

Policy Rationales: Why Regulate Telecoms?

Most slides from

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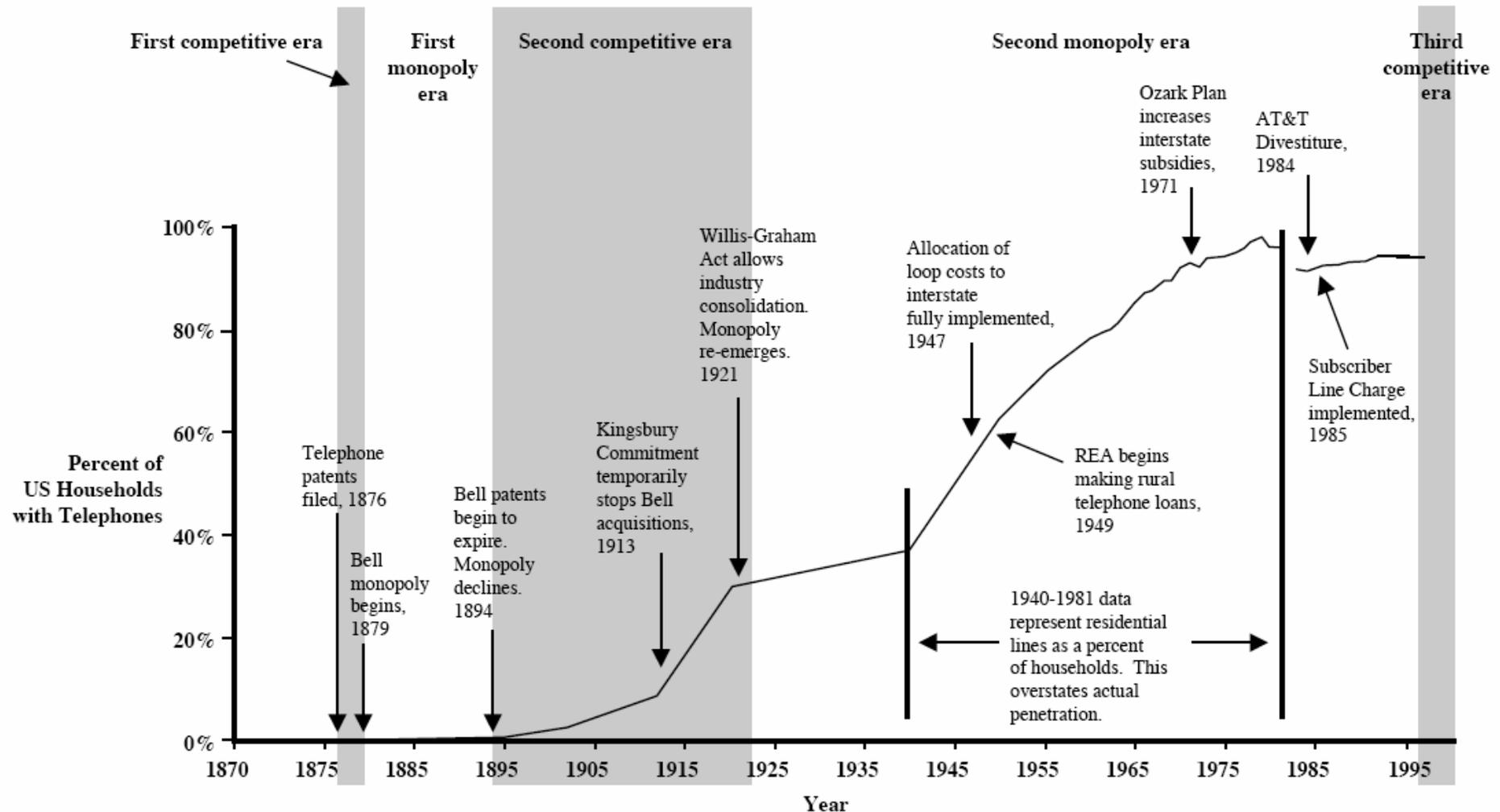
Regulatory Frameworks

- Why regulate telecoms: the policy agenda
- How regulate telecoms: from utility regulation to competition
- Who regulates telecoms: the institutions
- Some key issues/themes:
 - Convergence and challenge for legacy regulation
 - Jurisdiction: international v. national v. local
 - Models of regulatory enforcement
 - Agency v. standards v. courts (antitrust)

Policy Rationales

Domain	Rationale	Tech Change?
Economic	<ul style="list-style-type: none">□ Network effects (interconnection)□ “Natural monopoly” ↔ competition□ Multiplier effect of infrastructure	
Social	<ul style="list-style-type: none">□ “Universal service” (equity)	
Political	<ul style="list-style-type: none">□ Appeal to important constituencies□ National security□ Content (many aspects)□ Revenue source for governments	
“Coordination”	<ul style="list-style-type: none">□ Standardization□ Management of “scarcity”	

A History of Universal Service: 1876-1996



1895, 1902, 1912, 1920 -- Mueller, "Universal Service."; 1940, 1950, 1955 -- Majority Staff of the Subcommittee on Telecommunications, Consumer Protection, and Finance of the U.S. House Committee on Energy and Commerce, *Telecommunications in Transition: The Status of Competition in the Telecommunications Industry*, H.R. Doc. No. 86-058, 97th Congress, 1st Session, November 3, 1981; 1960-1981 -- FCC, *Common Carrier Statistics*; 1983-1996 -- FCC, *Trends in Telephone Service*.

From "Where the Money Comes From and Where It Goes," Mark A. Jamison, Public Utilities Research Center, U. Florida, 1997.

Courtesy of Mark Jamison, PURC, University of Florida. Used with permission.

How are telecoms regulated?

- Traditional model: Public utility regulation of monopoly carrier
 - Government owned *Post Telephone and Telegraph* (PTT), or investor-owned PTT with National Regulatory Authority (NRA)
 - US: FCC regulates AT&T Bell System
 - UK: Ofcom regulates British Telecom
 - France: ART regulates France Telecom
 - Japan: MPHPT regulates NTT
 - etc.
 - (Before PTT privatized, no need for NRA)
 - Rate of Return (RoR) regulation

Rate of Return Regulation (RoR)

- Regulatory Compact
 - *Carrier agrees to provide*: Universal service
 - Carrier of Last Resort, Duty to Serve
 - *Regulator agrees to allow*: Cost recovery (+ fair return)
 - Prices = costs + allowed return = $c + F/q + rK/q$
 - Rate base (K), fair return (r) which risk-adjusted, depreciation
- Retail rate regulation
 - Prices set to achieve social goals
 - Low for consumers (US), high for carriers/equipment makers (Japan)
 - Recover costs and support employment or generate govt. revenues
 - Prices include implicit subsidies:
 - Toll->Local, Urban->Rural, Bus->Res, Usage->Fixed
- Entry restrictions (protection from competition)
 - Telecom out of computers, everyone else out of telecom
 - Structural separation or accounting separation (separate subsidiary)

Transition to Competition

- Markets instead of “Soviet-style” central planning!
 - Regulatory capture/rent-seeking and overhead costs avoided
 - Competition => “Survival of the Fittest” => Efficiency
 - Prices driven to cost (no excess profits)
- Privatization of PTTs and creation of NRAs (1980/1990s)
- Liberalization and Deregulation:
 - Equipment markets – 1960/1970s
 - International/Long distance (US) – 1980s
 - Mobile services (and auctions) – 1990s
 - Local (Loop unbundling) – 1990s
- From RoR to Price Cap: $P(t+1) = P(t) - \text{Productivity Adj.}$
 - If transition to competition, then eventually markets set prices
 - If no transition, then RoR with a regulatory lag.
- Rules for Interconnection and Access
 - With competition, there will be multiple networks
 - Entrants need access to legacy network (at least initially)
 - Wholesale regulation (Interconnection, Resale)

Transition to Competition

- In US...
 - 1959 *Above 890* FCC decision (private line competition)
 - 1968 *Carterfone* FCC decision (CPE competition)
 - 1984 Divestiture Bell System (long distance competition)
 - Regulatory separation of local and long distance calling.
 - Structural separation of AT&T long distance (competitive) and Bell Operating Company local telephone monopolies (Verizon, SBC).
 - 1996 Telecommunications Act of 1996 (local competition)
 - Local network unbundling and interconnection
 - LD entry by local companies
- No divestiture, but otherwise similar abroad...
 - Canada, UK, Japan, Korea, Mexico, etc., etc...
 - European Commission
 - Liberalization in EC mandatory in 1998
 - New regulatory framework since July 2003

International trend during 1990s to privatize/liberalize telecommunications

Figures removed for copyright reasons.

Source: ITU Review of Regulatory Frameworks (1998), WTD98 – Doc. 32

- Figure 1.1 “New laws adopted 1992-1997 and separate regulators.”
- Figure 1.3 “Going private: Telecom privatizations, by number of transactions and by value 1984-1996 and by region.”

European Regulatory Framework

- Goal: Transition from communications law to competition law.
 - Convergence => from silos to platform competition with symmetric obligations.
 - As competition emerges, roll back regulation
 - Mandatory access to “monopoly” facilities during transition
- Three stage effort:
 - Analyze state of competition: Is there market power (SMP)?
 - 18 Markets: 7 Retail (Universal Service), 11 Wholesale
 - If no, then deregulate
 - If yes, then craft remedies consistent with EC Framework
 - National findings subject to EC rules
 - *Ex ante* controls justified to support transition
 - Impose remedies
 - Unbundling, line of business restrictions (separate subsidiary)

European Regulatory Framework: Markets for Assessing Power

- Retail Level (universal service)
 - (1) Access to public telephone network at fixed location for residential customers
 - (2) same as (1) for non-residential customers
 - (3) Publicly available local and/or natl telephone services provided at a fixed location for resid. customers
 - (4) Publicly available international telephone services provided at a fixed location for resid. customers
 - (5) same as (3) for non-residential customers
 - (6) same as (4) for non-residential customers
 - (7) Minimum set of leased lines (which comprises the specified types leased lines up to and incl 2Mb/sec)
- Wholesale Level (interconnection)
 - (8) Call origination on public telephone network provided at fixed location
 - (9) Call termination on individual public telephone networks provided at a fixed location
 - (10) Transit services in the fixed public telephone network
 - (11) Wholesale unbundled access (including shared access) to metallic loops and sub-loops for purposes of providing voice and broadband services
 - (12) Wholesale broadband access ('bit-stream' access that permit 2-way transmission of broadband data)
 - (13) Wholesale terminating segments of leased lines
 - (14) Wholesale trunk segments of leased lines
 - (15) Access and call origination on public mobile telephone networks
 - (16) Voice call termination on individual mobile networks
 - (17) Wholesale national market for international roaming on public mobile networks
 - (18) Broadcasting transmission services, to deliver broadcast content to end-users

Convergence & Legacy Regulation

- ❑ Traditional networks were single purpose. Tight integration of services and infrastructure.
- ❑ New broadband platforms support multimedia apps.
- ❑ *From silos to hourglass: what to regulate?*
 - Layered regulation...

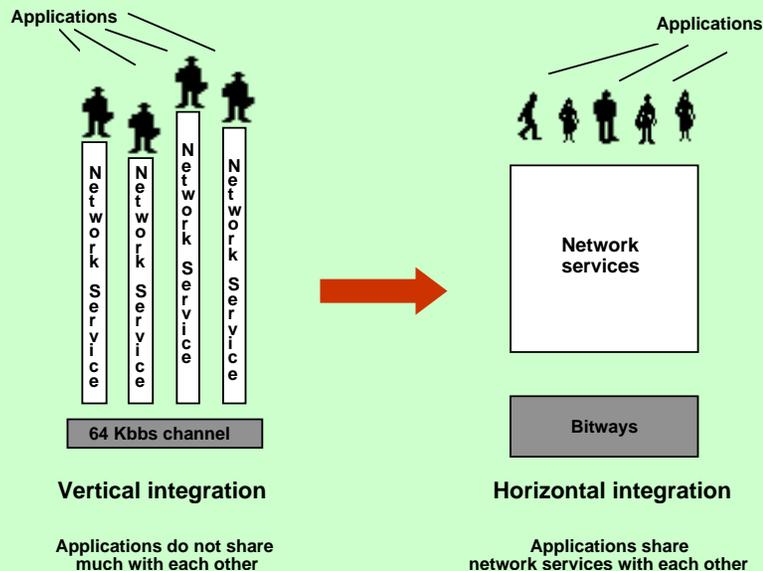


Figure removed for copyright reasons.

See <http://www.nap.edu/openbook/0309050448/html/53.html>

Figure 2.1 in National Research Council.

"Realizing the Information Future: The Internet and Beyond."
National Academies Press, 1994.

Convergence: Broadcasting v. Telecom

- ❑ Broadcasting: content regulation
 - Local content (national public broadcasting)
 - Free speech/editorial responsibility (libel)
 - Decency/censorship
 - Is the “Internet” broadcasting?
- ❑ Telecom: conduit regulation
 - Common carriage: content not under control of carrier
 - Cable TV a broadcast or telecom service? or, something else?
 - Legacy incumbents v. Entrants: duty to serve? regulatory burden?
 - Fixed v. Mobile?
- ❑ Future need regulatory symmetry.
 - Transition from legacy to future:
 - if competitive? then deregulate (goal of European/US frameworks)
 - but, what if not adequately competitive?
 - From physical unbundling to service level/functional unbundling
 - “Bit stream” unbundling?

Convergence: Computers v. Telecom

- Legacy of separation: IBM v. AT&T
 - FCC Computer Inquiries and emergence of commercial networks
- Internet: U.S. government R&D funding (D/ARPA, NSF)
- Computers: regulation by standards and courts, but still regulation
 - Antitrust review (Microsoft, Worldcom/Sprint merger...)
 - Which interfaces are open?
 - Equipment v. Service providers?
 - OS v. Applications (Browser wars)
 - Hardware v. software (Software radio)
- Where's the boundary? What's a telecom service?
 - Is Voice-over-IP a “telephone service”?
 - Should legacy regulation be imposed on emerging services?
 - Where is the network edge?
 - Unbundling customer premise equipment

Who are the regulators?

- ❑ National Regulatory Authorities (NRAs): national telephone services
 - Post-privatization, so 1990s phenomenon in many countries.
 - How independent are they? Whose interests do they protect?
- ❑ International Treaties: international interconnection
 - International Telecommunications Union (ITU)
 - World Trade Organization (WTO)
 - United Nations (UN)
- ❑ Standards Bodies and NGOs: industry standards and interfaces
 - Professional: IEEE (P802)
 - National: ANSI (US), JISC (Japan), AFNOR (France)
 - International: ISO, IEC, ITU-T, WIPO
 - Regional: CEN/CENELEC (European), ETSI
 - Trade Associations and NGOs: EIA, W3C, ATM Forum
- ❑ Courts: common law v. civil law countries
 - Property rights (intellectual property)
 - Contracts (negotiated interconnection)
 - Antitrust (mergers, anticompetitive behavior)

Jurisdiction: who's in charge?

- Problems are inherently multi-domain.
 - Ubiquitous connectivity and Death of distance
 - Global networks, global traffic, global eCommerce
 - Not just about communications anymore (Civil Society, International Trade)
 - Complexity is endemic in converged world
- Jurisdiction: Local Autonomy v. Coordination
 - Regional (Lehr & Keissling, 1999)
 - Europe: European Commission (EC) vs. National Regulatory Authorities (NRAs)
 - US: FCC v. state PUCs (vs. local franchising authorities)
 - International
 - International Settlements for Telecom: WTO(1997) v. FCC
 - UN, ICANN, and Internet governance
- Ambiguity is costly
 - Regulatory uncertainty raises investment/participation costs.
 - Encourages venue shopping/rent-seeking
 - But, political reality is that it is not going away.

Standardization as form of regulation

- Standards define markets
 - Competitive advantage (whose technology is adopted?)
 - Scale and scope economies (bigger markets, lower costs)
 - Wholesale competition/unbundling opportunities at interfaces
- Economics of standards setting: externalities & coordination failures
 - Network externality: value to each subscriber increases with total subscribership (e.g., PCs, telephone networks, language)
 - Role for government to solve market failure:
 - “Horses, Penguins, and Lemmings” (Farrell & Saloner, 1985)
 - “Narrow Windows, Blind Giants, and Angry Orphans” (David, 1986)
 - Mobile Standards:
 - 2G in Europe (GSM) v. US (GSM, CDMA, TDMA, etc.)
 - What about 3G? CDMA2000 v. W-CDMA. What about WiFi?
- SDOs are political institutions
 - Who gets to participate, public access to debate
 - How is “consensus” measured (voting?)
 - Rules that protect access/prevent capture slow progress

Courts and Antitrust Enforcement

- US: Department of Justice v. FCC; Europe: DG Competition v. DG Information Society
- Antitrust: prevent abuse of monopoly power
 - Block mergers that create market power
 - Penalize behavior that abuses (predatory pricing, illegal tying)
 - Market power not illegal *per se*, only its misuse.
- Measuring market power is contentious
 - Define markets
 - Horizontal markets: are goods substitutes?
 - Vertical markets: complements? Essential?
 - Ability to sustain price above cost for significant time
 - Potential entry can constrain (entry barriers?)
- Predatory pricing/illegal tying *or* Efficient pricing? Ambiguous economics.
 - Pricing below cost, but what is cost?
 - Hard to measure when shared/common costs, rapid technical progress
 - Dynamic pricing with externalities, learning
 - Complementary bundling of products or illegal tying
 - e.g., Microsoft browser and OS
- Antitrust regulation is *ex post*
 - Presumption that industry competitive
 - No role (limited role) for industrial policy: encourage transition to competition, promote infrastructure investment. (Varies by country)
- Enforcement via Courts presumes litigation is established business option

Summing Up

- Why regulate telecoms: the policy agenda – not just telecom
 - More important & more complex relationship to economy.
 - Lots of historical legacies (for better or worse).
- How regulate telecoms: from utility regulation to competition
 - Managing the transition difficult: how fast to liberalize?
 - Facilities-based competition needed to enable deregulation
 - Is competition viable everywhere? New “bottlenecks”?
- Who regulates telecoms: the institutions
 - Complex global array: NRAs, SDOs, Courts
 - Jurisdiction: tension between global coordination and local autonomy