Speeding Up the Broadband Wagon

THE U.S. ECONOMY is undergoing a profound transition as the Internet does for communication what the railroad did for transportation in the 1800s. Just as the railroad's revolutionary impact depended on building track capable of supporting fast trains across the nation, today's information revolution depends on upgrading the telecommunications infrastructure to support the new electronic commerce made possible by the Internet. The revolution's next step requires the network to rapidly deliver vast quantities of voice, data and video—broadband Internet access.

Railroad tracks were laid across the nation by the federal government, which raised the necessary funds by selling land adjacent to the tracks. Today, it's not the government but giant corporations that are building the nationwide broadband tracks. And this process is being held back not by the technology but rather by regulations designed for the telecom industry long before the Internet emerged.

Acting on industry requests and their own desire to promote competition, policymakers are seeking to dismantle the regulations that prevent broadband's rapid deployment. But they are finding that old regulations die hard. This article describes broadband, the current regulatory environment and the high costs of delaying broadband access.

Broadbanding the Internet

"Broadband is about to change the Internet again and usher in an era of electronic magic."[1] These words by Ivan Seidenberg, chief executive officer of Bell Atlantic Corp., sum up the next step in the continuing Internet revolution.

It is difficult to precisely define broadband, but roughly it means faster access to everything the Internet has to offer. The Progress and Freedom Foundation and others use "the analogy of 'fat pipes,' meaning vastly more digital information can flow through them at ever higher speeds, as opposed to narrowband 'skinny pipes' that still make up much of the old public switched telephone network and work well only for voice."[2]

Seidenberg describes broadband as having three unique attributes: capacity, speed and "always on." Broadband not only enables the Internet to offer seamless voice, data and video, it also changes how people use the Internet. Imagine surfing the Internet 100 times faster than most modems allow, without waiting to dial into any network. Imagine talking on the phone while your spouse conducts a stock trade and your teenager watches his favorite episode of "Seinfeld"—all through the same "pipe."

Americans wasted an estimated 2.5 billion hours last year waiting for web pages to download. Surveys show that households with broadband access increase their Internet usage fourfold,[3] probably because broadband drastically reduces that frustrating "world wide wait."

The Internet's chief constraint is bandwidth—and broadband lifts that constraint. Bandwidth used to refer to the range of frequencies in the broadcast spectrum occupied by a signal. In the digital economy, bandwidth is how fast information can be digitized, that is, reduced to bits of binary information (combinations of 0s and 1s), transmitted and then interpreted. Bandwidth is measured in bits per second. A 28.8-kbps modem operates at 28,800 bits per second. Today's broadband is available at speeds of 3 million bits per second—the "fat pipes" described above.

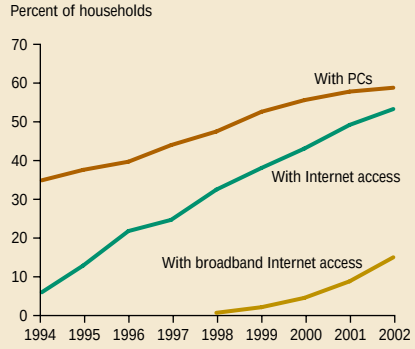
Several industries have developed technologies to capitalize on the convergence of voice, data and video. This new competition is producing an industry convergence as well, since any company with "pipes" now seeks to be consumers' provider of choice. Long-distance, local service and cellular phone companies, cable television companies and satellite operators are all positioning themselves to provide broadband, but they claim telecom regulations are standing in their way.

Ghosts of Regulations Past

The broadband industry operates under remnants of a regulatory regime designed for a different era, when phone service was a government-protected monopoly. Although the 1984 court-ordered breakup of AT&T and the Telecommunications Act of 1996 did much to encourage competition and improve the regulatory environment, legislative legacies continue to distort investment incentives for broadband. Ironically, the methods employed decades ago to ensure affordable local phone service for all Americans are one deterrent to broadband's spread.

The first president of AT&T, Theodore N. Vail, began using the term universal service in 1907 to mean the unification of local service providers into a regulated monopoly. Universal service gradually came to mean government efforts to ensure widespread access to telephone networks at affordable rates.[4]

Chart 1
U.S. Households Online



SOURCE: Erran Carmel, Jeffrey A. Eisenach and Thomas M. Lenard (1999), *The Digital Economy Fact Book*, 1st ed. (Washington, D.C.: The Progress and Freedom Foundation).

Over the years, long-distance rates have been kept high to subsidize local calls and thus provide universal service. Before its dismantling in 1984, AT&T simply charged higher prices for long-distance calls. Since then, local exchange carriers have levied access charges above economic costs on companies such as long-distance providers for accessing the local networks. (See box entitled "By Market or Mandate?")

This system of rate subsidies is difficult to unravel. Lowering access charges would raise local phone-service prices and could be infeasible politically. However, failure to address the economic inefficiencies of this system appears to encourage the regional Bells to invest in each other rather than in broadband Internet access.[5]

The Telecommunications Act of 1996 expanded the concept of universal service to include the rapid deployment of advanced telecommunications capability to all Americans, such as enabling Internet access for schools, hospitals and rural areas. But the question remains how to pay for it. The broadband industry fears the government will impose more fees that will continue to distort prices. The industry prefers new ways of achieving affordable broadband for all.[6]

For example, a consortium of nonprofit organizations, major corporations and federal agencies called PowerUP recently launched a multimillion dollar initiative to give underserved children access to Internet technology and guidance on how to use it. PowerUP partners will "provide technology, funding, trained personnel, in-kind support and other resources to help close the divide between young people who have access to computer-based information or technology-related skills and those who don't."[7]

The Cost of Wrong Regulations

The regulatory legacies described above distort investment decisions in the new broadband technologies and likely slow their deployment. Only 2 percent of U.S. households enjoy broadband Internet access today, and by some projections broadband will only reach 15 percent of households by 2002 (see Chart 1). Although fast by historical standards, this pace limits the Internet's economic potential.

The Federal Communications Commission has adopted a hands-off approach to broadband, though it is monitoring broadband's progress carefully. An October 1999 FCC report states: "Broadband deployment in this country is growing and will likely grow exponentially in the years to come. The rapid deployment of this technology to consumers will depend in large measure, however, on the level of investor interest and regulatory incentives provided to industry by local and federal governments. One of our most significant preliminary findings is that the Commission's policy of restraint on broadband regulation has helped to create a fertile environment for growth."[8]

Fortunately, policymakers in Congress also recognize policy flaws and are working with the FCC to prevent outdated regulations from deterring broadband investment. But the clock is ticking. As Seidenberg stated in his speech, "Innovation *delayed* is the same as innovation *denied*." The FCC delayed the licensing of cellular telephony for nearly two decades, costing the American economy over $85 billion by some estimates.[9] It is imperative that policies be changed not on government time, but on Internet time.

—Meredith Walker

Walker is an economist in the Research Department at the Federal Reserve Bank of Dallas.

By Market or Mandate?

It's difficult to determine whether government regulation and the Bell monopoly were necessary to achieve universal telephone service. But some facts about the early telephone industry raise the possibility that the market could have delivered what the government mandated.

• The United States had local phone service competition early this century. In 1904, dual service was available in over 60 percent of American cities with populations larger than 5,000. Almost 2,300 cities enjoyed competition in telephone service. The Bell System targeted large markets with business customers; independent companies provided service in small, rural areas.

• Telephone service, though expensive, spread rapidly before the Communications Act of 1934 established the federal regulatory apparatus and Bell monopoly. In 1920, one in three U.S. households had telephone service.

• Telephone service in the United States, which had competition in the beginning, spread much more rapidly than in Europe, where telephone companies were state monopolies from the start. The United States had 10 times more phones in service than Europe just before the start of World War I. Europe did not reach the 1920 U.S. household penetration rate until 1960.

SOURCE: Thomas J. Duesterberg and Kenneth Gordon (1997), *Competition and Deregulation in Telecommunications: The Case for a New Paradigm* (Indianapolis: Hudson Institute), pp. 48–49.

Notes

1 Ivan Seidenberg, "The Digital Revolution and the World Economy," speech presented at the Progress and Freedom Foundation conference "Cyberspace and the American Dream VI," August 23, 1999.

2 Erran Carmel, Jeffrey A. Eisenach and Thomas M. Lenard (1999), *The Digital Economy Fact Book,* 1st ed. (Washington, D.C.: The Progress and Freedom Foundation), p. 34.

3 Seidenberg, "The Digital Revolution and the World Economy."

4 Thomas J. Duesterberg and Kenneth Gordon (1997), *Competition and Deregulation in Telecommunications: The Case for a New Paradigm* (Indianapolis: Hudson Institute), p. 48.

5 Wes Basel, "Another Road for Telecom Competition," www.dismalscience.com, September 1, 1999.

6 Telecommunications Industry Association, *Public Policy Report and Agenda*, 1999, p. 14.

7 "Major 'Digital Divide' Initiative Launched," *Business Wire*, November 8, 1999.

8 Deborah A. Lathen (1999), "Broadband Today" (Staff report to chairman of Federal Communications Commission on Industry Monitoring Sessions convened by Cable Services Bureau, October).

9 Duesterberg and Gordon, p. 5.