

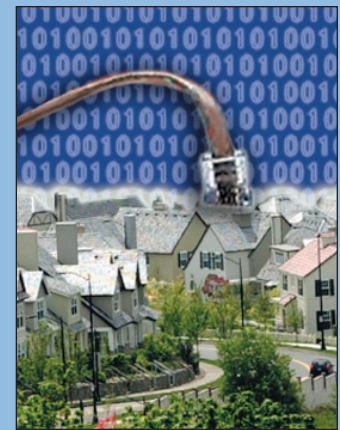
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Charles H. Ferguson (forthcoming, 2003)
- *Who Pays for Universal Service? When Telephone Subsidies Become Transparent*
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- The AEI-Brookings Joint Center for Regulatory Studies
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Debating U.S. Broadband Policy: An Economic Perspective

ROBERT W. CRANDALL

Two years ago, the telecommunications sector seemed poised to grow at astronomical rates, fed by the dizzying optimism over the Internet. Today, the telecom sector is weathering enormous financial strain, despite the fact that two-thirds of U.S. households now have personal computers and nearly 15 percent have high-speed or “broadband” connections to the Internet. Many observers worry that broadband is spreading too slowly to induce the expansion of the content required to make such a service attractive to most Americans and to provide sufficient demand to utilize the enormous excess capacity in telecommunications created by the 1998-2000 investment boom.



Telephone companies such as Verizon, SBC, and BellSouth are highly regulated in their delivery of broadband services. Their principal broadband competitors—cable companies—also face the threat of regulation. There are now calls for increased regulation, including even some cries to require “structural separation” of network facilities from the delivery of retail broadband services. But such regulation may reduce the incentive to deploy broadband or any other new service.

DELIVERING BROADBAND: THE TECHNOLOGY

Just two years ago, telephone carriers, cable companies, and satellite companies were making huge investments to meet the anticipated growth in telecommunications traffic as more and

more households connected to the Internet and every business gave its employees high-speed connections. The principal obstacle to continued growth appeared to be the slow “last-mile” Internet connections to residences and small businesses.



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The delivery of high-speed or “broadband” Internet services to the dispersed residences and small businesses in the United States is not an easy task. At present, there are essentially three technologies for delivery of these services: cable modem services provided by cable-television companies, digital subscriber line (DSL) services provided by telephone companies, and wireless technologies, including satellite services. All of these technologies have become economically feasible only in the last four or five years, and all require large investments by the carriers. As of mid-2002, about 12 percent of households subscribed to one of these services, according to the Federal Communications Commission (FCC). Roughly two-thirds of the subscriptions are to cable modem services, and DSL accounts for most of the rest. Satellite and wireless services have a very small presence, but one which may be growing in the near future.

No carrier can offer broadband connections without making substantial investments. Traditional telephone company networks were designed to deliver slower voice and data services, often over rather long pairs of copper wires. To offer high-speed services to large numbers of dispersed residential or small business customers, these companies must extend fiber optics closer to their subscribers, install large numbers of remote terminals, and invest in a variety of electronic equipment. Likewise, cable companies’ networks were originally designed for one-way video distribution, not two-way high-speed Internet services. They must also

extend fiber closer to their subscribers, install two-way amplifiers, and invest in modems and other electronic equipment to provide modern broadband services. Finally, satellite and wireless carriers must build their broadband service capability from scratch. Currently, satellite carriers are deploying expensive new satellites with “spot beam” capability to allow for more subscribers per unit of spectrum. Other wireless broadband services are still very much in an experimental stage and may not provide a sufficient return on investment to survive.

All of these investments are risky. No one knows how many residences will want broadband and how soon they will want it. New technologies may overwhelm the existing broadband technologies before the investment in the latter can be recouped. If regulation serves to cap the returns available from favorable market events, it may depress the overall expected return to a level that makes investment in many geographical areas unattractive.

REGULATION: THE ISSUES

The most important public policy issues involving broadband deployment are largely those that derive from existing regulatory policies. The incumbent telephone companies are regulated in two ways. First, their broadband retail offerings are subject to price regulation by either the states or the FCC. Second, the 1996 Telecommunications law requires them to make their network facilities available to competitors at regulated prices whenever such facilities are deemed to be necessary for new entrants to offer their



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own DSL services. Most of the controversy over broadband regulation of incumbent telephone companies involves the determination of which facilities must be provided to competitors and the proper cost standard for determining the leased rates of these facilities.

The cable companies are not currently regulated with respect to broadband Internet connections, but the FCC is now considering whether and how to assert such regulation in response to a federal court decision that concluded that cable modem service has a telecommunications component. The principal controversy in regulating cable modem service is not whether it should be subject to the same retail and wholesale regulation as telephone companies but whether cable systems should be required to open their services to competing Internet service providers (ISPs). Thus, regardless of the FCC's decision on cable broadband services, it seems likely that asymmetric regulation will continue—that is, that telephone companies will be regulated much more heavily than their cable rivals.

The justification for this asymmetric regulation generally falls into two categories. First, telephone companies are alleged to have last-mile “bottleneck” facilities without which independent broadband providers cannot compete. For some reason, the cable companies' last-mile facilities that parallel the telephone company lines are not considered by the current regulatory regime's supporters as similar “bottleneck” facilities. Nor, apparently, are wireless and satellite facilities.

Second, the telephone companies are alleged to have reduced incentives to deploy DSL services because such services could substitute for other high-speed services they sell to medium and large businesses. Cable companies do not generally offer such services.

Legislation that passed the House of Representatives in 2002 would have largely eliminated these regulations on telephone-company broadband services, but the legislation did not clear the Senate. With most new providers of telephone service, particularly those concentrating on broadband DSL services, failing or bankrupt, there is pressure to keep this regulation and even to tighten it to create an environment in which these new competitors can survive. Among the newer regulatory proposals are those that would divide the incumbent telephone companies into separate wholesale and retail divisions or even separate companies. Such separation is proposed to prevent any discrimination by the incumbent telephone companies against their nascent rivals.

A final policy problem concerns the interdependence between the provision of broadband service and the development of broadband content. Many consumers may not choose to subscribe to the new broadband because they perceive that there are few uses of it that interest them. On the other hand, content providers may not invest in new, innovative applications because there are too few subscribers. The obvious solution to this “chicken and egg” dilemma is to allow vertical

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integration between content providers and broadband carriers. Such integration is often controversial, however, because of the fear that such integrated enterprises will achieve advantages that result in monopoly power. The lengthy regulatory process that the AOL-Time Warner merger faced is a reflection of these concerns.

Is regulation slowing the pace of broadband subscriptions? Is the current competition between cable and incumbent telephone companies sufficient to spur the deployment of broadband technologies? Is vertical integration required to generate an optimal pace of development of broadband content and broadband subscriber lines? Should the government subsidize broadband deployment in underserved areas, and if so, what form should such subsidies assume? These issues are at the center of the current debate over broadband policy.

ECONOMISTS DEBATE THE POLICY

There is not universal agreement among economists on the nature of the broadband problem, the role of regulation, or the need for government action to promote broadband. With the future of broadband so difficult to predict, this is understandable. However, there are some broad areas of consensus that emerge from a careful debate over the issues. (The recent Brookings book, *Broadband: Should We Regulate Interstate Access?* contains an intensive discussion

of these issues by leading economists involved in this debate.)

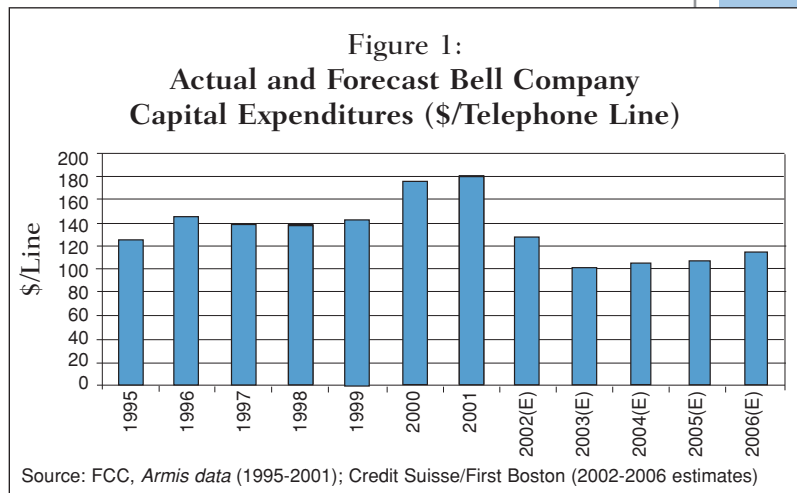
Is Broadband Deployment Fast Enough? Many economists argue that despite the concern over excessive regulation, broadband is spreading at least as fast as previous new consumer technologies such as television, cable television, VCRs, or the personal computer. Nevertheless, many households still do not have a choice of cable modem service and DSL, and some still have no access to either. Given that telephone companies are the more highly regulated, the fact that DSL is still not available to as many households as is cable modem service suggests that regulation may be slowing the diffusion of broadband throughout the population. Whatever the cause, the unregulated cable companies are expanding their lead over DSL.

Is DSL Roll-Out Being Deliberately Delayed by Incumbent Telephone Companies?

The assertion that incumbent telephone companies have delayed deploying DSL services for fear of cannibalizing their high-speed business services rests on three assumptions: (1) these companies have a dominant position in business high-speed services, (2) large numbers of business customers would migrate from these traditional services to DSL, and (3) the loss of residential high-speed services to cable television companies is less costly to telephone companies than an erosion of their business high-speed services. Given the rate at which local entrants, such as Teleport (acquired by AT&T) and MFS

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(acquired by WorldCom), have eroded the market share for high-speed business services of the incumbent telephone companies and the rapid rise of cable modem service, it is unlikely that incumbent telephone companies would be well advised to delay their DSL services.



Is Regulation Slowing Incumbent Telephone Companies' Deployment of DSL?

Continued uncertainty over the scope of the incumbents' wholesale, or "unbundling," responsibilities may well be inhibiting them from investing in network upgrades to deploy DSL services. If they have to share new facilities required for DSL service at cost-based prices, their potential returns from deploying these facilities may be so reduced that they choose to wait. Few economists recommend that incumbents be forced to lease new facilities, even if they favor requiring them to lease their older facilities that were constructed in a period of regulated monopoly. Current FCC requirements that the incumbents offer virtually all of their network facilities to entrants at prices that only reflect forward-looking long run incremental cost have certainly not created a healthy environment for investment. Note the decline in projected Bell company investment in figure 1.

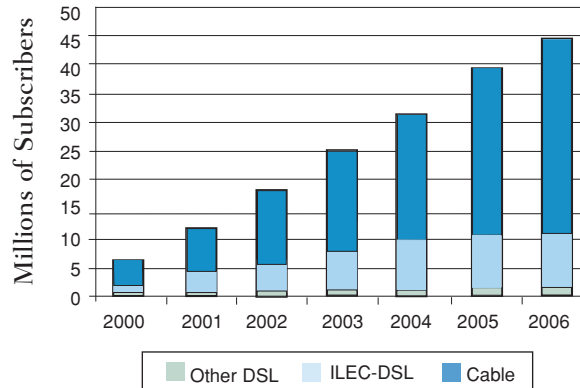
Does Requiring Incumbent Telephone Companies to Share Their Facilities With Entrants Increase Broadband Competition?

The principal justification for requiring the incumbent telephone companies to share their facilities with independent companies is to accelerate competition in local services, including DSL. Once new carriers gain a foothold through leasing incumbent facilities, they can build out their own networks to deliver these and other services. Unfortunately, none of the entrants that have tried to build a DSL offering through the leasing of incumbent lines or other facilities has succeeded. All have encountered severe economic difficulties, and many have filed for bankruptcy. One of the companies, Covad, has reorganized after filing for bankruptcy and now has more than 300,000 DSL subscribers. Nevertheless, despite favorable regulatory treatment, the new entrants have less than 10 percent of DSL lines and about 3 percent of all broadband lines.

The effect of the regulatory requirement that incumbent telephone companies



Figure 2:
U.S. Broadband: Forecast by Type of Carrier



Note: ILEC-DSL are lines provided by the incumbent telephone companies; Other DSL are lines provided by competitors using the incumbents' lines.
Source: FCC, Morgan Stanley.

share their facilities with entrants on the roll-out of DSL is shown in figure 2, based on a recent Morgan Stanley forecast. The statistics suggest that not only will DSL not catch up with cable television in broadband, but also that the entrants who are supposed to benefit from this network sharing will never rise above a minuscule level of participation in the market. Why, then, are policy-makers doing this?

Should the Government Subsidize Broadband Deployment in Marginal Areas?

The slow pace of broadband deployment in smaller cities and rural areas has led politicians from these areas to recommend government subsidies to accelerate deployment and to reduce the probability of a “digital divide” between urban and rural or wealthier and poorer areas. A case can be made for such subsidies if carriers cannot engage in price discrimination in marginal areas. Some potential subscribers may be

willing to pay very large amounts to receive the service, but others may be much less willing to pay. If the carrier has to charge the same price to all subscribers, it may not be able to operate profitably even though the value to all of these subscribers exceeds the cost of offering the service. This creates at least a theoretical justification

for subsidy, particularly a lump-sum subsidy based on the initial start-up costs. The problem with such a subsidy, however, is that funding the subsidy through taxes or higher rates on other services may create greater economic losses in other sectors of the economy.

Should Regulators Require “Equal Access” to Broadband Carriers for All Content Providers or Internet Service Providers?

The most troubling regulatory issue for the cable television industry has been the demand that cable companies open their broadband services to competing ISPs and/or content providers. Such requirements have been opposed by the companies for technical reasons and by some economists as a disincentive for cable companies to deploy cable modem service in many areas. In addition, the mere threat of these “open access” requirements is seen as at least one reason why cable companies allocate only 1 percent of available bandwidth to

“In the rapidly changing world of telecommunications, breaking up firms to achieve a social goal is extremely perilous.”

cable modem services. Were cable companies to allocate more bandwidth to cable modem service, they might be required by regulators to share their frequencies with independent broadband companies, much as regulated telephone companies must now share their facilities with entrants.

Should the Telephone Companies be Required to Divide Their Companies into Separate Wholesale and Retail Operations? The idea of isolating the “bottleneck” facilities from the competitive retail operations of regulated carriers is not new or necessarily unique to telecommunications. In 1984, an antitrust decree required AT&T to divest itself of its local bottleneck facilities so that they would not discriminate in favor of AT&T’s long distance and equipment divisions. The divestiture “worked” largely because the decree required the FCC to impose equal-access requirements on all local carriers. This requirement could have been imposed without divestiture, as illuminated by Canada’s success in obtaining even faster competitive results without requiring divestiture of its incumbent telephone companies. Canada and other countries have simply required local companies to connect traffic of all carriers on a non-discriminatory basis.

Because some observers and many failing local entrants argue that local competition in DSL and other services is being impeded by incumbents’ unwillingness to share their facilities on a non-

discriminatory basis, a few economists have supported the idea of requiring “structural separation” of the incumbent telephone companies. Few advocate outright divestiture because they correctly fear that the resulting wholesale network companies may have difficulty attracting capital and making investments in new facilities. Given the enormous costs involved in enforcing the 1984 decree that broke up AT&T’s long-distance monopoly and the inherent difficulty in drawing lines between “monopoly” and “competitive” activities in this rapidly changing sector, the risk of such a policy would appear to create greater costs than benefits. State regulators in New York and Pennsylvania have largely rejected such proposals, and British regulators have recently decided against imposing it on British Telecom.

CONCLUDING OBSERVATIONS

It should come as no surprise that there is no unanimity among economists on broadband policy. However, most economists familiar with the history of regulation in this and other sectors are wary of imposing regulation on new services or new technologies. Too frequently, such regulatory exercises are used to protect major industry participants and thereby to delay new innovations or services. Moreover, experience from other industries suggests that rivalry from two or three separate platforms may well be sufficient to obtain most of the benefits of competition. The recent experience in railroads, where only two major carriers

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generally compete on a route, or even airlines, where the presence of Southwest Airlines is sufficient to drive fares toward costs, provides considerable support for a policy of encouraging competition in broadband and not hindering any of these competitors by forcing them to share their networks at regulated prices with any entrant that is able to raise capital.

No one disputes that competition is important in driving the efficient deployment of broadband or other new services. Nor do many economists see a need to regulate new facilities to deliver

new, innovative services. In a period when telecommunications investment is declining precipitously, there can be little support for a policy that might depress investment even farther. Finally, the history of government-mandated dissolutions or divestitures of business firms is not one that should provide advocates of “structural separation” much solace. In the rapidly changing world of telecommunications, breaking up firms to achieve a social goal is extremely perilous, particularly after the stock market value of telecom firms has declined by at least 70 percent. B

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