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## “Open access:” the ideal and the real

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### Abstract

“Open access” would allow ISPs to use a cable operator’s broadband connection under regulated terms and conditions. Advocates stress the desirability of an “end-to-end” architecture for the Internet and the danger that cable operators will use their control over the last mile to limit consumer choice and stifle innovation. Opponents contend that wholesale price controls and other regulatory burdens under what they term “forced access” would in fact slow down the deployment of broadband, stifle innovation and harm consumers. The fears of “open access” advocates seem largely speculative at this point. Evidence from related policies also favors the opponents. “Closed” cable systems are beating their “open” DSL competitors in the market place; analogous regulation of cable TV did not serve consumers well; and forced “unbundling” of local service has been controversial and largely ineffective. In addition, relevant technology stocks declined in price with political and legal victories for “open access” and increased when it suffered setbacks. © 2002 Elsevier Science Ltd. All rights reserved.

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### 1. Origins of “Open access”

Broadband may change our lives as much as the telephone or the automobile, but it remains a work in progress. We do not know what the “killer apps” will be. Video-on-demand tops today’s list, but specific predictions are foolhardy, just as they were for earlier information technologies. Thomas Edison famously forecast that the phonograph would find its primary use in business dictation. He could not imagine Elvis and the Beatles.

We are also uncertain as to how broadband content will ultimately reach the consumer. As of December 2000, cable and telephony-based digital subscriber line (DSL) accounted for 99 percent of high-speed residential connections in the US. The favorite now in actual deployment is cable, which connects three times as many residences as the DSL. Though DSL seemed like a good bet in

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the late 1990s, installations—especially successful installations—have lagged behind original projections. Cable overbuilders have entered dense urban markets, but their long-term prospects are uncertain. Other technologies, notably satellite and fixed wireless, represent intriguing possibilities with much promise, but few market successes.

Calls for “open access” have focused on cable, a largely unregulated platform enjoying the leading market share in residential broadband. Telephone companies offering DSL service in competition to cable modems are regulated according to common carrier rules, while satellite and fixed wireless—despite “closed” platforms for broadband access—fledgling competitors remain. Acquisitions of cable companies by major players have stimulated political action, starting with the AT&T’s acquisition of TCI. For example, the local cable regulatory authority in Portland, Oregon stipulated in 1998 that TCI be allowed to transfer its cable properties to AT&T only if AT&T permitted non-affiliated Internet service providers (ISPs) to offer high-speed service over AT&T’s cable conduits. Similar efforts to force “open access” took place in San Francisco, Broward County (FL), St. Louis and other localities, though only a handful of initiatives resulted in regulation.

Those regulations have since been overturned by judges who saw a conflict with federal telecommunications law or with US free speech rights. A June 2000 appeals court ruling in the Portland case held that high-speed Internet access was not a “cable service” and hence not subject to local cable rules. In November 2000, a district court struck down the “open access” ordinance in Broward County on constitutional grounds—the ordinance infringed on cable operators’ First Amendment rights.<sup>1</sup> A unanimous appeals court decision involving Henrico County, VA held that cable modem lines were telecommunications facilities and hence under federal jurisdiction.

In response to these rulings—some of which appeared to invite federal action—local cable regulators have asked the FCC to return oversight authority to them. The request has not, thus far, been granted.<sup>2</sup> An FCC “notice of inquiry”, soliciting proposals and analyses on open access regulation, is pending.

The political pressure for “open access” regulation stems in part from telephone companies and telephony-based ISPs that fear they would be locked out of lucrative markets as consumers switch from dial-up narrowband to cable-based broadband. As one Portland ISP put the matter: “We want a pipe to the cable modem platform.”<sup>3</sup> Organizations lobbying for “open access” include the US Internet Industry Association, representing over 400 companies, and the OpenNet Coalition, representing over 800 members.<sup>4</sup> Individual corporate advocates have included MCI WorldCom, Mindspring and GTE (now part of Verizon).<sup>5</sup> America Online (AOL) also pushed for open access,

<sup>1</sup> US district court overturns Florida cable open access statute, *Communications Daily*, November 14, 2000.

<sup>2</sup> FCC asked to allow cities to regulate cable Internet service, *Communications Daily*, November 29, 2000. “At stake are millions of dollars in local franchise fees and the right of franchising authorities to adopt customer service standards to protect consumers using cable modem services”, according to the Marin County Telecom Agency (MCTA).

<sup>3</sup> Lisa Greim Everitt, TCI and AT&T minimize ruling: Oregon Commission puts conditions on transferring control of cable franchises, *Denver Rocky Mountain News*, November 18, 1998, p. 2B.

<sup>4</sup> FCC cable access recommendation not a shock, *Broadband Networking News*, October 26, 1999, Vol. 9 (22). For web sites of these two organizations, see: <http://www.usiia.org/> and <http://www.opennetcoalition.org/>.

<sup>5</sup> AT&T to try out multiple ISP access to cable systems, *Communications Daily*, June 8, 2000 (GTE a leader among open access advocates). For GTE’s views, see: <http://www.gte.com/AboutGTE/Publicpolicy/openaccess/>. Interestingly, though GTE advocated “open access”, when an ISP sought capacity on GTE’s own cable system, a GTE spokeswoman said “the company has no intention of providing a competitive ISP with access to its cable systems”. Vince Vittore, IVI takes open access to GTE, Falcon, *Telephony*, February 15, 1999.

though before it became a cable company itself through its acquisition of TW. In each case, consumer migration to cable-based high-speed Internet access threatened to separate existing telephony-based players from their customers.

The cable industry responds that “open access” is “forced access”. The leading cable trade associate claims that cable customers enjoy access to all Internet content without regulation.<sup>6</sup> Part of the industry’s opposition to “open access” is based on technical issues. These are concerns and could be fixed, given time, money and the right incentives.<sup>7</sup> The industry points to problems configuring cable systems for independent ISPs, with traffic control over the shared local area network, and with back office integration.<sup>8</sup> According to a Bear Stearns study, “The cable industry has not yet found a standardized way of dealing with multiple ISP access.”<sup>9</sup>

Part of the industry’s opposition is also based on longer-term economic objections. According to Matt Polka, president of the American Cable Association, a group representing small US cable system operators, “Our members are not opposed to working with unaffiliated ISPs, but they just do not want the government telling them they have to provide access at below-market rates.”<sup>10</sup> The industry seeks to avoid mandated “open access,” which would imply wholesale rate regulation and devolution into common carrier status.

Cable operators, including AT&T, Comcast and Cox Communications, have been conducting voluntary trials with multiple ISPs. Both political pressure and financial opportunity likely play a role in these developments.<sup>11</sup> The multiple-ISP trials have been marked by technical difficulties on the operational side and complaints by ISPs about the slow pace of actual deployment.<sup>12</sup>

Contractual commitments have influenced access, serving both as an impediment to new competitors and a call for action. Indeed, TCI’s exclusive contract with Excite@Home provided the stimulus for the open access debate when AT&T acquired TCI in 1999.<sup>13</sup> That contract was scheduled to expire in 2002. Comcast and Cox Communications terminated similar agreements with Excite@Home in June 2001.<sup>14</sup>

<sup>6</sup> “Misnamed” open access hit again by NCTA at East Coast Cable ’99, *Communications Daily*, October 13, 1999 (NCTA President Robert Sachs: “cable services give access to any Internet content”).

<sup>7</sup> Open Access: What’s at Stake, August 2, 1999, *ZD Net* at <http://www.zdnet.com/intweek/stories/news/0,4164,2305563,00.html>.

<sup>8</sup> Randall Cardinal, Open Access Customer Care, *Broadband Week*, May 21, 2001, p. 46.

<sup>9</sup> Katz, Radeff and Goldberg (2001), p. 68. AT&T spells out plans for multiple-ISP market trials, *Communications Daily*, March 16, 2001.

<sup>10</sup> Ted Hearn and Mike Farrell, FTC builds a model: AOL access terms could resonate, *Multichannel News*, December 18, 2000, p. 47.

<sup>11</sup> Robert Sachs, the president of the National Cable and Telecommunications Association (NCTA) is urging members to offer subscribers “a choice of ISPs” and “access to all Internet content”. He argued that “it is in our industry’s self-interest to provide cable consumers with a choice of ISPs ... for it’s not as if the skies are entirely free of regulatory clouds”. Western Cable Show Notebook, *Communications Daily*, December 4, 2000. Some financial analysts have come to see an open, or partly open, cable broadband platform as a profit-maximizing strategy. See *Morgan Stanley Dean Witter Equity Research, Telecom-Cable*, The sequel: open access is better (June 29, 2001).

<sup>12</sup> Double-edged sword of open access, *ISP Business News*, Vol. 7 (26), July 9, 2001.

<sup>13</sup> Peter S. Goodman, AT&T puts open access to a test; competitors take issue with firm’s coveted first-screen presence, *Washington Post*, November 23, 2000, p. E01.

<sup>14</sup> Todd Wallack, ExciteAtHome loses cable contracts, *San Francisco Chronicle*, June 20, 2001, p. C1.

The “open access” debate took on new urgency and an ironic twist with AOL’s January 2000 bid for TW. AOL had previously sought mandatory access to cable systems.<sup>15</sup> In merging with TW, the Internet and media firm then became owner of the second largest cable operator in the United States, with the plant passing 20 million American homes.<sup>16</sup> An intensive debate ensued as regulators pondered the deal. Would AOL grant access to Earthlink, Juno or other independent ISPs eager to deliver broadband service over TW cable? Would TW broadband customers be free to access content provided by web sites owned by Disney, Viacom, or other firms competing with TW?

Ultimately, AOL agreed to allow some independent ISPs to use TW’s cable under FTC oversight. The regulatory deal gave new hope to open access advocates hitherto frustrated by the courts and FCC.<sup>17</sup> In contrast, the cable industry was eager to spread the message that the terms were specific to the AOL–TW deal and carried no precedent value for future regulation.

## 2. Effects of “Open access”

Some policy analysts view open access requirements as essential for the preservation of the Internet and recommend that cable be placed on the same regulated footing as local telephone service. Others advocate open access regulation under specific circumstances, such as when large cable operators own large content providers. Yet a third group views open access as inefficient, eroding financial incentives to develop a nascent industry while providing little of value to consumers.

Mark Lemley and Lawrence Lessig represent the first group. With the aim of preserving the “end-to-end” principle of Internet architecture, Lemley and Lessig advocate the same restrictions for cable-based broadband as currently exist for local telephone companies. “We believe that there is no justification in law or policy for giving cable companies special treatment.... Nothing less than the structure of the Internet itself is at stake in this debate.”<sup>18</sup> They argue that historical experience under AT&T as a telephone monopolist shows how an integrated network controlled by a corporate entity blocks progress, and they regard government safeguards as central to the

<sup>15</sup> Audrie Krause, Look behind the words to find the real motivation for trying to control the growth of broadband technology, *Los Angeles Times*, November 3, 1999, p. B11.

<sup>16</sup> Heather Fleming Phillips, Earthlink access is huge leap for hopes of America Online (AOL)–Time-Warner (TW) Merger, *San Jose Mercury News*, November 21, 2000.

<sup>17</sup> FCC’s AOL–TW deal approval stokes open access, ITV rules debate, *Communications Daily*, January 6, 2001 (pointing to new battle fronts in FCC proceedings on cable open access and interactive TV, and proposed federal legislation). “Now that FCC finally has approved AOL’s takeover of TW with additional regulatory conditions, cable operators, consumer groups, phone companies, state and local regulators, ISPs, broadcasters, DBS providers, cable overbuilders and others already are girding for next big fights over extending those regulations to rest of cable industry.”

<sup>18</sup> Lemley, Mark and Lessig, Lawrence (2001); also available at <http://www.bepress.com/blewp/default/vol2000/iss2/art8>. Lemley and Lessig have repeated these arguments in a filing with the FCC. Written Ex Parte of Professor Mark A. Lemley and Lawrence Lessig, Application of consent to the transfer of control of licenses MediaOne Group, Inc. to AT&T Corp., CS Docket No. 99-251. For a press story on Lessig’s views, see Mary Mosquera, Cyber Guru Favors Regulated Open Access, *TechWeb News*, February 28, 2000 (<http://content.techweb.com/wire/story/TWB20000228S0017>).

development of the Internet. They also point out that ISPs provide functions such as caching, and may increasingly specialize as the broadband market matures. For example, some may provide interactive gaming, while others feature streaming video. They largely discount the influence of competition from existing sources such as “open” DSL or fixed wireless.

Representative of the second group, Jerry Hausman, Gregory Sidak and Hal Singer propose less sweeping implementation of “open access”. They would apply it only when mergers form vertically integrated cable and content providers. They argue that cable-based services, which accounted for roughly 75 percent of US broadband subscribers in 2000, will continue to dominate the broadband market. They further argue that vertically integrated firms producing both cable services and content (as does AOL TW) will have an incentive to discriminate against unaffiliated content providers. As evidence, they point to attempts by TCI and TW to control cable programming on their systems. These considerations lead Hausman et al. to conclude that regulators should “require vertically integrated cable firms to afford unaffiliated ISP’s equal and nondiscriminatory access to the combined company’s cable modem platform”.<sup>19</sup>

In contrast, Owen and Rosston (1998) view even the threat of open access as reducing incentives to invest in broadband. Further, they regard implementation as injurious to efficient forms of vertical integration. This view is shared, thus far, by the FCC. Similarly, Brookings telecom economist Robert Crandall responds to the asymmetry between phone and cable regulation by urging deregulation of the telephony-based DSL rather than regulation of cable.<sup>20</sup> According to Crandall, “The best solution is for regulators to stand aside.”<sup>21</sup>

We propose to contribute to this debate by examining the political realities of telecom regulation and the relevant economic evidence gleaned from broadband markets, financial markets, and the historic application of cable TV regulation. In doing so, we arrive at several conclusions:

- Broadband cable has not reached its potential because cable operators take defensive measures to counter possible regulation. “Open access”, an attempt to impose common carriage rules on cable operators, prompts systems to allocate only meager increments of available bandwidth for broadband.
- “Open access” requirements will not increase capacity and innovation.
- Multiple ISPs may or may not serve the interests of cable operators. If they do not, forced “open access” will lead cable operators to reduce their investment in Internet-specific capacity and innovation.
- Various equivalents of “open access”—notably price regulation, leased access and video dial tone—have demonstrably failed to promote consumer interests in the cable television market.

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<sup>19</sup>Hausman, Sidak and Singer (2001) p. 307. Speta (2000) proposes mandated open access for some broadband carriers along different lines. He argues that carriers who provide transport only and no content should be held to the interconnection requirements of the 1996 Telecommunications Act, while carriers that provide linked information services should not be required to interconnect. Thus, AOL/TW could keep its customers in a “walled garden”, while local cable companies offering no content would be required to connect to the web.

<sup>20</sup>Robert W. Crandall, Competition is the key to ‘open access’, *Wall Street Journal*, December 13, 2000, p. A26.

<sup>21</sup>Simone Kaplan, FCC urged to act in broadband battle: Industries resist heavy regulation but want an equal footing in rapidly growing broadband market, Medill News Service, October 17, 2000 <http://www.pcworld.com/resource/printable/article/0,aid,32302,00.asp>.

- “Closed” cable broadband beats “open” DSL broadband in the marketplace. Cable’s lead reflects, in part, the lack of regulatory handicaps.
- Stock prices of companies that depend on generic development of broadband delivery systems have tended to increase with setbacks for “open access” and decline with victories.

### 3. The “last-mile” bottleneck

Traditional telephone service and cable TV suffer from the “last-mile” problem. In each case, only one wire connects the typical consumer to the respective network, yielding the owner of that wire market power. Unregulated price exceeds marginal cost and, with high probability, average cost.

To be sure, last-mile links face some competition. Traditional telephone service can be replaced by a wireless phone connection. This is especially true for second and third lines used by households, though a small but growing percentage of US homes are now completely wireless. Similarly, cable TV incumbents worry about direct broadcast satellite systems and, to a lesser extent, cable overbuilders, DSL and fixed wireless. But competition in these “last-mile” services remains muted in comparison to markets in which consumers choose between a number of highly substitutable rivals.

Financial data in the cable industry reflect the last-mile bottleneck. The capital cost of adding a new subscriber was \$1000 or less throughout the 1980s and 1990s.<sup>22</sup> By 2000, in contrast, the market value of cable systems per subscriber had reached \$6000 dollars,<sup>23</sup> although prices may have peaked. A May 2001 Bear Stearns study estimated per mean subscriber values of four leading cable companies of \$4432.<sup>24</sup>

Even the new lower values still reveal a substantial gap—a margin of substantial capitalized profit representing the scarcity value of last-mile links. Some of this scarcity value owes to franchise regulation. Local politicians, eager to siphon economic rents via regulatory cross-subsidies, have an interest in scarcity creation. New entrants may also face obstacles, such as difficulty in obtaining rights of way or predatory actions by incumbents.

Monopoly suppliers exercise market power by charging prices substantially above their costs. The best policy response in static sectors plagued by last-mile monopoly may be some form of rate regulation, including wholesale “open access” rules for competitive suppliers utilizing the facilities of the incumbent to reach end users. Water supply offers a possible example. For an industry featuring an ill-defined (rapidly changing) product facing emerging marketplace substitutes, however, the case for price controls or access regulation is considerably weakened.

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<sup>22</sup>Federal Communications Commission, Annual assessment of the status of competition in the market for the delivery of video programming: First Annual Report, CS Docket No. 94-48 (rel. Sept. 28, 1994) (First Cable Report), Table 5.2. By 1999, the cost had risen to \$800–\$1000. FCC, Section 706 Report, Chart 2.

<sup>23</sup>Lee Conrad, Cable comes under pressure to roll out digital, phone services: Satellite broadcasters coming on strong; competing with cable to reach consumers’ homes, *High Yield Report*, February 7, 2000 (cable valuations per subscriber up to \$4000 in 1999, up from \$3000 in 1998). Convergence, competition, mergers hamper franchise renewals, say experts, *Communications Daily*, December 4, 2000 (citing increase in value per subscriber to \$6000; increase in cable franchise value responsible for municipalities asking for “concessions or cash”; disagreement over which new services are subject to franchise fees).

<sup>24</sup>Katz et al. (2001), p. 109.

The argument for open access has focused not on the benefits of price, but on quality, competition. Specifically, advocates of access regulation emphasize the possible incentives cable operators to limit broadband customers to web sites and networks with whom they enjoy a partnership, reciprocal dealing contract, or joint ownership. On close examination, however, cable company strategies to limit broadband content are generally unconvincing. Consider the various charges leveled against cable operators.

*Cable operators see broadband as threat:* Cable companies have the valuable franchise for the delivery of video content and may regard broadband as a competitor. Lemley and Lessig (2000, p. 25) conclude that cable operators have an incentive to “minimize the threat of broadband to their own video market”. They thus claim that cable operators might restrict access to streaming video, a conceivable substitute for traditional television programming. Indeed, cable operators and content providers have crossed swords over video streaming, as indeed they have over other issues.<sup>25</sup>

But if consumers find that streaming video is a good substitute for video programming, they will pay the delivery monopolist for access to streaming just as they do for traditional cable fare. Cable operators own toll booths on gateways to the last mile. They are indifferent as to whether the revenues they pocket come from video subscribers or Internet access subscribers.

The cable companies own the pipe that leads to either the household TV or the household PC (or both). Tellingly, when cable companies limited streaming video, ESPN executives responded that “they would consider sharing advertising and subscription revenues with cable affiliates, as well as other possible arrangements”.<sup>26</sup> Similarly, cable operators in turn have signaled their willingness to compromise.<sup>27</sup>

*Cable operators under-allocate spectrum to broadband:* An alternative application of the “cannibalization” view is more compelling. This explanation begins with the observation that the cable companies allocate far less spectrum to broadband than is generally warranted by the incremental revenue it delivers to operators. The typical cable system has a capacity of 750 MHz but only 6 MHz goes to broadband, with the rest largely going to subscription and pay-per-view video programming. Since an analog video channel requires 6 MHz, cable operators have capacity for as many as 125 analog video channels.

Interestingly, cable companies derive about equal revenues from each type of subscriber. If a cable TV subscriber pays \$40 per month for 50 channels, the average price/channel is \$0.80. Cable

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<sup>25</sup> At a cable convention, cable executives from Charter Communications and Comcast “sought assurances from Disney, Viacom and other programmers that they would not use streaming video to circumvent cable operators’ offerings and hurt their business model”. ESPN-charter dispute shows cable fears of video streaming, *Communications Daily*, July 5, 2001. Cable and content providers have had other disputes. At one point during the year-long review of the AOL/TW merger, TW dropped ABC from its cable offerings. Betsy Streisand, Pulling the plug on ABC, *US News & World Report*, May 15, 2000, Vol. 128 (19), p. 43.

<sup>26</sup> ESPN-charter dispute shows cable fears of video streaming, *Communications Daily*, July 5, 2001. (According to the article: “ESPN executives ... said they would consider sharing advertising and subscription revenues with cable affiliates, as well as other possible arrangements”.)

<sup>27</sup> Carl Lindemann, Old media may have survived round one of its battle with new media, but the sequel promises to be more challenging, *Broadcasting and Cable*, June 18, 2001, p. 42. (“We’re not against video streaming”, according to Charter spokesman Andy Morgan. “But the network is going to provide substantial content free via the Internet while we’re having to charge customers for it. There needs to be some limitations. Otherwise, it devalues the product we’re providing via our system to customers.”)

modem subscribers also pay about \$40 per month, but receive the use of just one channel. While the relevant economic calculation is made not according to averages, but according to margins, the marginal value of the bandwidth devoted to broadband is likely to also be far higher than that devoted to the last video channel. Against the background of congestion over shared cable networks and the likely interest of some subscribers in paying for better service, the current allocation seems puzzling. Diverting additional bandwidth to broadband would appear to offer greater profits.

Ironically, open access rules would do nothing to ease this apparent under-allocation. Rather, the push for open access *promotes* it. Cable operators' video services have largely (but not completely) escaped common carrier regulatory mandates. Cable operators' broadband services have also—thus far—avoided classification as a common carrier service subject to regulation. Open access rules could subject broadband to regulatory constraints reducing the rents now realized by operators. (This reduction in rents could accrue from reduction of monopoly pricing margins, or from elimination of efficient vertical integration, or some combination thereof.) The greater the share of spectrum allocated to broadband, the more attractive the target for regulators (and pressure groups) and the greater the loss to the cable operator. Fear of appropriation by regulation prompts operators to hoard available bandwidth, reserving them for those business segments (namely, video) where property rights are relatively secure.

*Cable companies suppress unaffiliated ISPs:* Critics also charge that cable companies will exclude unaffiliated ISPs. Consumers do benefit from having a broad palette of Internet content and they benefit from fast, reliable service. Whether direct competition between ISPs for customers produces these attributes in a superior fashion to a competition in which ISPs compete to become the exclusive partner of the monopoly cable company is an open question.

Broadband with multiple ISPs entails advantages and disadvantages. ISPs may offer better service by offering local caching of popular web sites. ISPs may also specialize at some future point, with some offering entertainment and others gaming. They may offer walled gardens—pleasant and easy to navigate. With several ISPs competing to provide broadband, cable companies may wind up signing up more customers. The strategy is familiar from other contexts. For example, Microsoft encouraged competition among computer manufacturers to promote use of its operating system and software.

On the other hand, broadband service made available by a cable company with an integrated or exclusive ISP also entails advantages. Consumers have to deal with only one entity—rather than two—when problems develop. Cable companies are protected against high mark ups if the ISP itself has market power, as might be the case if AOL were the ISP for Comcast, for example. Additionally, an integrated cable-ISP may find it easier to price-discriminate by coordinating pricing for content and quality of service. Price discrimination of course has well-known ambiguous implications for consumer welfare.

*Integrated providers suppress conduit and content competitors:* Hausman, Gregory Sidak, and Singer (2001a, pp. 305–306) focus on two types of actions by integrated “full-service broadband providers” such as AOL–TW. “Conduit discrimination” would entail protection of a firm's own pipe by limiting distribution of its content over rival pipes—such as DSL, satellite or overbuilders. “Content discrimination” would involve refusing to carry or degrading content from rival producers, presumably firms such as Disney or Viacom. Hausman et al. concede that this conduit

and content discrimination are costly strategies, but offer that “the benefits *could* outweigh the costs in certain situations” (emphasis added).

Current circumstances hardly warrant blanket-mandated “open access,” as Hausman et al. concede when they limit their proposed remedy to new mergers. Moreover, it is unclear whether integrated cable/content firms will dominate broadband access. Many major video programming owners do not have substantial holdings in cable or satellite distribution facilities in the US market. These include industry leaders Disney, Viacom, and News Corp. Industry speculation is that AOL may actually divest its TW cable operations,<sup>28</sup> and AT&T’s acquisition of TCI (then America’s largest cable operator) involved the spin off of Liberty Media, TCI’s programming arm. Currently, the US has but one large integrated media/conduit company; if this model is the wave of the future, the surf has yet to form.

*Use and misuse of the bottleneck—summary:* Cable is the currently dominant last-mile broadband link. While it seems doubtful that cable TV operators’ financial interests will prove lethal to broadband, defensive actions taken to limit regulatory risks likely reduce operators’ allocation of bandwidth for high-speed Internet access and thereby retard development of applications, content, and networks.

#### 4. Lessons from cable TV and telephone regulation

Both cable TV and telephony have been regulated in ways that are similar to what open access for cable broadband could entail. Regulation of cable TV is especially pertinent because it involves the same conduit. The industry’s experience with retail rate regulation and “leased access” speak to the operational realities involved in actually implementing open access. Various aspects of telephone regulation—notably “video dialtone” and local exchange unbundling—also provide relevant cautionary lessons.

Over the 50-year history of cable TV, retail rates have been regulated, deregulated in 1984, re-regulated in the 1992 Cable Act, and then deregulated a second time through the joint influence of the FCC and the 1996 Telecom Act. The evidence supports the conclusion that rate regulation does indeed lower nominal rates, but at the cost of lowering service quality. Lower prices and lower quality suggest a tradeoff that could result in net consumer gains, but cable television subscription growth declined under price caps. This evidence, along with other data, reveal that subscribers generally believed they were worse off with price controls.<sup>29</sup> Part of this reaction can be attributed to a reduction in investments for marketing and capital infrastructure by cable operators.<sup>30</sup>

“Leased access” forces cable TV operators to make available some of their capacity to third parties with the aim of providing a broader spectrum of “ideas and experiences”. The FCC formulated the policy in 1969 and imposed a duty on cable operators to make available not only a “leased access” channel but also “PEG” channels for public, educational and governmental use.

<sup>28</sup> Seth Schiesel and Geraldine Fabrikant, AT&T is said to be open to courtship of its cable television unit, *New York Times*, July 16, 2001, p. C1.

<sup>29</sup> Hazlett and Spitzer (1997) provide evidence showing that price cap regulation lowered both quality and subscriptions. Also, see Crandall and Furtchgott-Roth (1996) and Havenner, Hazlett, and Leng (2001).

<sup>30</sup> Hazlett (1991, 1997).

“Leased access” was reaffirmed in the 1984 Cable Act, which required operators to set aside 10–15 percent of capacity to third-party programmers. Its regulatory purpose is so closely aligned with the stated intentions of open access advocates that ISPs have, in fact, used the leased access rules to file applications to use cable system conduits to provide broadband access—unsuccessfully.<sup>31</sup> Some leased access programming has appeared on cable systems, primarily offered by home shopping networks and providers of infomercials, but the system has been uniformly condemned by policy analysts as ineffective in creating genuine new distribution opportunities for valued programming denied cable carriage due to cable operators’ financial incentives.

“Video dialtone” (VDT) allowed local exchange carriers to serve as transporters of video signals, entering markets to compete with cable television systems. The FCC allowed the LECs to enter video signal distribution in the late 1980s, but VDT became mired in regulation and familiar beggar-thy-neighbor telecom controversy. In 1995, the FCC was wondering if the nascent service should be subject to price caps, a policy supported by long-distance carriers and cable operators—potential competitors of the LECs.<sup>32</sup> After years of skirmishing over how to set the terms for third-party program access, one VDT system was finally authorized by the FCC in New Jersey, attracting just 1250 subscribers. *Cablefax* dubbed VDT “the telephone industry’s version of the 8-track”.<sup>33</sup> In the 1996 Telecommunications Act, VDT was replaced by an ostensibly lighter regulatory framework called the “open video system (OVS)”. OVS rules tone down the mandates on “open access”, allowing telcos to offer programming on one-third of the channels they construct, while third-party programmers would have access to the rest. While OVS has been used more frequently than VDT, fewer than 100,000 subscribers were served by such systems through 2000, and those OVS franchises that do get built are typically converted to local cable franchises (with fewer access requirements) by their owners.<sup>34</sup>

The 1996 Telecom Act provided a variant of open access in its provisions for forced sale of unbundled network elements (UNEs) and for resale of local telephone service. The idea behind UNEs was to make available components of local ILEC telephone systems and offer them to CLECs at a regulated price. (ILECs are the incumbent local exchange carriers. For most customers, this means the Baby Bells created from the 1984 breakup of AT&T. CLECs are competitive local exchange carriers.) Resale requirements permit entrants to buy ILEC services at a discount and resell them under their own brand names. In practice, the effect has been to bog down the industry in uncertainty and litigation, particularly over the level of regulated wholesale prices, and to discourage investment in new technology by the ILECs.<sup>35</sup>

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<sup>31</sup>Ted Hearn, FCC rejects leased access for ISPs, *Multichannel News*, February 14, 2000; FCC Rules ISPs aren’t entitled to leased access to cable, *Communications Daily* February 22, 2000 (FCC holding that Internet service would not be “video programming”).

<sup>32</sup>RHCs disagree with industry on price cap regulation of VDT, *Communications Daily*, April 20, 1995, Vol. 15 (76), p. 1.

<sup>33</sup>In the States, *Cablefax*, March 15, 2001, Vol. 12 (51).

<sup>34</sup>Video market share for cable declines to 82%, FCC says, *Communications Daily*, January 24, 2000 (FCC reports declining shares in multichannel video service for cable, MMDS, home satellite dishes and open video systems, but increasing shares for DBS). The report credited the decline in OVS to purchases and conversions to traditional cable franchises by RCN, a cable overbuilder.

<sup>35</sup>Crandall and Hausman (2000), Lehman and Weisman (2000) and Kahn (1998).

## 5. The winner in the race between “open” and “closed” broadband is...

Though predecessors and analogies to cable open access offer valuable insight into its likely effects, actual examples of rival access regimes in broadband emerged following the 1996 Telecom Act. Local exchange carriers must share networks with rival sellers of DSL, unbundling network elements to assist their broadband competitors. This constitutes a very ambitious set of “open access” requirements, as it allows rivals to piece together alternative broadband services in multiple configurations. Open access in cable is taken to mean that independent ISPs have the opportunity to access just the configuration offered the cable company’s own ISP.

DSL’s star once shone brightly. The arguments seemed compelling. DSL carries broadband over existing phone lines. In the US and elsewhere, a larger fraction of homes have a phone line than a cable connection. The wires are in place. In addition, the US regulatory regime seems to favor “openness” and competition. If the ILECs do not themselves rush out to provide DSL service, CLECs and ISPs would gladly fill the gap, using the ILECs own plant and equipment and the favorable regulatory climate.

To be sure, DSL suffered from some handicaps. DSL currently does not function at more than 3 miles from the ILEC’s central office. But the mood was optimistic as recently as the March 2000, when Cahners In-Stat predicted that “the battle for primacy in the high-speed Internet access market may be won by the telephone companies and not the cable firms”.<sup>36</sup>

In actual practice, however, “open” DSL remains a distant second to “closed” cable modem service. “Contrary to the hype and regulatory hope that DSL would catch up to cable modem deployment, cable is still deploying cable modems at roughly two times the rate of DSL in the residential market.”<sup>37</sup> In June 1999, analysts at Lehman Brothers had predicted that DSL would catch up with cable deployments by the end of 2001, but in June 2001, the same analysts expected that it would take at least 5 more years.<sup>38</sup>

What happened to DSL? First, DSL has run into unexpected technical problems.<sup>39</sup> To be sure, customers also complain about cableco service.<sup>40</sup> But when the problems with DSL became legendary, they turned to the cable companies for technology that worked. Second, the regulatory structure that promotes “open access” also hinders investment and marketing. When a DSL installation fails, ILECs, CLECs and ISPs point fingers. The very modularity ensured by regulations assuring “openness” sabotage consumer demands for accountability and “one stop shopping”. In addition, profit-maximizing ILECs are not eager to help their competitors, the CLECs; profit-maximizing CLECs are not eager to help their competitors, the ILECs. Regulations designed to foster vertical separation of ILEC and CLEC functions hinder efficient

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<sup>36</sup> Corey Grice, DSL could pull ahead in high-speed race, *CNET News*, March 1, 2000 (reporting on a Cahners In-Stat Group study).

<sup>37</sup> Scott C. Cleland, Expect positive cable outlook to continue, *Precursor Group Independent Research*, March 19, 2001.

<sup>38</sup> Jo Shields, Cable to lead DSL for local access, *Telecom Markets*, June 19, 2001.

<sup>39</sup> Jeff Smith, Tales of slow consumers in search of speedy DSL service tell of frustrating wait, *Denver Rocky Mountain News*, December 18, 2000, p. 1B. Todd Wallack, DSL providers dropping with dot-com bust; NorthPoint Communications of S.F. is latest in trouble, *San Francisco Chronicle*, January 21, 2001, p. B1.

<sup>40</sup> Paul Coe Clark III, Cable operators give used car salesmen a good name, *Broadband Networking News*, August 1, 2000, Vol. 10 (16).

coordination, even when customers skip CLECs and unaffiliated ISPs and buy DSL directly from ILECs. “What consumers don’t realize is that they still are dealing with several entities, even when they are part of the same phone company, that they are required by law to deal with each other through written orders and not conversations.”<sup>41</sup> Hausman, Gregory Sidak and Singer (2001b, p. 304) contend that “significant regulatory burdens prevent [DSL providers] from competing effectively against the cable broadband providers”.

Not only is it instructive that cable’s “closed” platform is winning the broadband race, other dynamics of the market suggest that access mandates hinder deployment incentives. In what has become a refrain among critics of the Bell companies, it is alleged that ILECs were historically reluctant to promote DSL due to fear of cannibalizing revenues accruing from T-1 lines, high-capacity data links typically priced far above DSL service. The allegation is that ILECs only began to seriously roll out DSL when confronted with the emergence of cable modems. Fearing loss of the retail and small business market to a competitor, phone companies finally began to build and market a low-priced competitive option for high-speed Internet access. Ironically, this version of the development of broadband gives the “closed” platform credit for bringing the “open” platform into the market.

## 6. The verdict from markets and analysts

Clearly, much hinges on the success of broadband. Content providers, semi-conductor manufacturers, backbone companies, wide area networks and other economic interests would prosper if every home in America had available a cheap, reliable, high-speed connection to the Internet. We thus have a ready gauge for the prospective effects of open access. If mandated open access is likely to promote consumer interests, it will help technology deployment; hence, investors should increase equity values of these broadband beneficiaries as the open access movement scores political and legal victories. Similarly, investors should mark down the values of the same companies when open access suffers setbacks.

We identified eight victories for open access and 21 setbacks over the period January 1998–October 2000. The victories include early events favorable to open access in Portland, Broward County and Pittsburgh; and news stories signaling opposition to the AOL/TW merger. The setbacks involve favorable developments in AT&T’s acquisition of TCI and MediaOne, FCC decisions unfavorable to the ISPs, and state and local governments and courts turning back or abandoning efforts to implement open access.

We examine the movement of two stock market metrics over this period:

*Inter@ctive week Internet index:* This is a capitalization-weighted index of major Internet companies, including Amazon.com, Cisco, E\*Trade, Cnet, 3Com and Yahoo!. Changes in this index reflect a market assessment of the changing prospects of major Internet players.

*Excite@Home’s stock price:* At Home serves as a marker for the open access debate. It had exclusive contracts with major cable players, including AT&T, Cablevision, Comcast and Cox Communications. A victory for open access would undermine a business model built on this

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<sup>41</sup>David Lieberman, Bumpy road to fast net access, *Chicago Sun-Times*, November 24, 2000, p. 85.

Table 1  
3-day returns for 21 “open access” setbacks and eight “open access” victories, January 1998–October 2000

	Internet index (%)	Excite@Home (%)
Setbacks	1.7	8.1
Victories	−0.1	−6.4

These returns are adjusted for movements in the S&P 500 index.

exclusive status. Indeed, the press routinely linked the company’s stock price with new developments in the open access debate.

The movements of both metrics are summarized in Table 1. We show the average net movement per event, net of movements in the overall stock market as measured by the S&P 500 Index, over the 3 days centered on the event date reported in the news media.<sup>42</sup> Both measures—the Internet Index and Excite@Home—increased with setbacks for open access. Conversely, all the three also declined with victories for open access. Note that the movements of Excite@Home, whose fortunes were so clearly linked to open access, suggest that we have chosen important event dates and assigned them correctly to the “setbacks” and “victories” categories.

Table 1 supports the view that investors regarded open access as a threat to the future of the Internet. Various mechanisms are possible. “Open access” would introduce political costs and risks, particularly with respect to wholesale transport pricing and quality of service. Aside from static regulatory effects, politicization of broadband would introduce uncertainty and delay above and beyond existing technological and market risks. Importantly, common carrier status for cable broadband would imply that the benefits of innovation would be shared by ISPs, while costs would be borne by the cable companies. This is not simply an equity issue, but one altering financial incentives. If cable companies believe that successful innovations, including infrastructure upgrades creating the opportunity for two-way digital Internet access, will be provided by new competitors gaining access to their network at regulated wholesale rates, they must discount the returns potentially available from such innovations.

Recent analyst commentary has dissected the likely effect of open access on cable broadband. An analysis by Deutsche Bank noted the valuations in several sectors depend on the development of high-speed residential connections. The report concluded that open access would likely lower these stock values. Open access rules would force unbundling of transport and closely related services, compromising service quality. Investment in infrastructure would also slow down due to reduced financial incentives. On the other hand, the report discounted the possibility that unregulated cable broadband offerings would discriminate against unaffiliated content because consumers demand unrestricted access to the Internet. They also regarded the growth in DSL (the “open” system) as in part a response to the threat from “closed” cable modem service. Finally, the report noted that political support for open access comes in part from the telcos, whose only apparent interest is in subjecting the cable companies to costly and demand-reducing regulation.<sup>43</sup>

<sup>42</sup> For more detail, see Hazlett and Bittlingmayer (2002).

<sup>43</sup> Cable open access rules: An analysis of the debate, Deutsche Bank Alex Brown, January 18, 2001.

## 7. Access and progress

Open access advocates claim that mandated openness will stimulate innovation. “The danger of closed access—where the platform owner has the power to control which innovations are permitted and which are not—is the potential for strategic action by owners of the network that could dampen the eagerness of innovators to develop for the Net.”<sup>44</sup> In other words, cable owners might not implement technologies or applications that benefit broadband users generally. This prospect creates its own chilling effect, as equipment suppliers and others curtail their own efforts to discover and develop new products.

“Closed access” does have the potential for strategic action that could dampen innovation. But this level of abstraction works just as well the other way around. Mandated “open access” has the potential for diminishing financial incentives and introducing political wrangling that could dampen innovation.

Actual experience offers necessary guidance, and the contrast between “closed” cable and “open” DSL is again instructive. The cable industry has promoted standards through its research consortium, CableLabs, and it has launched a cable modem standard, OpenCable. In fact, CableLabs was responsible for DOCSIS, which provides a standard broadband delivery architecture for cable.<sup>45</sup> DOCSIS is widely viewed as “a critical market driver”.<sup>46</sup> The industry-developed standard fostered a competitive vendor market, it stimulated sales of modems at retail, and it forms the core of technology that will allow the integrated delivery of data, voice and video over a packet-based broadband network.

The telcos have responded to the cable standards with an “OpenDSL” initiative, though arguably as a defensive measure.<sup>47</sup> Nor is it clear that DSL will be as successful. “Without a central coordinating body such as CableLabs, hamstrung by much tighter regulatory requirements for open interfaces and nondiscriminatory access, it is highly unlikely that DSL will attain as favorable a standards position as cable anytime soon.”<sup>48</sup> Progress is no doubt hampered by current regulatory policy, which demands that one segment of the industry must provide the other, competing segment with facilities at prices below historical cost and only for those investments that prove successful.

SBC’s experience with “Project Pronto” illustrates the burden “open” systems place on the implementation of new technology. SBC was eager to develop neighborhood broadband gateways that would allow more customers to sign up for DSL service. SBC’s initiative has been bogged down in extensive regulatory wrangling generated by CLEC objections.<sup>49</sup> One key issue was the extent of unbundling that regulators would require. The Illinois Public Utility Commission ruled

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<sup>44</sup> Larry Lessig, The rules of politics, *The Standard*, January 12, 2001.

<sup>45</sup> CableLabs enters teen years: As cable R&D consortium celebrates thirteenth birthday, DOCSIS is the brightest candle on its cake, *Cable Datacom News*, May 1, 2001; <http://www.cabledatcomnews.com/may01/may01-4.html>.

<sup>46</sup> CED Buyer’s Guide Supplement, November 15, 2000, p. 16.

<sup>47</sup> Corey Grice, DSL rivals join forces to create compatible products, *CNET News.com*, August 7, 2000. DSL Strategy, *Cablefax*, August 8, 2000, Vol. 11 (154).

<sup>48</sup> Broadband! Sanford C. Bernstein & Co. and McKinsey & Co., January 2000, p. 61.

<sup>49</sup> CLECs declare war over project Pronto, *Communications Today*, March 7, 2000. Comptel asks FCC to alter project Pronto, *Communications Today*, May 19, 2000, Vol. 6 (96). CLEC’s urge FCC to investigate SBC’s new network technology, *Washington Telecom Newswire*, June 5, 2001.

unfavorably, and SBC declined to offer the service.<sup>50</sup> SBC decided to scale back Project Pronto in late 2001.<sup>51</sup>

## 8. Concluding comments

“Open access” comes at a cost. On the benefit side, the policy could allow a choice of broadband cable connections to the Internet, albeit over the same conduit. This could spur variety in ISPs and ensure that cable broadband customers have access to the entire Internet. Open access may reduce nominal prices for broadband service if the regulated wholesale price is low enough. However, the policy is unlikely to generate higher quality service. In fact, the current pressure for open access by itself acts as a disincentive to capacity expansion because of attendant uncertainties and the reality that sharing appropriates risky investments. Wholesale price controls distort the incentives of cable systems to invest in new technologies by raising the probability that wins are shared while losses are not.

The regulatory parallels to open access do not provide encouragement. Cable TV regulation was accompanied by slumping subscriber numbers. “Open” DSL has lagged behind “closed” cable modems. In telephony, forced unbundling and resale of local voice and data services has been mired in controversy and litigation while producing disappointing results. Capital markets and stock analysts see open access as depressing the values of companies that would seem to be its logical beneficiaries.

The best hope for broadband is a business model that promises at least a competitive return on investment and risk-taking. The lure of economic profits will also generate competition from other platforms, including cable overbuilders, fixed wireless and satellite delivery, helping to alleviate last-mile problems. By the intriguing dynamic that results in pressure for “open access”, the regulatory dangers to these and other possible broadband platforms will increase should they ever become widely successful.

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<sup>50</sup> Liane LaBarba, Pronto, part deux; SBC tries to fill in the business gap, but regulation still an issue, *Telephony*, May 14, 2001.

<sup>51</sup> Jessica Hall, SBC posts lower net, to cut jobs and spending, *Reuters* (October 22, 2001), [www.totaltele.com/view.asp?articleID=44915&Pub=TT&categoryid=889&kw](http://www.totaltele.com/view.asp?articleID=44915&Pub=TT&categoryid=889&kw).

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