation of regulated local monopolies

- LATA markets: intra-LATA and inter-LATA division

- Provides IXCs with "equal access" to BOC facilities

- Prohibits BOCs from IXC, info. services, and unregulated products

Result in opening long distance, equipment & information service market to competition. Ancillary voice services such as call waiting, forwarding and voice messaging experience explosive growth.

Impact of Telecommunications Act of 1996 on Provision of Voice Services

Act further opens competition in LEC and IXC markets thru deregulation.

- Interconnection requirements/access charge agreements
  to promote IXC entry and end cross-subsidization.

- Requires resale/unbundling of incumbent LEC networks
  to allow new entry through leased lines.

Also provides new Universal Service Initiatives:

- Establishes Universal Service Fund (USF)
  to provide subsidies to LECs and end cross-subsidization
  within local market and promote new entry into high cost areas.

Basic Lessons from Telephony Regulation

Policies need to successfully fulfill the dual objectives of

(1) Maximizing innovation:
- removing barriers to entry

(2) Maximizing adoption:
- (de)regulating market structure and service prices;
- development of universal service initiatives

* Future (and current) entry by telcos into other markets such as wireless, video and data can benefit from policies that are not only deregulatory, but that also promote use of the most efficient and effective technologies. (i.e. wireless entry in high cost areas)

Case Study 2:

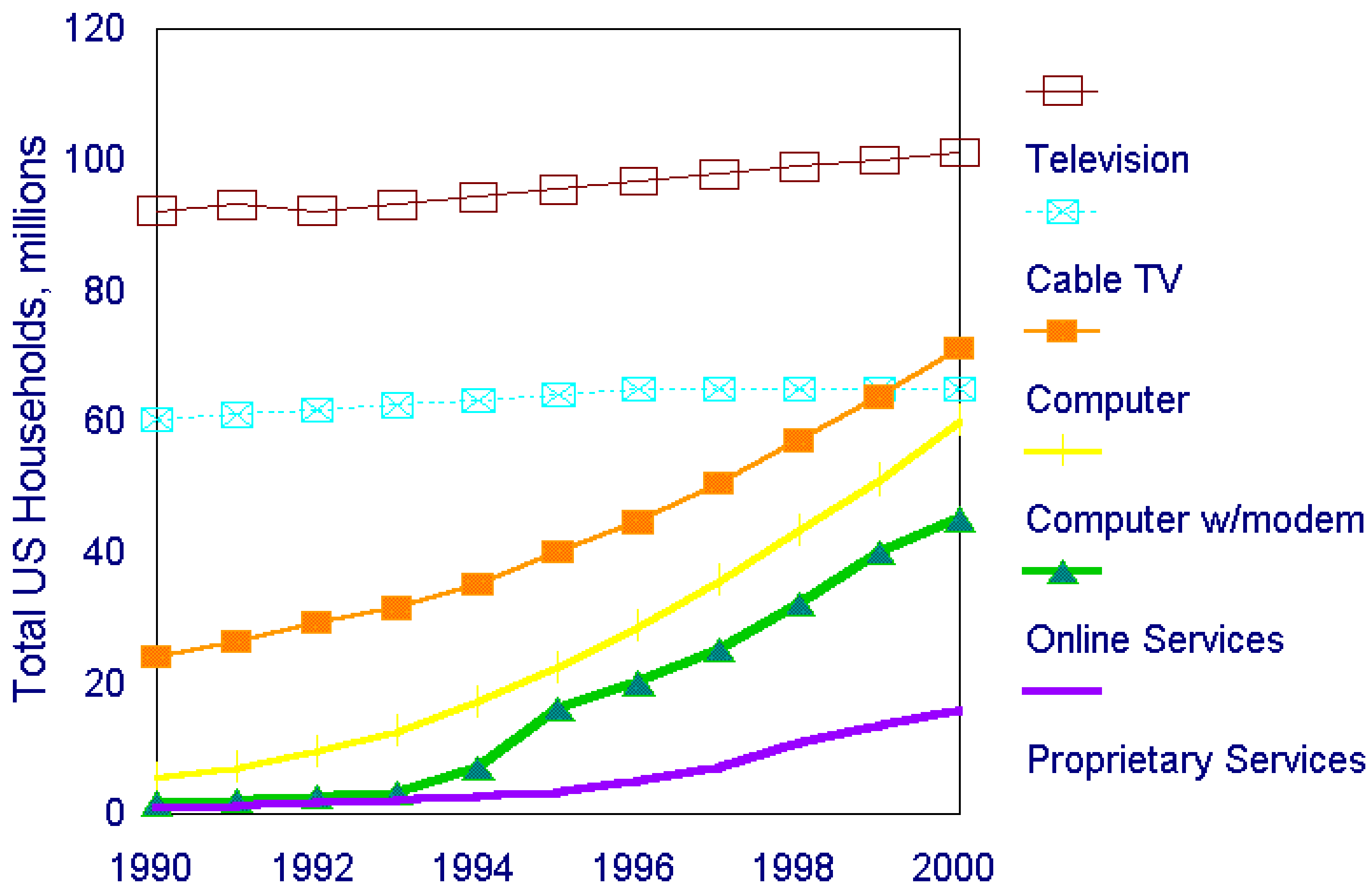
Internet: ADSL & Cable Modems

Power of the Internet

"Just as the railroads of the 19th century enabled the Machine Age, and revolutionized the society of the time, the Internet takes us into the Information Age, and profoundly affects the world in which we live."

– PBS online

US Households



History of the Internet

The Original Motivation:

How could US authorities talk to each other in the aftermath of a nuclear attack?

- 1969: Four US campuses became the first hosts on the ARPANET.
- 1970’s: Numerous communication networks were built in government agencies.
- 1986: A national backbone NSFNET was deployed.
- 1990, The ARPANET was decommissioned.
- Early 1990’s: Mosaic was created.
- 1995: The NSFNET was defunded and privatized.

The government has almost single-handedly created the Internet.

Problems with the Internet

- Internet security is still a very serious problem.
- Backbone networks cannot accommodate the exponential growth of Internet traffic.
- There is no adequate network equipment to do resource allocation and to provide guaranteed QoS.
- Access to the Internet is extremely slow from most of the homes using telephone lines.

Emergence of New Technology

- Deregulation of telephone, cable, and utility industries to provide Integrated Services
- Promotion of Universal Service to connect schools & libraries to the Internet
- With limited resources, no significant increase in infrastructure is seen in the near future.

➡ The most cost effective and fastest way is to develop new technologies that can utilize existing infrastructure:

- ADSL modem
- cable modem

ADSL modem vs. Cable modem

	ADSL modem	Cable modem
Infrastructure	use existing POTs	use existing cable lines
Speed	1.5 to 9 Mbps down & 64 kbps up - dedicated circuit switched	30 Mbps down & 10 Mbps up Mbps - shared line
Price	comparable to ISDN line $500 installation $100 per month	$150 installation including modem & $35 per month unlimited access
Advantages	no infrastructure upgrades needed; transportable	cheap; fast (at least for now)
Disadvantages	expensive; location sensitive due to tech. limitation	massive infrastructure upgrade needed; not as widely installed as telephone lines

Impact of (possible) policies on the success or failure of ADSL & cable modems

ADSL modem

- Long distance & local phone companies compete in Internet service thru POTs
- Open access rule required
- Telephone lines are much widely installed, possible government incentive for schools to be connected using ADSL?

Cable modem

- Conflict between government & cable companies on how to recover retrofitting cost
- No open access rule is imposed.
  - ➔ High entry barrier
- Cable modem allows much higher transmission rate, possible subsidy to connect schools to high speed Internet?

Other Factors

	ADSL modem	Cable modem
standards	two incompatible modulation schemes: CAP & DMT	DOCSIS specs. for 8 interfaces
pricing	installation & equipment cost	installation, equipment & retrofitting cost
network effects	strong	strong, but with drawbacks (local congestion)
human factors		from a different perspective (investor)

Both will have market share. In the near future, ADSL will be more popular. But in the long run, cable modem may be a better choice.

Case Study 3:

Network Computer

Network Computers

- Definition of NC:
  - all-encompassing
    - stationary
    - nomadic
    - mobile
  - market
    - office: NC™
    - home: WebTV
    - street: wireless PCS, wireless modem: Nokia, Pilot
- Especially interested in the mobile model (i.e. wireless)
- FCC’s spectrum management may indirectly affect the success of wireless NC.

FCC Spectrum Management

- Market-driven demand
  - minimal central planning; let spectrum users respond to market demand
  - before: lottery, comparative hearings
  - now: auction spectrum to those who deem it most valuable; speed up process of allocation and usage
  - open to proposals for new allocation
- Flexible use
  - freedom on what type of services to offer
  - freedom to choose the types of technologies and equipment
  - freedom on how to partition / aggregate spectrum and geographic area
  - freedom on time of implementation

Events with Possible Impact On NC

- ☺ Auction of PCS (120 MHz) started in 1994
  - Multi-function portable devices for phone, fax, and 2-way data transfer
- ☺ U-NII/SuperNet unlicensed equipment in 1997
  - Resulted from Apple & WINForum proposals for NII
  - Allow short-range, high-speed wireless LAN
- ☺ Flexible use in alternative technologies (e.g. wireless modem, wireless cable, satellite)

- ☹ Spectrum for HDTV in 1996
  - Free spectrum for a service which has little public interest and benefit
  - Before deployment, may offer any other services
- ☹ Given away 4 times as much spectrum as those being auctioned so far (worth ~ $100 billion) to FedEx, Texaco, etc.
- ☹ Financial difficulties of PCS companies due to overbidding, 1997

Network Computer Conclusion

- FCC likely to comply with growing demands
- Success / failure of (wireless) NC will mainly depend on other factors:
  - Technological: speed, quality, types of services
  - Human factors: central management vs. user empowerment
  - Marketing strategy

Conclusion

What are good government policies?

To encourage development & adoption of new technology:

1) Deregulation to increase competition

2) Funding for research & development

3) Government incentives to disseminate public goods to increase social benefits

Government policies can have very strong impact on the deployment & dissemination of technology, esp. in large scale infrastructure & allocation of public goods.