

*Roadblocks on the Information
Highway: Regulatory Obstacles
to Innovation and Investment*

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Institutional Framework in U.S.

- | Federalism: Dual System of Regulation
 - State regulation of intrastate activities
 - Federal regulation of interstate activities
- | Spectrum allocation: Federal jurisdiction
- | Federal pre-emption of state regulation
- | Federal Antitrust Policy
 - Complement to/substitute for regulation
 - Exemption of state regulated activities

Resources Are Being Diverted From Their Optimal Use

- | Regulated firms spend time and effort arbitraging between regulation-distorted opportunities.
- | Regulators focus on “politically correct” prices, creating obstacles to investment and innovation.
- | Regulators may well have good intentions, resources are being diverted from their best use
- | Due to rapid technological change, the problem is growing, with increasingly negative outcomes

Examples for last bullet point:

1. The once-simple idea that everyone should be on the telephone network ("universal service"), is now a 450 page list of "recommendations" encompassing everything from directory services for low-income subscribers to advanced information services for rural hospitals.
3. Rate integration (charging similar rates in different states) began in 1972 as applying to mainland U.S. Now integration must extend to Guam, which is served by foreign satellites costing four times as much as domestic satellites.

The Negative Effects of Well-Intentioned Regulations

- | **Unintended Consequences:** distorted investment decisions, the unexpected outcomes of regulation, far outweigh the purported benefits.
- | **Unobserved Consequences:** disincentives for R&D and deployment of new technologies, reducing innovation in telecommunications.
- | **Opposite Consequences:** pernicious effects directly opposed to regulation's intended purpose. The "Boomerang Effect."

Distortions in Investment

- | Investment decisions depend crucially on the expected return from the investment.
- | By dampening expectations of future returns, regulation saps the incentive to deploy new infrastructure.
- | Investments are long-lived – distortions saddle the industry with long-term consequences.
- | Lesson: reduce expected returns below forward-looking cost of capital => reduced investment in communications infrastructure

Distortions in Process Innovation

- | Regulation curbs the incentive to create and develop new infrastructure.
- | R&D is inherently risky and requires the promise of reward.
- | Benefits of innovation are long-lived – distortions beget long-term consequences.
- | Telecom regulation also distorts innovation in complementary industries, such as computers and the Internet.

Distortions in Service Innovation

- | As with investment and process innovation, the introduction of new services requires an expectation of future profit.
- | Onerous filing requirements set a high hurdle for LECs wishing to offer a new service.
- | Unregulated entrants exploit the regulatory process to delay their rivals' new service offerings.

Regulatory Obstacles to Investment and Innovation

- | prices below or above competitive levels
- | price averaging, with some prices below costs
- | setting prices AT “forward-looking costs”
- | entry restrictions
- | prior approval of new services

Prices Above Cost

Policy	Setting prices well above competitive levels.
Outcomes	<i>Investment:</i> Encourages inefficient bypass provided by higher cost entrants. <i>Innovation:</i> Misallocation of R&D resources leads to wrong type of product innovation.
Examples	<i>Investment:</i> CAP facilities. <i>Innovation:</i> Internet telephony.

Other ideas for this slide:

1. Forcing prices above cost sends the wrong signal to the marketplace.
2. Supporting above-cost pricing requires escalating regulation: Entrants must be regulated or banned outright, creating an ever-growing regulatory mess.

Prices Below Competitive Levels

Policy	Setting prices well below competitive levels
Outcomes	Sends the wrong signal to the market. <i>Investment:</i> Discourages entry by lower cost service providers. <i>Innovation:</i> Retards beneficial product and process innovation.
Examples	<i>Investment:</i> digital loops (e.g., ISDN) <i>Innovation:</i> expedited Internet access

1. Forcing prices below cost also sends the wrong signal to the marketplace.
 - a) Discourages efficient entry by lower cost service providers. E.g.: low rural rates for access discourage more efficient solutions such as wireless "loops".
 - b) Discourages efficient allocation of R&D resources, retarding product innovation. E.g.: digitized wireline services (ISDN). Since analog wireline services are artificially cheap, people choose analog services over ISDN even in cases where they would otherwise be better off with ISDN. Reduced customer usage feeds back into the research, development, and diffusion of ISDN technology.
2. Supporting below-cost pricing requires escalating subsidies to the firms
 - a) As low-cost subscribers are lost to (inefficient) competitors, the regulated firm find its average costs, and therefore its average required subsidy, rising.
 - b) Every potential cost-reducing innovation that is stymied by the artificially low market price of an inefficient incumbent technology increases the opportunity cost of the regulation.

Price Averaging

Policy Averaging prices over geographic areas.

Outcomes Results in prices above and below cost.
Investment: encourages cherry-picking by entrants.
Innovation: stymies cost-reducing innovation in rural areas.

Examples *Investment:* in rural infrastructure
Innovation: in lower cost rural technologies (e.g., wireless loops)

1. Above and below-cost pricing often arise from rate averaging and rate integration policies.
2. Requiring entrants to average rates over an entire state encourages "cherry picking".
3. Requiring IXCs to integrate rates in different states reduces the incentive to enter low-demand, high-cost states.

Setting Prices AT “Forward Looking Costs”

Policy	Requiring prices to be set at “naïve” TELRIC, assuming instantaneous and total deployment of “best available technology.”
Outcomes	Prices will not be at competitive levels. <i>Investment:</i> costs will not be recovered. <i>Innovation:</i> firm “shoots itself in the foot” by introducing new technology.
Examples	<i>Investment:</i> LEC infrastructure <i>Innovation:</i> cost-reducing loop technologies

1. While forward looking costs (TELRIC) may be fine as an antitrust test for predatory pricing, they are not "competitive" prices.
2. The adoption of new technology takes place over time, typically following an ogive (S-shaped) path. Adoption is not instantaneous!
3. Actual prices in a competitive marketplace will reflect the user cost of capital presently installed. To the extent that some of the installed capital is not the latest vintage, the user cost of capital will not be TELRIC.
4. Thus TELRIC is only a lower bound on the competitive price. In particular, it is not high enough to encourage investing in new infrastructure, for two reasons:
 - a) Installing new technology costs money. If the telco is allowed to recover only TELRIC prices, they necessarily will not recover the investment costs.
 - b) Installing new technology lowers TELRIC, which lowers the allowed price on all the firm's previously installed infrastructure. The firm would thus "shoot itself in the foot" by introducing new technology.

Entry Distortions and Restrictions

Policy	Restricting entry and lines of business or distorting form of entry (e.g., resale).
Outcomes	<i>Investment:</i> asymmetric regulation discourages truly innovative entry. <i>Innovation:</i> restrictions inhibit development of integrated service platforms.
Examples	<i>Investment:</i> downtown business entry by facilities, residential entry by resale. <i>Innovation:</i> integrated residential services

1. While LOB and entry restrictions are loosening, there is still a long way to go.
 - a) Do not use backward-looking measures of competition like market share as a litmus test
 - b) In many markets, potential competition is actual competition from uncommitted entrants.
2. Asymmetric regulation encourages "entry by resale" rather than true innovative entry.
3. Lifting vestigial LOB restrictions will encourage the innovation of integrated services.

Example: "Anti-Redlining" Policies

- a) Regulators often allow new services to be rolled out in high demand areas only if they are concurrently introduced in "disadvantaged" (low-demand) areas.
- b) Intent: to speed deployment of new technology.
- c) Actual Effect: concurrent deployment rules effectively reduce average demand, may raise average costs, and therefore delay introduction of new services.

- (1) Obviously roll-out is delayed in the high-demand area.
 - (2) If there are learning economies, so that deployment in the second area becomes cheaper from the experience gained by initial deployment, then concurrent deployment rules by delay roll-out in the low-demand areas as well

Requiring Prior Approval of New Services

Policy	Requiring a burdensome approval process for new service offerings.
Outcomes	Robs consumers of new services while new services are delayed in proceedings. Confers a second mover advantage.
Examples	<i>investment</i> : SONET access services <i>innovation</i> : call completion services

1. Consumers benefit from new services at any price, so long as existing services remain available.
2. The burden of proof is in the wrong place: do not make innovators prove their new services will do no harm.
3. The "Me Too" effect: Part 61 (tariffs) and Part 69 (access charges) rules place a larger burden on the first new service introducer, conferring a second mover advantage. The "Me Too" effect rewards waiting, delaying new service offerings.

What Are the Causes of These Regulatory Obstacles?

- | Telecommunications regulation has been around for a long time and is deeply embedded.
- | Regulation generally served the public interest in a slowly-changing environment.
- | Today's rapidly evolving technological milieu renders old regulatory approaches obsolete.
- | Current policies are contrary to our interests in promoting investment and innovation.

Changing the Way We Think About Telecommunications Policy

- | We must not limit our attention to the intended consequences of regulation.
- | We must consider the unintended, unobserved, and opposite consequences of regulation.
- | We must recognize the regulatory environment is “leakier” today than ever before
- | We should allow market forces to generate incentives for investment and innovation in telecommunications

Develop a Long-Term Vision

- | A myopic focus on correcting static market imperfections increase dynamic inefficiencies
- | Investment is a long-term undertaking.
- | Live with imperfect markets if the “cure” is worse than the “disease.” Weigh costs of regulation against benefits.
- | Accept short-term pain for long-term gain!

Specific Policy Changes

- | Trust the market to set the appropriate prices
 - limit the scope of price averaging requirements
 - allow rates to be rebalanced
 - do not set prices at naïve TELRICs
- | Do not regulate new service offerings
 - do not place the burden of proof on the innovator
 - eliminate the second mover advantage
- | Ease entry restrictions
 - do not use backward-looking measures of competition like market share as a litmus test

The Benefits from Policy Reforms Are Enormous

- | Substantial increase in installed fiber in the long run from relaxing regulation – Greenstein, McMaster, and Spiller (1995).
- | Considerably swifter diffusion of SS7, ISDN, and fiber – Taylor, Zona, and Zarkadas (1992); Greenstein, McMaster, and Spiller (1995).
- | \$30 billion gain in social welfare from reducing regulation, rebalancing rates, and mandating access – Crandall & Waverman (1995).