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The Government's Role in Promoting the Future of the
Telecommunications Industry and Broadband Deployment

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The uncertainty and delay that infect broadband regulation today are sharply depressing both investment and innovation. What the industry most needs from Washington isn't any new form of affirmative regulation or subsidy; the industry needs even-handed and complete deregulation.

“Broadband” is a horizon that keeps receding. Microprocessors, computer buses, local area networks, and Web connections all run much faster today than they did five years ago. There is no reason to expect that our pursuit of higher speed in the processing and delivery of bits will ever end. Modem speeds on ordinary dial-up phone lines increased more than a hundred-fold over the last two decades. Broadcasting bandwidth progressed from radio to analog television to cable and digital satellite; the new digital television standard provides effective transmission speeds (with compression) of almost 20 megabits-per-second (Mbps). Speeds of 10 Mbps used to be quite adequate for office LANs, but 100 Mbps is now commonplace. Intel CEO Craig Barrett has remarked that “broadband” only “get[s] exciting when you get to 5 megabits per second or even 100 mbps.” By the time those connection speeds become widely available, however, they will no longer be exciting. New applications will inevitably emerge to push the threshold of excitement out further still.

Demand for broadband isn't uniform across users, either. Businesses, universities, schools, and residences have different needs. Some require full two-way capabilities, others require mobility, others need far more bandwidth in one direction than in the other.

Sound policy must start with a clear understanding of how dynamic and varied broadband markets really are. Demand for broadband connectivity, and the technologies that supply it, evolve quickly and continuously. Connection speeds and the aggregate bit-miles of deployed capacity will continue to double and redouble every few years, indefinitely into the future. New applications will spur new demand for bandwidth, and new bandwidth will attract new applications. Most of the applications that will generate data traffic five years hence aren't running today, at least not in any way comparable to what they will become. Most of today's users aren't yet using broadband for what they'll be using it for in five years. Most of today's broadband infrastructure, both wired and wireless, will have to be upgraded again and again to meet the continuous rise in demand.

In such circumstances, policies must be shaped to promote dynamic and adaptable competition, nothing more or less. Whether by design or otherwise, regulations that favor some providers or technologies over others will do far more harm than good. So will fixed “universal service” targets, or sweeping plans to subsidize or “jump start” broadband service, because there is no start or finish to the broadband enterprise. At their least harmful, such policies will simply be overtaken by the market before bureaucracies can be set up to implement them. At worst – as is in fact happening today – such policies will impede investment, stifle innovation and penalize creative effort industry-wide. The broadband market does not need more help from Washington. It needs considerably less.

Competition

Cable modem service is currently available to between two-thirds and three-quarters of U.S. households; DSL service is available to between half and two-thirds. Approximately one-third of all U.S. households have access to both cable modem and DSL service. Approximately 20 percent of online households are broadband subscribers. Cable and DSL providers are now adding five million new broadband connections a year – an annual growth rate of nearly 50 percent.

One way to look at these numbers is complacently: the infrastructure is basically there now; the demand hasn't yet caught up; and the customers will come when the online games, music, and videos arrive to drive demand for broadband connections. But this is quite the wrong way to look at things. Sound policy must promote a dynamic competitive process – one that will keep pushing the boundaries for decades to come.

Most cable networks have been upgraded at great expense, but they still rely on shared bandwidth at the end of the line; they will have to be upgraded further, and then further still, as bandwidth requirements continue rise. Substantial parts of the legacy telephone network are now capable of providing DSL, but phone companies will have to make huge investments in remote terminals and fiber-optic glass to keep pace with cable, or to forge ahead of it – DSL can't be provided at all over certain older loops, nor over loops that run further than 18,000 feet, nor can the bandwidth in ordinary copper loops be pushed much higher than where it's at now. So telephone and cable companies alike will have to extend fiber deeper and deeper into the local exchange, until it finally reaches the home.

Comparable levels of new investment will be required to develop broadband wireless networks. DBS companies have, in the last year, deployed a two-way high-speed Internet service capable of competing on equal footing with cable modems and DSL; other terrestrial and satellite technologies (MMDS, 3G, Digital SMR, 2 GHz MSS satellite systems, L-Band satellites, and Big LEO satellites) are also under development. The television set is now morphing into a personal computer, and the radio into a mobile digital receiver, both linked to high-speed digital wireless networks. DVDs, digital games like Microsoft's Xbox, and high-end digital video recorders like TiVo and ReplayTV already feed their content into analog televisions; in due course, the transition to digital TV sets and digital broadcasting will propel a new constellation of high-speed digital terminals and connections into the average American home.

When broadband wireless services do come of age, they are likely to expand very fast, just as satellite and wireless telephony did after their early years of incubation. Wireline services generally get rolled out incrementally, but wireless services tend to get turned on abruptly, to serve an entire geographic area. That wireless providers currently lag behind wireline providers in serving broadband customers reflects the none-to-all dynamic of wireless roll out, more than anything else.

The broadband market, in short, ought to be experiencing the kind of leap-frog competition that has characterized competition in many other sectors of the high-tech

industry. No one network provider should be securing an overwhelming market share; the fastest and most affordable option today should always face the risk being overtaken by a faster, cheaper, or better alternative. Wireline networks should compete on both raw speed and quality of service; wireless networks will offer mobility as well. Broadband content should be adding yet another important dimension to competition: the demand for the digital bandwidth depends on the supply of digital content, which should depend, in turn, on how successfully broadband suppliers package, promote, and protect the content that their networks distribute.

All of this should be happening, but much of it isn't. A legacy of botched regulation is largely to blame.

Regulation

The regulation of broadband has been split into two separate and unequal parts. One regime promotes a get-it-built objective: it is deregulatory, it leaves planning, investment, price, and profit with the cable and wireless companies that deploy real facilities, and it is working – the facilities are indeed getting built. The other regime requires phone company competitors who do build networks to unbundle and interconnect, at cut-rate prices prescribed by regulators, with free-riders who don't. This share-it-cheap regulation is intensely intrusive, it empowers the FCC and state commissions to control planning, investment, price, and profit, and if it has forced sharing, it has done so at the expense of investment and innovation.

To its credit, the FCC has recently begun to take the steps necessary to classify both cable modem and DSL as “information services” under Title I of the Communications Act. The logical culmination of that process, if the Commission sees it through, will be complete deregulation of both services, with no further unbundling, interconnection, or wholesale price regulation imposed on either service, by either federal or state regulators. To get to that point, however, the Commission must completely eliminate all sharing obligations in new, mixed-use facilities, that are deployed to provide broadband service but that can be used, as well, to provide traditional voice service. The continued regulation of legacy voice services cannot be permitted to continue depressing investment in the new facilities required for high-speed data.

Until the Commission finishes its job – if it finishes it – phone companies must continue to “unbundle” the wireline spectrum they use to provide broadband; cable companies don't. Phone companies must permit their broadband competitors to “collocate” equipment in telephone company premises to make it easier to use that “unbundled” broadband capacity; cable companies don't. Phone companies still remain largely locked-out of the multi-billion dollar market for Internet backbone service; cable companies aren't. Phone companies must offer their retail broadband transmission services to competitors at a federally mandated discount; cable companies have no such obligation. Phone companies have to pay into universal service funds when they provide broadband access; cable companies don't.

The unbundling mandates of the 1996 Telecom Act should never have been extended to broadband services at all; Congress created those mandates to open up competition in the legacy voice markets, which incumbent phone companies had long dominated, not in broadband markets, which were traditionally dominated by analog cable. Almost four years ago, the Supreme Court made clear that – as Congress itself specified in the 1996 Act – unbundling is to be extended only to network elements that can't be provided competitively. It is, of course, preposterous to maintain – as the FCC has in fact maintained for almost six years – that competition in broadband markets would be impaired absent access to the unbundled elements the phone company's network, when the phone company itself is scrambling to catch up with the dominant provider of broadband service, the cable company.

Costs

A few years ago, one incumbent phone company concluded it would have to deploy new “remote terminals” and optical concentration devices (OCDs) to upgrade its broadband capabilities and extend them out to rural and other users located far from end offices. After the better part of a full year of painstaking discussion, regulators decided that the phone company would have to undertake various obligations for the “right” to complete this upgrade, including deployment of more capacious facilities to make sure there would be sufficient capacity to share with potential competitors. The phone company reluctantly complied with regulators' demands, at a total cost of approximately \$250 million dollars. Two years have since passed, but no competitor has arrived to lease any part of the new facilities.

This kind of experience is not the exception, it is the rule. The current regulatory regime imposes massive uncertainty and delay on new investment. Sharing regulation assumes that the network is already in place, and focuses entirely on how to divvy up access. This form of regulation does not promote innovation or investment; it assumes that the innovation and investment have already happened, or are inevitable regardless of what regulators do. Sharing regulation operates entirely for the benefit of competitors that don't build facilities, and its costs are shouldered by competitors that do. It is retrospective in that it kicks in only after facilities get built – but everyone knows that it will kick in, nobody knows on just what terms, and this uncertainty alone slows and depresses investment. In the worst circumstances, new investment doesn't happen at all because would-be investors fear that the benefits of good investment are destined to be shared with competitors, while the costs of bad ones are shouldered by shareholders. That is exactly what has happened wherever the prices set for shared elements have been set ruinously low, as they now have been in many major markets.

In an environment as dynamic as the market for broadband services, the forced sharing of innovation and new facilities has done little good even for the intended beneficiaries and their investors. Between 1998 and early 2000, more than twenty “data local exchange carriers” (DLECs) threw together business plans, raised large sums of money on the public market, and launched preposterously ambitious marketing campaigns. With an average of fewer than 300 employees each, and at a point when they were serving an average of fewer than 2,000 lines, nine DLECs completed successful

IPOs. But as they and their customers soon learned, most of the new challenge and value in the broadband market lay in getting the broadband loop up and running, and that was especially difficult on copper wire that had been deployed, originally, only to carry voice. Counting on regulation to solve all their problems, the DLECs simply ignored the engineering and economic realities. When the Internet bubble burst, many of the DLECs burst with it.

Up to a point, and in the short term, cable and wireless operators benefited from all this turmoil on the DSL side of the house; roughly two out of three residential broadband subscribers are now with cable. But the development of broadband as whole was seriously delayed, and that has harmed cable broadband as much as anyone. Some critical threshold size of broadband connectivity has to be reached to attract broadband content and software; the content and the software then propel further growth in broadband connectivity. In the early stages of the evolution of markets like these, competitors benefit much more from fast growth of the market as a whole, than they do from regulations that suppress competitive rivalry.

Finally, the competition-suppressing regulation has certainly harmed consumers, equipment manufactures, and providers of broadband content. Robust competition between cable and DSL would have pushed up demand and pushed down prices; instead, however, unregulated cable has opened up a wide lead while phone companies have sunk deeper and deeper into the regulatory quagmire. In a true free-for-all, each major advance in one network will spur a comparable advance, and then some, in a rival's. The one sure way to kill innovation and new investment is to regulate in ways that allow a single provider to become so dominant that it no longer has to worry seriously about being overtaken by anyone else.

The delays in the synergistic development of broadband content are especially worrisome. As content providers have correctly recognized, broadband networks represent a huge new opportunity for distributing their products – and an equally huge threat if networks evolve in ways that facilitate theft. The potential downside has spawned many different proposals for mandatory new technology standards or legal liabilities for network providers. Standards and copyright laws do have important roles to play, but experience teaches that the best defense of intellectual property will be found in collaborative agreements hammered out privately between providers of content and conduit. The best way to protect the economic interests of content providers is to have different broadband service providers vie for the right to distribute the content. Cable already distributes significant amounts of digital content in ways that provide acceptable assurances against theft. Providers of broadband service know that content is what ultimately sells the broadband connection to the consumer. Robust competition among broadband providers is what will deliver the innovative technologies to protect – and thus attract – the valuable content.

Policies

Congress should urge – or direct – the FCC to complete the deregulation of broadband immediately. This means placing broadband service – in its entirety,

including all underlying broadband transport components – under Title I of the Communications Act. Broadband Internet access service is an “information service,” not a “telecommunications service.”

Wireline broadband service should not be regulated at all; wireless broadband service should be regulated only as needed for the normal allocation and assignment of underlying spectrum. Sharing obligations must be confined to legacy voice service, provided on legacy networks, and even then, must extend only to network elements that are competitively essential to new entrants.

State and local authorities cannot be permitted to regulate broadband services in ways that undermine implementation of a uniform national broadband policy; patchwork regulation creates a serious impediment to the development of broadband services.

Effective protection of content is essential to the long-term development of digital broadband networks, but it won't come through technology prescriptions issued from Washington. The best long-term protection for providers of content lies in robust competition among providers of broadband connectivity.