



The Political Economy of Cable "Open Access"

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I. INTRODUCTION

¶1 Federal and municipal regulators are considering rules to insure that cable television operators share their systems' broadband transport functionality with independent Internet Service Providers (ISPs).¹ Such rules would presumably render exclusive contracts between cable television systems and their subsidiary ISPs illegal, perhaps affecting a sharp change in market structure. Subscribers wishing to access the Internet using the high speed connection available over the local cable TV "broadband"² conduit would no longer have to subscribe through the exclusive agent selected (and often owned) by the cable operator.

¶2 A fiery debate rages over "open access." The term—modified as "forced access" by some—spawns as much confusion as light. Cable companies profess to favor access for all retail and wholesale customers.³ What divides are the details. How much will cable systems charge? How much control over technical standards and operating rules will cable systems maintain? How will upgraded services be provided? How will content revenues be generated and shared?

¶3 Diametrically opposite positions characterize the access issue as elementary. Lemley and Lessig express frustration over "the great lengths to which the FCC and so many commentators are willing to go to justify the behavior of cable companies."⁴ But there is not much to debate: "In our view, 'open access' is simply a short hand for a set of competitive objectives."⁵ The authors warn that ISP exclusivity, which "serves no good end,"⁶ is both damaging and virulent. If not checked by

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¹ The ISP access rules agreed to by the Federal Trade Commission (FTC) and the merging parties in the AOL/Time Warner deal provide an outline of what such a policy may look like. A key part is "the 'most favored nation' clause which will enable any non-affiliated ISPs to gain access to cable systems on the same terms and rates as AOL has secured." Press Release, openNET Coalition, openNET Coalition Applauds Open Access Requirements in AOL-TW Consent Agreement (Dec. 14, 2000) (quoting Rich Bond, openNET Coalition Co-director), available at <http://www.opennetcoalition.org/news/976830688.html>.

² The Federal Communications Commission (FCC) defines "high speed" Internet access as a connection in excess of 200 Kbps downstream (from the network to the end user), and "broadband" Internet access as a connection in excess of 200 Kbps both upstream and downstream. *In re Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, 14 F.C.C.R. 2398, 2406 (1999).

³ "Our members are not opposed to working with unaffiliated ISPs, but they just do not want the government telling them that they have to provide access at below-market rates." Ted Hearn & Mike Farrell, *FTC Builds a Model: AOL Access Terms Could Resonate*, MULTICHANNEL NEWS, Dec. 18, 2000, at 47.

⁴ MARK A. LEMLEY & LAWRENCE LESSIG, THE END OF END-TO-END: PRESERVING THE ARCHITECTURE OF THE INTERNET IN THE BROADBAND ERA 57 (Stanford Law School John M. Olin Program in Law and Economics, Working Paper No. 207, 2000).

⁵ *Id.* at 58.

⁶ *Id.* at 38.

regulation, it will likely spread to emerging broadband access products offered by satellite and fixed wireless providers who may "decide to maximize profits by closing off access to ISPs, just as cable companies have done."⁷

¶4 Owen and Rosston see just the reverse simplicity: "[E]ven the threat□□□of government regulation, such as□□□ mandatory unbundling□□□, will chill the appetites of investors and reduce the pace of telecommunications infrastructure construction."⁸ They see regulated "open access" as destroying efficient forms of integration. "[B]ecause of the complexity of network arrangements, the argument that unbundling or non-exclusivity would have no effect on investment incentives, quality and consumer welfare is simply wrong."⁹

¶5 "Simply" competition—or "simply wrong"? Merging such disparate perspectives may be beyond the explanatory ability of this paper, but perhaps the gap can be narrowed. This paper offers both a theoretical explanation of the behavior of cable television companies, and an empirical assessment of the likely effects of "open access." The view of "open access" regulation that emerges does not depend on how rapidly new competition emerges in the cable/broadband space,¹⁰ and is entirely consistent with the current perspective that broadband access is a distinct market dominated by incumbent cable operators.¹¹ The crux of our analysis is as follows:

(a) Cable operators possess substantial market power in subscription video markets.□ Moreover, they use this leverage to restrict output in broadband access.□ This is not profitable in a narrow financial calculus, but is rational due to strategic considerations.□□

(b) Vertically extending cable market power by restricting the availability of spectrum protects against appropriation by regulators or rival networks.□ Regulatory regimes are distinct for video, explicitly ruled not to be a common carrier service, and broadband Internet access, a passive transportation function.□ A profit-maximizing pricing structure in video cannot co-exist with unbundling and cost-based pricing.□ Notably, the "open access" movement is itself an attempt to impose common carriage regulation on cable systems.

(c) Non-discriminatory ISP mandates do not attack the cable monopoly problem.□ Cable operators will continue to allocate spectrum within their broadband pipes so as to protect video subscription revenues.□ Limits on transport capacity are placed on all ISPs without discrimination.□

(d) Extensive regulatory history strongly suggests that more ambitious controls on cable television infrastructure are unlikely to achieve desired effects.□ These lessons include those gleaned from retail price regulation, leased access, must-carry, video dialtone, and open video systems.□

(e) "Open access" rules discourage broadband network development and lessen functionality "end-to-end."□ Mandatory unbundling of cable modem service invites coordination problems, producing observable disinvestment.□ Cable modem service, provided on "closed" platforms, leads the bandwidth race against DSL's "open" platform.□ A financial event study further reveals that shares of Internet infrastructure suppliers and content producers decline in value with news that "open access" rules are advancing in the courts, legislatures, or regulatory agencies.□

II. MARKET POWER IN CABLE AND BROADBAND

⁷ *Id.* at 37.

⁸ Bruce M. Owen & Gregory L. Rosston, *Cable Modems, Access and Investment Incentives* ii (Dec. 1998) (study for the National Cable Television Association) (on file with author).

⁹ *Id.* at 2.

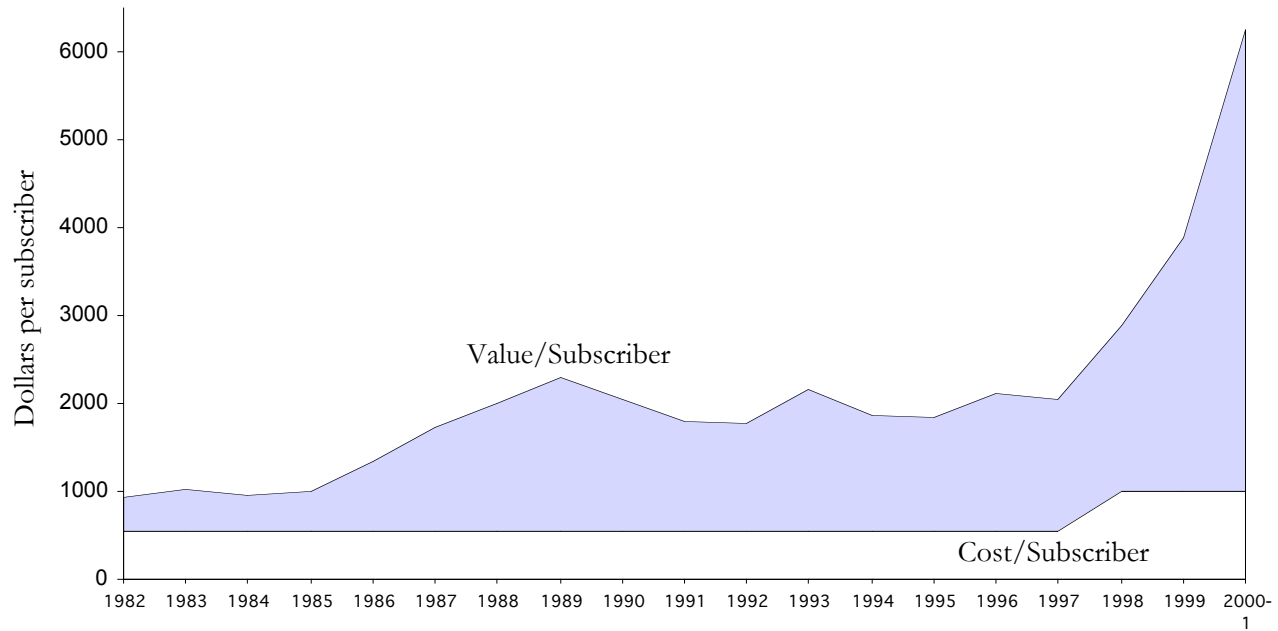
¹⁰ Head-to-head cable/broadband competition may emerge, as shown by Gerald F. Faulhaber & Christiaan Hogendorn, *The Market Structure of Broadband Telecommunications*, 48 J. OF INDUS. ECON. 305 (2000).

¹¹ As argued in Jerry A. Hausman et al., *Residential Demand for Broadband Telecommunications and Consumer Access to Unaffiliated Internet Content Providers*, 18 YALE J. ON REG. 129 (2001).

¶6

Incumbent cable television systems generally possess dominant positions in local video distribution markets and earn monopoly rents. One way to appraise these rents is to compare the actual costs of tangible capital with the market value of assets in place, the q ratio.¹² For the cable television industry as a whole, average capital costs and system values (per subscriber) are displayed in Figure 1. Investors are willing to pay several times as much for a cable television system as they would for the physical assets that comprise it.¹³ The large differential has existed over a number of years and suggests, even when good will and survivor bias are accounted for, the presence of monopoly power.¹⁴

Figure 1. Cable TV System Rents



Note: 2000-1 = Jan. – June 2000.

Sources. Values: HAZLETT & SPITZER, *supra* note 14, at 22; FCC, First Cable Report, Table B-9; FCC, Seventh Cable Report, Table B-8. Costs: See footnote 13.

¶7

How does this dominance in video distribution impact the broadband ISP market? The physical infrastructure used to distribute video programming to subscribers is relatively efficient at also providing Internet access to both cable subscribers and non-subscribers in areas passed by cable plant (over 95% of U.S. television households¹⁵). This has proven very exciting news over the past

¹² Where q = market value of assets/replacement cost of tangible capital. This value is about 1 in a highly competitive industry.

¹³ In 1994, the capital cost per subscriber was \$538. *In re* Implementation of Section 19 of the Cable Television Consumer Protection and Competition Act of 1992 Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, 9 F.C.C.R. 7442 (1994) (Appendix I, Table I-1) [hereinafter "First Cable Report"]. In 1999, the per subscriber cost of upgraded cable plant was placed at \$800 - \$1,000. *In re* Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, 14 F.C.C.R. 2398, 2431 (1999) (Chart 2).

¹⁴ See discussion in Chapter Three of THOMAS W. HAZLETT & MATTHEW L. SPITZER, PUBLIC POLICY TOWARD CABLE TELEVISION: THE ECONOMICS OF RATE CONTROLS (1997).

¹⁵ *In re* Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, 16 F.C.C.R.

several years to cable system owners, who had seen their equity values languish prior to the broadband bump beginning about 1997. (Note in Figure 1 that the post-deregulation boom in cable system values stalled with recession [1990] and re-regulation [1992], but rebounded strongly in the late 1990s.) There is little doubt that the opportunity to add significant broadband access revenues drove this revaluation,¹⁶ while capital costs were increasing by about \$460 per video subscriber.¹⁷

¶8 Cable system operators are faced with the question as to how these projected broadband revenues can best be captured. Large investments must be made to upgrade cable systems to be capable of providing two-way broadband. Typically, systems upgrade by installing more sophisticated electronics and rewiring existing cable plant, running high capacity fiber optic lines to neighborhood "nodes." Users in these nodes share the local coaxial cable grid connecting their computers to the nearby fiber optic link. The more subscribers per node, the slower the service. The expense of building additional nodes forces a price-performance trade-off on the network owner.

¶9 Having some notion of the shape and magnitude of this trade-off, the cable system estimates a range of cash flows it might receive from offering broadband access before undertaking a series of investment decisions to upgrade plant. The "open access" controversy enters just here, as investment is intrinsically linked to cash flows anticipated from broadband service. What corporate policy—internal provision or outside contracting—will extract maximum profits from the ancillary service?

III. VERTICAL LEVERAGING FROM CABLE TO BROADBAND

*Unlike the real physical spectrum limitations of the telco wire, the scarcity of cable broadband is artificial—i.e., a purely commercial allocation choice by the cable industry.*¹⁸

¶10 The two largest broadband ISPs, @Home and RoadRunner (RR), served about 1.8 million and 0.9 million broadband subscribers as of the end of 2000.¹⁹ No other broadband access provider was even one-half as large as @Home.²⁰ Each of the firms is substantially owned by cable system operators (@Home by AT&T; RR by both AT&T and Time Warner). Under "open access," ISPs owned by cable companies remain eligible to link customers to broadband access service provided over a parent's infrastructure, but the same terms of transport are available to ISP competitors not owned by the parent. Eliminating exclusive relationships is recommended to promote ISP competition and keep the Internet open "end-to-end."²¹

¶11 Perhaps cable companies should welcome "open access." Jeffrey MacKie-Mason cites the endorsement of "third party access" by Canadian cable television companies as evidence that promoting ISP competition will enhance cable firms' profits.²² He argues that "open access will not

6005 (2001) (Appendix B, Table B-1) [hereinafter "Seventh Cable Report"].

¹⁶ Reviewing 1999 economic performance, cable industry analyst Paul Kagan wrote, "[T]he real story is in the new services sector . . . High-speed-data revenue grew 186.9% to \$482 million with 1.4 mil. customers across the nation, up from 600,000 a year ago." THE CABLE TV FINANCIAL DATABOOK 2000 6 (Paul Kagan Assocs. 2000).

¹⁷ "According to Excite@Home, in order to provide broadband services, the cable industry will need to spend . . . \$31 billion to upgrade their systems to reach all homes passed." DEBORAH A. LATHEN, CABLE SERVICES BUREAU, BROADBAND TODAY 26 (Oct. 1999) (A Staff Report to William E. Kennard, Chairman, Federal Communications Commission).

¹⁸ Scott C. Cleland, *Residential Broadband Outlook: Investment Implications of a Duopoly?*, PRECURSOR GROUP, Aug. 11, 2000.

¹⁹ @Home finished 2000 with 1.8 million subscribers, RR with 912,000. *Cable Notes*, WARREN'S CABLE REGULATION MONITOR, July 24, 2000, available at LEXIS-NEXIS, Warren Publications Database.

²⁰ The largest DSL provider, SBC, served 767,000 subscribers at the end of 2000. Verizon had 540,000, Quest more than 255,000, and BellSouth more than 200,000. SBC COMMUNICATIONS INC., 2000 ANNUAL REPORT 2 (2001); VERIZON COMMUNICATIONS INC., ANNUAL REPORT 2000 7 (2001); *Qwest Communications Reports Strong Fourth Quarter and Full-Year 2000 Results Driven by Growth in Internet, Data and Wireless Revenues*, PRNEWswire, Jan. 24, 2001; BELLSOUTH, 2000 REPORT TO SHAREHOLDERS 5 (2001).

²¹ See generally LEMLEY & LESSIG, *supra* note 4, at 62.

²² Jeffrey K. MacKie-Mason, Investment in Cable Broadband Infrastructure: Open Access is Not an Obstacle 1 (Nov. 5, 1999) (policy research study) ("The Canadian Cable Television Association is committed to the implementation of third party

reduce the value of broadband last-mile transport infrastructure."²³ In endorsing access regulation, however, he implies that managers of U.S. cable firms must be forced to maximize profits. The further implication is that cable firm shareholders should sue company managers, perhaps awarding a share of monetary damages to regulators as a finder's fee.

¶12 Cable companies do benefit from robust competition in complementary goods and services. Independent ISPs that bring customers to the cable system by reselling its capacity apply additional marketing effort that, *ceteris paribus*, bolster cable company profits. But the key issue immediately arises: what prices and terms will be set for access? Where the cable company negotiates an access contract at arms length, the firm evinces the judgment that it can most efficiently promote its product by "hiring" inputs from outside the firm. Table 1 shows the current broadband players and their characteristics.

Access Mode	Bandwidth (MHz)		Subscribers		Fee (\$)		Speed (bps)	
	Available	Allocated to access	000s	%	Initial	Monthly	Down	Up
Cable	750	6	4,725	73	75	40	□2M	128-500K
xDSL (ILECs, CLECs, IXC)	1	1	1,710	26	100	40-50	□768K	128-256K
Overbuilder (RCN)	860	6	67	1	0	40	□1.5M	□768K
Satellite (Hughes DirecPC)	n.a.	n.a.	35	<1	215	50	□400K	□28-56K
MMDS (fixed wireless)	198	□198	1	<1	150	40	□1M	□256K
PCS/WCS (fixed wireless)	10	10	10	<1	0	35	□500K	□150K
TOTAL SUBS			6,548	100				

Source: Precursor Watch: Residential Broadband Deployment Outlook (Feb. 22, 2001).

A. Cannibalization and the Vertical Leveraging Fallacy

¶13 This is the fundamental trade-off between internally producing inputs and relying on the market.²⁴ A firm with monopoly power in one layer of a vertical production chain may face incentives to integrate up or down (as we discuss in the context of this market below), but as a general matter it is not true that vertical expansion is a concomitant of profit-maximization. A stark illustration is offered by comparing the returns accruing to the initial shareholders in Apple, a firm that chose to internalize many layers of hardware and software production in personal computers, to the fortunes garnered by investors in Microsoft, which narrowly focused on the production of essential software components.²⁵

¶14 A crucial horizontal issue arises, however. Cable television systems in the United States were worth over \$6,000 per subscriber in 2000.²⁶ This value is based on expectations of distinct profit

access, in large part because it is in the cable companies' financial interests." (quoting Reply comments of the Canadian Cable Television Association, PN 98-14, at 2 (Oct. 30, 1998)), available at <http://www-personal.umich.edu/~jmm/papers/broadband.pdf>.

²³ *Id.*

²⁴ See generally Ronald H. Coase, *The Nature of the Firm*, 4 *ECONOMICA* 386, 390-398 (1937).

²⁵ This story has been told in many places, but perhaps the best documented telling—and most painful to long-term shareholders of Apple—is found in JIM CARLTON, *APPLE: THE INSIDE STORY OF INTRIGUE, EGOMANIA, AND BUSINESS BLUNDERS* (1997).

²⁶ In system sales during January through June, 2000, the dollar value per subscriber was \$6,259. *In re* Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, 16 F.C.C.R. 6005 (2001) (Appendix B, Table B-

streams. First, there is the video subscription business, or plain old cable (POC). Second are the burgeoning services of high-speed access (HSA) and cable telephony. In 2000, the cable television industry garnered about \$42 billion in revenues.²⁷ As seen in Table 2, which excludes minor revenues from business services, cable system owners are heavily dependent on POC revenues now and will remain so for years to come. While telephone revenues are expected to rise rapidly over the next decade, traditional video subscription service is projected to continue generating over two-thirds of industry revenues. In particular, POC revenues are projected to dominate HSA by more than 12-to-1 in 2010.

Table 2. Sources of Cable Television Industry Revenues, 1999–2010				
Service	\$bil. Annual Revenue in:			
	1999	2000	2001	2010
Traditional Cable (includes local ad, games, home shopping, equipment, and installation revenues)	36.2	38.9	42.6	82.2
Residential High-speed Access	0.5	1.2	2.3	6.8
Residential Telephony	0.1	0.5	1.2	20.1

Source: CABLE TV FINANCIAL DATABOOK 10-11 (Paul Kagan Assocs. 2000).

¶15 Critics of cable's exclusive contracts with affiliated ISPs have cited the potential competition between cable and broadband delivery systems as a predicate for regulation. They argue that cable operators will not permit broadband access service to undermine their existing cable market power; i.e., they will stifle efforts to develop video-streaming and related technologies. Lemley and Lessig write:

By gaining control over the network architecture, cable providers are in a position to affect the development of the architecture so as to minimize the threat of broadband to their own video market. For example, a broadband cable provider that has control over the ISPs its customers use might be expected to restrict customers' access to streaming video from competitive content sources, in order to preserve its market of traditional cable video.²⁸

¶16 Opponents of "open access" counter that this argument falls prey to the "monopoly leveraging" fallacy.²⁹ The cable monopolist should not fear competition from complementary (vertical) markets because it is free to extract consumer benefits flowing from the newly available "substitute" by pricing access to the broadband conduit.³⁰ Whether subscriber dollars end up in the "video" pocket or the "broadband" pocket, they still flow to the cable operator.

8).

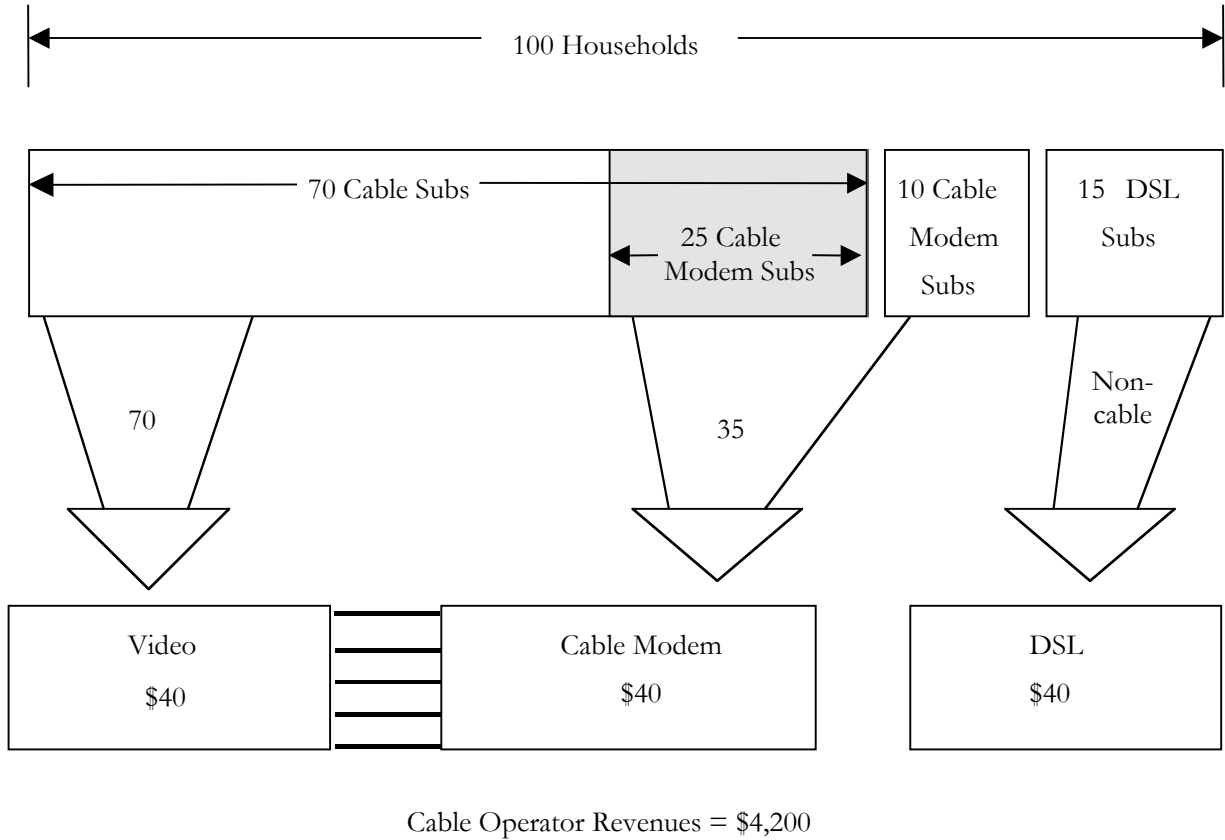
²⁷ THE CABLE TV FINANCIAL DATABOOK 2000, *supra* note 16, at 11.

²⁸ LEMLEY & LESSIG, *supra* note 4, at 25.

²⁹ James B. Speta, *The Vertical Dimension of Cable Open Access*, 71 U. COLO. L. REV. 975, 976, 1005 (2000).

³⁰ More sophisticated economic models theorize about tying (analogous to offering high-speed modem customers just one ISP choice). The effect on consumers is highly sensitive to the assumptions made about the nature of the markets and firms. Patrick DeGraba's approach, for instance, results in reduced prices. Patrick DeGraba, *Why Lever into a Zero-Profit Industry: Tying, Foreclosure, and Exclusion*, 5 J. ECON. & MGMT. STRATEGY 433, 445 (1996).

Figure 2. Vertical Services Pricing by Cable TV Systems



¶17

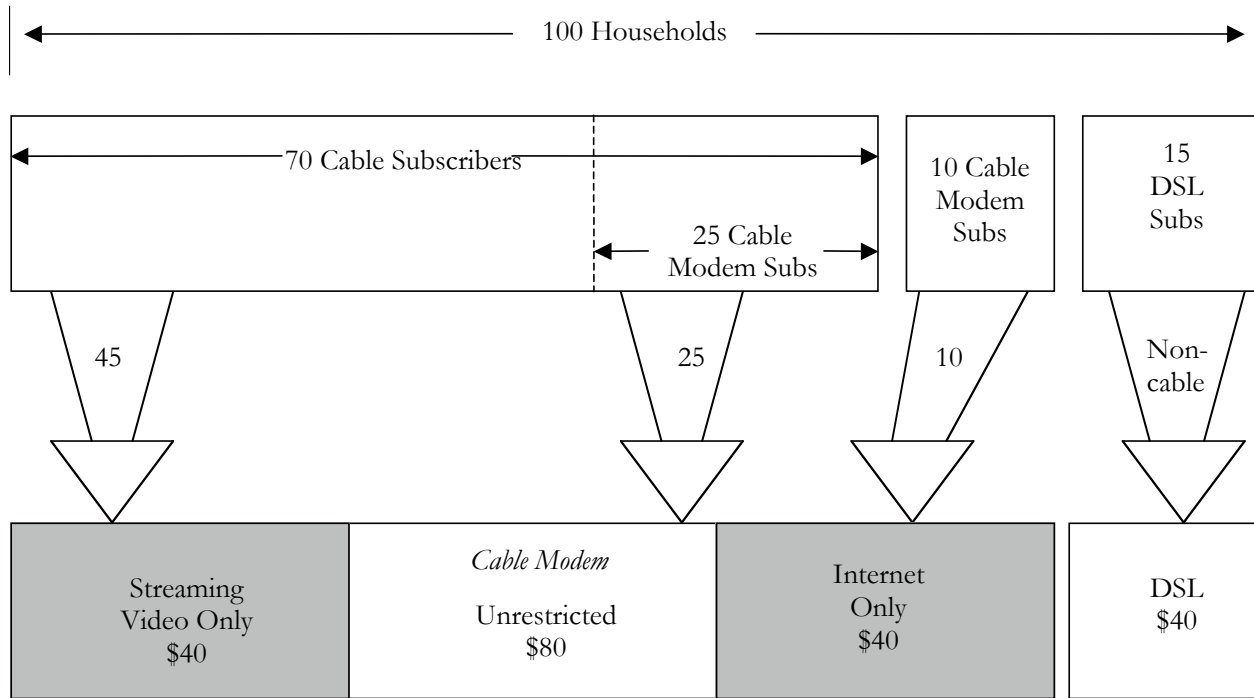
In Figure 2, we illustrate this basic concept by charting the revenues available to a cable operator in a hypothetical market with one hundred households. The firm, we assume, maximizes profit by charging \$40 per month to 70 cable (video) subscribers, and \$40 per month to 25 broadband access (cable modem) subscribers. Total monthly revenues are \$4200. We assume that profit margins are equal across service. In the "monopoly leveraging" story the cable operator seeks to restrict use of broadband to protect cash flows from video.³¹ Lemley and Lessig believe that this is sufficient incentive for cable executives to limit broadband access.³² But as Speta notes, there is a logical problem with this claim, and it is shown in Figure 3.³³

³¹ "When asked whether users of the AT&T/MediaOne network would be permitted to stream video from competing providers across their network, Internet Services President Daniel Somers is reported to have said that AT&T didn't spend \$56 billion to get into the cable business 'to have the blood sucked out of our vein.'" LEMLEY & LESSIG, *supra* note 4, at 25-26.

³² LEMLEY & LESSIG, *supra* note 4, at 25. "By gaining control over the network architecture... cable operators are in a position to affect the development of the architecture so as to minimize the threat of broadband to their own video market. For example, a broadband cable provider that has control over the ISPs its customers use might be expected to restrict customers' access to streaming video from competitive content sources, in order to preserve its market of traditional cable video."

³³ Speta, *supra* note 29, at 1005.

Figure 3. Vertical Pricing by Cable Operator with Integrated Broadband



Cable Operator Revenues = \$4,200

¶18 Here we chart the same market: identical costs and demands as in Figure 2. But now the cable operator pursues a different strategy, allowing customers the freedom to migrate out of video subscriptions, obtaining substitute programming via high-speed Internet access. Suppose, for example, that cable modem users employ RealNetworks software to download video programs from Broadcast.com, Disney.com, Discovery.com, AtomicFilms.com, and C-SPAN.org. The broadband connection satisfies what was previously a demand for a multi-channel video subscription, which broadband subscribers drop. Yet, cable companies are unhurt. Because downloaded services and content flow through their conduit, cable system operators capture the full value of their service by pricing access (or through-put) accordingly. This is done by charging HSA subscribers with access to Internet video \$80 per month, or the "cable + broadband" package price when services were sold separately. POC-only and HSA-only customers continue to pay \$40 monthly, and system revenues (and profits) are unchanged. It is not necessary for cable operators to own broadband applications, provide the services, or—most importantly—limit customer access to web sites in order for cable systems to extract the gains from providing transport to desirable locations. And note that the existence of a competitor in the broadband access market, here DSL, does not alter the logic.

¶19 A standard problem with the above calculus, however, is that it involves price discrimination. Firms may have difficulty executing such a strategy where consumers are difficult to segment (say, because customers in distinct demand segments are difficult to identify, or because arbitrage between segments is easy). It may then be profitable to extend a monopoly into upstream or downstream product markets. Notable examples include cases where firms tie input purchases to capital equipment. By setting an above-market rate for an input highly correlated with usage, intense users (likely to be relatively inelastic demanders) can be charged more per unit than light users. A classic example was the IBM punch card arrangement. The computer maker originally leased its machines, requiring lessees to purchase tabulating cards from IBM. The cards were priced significantly above

competitive cost, and demand was metered. The scheme allowed IBM to distribute a large number of computers (with relatively low lease payments), while capturing differential payments: intense (and relatively inelastic) demanders would buy more cards than lighter users.³⁴

¶20 In the cable modem market, however, customer classes can be separated by quality of service. Those attempting video downloads require very high capacity. This can be (and is) priced as a distinct class of service.³⁵ Arbitrage between classes is also difficult, given that access is a service rather than a fungible product. Moreover, cable operators are able to monitor traffic and to limit uses inimical to company policies. For instance, cable modem users are routinely barred from operating commercial web sites, offering e-commerce services, or engaging in prolonged video streaming. In short, cable operators appear to control their pricing structures such that vertical integration into adjacent broadband access services is unnecessary for profit maximization.

B. *Allocating Cable System Spectrum*

¶21 State-of-the art cable systems allocate one video channel for broadband access; this conduit is shared by 500 home clusters called "nodes." (See Figure 4.) Greater bandwidth could be economically delivered in at least two ways. First, fewer homes could be required to share the local area network (LAN) formed by a cable node. Standard cable architecture allows systems to create nodes with just 75 subscribers.³⁶ A competitor in local cable television markets, RCN, uses an architectural standard featuring 125 homes per node.³⁷ In general, cable competitors ("overbuilders") effectively under-price monopoly systems by allotting users substantially higher system capacity for broadband.³⁸

³⁴ "Under Justice Department pressure, IBM agreed to 'cease and desist' its dual practice of only renting hardware and of requiring the purchase of its own cards." KENNETH W. CLARKSON & ROGER LEROY MILLER, *INDUSTRIAL ORGANIZATION: THEORY, EVIDENCE AND PUBLIC POLICY* 275 (1982). Chicken Delight crafted a similar pricing structure, franchising retail fast food outlets at zero royalty payment but maintaining an exclusive contract to supply fryers, buckets, and other key inputs at prices significantly above those of competitors. Chicken Delight's tying arrangement was found to have violated Section 1 of the Sherman Antitrust Act. Siegel v. Chicken Delight, Inc., 448 F.2d 43 (9th Cir. 1971).

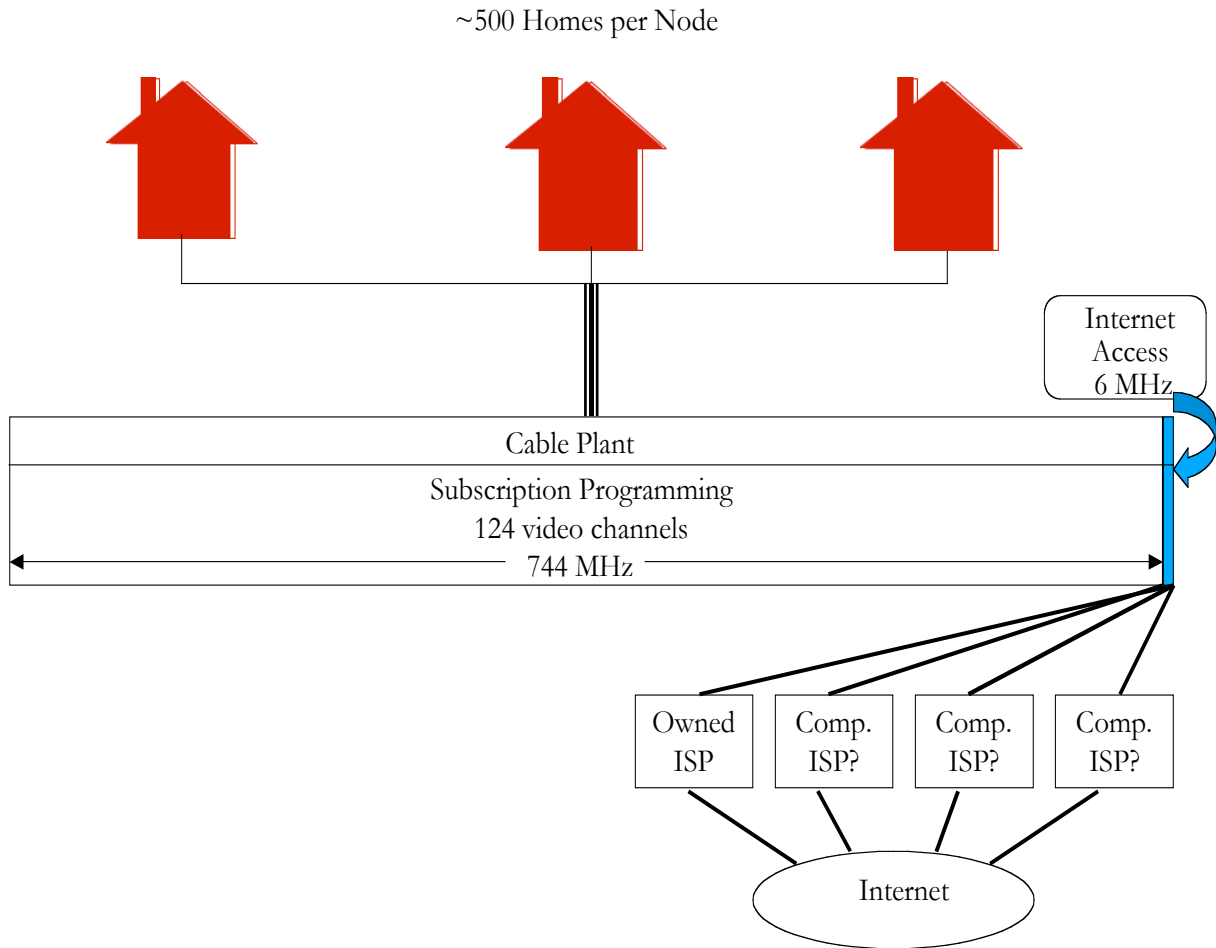
³⁵ Business broadband services routinely price according to bandwidth offered customers, and cable systems specifically note that various speeds can be offered subscribers. "Some consumers want a fast enough service, others want a really fast service, and some want an incredibly fast service, and there's a different price associated with each one of those tiers." Comment of Susan Marshall, AT&T Broadband, in David Connell, *The Long Road to Open Access*, CABLEWORLD, Feb. 12, 2001, at 20.

³⁶ KIM MAXWELL, *RESIDENTIAL BROADBAND: AN INSIDER'S GUIDE TO THE BATTLE FOR THE LAST MILE* (1999), at 182, 253.

³⁷ "Included in the 'overbuilders' [RCN's] network plans are usually 860MHz versus 750MHz plant capacity, fiber taken down to node sizes of 125 or so homes, instead of 500 or more, and in some cases new technologies to allow much faster data speeds than the typical upgraded cable system is providing." *Media Week: Cable Overbuilders—Down but Not Out*, CREDIT SUISSE/FIRST BOSTON EQUITY RESEARCH, Feb. 12, 2001, at 3.

³⁸ An overbuilder in Denver, WideOpenWest, is a good example. "High-speed-data is the centerpiece of WideOpenWest's business plan, and where [a company spokesman] expects to 'blow [incumbent] AT&T out of the water.' The company's plant . . . allows for a capability of up to 3 megabits per second, both upstream and downstream By comparison, AT&T can deliver 1.5 megabits downstream, but just 156 kilobits upstream" Joe Estrella, *Overbuilder Gears for Denver Launch*, MULTICHANNEL NEWS, Mar. 19, 2001, available at http://www.wideopenwest.com/news/cahners_twinsite.htm.

Figure 4. Standard 750 MHz Cable System Architecture



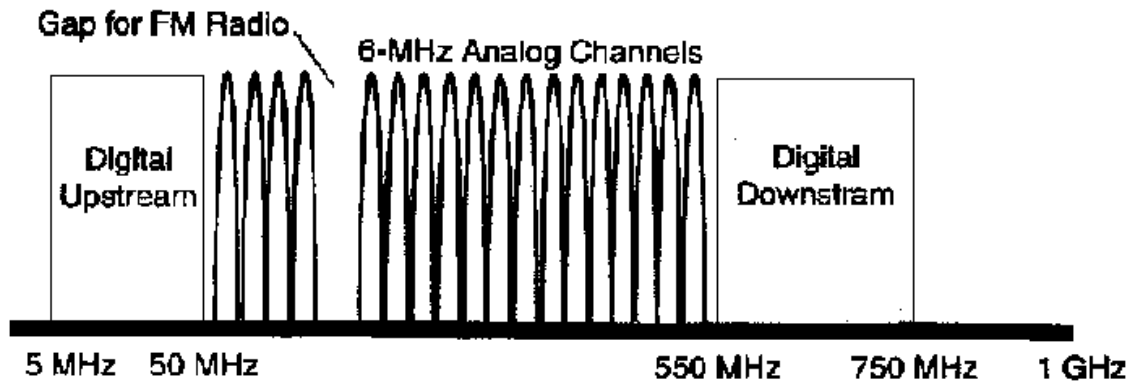
¶22

Second, cable systems could increase broadband access speeds by allocating more spectrum. The standard downstream allotment of just one video channel, 6 MHz, comprises less than 1% of the bandwidth in a 750 MHz cable system.³⁹ (See Figure 5.) Although bandwidth cannot be requisitioned seamlessly when video services are jointly provided due to leakage and potential interference, a substantially higher percentage can be utilized for broadband access without incurring substantial depreciation in network functionality. For instance, Kim Maxwell notes that 750 MHz cable systems delivering 78 channels of video programming are free to use 37 MHz for digital upstream transportation (5 to 42 MHz), and up to 200 MHz for digital downstream transport (550 – 750 MHz).⁴⁰

³⁹ By 2000, 92% of Time Warner's cable plant was equipped to provide 2-way service over 750 MHz, while 70% of AT&T's plant was similarly equipped. These are the two largest U.S. cable system operators. Leslie Ellis, *What Slowdown?: Cable Construction Steady through 2002*, BROADBAND WEEK, Mar. 19, 2001, at 6.

⁴⁰ MAXWELL, *supra* note 36, at 244. Upstream transmissions are more difficult to expand into adjacent spectrum, as noise problems develop. Yet, upstream demands are far less intense, as individual web surfers send far less data than they receive. Indeed, many cable modems are one-way, with upstream connections provided through dial-up modems utilizing telephone lines (speeds of less than 56Kbps). Most important is the fact that Internet video relies on downstream bandwidth.

Figure 5. CATV Spectrum Allocation



¶23 This spectrum allocation appears economically inefficient. The standard basic cable television package in the U.S. features 45 channels of programming, producing revenues of about \$29.86 per month per subscriber.⁴¹ Assuming that the revenue generated by a cable channel is a reasonable proxy for the value it delivers cable operators,⁴² the most popular channels (ESPN, CNN, Nickelodeon, TBS, A&E, and Lifetime) are far more important (measured in viewing share or license fees paid by cable operators) than the least watched (Headline News, Animal Planet, the Food Channel, and the Travel Channel).⁴³

¶24 To deliver cable broadband, standard cable systems use one video channel of bandwidth and achieve revenues of \$40 per subscriber per month.⁴⁴ But there are many fewer subscribers to HSA than to POC. Nationwide there were about 3.6 million cable modem subscribers at year-end 2000, as opposed to about 68 million cable subscribers.⁴⁵ At current levels of utilization, then, cable modem users are just 6.9% as numerous as POC customers. This ratio is projected to rise rapidly.⁴⁶

¶25 While the average cable channel yields 66 cents per subscriber monthly (\$29.86/45), the one channel devoted to HSA yields \$2.76 (\$40 x 0.069) per cable subscriber per month. It is highly likely that the marginal channel devoted to cable generates far less than the average, given the steep drop-off seen in license fees for less popular programming. It is conceivable that the marginal value of additional spectrum deployed in broadband access also falls rapidly, making reallocation uneconomic. But it is a near certainty that more intense utilization of shared broadband will dramatically increase the value of spectrum used for Internet access over time. Using the 2005 projection for cable modem penetration yields an approximation of broadband access revenue of \$11.36 (\$40 x 0.284) per cable subscriber per month. Because investments made today (or yesterday) will determine the configuration of cable systems (including bandwidth allocation) in the year 2005, the evidence strongly suggests that cable operators are exceedingly conservative in allocating spectrum to broadband access and (equivalently) exceedingly generous in preserving bandwidth for plain old cable.⁴⁷

⁴¹ THE CABLE TV FINANCIAL DATABOOK 2000, *supra* note 16, at 10. The analysis focuses on the cost of reallocating basic cable channels to high-speed Internet access. Premium channels, pay-per-view, and digital TV channels could also be reallocated. As returns will be equal across services for profit maximization, however, the examined trade-off yields general results.

⁴² This assumes roughly constant profit margins across channels. The analysis ignores local ad sales by cable operators which are less than 10% of system revenues. *Id.* at 10-11.

⁴³ For example, ESPN costs cable systems 93 cents per subscriber per month on the basic rate card for 2000, while Animal Planet costs just 10 cents. *Id.* at 60-61.

⁴⁴ *Id.* at 10.

⁴⁵ *Id.*

⁴⁶ By 2005, the ratio of cable modem users to POC customers is expected to reach 28.4 percent. *Id.*

⁴⁷ It is surprising that there has been no discussion of why cable decided to allocate only 6 of its 750 MHz of spectrum (1 of 125 channels) to the supposedly high growth broadband data market. . . . Scarcity increases pricing power and protects core cable

¶26 Spectrum is under-allocated to high-speed access in the cable system. But the "@Home/RoadRunner contract structure"—which we take to refer to the exclusive contracting provisions—is not the hoarding device. Take the limits on video streaming that Cleland, Lemley, Lessig and others have criticized as symptomatic of the need for "open access,"⁴⁸ while cable companies respond that the rules protect shared bandwidth.⁴⁹ Either explanation is compatible with cable exerting market power in the underlying subscription video market, and neither explains how "open access" would reduce that market power. Indeed, under a non-discrimination policy allowing independent ISPs use of cable's conduits on the same terms offered affiliated ISPs, the video streaming time limits would remain in effect.⁵⁰

¶27 One interesting development is that cable TV systems are aggressively upgrading from analog to digital transmission.⁵¹ Driven by competition from satellite TV providers, digital cable delivers far larger packages of video channels. Already, 80% of U.S. cable homes have access to digital services,⁵² and over 11 million subscribe. By 2005, this number is forecast to reach 44.6 million.⁵³ Two points are key: (1) lots of spectrum is being reallocated from analog to digital, and (2) "Most industry executives point to VOD [Video on Demand] as digital cable's 'killer app,' as it allows consumers to watch content on demand and employs VCR-type features such as fast-forward, rewind and pause capabilities."⁵⁴ This is the cable-encapsulated version of "streaming video." The purpose of cable operators in pushing digital cable and video-on-demand while starving broadband access is clear: to keep content "on network." Ironically, "open access" demands exacerbate this discrimination against Internet functionality.

C. Appropriation by Regulation

¶28 While many firms elect to serve all customers without discrimination as a profit-maximizing strategy, being subject to common carrier regulations may limit asset value.⁵⁵ Restrictions attendant to carrier regulation include the imposition of rate controls, limits on vertical integration, and forced cross-subsidies (as when high-cost customers are mandated to be served at prices equal to those charged low-cost customers). By removing flexibility in pricing and operations, such regulations limit profitability, particularly as they impose political uncertainties on risky investments. As a result, firms often battle common carrier status. "Telecom providers and regulators engage in an endless minuet that moves dancers in or out of the circle called 'common carriage.'"⁵⁶

¶29 The separation of content and conduit dramatically lowers the transactions costs associated with imposing common carrier regulation. This reality has been long reflected in public policies that have attempted to limit common carrier rules (and rate regulation) to open access platforms. One obvious

revenues from Internet video competitors. Scarcity also effectively limits speeds to roughly DSL range to foster some competition and postpone inevitable non-discriminatory access requirements." Cleland, *supra* note 18.

⁴⁸ Lemley and Lessig note that, "[l]egacy monopolies" impose rules to "protect their own 'turf,'" citing limits to video streaming as an example. Lemley & Lessig, *supra* note 4, at 25.

⁴⁹ While cable companies' interest in explaining away monopolistic practices is real enough, there are substantial sharing issues which maintain plausibility for such claims. This is seen in the occasional limits placed on video streaming over DSL. *See, e.g.,* John Borland, *Pac Bell Puts Speed Limits on Some DSL Customers*, CNET NEWS.COM, June 30, 2000, at <http://news.cnet.com/news/0-1004-200-2176366.html>.

⁵⁰ Excite@Home's network architect Milo Medin commented: "I was sitting next to [AOL CEO] Steve Case in Congress during the open access debates. He was saying that all AOL wanted was to be treated like ExciteAtHome. If he wants to be treated like us, I'm sure he could cut a deal with [the cable networks], but they'll take their pound of flesh. We only had to give them a 75 percent equity stake in the company and board control. The cable guys aren't morons." *Quoted in*, Jason Krause & Elizabeth Wasserman, *Switching Teams On Open Access?*, THE INDUSTRY STANDARD, Jan. 24, 2000, available at <http://www.thestandard.com/article/0,1902,8903,00.html>.

⁵¹ John M. Higgins, *Ready to Hatch*, BROADCASTING & CABLE, Mar. 19, 2001, at 64.

⁵² Geraldine Fabrikant & Seth Schiesel, *Satellite vs. Cable: A Rivalry Beyond TV*, N.Y. TIMES, Feb. 19, 2001, at C1.

⁵³ Lee Hall, *The Dark Side of Digital: Heavy Churn*, CABLEWORLD, Mar. 19, 2001, at 11A.

⁵⁴ R. Thomas Umstead, *VOD Takes Content Hit: Buena Vista Pulls Titles*, MULTICHANNEL NEWS, Feb. 12, 2001.

⁵⁵ Federal Express, Earthlink, and United Airlines elect a "common carrier" business model without regulation.

⁵⁶ JOHN THORNE, PETER W. HUBER, & MICHAEL K. KELLOG, FEDERAL BROADBAND LAW 292 (1995).

example: phone systems have been historically rate regulated, whereas radio and television broadcasters have not. An exception that proves the rule is provided by retail rate controls on cable television systems. Imposed in the 1992 Cable Act, they were ultimately judged a failure by policy makers and analysts.⁵⁷ Regulating a complex set of video services, which cable operators can repackage and reoffer at will, proved overwhelming. Congress eliminated cable rate regulation in the 1996 Telecommunications Act in deference to this reality. (See discussion below.)

¶30 The cable television industry has long teetered on the edge of common carrier status. Cable interests have vigorously sought to avoid it, seeing such regulation as detrimental to asset values. The earliest attempts to regulate cable television at the federal level came in two separate FCC staff recommendations that cable television could properly be considered a common carrier service. Both were rejected by the Commission.⁵⁸ It is of note that the 1958 petition setting the staff in motion was filed by 13 TV broadcasters who "concluded that the infant cable industry threatened television's economic security."⁵⁹ Cable operators lobbied for, and obtained, a statutory determination that they were not common carriers in the 1984 Cable Communications Policy Act.⁶⁰ This delineation was reaffirmed in the 1996 Telecommunications Act.⁶¹

¶31 Despite cable's definitional success, aspects of carriage have been regulated. Cable operators have been required to lease channel capacity to independent program providers since 1972.⁶² Broadcast station owners succeeded in getting the FCC to enact "must carry" rules, awarding local TV stations priority channel assignments (at zero cost) on cable systems.⁶³ When must carry was overturned on First Amendment grounds by federal courts in 1985,⁶⁴ and again in 1987,⁶⁵ broadcasters turned to Congress. There, they won must carry rights in the Cable Television Consumer Protection and Competition Act of 1992,⁶⁶ upheld by the U.S. Supreme Court in *Turner Broadcasting v. FCC*.⁶⁷

¶32 When telephone companies have received federal permission to deliver cable television service, it has been under common carrier rules such as "video dialtone" and "open video service." "Common carrier cable service was thus defined and approved, but defined in such a way as to make the established wireline common carrier lose interest in providing it."⁶⁸ When seen historically and examined in the context of other communications industries, it is clear that cable television operators have adroitly side-stepped onerous common carriage regulation without escaping the threat. Referring to cable TV's origins as "CATV," or community antenna television, a legal treatise notes: "The 'community antenna' began life in the legal slums of common carriage and has never quite shaken off its past."⁶⁹

¶33 That broadband access appears to fall into a distinct regulatory category from that governing cable's multi-channel video subscription service has already found its way into law. In an important ruling by the Ninth Circuit Court of Appeals in June 2000, AT&T successfully challenged an "open

⁵⁷ HAZLETT & SPITZER, *supra* note 14, at 211-13.

⁵⁸ See LUCAS A. POWE, JR., AMERICAN BROADCASTING AND THE FIRST AMENDMENT 218-19 (1987).

⁵⁹ THORNE, HUBER & KELLOGG, *supra* note 56, at 317.

⁶⁰ 47 U.S.C. § 541(e) (2002).

⁶¹ 47 U.S.C. § 571 (2002).

⁶² DONNA N. LAMPERT, FRED H. CATE, AND FRANK W. LLOYD, CABLE TELEVISION LEASED ACCESS (1991), at 4.

⁶³ Robert B. Hobbs, Jr., *Cable TV's "Must Carry" Rules: The Most Restrictive Alternative -- Quincy Cable TV, Inc. v. FCC*, 8 Campbell L. Rev. 339 (1986), at 339-41.

⁶⁴ *Quincy Cable TV, Inc. v. FCC*, 768 F.2d 1434 (DC Cir 1985).

⁶⁵ *Century Comm Corp. v. FCC*, 835 F.2d 292 (DC Cir 1987).

⁶⁶ See 47 U.S.C. §§ 534-35.

⁶⁷ *Turner Broad. Sys. v. FCC*, 520 U.S. 180 (1997).

⁶⁸ THORNE, HUBER & KELLOGG, *supra* note 56, at 321 (citation omitted).

⁶⁹ *Id.* at 317.

access" cable modem law imposed on its franchise transfer from TCI.⁷⁰ The ruling was based on the court's finding that broadband access was not "cable service," which is regulated (with certain federal preemptions) at the local franchise level, but "telecommunications service."⁷¹ The latter is common carrier service falling under federal jurisdiction. While the Ninth Circuit thereby prohibited the Portland City government from imposing "open access," a cable trade journal reports the danger for AT&T in winning this battle: "If high-speed data is really a telecom service, that means it's subject to regulation from the FCC. Thus, cable's bittersweet Portland victory."⁷²

¶34 Regulators and influential interest groups are already moving to impose common carrier rules for cable broadband service. Cable operators have explicitly used their function as electronic publishers (delivering selected video networks directly to viewers) as a First Amendment defense against "open access" requirements.⁷³ A more vigorous transition by cable operators could lead to the development of web-based services including video-streaming and other substitutes for networks now packaged for customers by cable system operators, exposing cable assets to intensified demands for common carrier regulation. As a report by two Wall Street consulting firms noted in 2000:

Unlike the telcos, which are regulated as common carriers, cable currently suffers neither interconnection nor unbundling nor mandatory resale obligations. As cable has moved into two-way services, however, the distinction between the two carrier groups has begun to blur. Nonetheless, under the status quo, cable has thus enjoyed a benefit—namely, freedom from regulation—relative to the telcos on high-speed services.⁷⁴

¶35 Cable systems deter appropriation through defensive engineering. To pre-empt the imposition of common carrier regulation and free riding by competitive broadband networks potentially benefiting from the emergence of Internet TV, system operators impose "slow access" architecture. Regulators may yet attempt to impose common carrier rules, but chances of success are reduced. Note that even FTC rules in the AOL-Time Warner merger, hailed by "open access" champions,⁷⁵ failed to allocate additional bandwidth to broadband access.⁷⁶

D. Appropriation Via Network Effect

¶36 The economic externality generated by moving to an integrated platform involves the effect of cable system investments in stimulating the emergence of broadband networks. Even if optimized for reception over cable conduits, the promotion of broadband content could benefit alternative distribution networks. In particular, DSL stands to gain from the emergence of Internet video. Not only would DSL demand rise among web surfers as the quantity of popular broadband content increases, but demand rises as POC subscribers see DSL as a competing source of programming to multi-channel video subscriptions.⁷⁷ By opening the cable system to receive Internet video, and by

⁷⁰ AT&T Corp. v. City of Portland, 216 F.3d 871 (9th Cir. 2000).

⁷¹ 216 F.3d at 878.

⁷² David Connell, *The Long Road to Open Access*, CABLEWORLD, Feb. 12, 2001, at 16. "Cable does not want to be regulated at all for its next-generation services. It has avoided any regulatory classification so far. But there is a Supreme Court case next year that is going to cause problems for cable in the sense the court may decide whether cable is really a telecom common carrier, a less-regulated cable service or an unregulated information service. . . . So it's a positive outlook for cable with some very nagging concerns about how they make money with broadband and how they eventually will be regulated, or not regulated." Comment of Scott Cleland, in Sandra Ward, *Telecom's Future*, BARRON'S, Mar. 12, 2001.

⁷³ Indeed, cable operators have won a federal district court decision striking down "open access" requirements as violations of the right to freedom of the press. Comcast Cablevision of Broward County, Inc. v. Broward County, 124 F. Supp. 2d 685 (S.D. Fla. 2000).

⁷⁴ SANFORD C. BERNSTEIN & CO., INC. & MCKINSEY & COMPANY, INC., BROADBAND! 64 (Jan. 2000).

⁷⁵ See, e.g., Lawrence Lessig, *The Rules of Politics*, THE INDUSTRY STANDARD, Jan. 15, 2001, available at <http://www.thestandard.com/article/0,1902,21427,00.html>.

⁷⁶ It should also be noted that the FTC/AOL agreement failed to impose any "open access" requirements vis-à-vis Road Runner, Time Warner's cable ISP. Mandates for ISP non-discrimination apply only to cable modem service provided by AOL's "Affiliated Cable Broadband ISP Service . . . excluding Road Runner." *In re America Online, Inc. and Time Warner Inc.*, FTC Docket No. C-3989, Agreement Containing Consent Orders: Decision and Order, (Dec. 14, 2000), available at 2000 WL 1843019.

⁷⁷ DSL providers have already begun efforts to promote their networks as POC substitutes, even as the primitive state of

supporting (directly and indirectly) the emergence of video content providers on the web,⁷⁸ the cable operator develops networks potentially shared with DSL competitors.

¶37 One way to think of this is via the vertical competition model outlined by Tim Bresnahan.⁷⁹ In Bresnahan's analysis, some industries witness rivalry between complementary products. This is counter-intuitive to the standard industrial organization framework that categorizes competitors as horizontal and complementary suppliers as vertical. The layered, or modular, aspect of emerging product markets (particularly in computers) lends plausibility to the new analysis, however. Numerous suppliers cooperate either explicitly or through arms length market transactions to serve customer needs. Within each product niche, one dominant supplier emerges. Yet competition rages between niches.

¶38 The application featured by Bresnahan, the personal computer, is apt. The semi-conductor product market is dominated by Intel. On top of this PC building block rests an operating system (OS), where Microsoft's Windows is dominant. Atop Windows rest software applications provided by Microsoft and other rivals, including Netscape. Microsoft may face important competition from below—should Intel program greater functionality into its chips, or attempt to bundle its own operating system—and above, should Netscape attempt to provide OS-type functionality within its browserware. This is what the inclusion of Java programming language in Netscape Navigator had the potential to achieve. Of course, the ensuing skirmish (also known as the browser "jihad") became the heart of *U.S. v. Microsoft*.

¶39 In the cable market, high-speed Internet access is supplied atop the underlying cable television video subscription service. Theoretically, cable broadband service could compete with the cable operator's video offerings by delivering Internet TV. Even at a price compensating cable operators for short-run revenue displacement, however, vertical competition of this sort would support the creation of broadband applications that could be delivered over rival networks. This lessens the "applications barrier to entry" (as the government calls Microsoft's dominant popularity among software packages for PCs) helping to protect cable's video subscription business from competitive attack by DSL providers. As depicted in Figures 2 and 3, the horizontal competitor in broadband (DSL) could grow by absorbing both broadband subscribers (under-pricing the discriminatory schedule put forward by cable operators to compensate for "cannibalization") and cable video customers. Even if efficient on its own (narrow) terms, migrating customers from video subscriptions to broadband access (including video) risks empowering competitors to challenge cable's lucrative video market head-to-head, something DSL has long (unsuccessfully) aimed to do.⁸⁰

¶40 One objection to this view is that only large cable companies would face such strategic considerations. Given the observation that scores of small (monopoly) cable firms pursue the identical path (and system engineering for broadband) as large, multiple system operators (MSOs) like AT&T, AOL Time Warner, Comcast, Cablevision, and Cox, an argument can be made that network externalities are a non-issue. Even if they were important to the industry's large players,

video streaming (too clunky over existing delivery systems, including cable broadband and DSL) limits demand. Qwest and NorthPoint Communications have developed technologies to transmit real-time video to Internet users and hope that coming services will be competitive with cable television subscription service. Brian Ploskina, *DSL Providers Gird for Content War*, INTER@CTIVE WEEK, July 23, 2000. Other companies involved in similar efforts include Akamai, Digital Island, Sun Microsystems, Mirror Image, Xcelera.com, Adero, Axient, Cidera, iBeam and Covad Communications. See Corey Grice, *Akamai To Face New Rival in Start-up Axient*, CNET NEWS.COM, Aug. 2, 2000, at <http://news.com.com/2100-1033-243983.html?legacy=cnet>.

⁷⁸ Websites dispensing video are experiencing difficulty in achieving financial success, and this feeds back to harm broadband access suppliers. Speaking of the market exit of Icebox, a web-based video production and distribution company, a market analyst observes: "The technology [broadband] side has got to find a way for the content side to make the Web worth using, or content people won't be the only ones in trouble." Richard Cole, *Icebox Melts Down*, CABLEWORLD, Feb. 12, 2001, at 53. The departure of Icebox leaves Shockwave's Atom Films "among the few video content providers left standing . . ." *Id.*

⁷⁹ Timothy F. Bresnahan, *New Modes of Competition: Implications for the Future Structure of the Computer Industry* (June 1998), prepared for COMPETITION, CONVERGENCE, AND THE MICROSOFT MONOPOLY (Progress and Freedom Foundation Conference), available at <http://www.stanford.edu/~tbres/research/pff.pdf>.

⁸⁰ "ADSL also began conceptual life for a specific application—a single channel of video-on-demand." MAXWELL, *supra* note 36, at 229.

small operators should not fear triggering development of complementary network products. But for just this same reason, the gains available to small cable operators are small. Acting on the margins of the national programming market, small system owners do not anticipate that supplying cheap abundant broadband capacity will stimulate "killer apps" such as streaming video, video on demand, or Internet TV.

¶41 There is an objection, however, that is much more damaging: Were large cable operators to launch a much more aggressive product in the broadband access space, they would severely undermine market demand for DSL. Already, cable modem service maintains a nearly two-to-one advantage in residential subscribership. Were the quality/price trade-off to decisively shift to cable's favor from this initial equilibrium, DSL would be neutered as a competitive threat until at least the next product cycle. In the meanwhile, cable operators would enjoy overwhelming dominance in broadband access service. Hence, while strategic considerations relating to network externalities are of interest, it is difficult to see where they have thus far constrained investment choices by operators. Our analysis focuses on the much more immediate threat attending aggressive broadband access supply, appropriation by regulation.

IV. PROFIT MAXIMIZING VERTICAL RESTRICTIONS

I believe that these arguments fail, however, because they do not suggest any reason the cable companies would seek to protect video programming revenues instead of seeking new revenues from Internet service.⁸¹

¶42 The analysis in Section III provided such a reason. In short, political risks associated with such a transition undermine cable system efforts to capture the returns available from supplying subscribers an integrated, high performance data/video broadband package.

¶43 Other vertical concerns have also been raised in the "open access" debate. Specifically, cable operators are accused of using their control of the broadband conduit to favor complementary services provided by operators. The prime example involves ISP connections. Where a cable operator owns an interest in a broadband ISP, it can favor that provider (e.g., through an exclusive contract), foreclosing competing ISPs. Profits may be realized through both subscription fees and the advantage gained in providing a "start-up screen" to web users. Similarly, where an ISP selected by the cable operator promotes content (web sites) it owns, independent content providers may be placed at a disadvantage.

¶44 There are at least four different reasons that cable operators would seek vertical integration (from cable conduit service provision to ISP connections). The first is to promote productive efficiency. The second is to eliminate monopoly in the complementary service. The third is to enable price discrimination. The fourth is to impose impediments to competition in upstream or downstream markets. The first two situations imply consumer gains from vertical integration, and the third is ambiguous. The fourth rationale presents the most interesting possibilities for anti-competitive conduct. We discuss them in order.

A. Efficiency

¶45 Where a downstream (upstream) supplier, with or without monopoly power, sees that it can provide an upstream (downstream) service at lower cost and/or higher quality than competitors, it has an incentive to provide that service. Barring special circumstances involving strategic behavior discussed below, the firm will have an incentive not to enter when it anticipates the reverse—that competitors are more efficient producers. Either way, the incentives of producers are aligned with those of consumers, who benefit from least-cost production. In cable modem service, efficient vertical integration could occur when, for example, a reseller who might invest too little in promoting customer information and service quality, is replaced by a conduit owner that internalizes losses of

⁸¹ Speta, *supra* note 29, at 1005.

reputation for both the specific cable system and the cable modem service generally.⁸² Product tying could also be efficient, eliminating customer confusion that arises when multiple vendors or resellers are involved in provisioning service.

B. Prevention of Double Marginalization

¶46 When a complement is produced by a monopolist, demand is reduced. If the firm in the primary market vertically integrates and succeeds in lowering the price of the complementary good or service, it increases demand in the primary market (and, hence, profits). The incentives of the primary market producer, competitor or monopolist, are symmetric with those of consumers.

C. Price Discrimination

¶47 Integration into complementary product markets may assist a firm in segmenting customers. Indeed, as discussed in detail in Section III, cable firms do implicitly regulate the flow of a vital input (spectrum) into a potentially competitive service (broadband access). Yet this integration takes place at the system engineering level. Access to the limited bandwidth allocated for broadband by independent ISPs will not remedy the potentially anti-competitive nature of the technical configuration.

D. Strategic Vertical Integration

¶48 Allegations arose in the Federal Trade Commission's review of the AOL-Time Warner merger that the newly merged firm could seek to provide Time Warner cable customers high-speed Internet access via AOL or Road Runner ISPs (owned by AOL Time Warner) that discriminated against content owners competing with Time Warner. Most prominent in this debate was Disney, a leading broadcaster (as owner of the ABC television network) and cable network supplier (as owner of ESPN, the Disney Channel, etc.).⁸³ The result was that the FTC imposed conditions on the merger mandating that AOL not only allow independent ISPs to use (or resell) their cable broadband access facilities, but that AOL not impose any barriers limiting access to content (including web sites available uniquely to customers of rival ISPs).

¶49 The incentive of the cable operator to engage in exclusionary conduct is ambiguous. Whatever is done to restrict customer access lowers demand for cable broadband service, resulting in a lower wholesale price for the cable system owner (here, AOL Time Warner). Unless some gain offsets that loss, no such action will be profit maximizing. Such trade-offs are difficult to estimate a priori. Hence, the factual basis for such an allegation merits empirical assessment. Judging from three episodes of relevant market experience, it appears that broadband providers will not realize gains from anti-competitive exclusion.

1. Dial-up ISP Foreclosure

¶50 In the low-speed Internet access market, leading ISPs have attempted to provide closed systems. These services discriminated against content provided by non-affiliated firms. In each case, though, the emerging popularity of the Internet has forced firms to provide virtually seamless and ubiquitous web access. As Speta writes:

[T]he transformations of Prodigy, CompuServe, and AOL seem instructive. Each of those systems began as a closed-content system: users dialed into CompuServe, for example, and received only content created by or affiliated with CompuServe. But, because consumers

⁸² This is similar to vertical integration into retailing by manufacturers, or performance incentives placed on franchisees by franchisors.

⁸³ "Disney told the U.S. Federal Communications Commission in a filing late today that the merged AOL Time Warner should be 'unequivocally' prohibited from discriminating against any unaffiliated content or Internet service providers." *Disney Asks FCC for Restrictions on AOL-Time Warner Deal*, BLOOMBERG NEWS, May 11, 2000, available at <http://news.cnet.com/news/0-1005-202-1859769.html>.

demanded access to all of the information available on the Internet, those providers were forced to permit their subscribers open access to unaffiliated content on the Internet . . .⁸⁴

¶51 The matter may or may not be as settled as Speta suggests. The market outcomes may be at least partly a product of the unbundled telecommunications platform on which each of these ISPs rests. With open entry into the resale of local exchange carrier access service by independent ISPs, perhaps they are competitively pressured into relaxing restraints on customers. While this sounds both plausible and a predicate for extending similar open access rules to cable modems, it is not compelling. The dial-up services spent years providing restricted access to subscribers while operating on "open" platforms.⁸⁵ Access restrictions were voluntarily eliminated when the value of unrestricted access rose, driven by the rising popularity of the World Wide Web.

2. Microsoft's Non-Discriminatory Internet Access Through Windows

So in 1995 [Netscape General Counsel Roberta] Katz began, quietly, to investigate the legality of how Microsoft did business. . . . That summer, Katz met with federal investigators at Netscape's offices in Mountain View, where the investigators were clearly more focused on the Microsoft Network than on Microsoft's belated entry into the browser market. Initially, they were especially concerned about whether Microsoft's Network would spell the demise of the reigning king of on-line services, America Online. The Microsoft Network, like AOL, would be a gated community on the Net that one would reach through a direct dial-up phone number. They "wanted to evaluate the market for on-line services and wanted to know if the Net represented competition to on-line services," Katz remembered.⁸⁶

¶52 The Department of Justice investigation that eventually resulted in the famous antitrust verdict actually began with questions about closed platforms and proprietary content restrictions. While charges were never brought on these grounds, it was feared that Microsoft would use its dominance in personal computer operating systems (i.e., the "Windows monopoly") to leverage its way into dominance over dial-up Internet connections. Like cable television operators, Microsoft controlled a key level of the service chain, and in passing through the operating system customers would have to settle for whatever Internet access Microsoft deemed to offer them. The idea was advanced that not only would MSN, Microsoft's wholly owned subsidiary, emerge as the monopoly ISP, but it would use this position to dictate consumer content choices. Microsoft would limit choices to proprietary services, or charge fees to access non-Microsoft web sites on the Internet.

¶53 None of this happened. MSN was bundled into Windows, and efficiently distributed to millions of purchasers of new computers who found MSN pre-loaded and ready to dial-up (usually with a 30 day free trial). But so was AOL. In a deal struck in March 1996, Microsoft vigorously sought to enlist AOL as a supporter in its browser war combat against Netscape. Terms of the AOL-Microsoft alliance included bundling and promoting AOL dial-up access with Windows. The Microsoft executive in charge of MSN resigned with news of this deal, as it "sacrificed one child to protect another."⁸⁷ It was surely a good career move. AOL subscribership was then at six million, while MSN's stood at 600,000. In 2001, AOL's paying subscriber base in the United States had grown to 22 million, while MSN served four million, trailing AOL, Earthlink and Juno (with ten million free users supplementing its four million paid subscribers).

¶54 The high value of unrestricted access to web content is what drove Microsoft to jettison proprietary content and even befriend rivals of MSN in dial-up service, to engage the browser war. Like cable operators, Microsoft could have elected to screen access to web content by virtue of its

⁸⁴ James B. Speta, *Handicapping the Race for the Last Mile?: A Critique of Open Access Rules for Broadband Platforms*, 17 YALE J. ON REG. 39, 86 (2000).

⁸⁵ CompuServe, beginning in 1969, initially provided proprietary online services. Prodigy did likewise beginning in 1984, followed by AOL in 1989. Prodigy announced that it would provide customers access to the World Wide Web in Fall 1994, prompting AOL to follow suit. CompuServe was purchased by AOL in 1997. See KARA SWISHER, AOL.COM 56, 86-87, 112, 287-307 (1998).

⁸⁶ JOSHUA QUITTNER & MICHELLE SLATALLA, SPEEDING THE NET: THE INSIDE STORY OF NETSCAPE AND HOW IT CHALLENGED MICROSOFT 270-71 (1998).

⁸⁷ MICHEAL A. CUSAMANO & DAVID B. YOFFIE, COMPETING ON INTERNET TIME: LESSONS FROM NETSCAPE AND ITS BATTLE WITH MICROSOFT 111-12 (1998).

ownership of the gateway (i.e., Windows). Indeed, it considered using MSN to steer customers to selected online services, cordoned off from independent content suppliers. But the value of unfettered Internet access to users became apparent by 1995. Hence, Microsoft strategically realigned, expediting convenient web access by aggressively distributing free browserware dubbed Internet Explorer (IE), and upgrading the functionality of IE to compete with Netscape Communicator.

¶55 Similarly, broadband Internet access provided by cable modem service does not restrain customers from full access to independent content. While ISPs in dial-up, DSL, or cable modem service traditionally pre-install their own websites as default user home pages, the user's cost of switching is trivial. Some cable ISPs do not even provide user software, leaving the customer to individually select their own start-up screen as provided by Netscape or Microsoft browsers.⁸⁸

3. Cable Television Systems Do Not Vertically Foreclose Programming Competitors

¶56 Perhaps the best test of how cable operators will behave when deciding how customers will be allowed to select content via broadband connections is to observe plain old cable service. There, cable operators act as program packagers, selecting (and paying license fees to) the video networks subscribers may watch. Since cable operators are permitted to own cable television networks, the question arises: Do they discriminate against content owned by others in filling up the cable channel menu?

¶57 The data suggest otherwise. While cable operators do own a substantial portion of the equity in leading basic cable television networks (vertical integration that can be explained by scope efficiencies), broadcasters own more than twice as much cable content. (See Table 3.⁸⁹) As Speta notes, there are federally imposed vertical ownership limits dating from the 1992 Cable Act: "Cable operators are . . . forbidden to devote more than forty percent of their channel capacity to affiliated programmers . . ."⁹⁰ But these rules are not binding. First, total cable ownership (weighted by cash flow) amounts to just thirty percent of basic cable channels, comfortably less than the cap. Second, because cable network revenues are not uniformly distributed (i.e., the top networks realize far more than the less watched networks), the cap at forty percent of capacity would allow cable system operators to own networks garnering close to 100 percent of basic cable network revenues (and, hence, cash flow).

⁸⁸ Co-author Hazlett was surprised to find this arrangement when subscribing to Comcast Cable's ExpressNet access service in Montgomery County, Maryland in 2000.

⁸⁹ In this analysis, cable networks are valued according to cash flows (revenues minus operating costs). The networks with higher cash flows are, obviously, more valuable. If equity were evaluated on an unweighted basis, then ownership of low-valued channels would be as important as ownership of highly valuable channels.

⁹⁰ Speta, *supra* note 29, at 1003.

<i>Cable Network</i>	<i>Cable Operator Shares</i>	<i>Broadcast Shares</i>	<i>Cable+ Broadcast Shares</i>	<i>Cash Flow (1998) (\$mil)</i>	<i>CF/ total pos. CF</i>	<i>cable share*CF share</i>	<i>Cable + broadcast share*CF share</i>
ESPN	0.0%	100.0%	100.0%	459.7	11.732%	0.000%	11.732%
Nickelodeon	0.0%	100.0%	100.0%	407.8	10.407%	0.000%	10.407%
TNT	100.0%	0.0%	100.0%	285.1	7.276%	7.276%	7.276%
CNN+HN	100.0%	0.0%	100.0%	276.1	7.046%	7.046%	7.046%
TBS	100.0%	0.0%	100.0%	246.4	6.288%	6.288%	6.288%
MTV	0.0%	100.0%	100.0%	238.9	6.097%	0.000%	6.097%
Lifetime	0.0%	100.0%	100.0%	186.8	4.767%	0.000%	4.767%
Discovery	73.5%	24.5%	98.0%	186.4	4.757%	3.496%	4.662%
USA	0.0%	100.0%	100.0%	184.5	4.708%	0.000%	4.708%
Disney	0.0%	100.0%	100.0%	175.0	4.466%	0.000%	4.466%
A&E	0.0%	100.0%	100.0%	155.9	3.979%	0.000%	3.979%
CNBC	0.0%	100.0%	100.0%	143.0	3.649%	0.000%	3.649%
FOX Family	0.0%	49.5%	49.5%	142.5	3.637%	0.000%	1.800%
TNN	0.0%	100.0%	100.0%	136.9	3.494%	0.000%	3.494%
BET	35.0%	0.0%	35.0%	89.5	2.284%	0.799%	0.799%
AMC	75.0%	25.0%	100.0%	64.3	1.641%	1.231%	1.641%
Weather	0.0%	0.0%	0.0%	61.4	1.567%	0.000%	0.000%
CMT	0.0%	100.0%	100.0%	54.1	1.381%	0.000%	1.381%
Sci-Fi	0.0%	100.0%	100.0%	46.1	1.176%	0.000%	1.176%
Comedy Central	50.0%	50.0%	100.0%	46.0	1.174%	0.587%	1.174%
VH1	0.0%	100.0%	100.0%	45.3	1.156%	0.000%	1.156%
FX	0.0%	100.0%	100.0%	44.4	1.133%	0.000%	1.133%
E!	100.0%	0.0%	100.0%	43.7	1.115%	1.115%	1.115%
ESPN2	0.0%	100.0%	100.0%	43.6	1.113%	0.000%	1.113%
TLC	73.5%	24.5%	98.0%	40.9	1.044%	0.767%	1.023%
Cartoon	100.0%	0.0%	100.0%	39.3	1.003%	1.003%	1.003%
History	0.0%	100.0%	100.0%	18.6	0.475%	0.000%	0.475%
TV Guide	56.0%	44.0%	100.0%	17.1	0.436%	0.244%	0.436%
HGTV	100.0%	0.0%	100.0%	12.4	0.316%	0.316%	0.316%
Bravo	75.0%	25.0%	100.0%	10.2	0.260%	0.195%	0.260%
TCM	100.0%	0.0%	100.0%	8.4	0.214%	0.214%	0.214%
ESPN Classic	0.0%	100.0%	100.0%	4	0.102%	0.000%	0.102%
Court TV	100.0%	0.0%	100.0%	2.3	0.059%	0.059%	0.059%
Golf	42.0%	33.0%	75.0%	1.9	0.048%	0.020%	0.036%
CF WTD. AVG.						30.66%	94.98%

Source: ECONOMICS OF BASIC CABLE NETWORKS 2000 (Paul Kagan Assocs. 2000).

¶58

Third, the programming choices of cable operators prior to implementation of the 1992 Cable Act suggest that legal limits on vertical ownership are not the source of cable's "anti-cable" behavior in selecting content for POC. (See Table 4.) When there were no constraints on cable operator programming choices, the top five basic cable networks were owned entirely by broadcasting

interests.⁹¹ Indeed, the major changes in ownership of cable networks between 1992 and 2000 are primarily attributable to (1) the acquisition of Turner Broadcasting (owner of CNN, TNT, Cartoon, and other cable networks) by Time Warner, a cable operator; and (2) the divestiture of cable systems by Viacom (owner of CBS, MTV, Showtime, and other program interests).

<i>Network</i>	<i>Total Net Revenue (1992; \$millions)</i>	<i>% owned by broadcasters</i>	<i>% owned by cable system operators</i>
ESPN	553.3	100	0
CNN/HN	491.4	100	0
TNT	415.1	100	0
USA	364.0	100	0
TBS	256.5	100	0

Source: ECONOMICS OF BASIC CABLE NETWORKS 1993, Exec. Sum. 5, Ownership 2 (Paul Kagan Assocs. 1993).

¶59 That broadcasters effectively own twice as much cable network programming as cable system owners is revealing. The two industries aggressively battle for viewing audiences. Yet, the product offered by broadcasters—obviously exploiting substantial economies of scale in producing mass audience television shows—appeals to cable subscribers. Disney is paid a license fee of 93 cents per subscriber per month to supply ESPN to its subscribers, substantially more than any other network.⁹² Disney owns the ABC Television Network and a chain of television stations. It has specifically complained that its Internet content is threatened by cable's "closed" broadband platform.⁹³ However, in the "closed" plain old cable platform, where content is actually bought and paid for by the cable operator as an intermediary, Disney has had little problem maintaining access to customers.

V. CABLE TV REGULATION IN PRACTICE

¶60 In the policy debate over access, the actual regulatory process merits investigation. To our knowledge it has received none. This is a curious state of affairs, in that no policy is costless to implement. Even were rules guaranteeing access by independent ISPs theoretically compelling as a constraint on monopoly power of cable operators, the case for access regulation would not be established. It would yet be necessary to demonstrate that the actual rules imposed by regulators would likely enhance consumer welfare. The unstated assumption of "open access" is that policies can be enacted without cost and without error. The record reveals this leap of logic to be perilous.

A. Retail Rate Regulation

¶61 Regulation of retail cable rates demonstrates a most dubious record. Through federal preemption of local controls in the 1984 Cable Act, rate reregulation in the 1992 Cable Act, and then

⁹¹ Cable operators could hardly have exercised discrimination in the remaining channels to make up for this "lost opportunity" in paying broadcasters for carriage. The top five networks accounted for 65.3% of aggregate revenues recorded by all 34 basic cable networks listed in ECONOMICS OF BASIC CABLE NETWORKS 1993, Exec. Sum. 5 (Paul Kagan Assocs. 1993).

⁹² Top of the rate card for year 2000. ECONOMICS OF BASIC CABLE NETWORKS 2000, at 59 (Paul Kagan Assocs. 2000).

⁹³ *Disney Asks FCC for Restrictions on AOL-Time Warner Deal*, BLOOMBERG NEWS, May 11, 2000, available at <http://news.com.com/2102-1023-240450.html?legacy=cnet>; Jim Hu, *Disney Asks Congress To Look Critically at AOL Time Warner*, CNET NEWS.COM, Mar. 23, 2000, at <http://news.cnet.com/news/0-1005-200-1581837.html?tag=bplst>; *Disney Lobbyist Speaks Out Against AOL*, BLOOMBERG NEWS, Oct. 3, 2000, available at <http://news.com.com/2100-1023-246560.html?legacy=cnet>.

deregulation once again (first in a string of FCC decisions beginning in late 1994 and finally by statute in the 1996 Telecommunications Act), rate controls have "worked" to lower nominal rates to customers only by degrading service quality. Most importantly, the cost of the quality degradation has exceeded the value of the price savings, as revealed in consumer purchasing decisions. This means that cable rate controls have proven counter-productive, lowering both consumers' and producers' surplus.⁹⁴

¶62 The dynamic nature of cable television technology and programming helped produce this result. Constraints on cable operators force reactions by system owners; at lower prices, infrastructure and content are not as likely to be created or aggressively marketed. One revealing fall-out from rate regulation under the 1992 Cable Act was that the U.S. cable industry largely missed an entire capital upgrade cycle. This later slowed industry development, retarding opportunities to offer broadband Internet access.⁹⁵ This reduction in the pace of infrastructure build-out occurred despite the fact that cable systems maintained market values in excess of three times capital costs. (See Figure 1.)

B. Leased Access

¶63 For three decades the FCC has actually mandated just the third party access now demanded by ISPs. The results are nil. The policy of "leased access" is described by public interest lawyer and former FCC General Counsel, Henry Geller:

In 1969 the FCC announced that provision of leased channels was called for "[I]n view of the importance of an informed electorate and speech concerning public affairs to self-government, the right of the public to receive suitable access to social, political, aesthetic, moral and other ideas and experiences, and the CATV systems' monopoly position over cable access to the subscribers' premises" In 1972, the FCC adopted rules requiring cable systems with more than 3500 subscribers to make available channel capacity for public access (the PEG channels—for public, educational and governmental use) and at least one channel for leased access, to be offered on a first-come, first-served basis with the cable operator having no content control.⁹⁶

¶64 Regulated terms and conditions have never attracted third party content for distribution over cable television systems, with the exception of scattered home shopping programs and infomercials. Attempts by the FCC to remedy this embarrassing state of affairs have been cut down by a coalition of cable operators and cable programmers concerned that access for individual programs will crowd out channel slots for niche cable networks such as C-SPAN and Black Entertainment Television.⁹⁷

¶65 The leased access policy is directly applicable to broadband. Exactly 6 MHz—one video channel in bandwidth—is allocated by cable systems to broadband access. Why couldn't an ISP simply request the use of another channel for Internet access? Indeed, "[t]he 1984 Cable Act mandated that 15% of cable spectrum (about 125 MHz) be available for commercial use (resale or 'leased access')."⁹⁸ While previous regulations did not specifically consider Internet access, the rules were explicitly crafted to create a nondiscriminatory (common carrier) solution where any unaffiliated programmer could use the cable system conduit to reach customers.

¶66 The example given is not hypothetical. Internet Ventures, Inc. (IVI), an ISP with 30,000 dial-up and 2,000 high-speed subscribers, petitioned the FCC in early 1999 requesting the opportunity to

⁹⁴ See generally ROBERT W. CRANDALL & HAROLD FURTHGOTT-ROTH, CABLE TV: REGULATION OR COMPETITION? (1996); HAZLETT & SPITZER, *supra* note 14; Arthur Havenner et al., *The Effects of Rate Regulation on Mean Returns and Non-Diversifiable Risk: The Case of Cable Television*, 19 REV. OF INDUST. ORG. 149 (2001).

⁹⁵ "TCI [the largest U.S. cable system owner] . . . halted most of its capital spending in the early 1990s following a lending squeeze followed by reregulation of the industry by Congress." Thomas W. Hazlett, *Surprise, Surprise: Cable Rates Fall After Deregulation*, BARRON'S, Feb. 28, 2000.

⁹⁶ HENRY GELLER, FIBER OPTICS: AN OPPORTUNITY FOR A NEW POLICY? 17 (1991) (citations omitted).

⁹⁷ Chris McConnell, *Leased-Access Rates Get a Second Look*, BROADCASTING & CABLE, Sept. 30, 1996, at 22.

⁹⁸ Cleland, *supra* note 18.

resell one 6 MHz cable broadband connection under leased access rules.⁹⁹ IVI President Don Janke noted that, "While 'open access' requires new regulation for the cable industry, the legal framework for 'leased access' already is in place in Section 612 of the Communications Act."¹⁰⁰ The petition received widespread support from ISPs, "open access" advocates, and policy makers. Rep. Rick Boucher (D-Va.), a leading member of the House Subcommittee on Telecommunications, wrote FCC Chairman William Kennard on Feb. 9, 2000: "Independent ISPs now present a major source of competition to the programming offered by cable providers. Granting the petition would clearly . . . [provide] greater diversity and competition in the programming choices available to consumers."¹⁰¹

¶67 However, the following day the FCC rejected the petition with Kennard dubbing it "a square-peg, round-hole problem."¹⁰² After three decades to perfect leased access, the Commission conceded it does not know how to implement such rules in a situation that appears tailor-made to accomplish "open access" and more—reallocation of radio spectrum within the cable television system from subscription video to broadband access.

C. Video Dialtone/Open Video Systems

¶68 Since 1987, the FCC has pursued the common carrier regulatory model with similarly empty results. The initiative begun as Video Dialtone (VDT) was designed to allow local exchange carriers (LECs), banned from providing in-region cable television service since 1970, back into video.¹⁰³ While the FCC initially banned local telephone exchange companies from owning cable systems in their exchange territories in order to eliminate incentives for anti-competitive conduct against fledgling cable systems (for example, denying access to telephone poles), the Commission found that once the country had been wired for cable it was time to relax the ban in order to promote new video competition. Phone companies would be free to offer such competition—as providers of transport. Programming would be provided by unaffiliated firms leasing capacity over LEC distribution networks.

¶69 After nine years and 851 official filings, the VDT rulemaking produced a grand total of just 1,250 actual subscribers (all in a New Jersey Bell system serving Dover Township).¹⁰⁴ In February 1996 the Telecommunications Act mercifully put this paper tiger to rest, instituting a new, more liberal approach. Under Open Video System (OVS) rules, telcos would be permitted to offer programming to customers, claiming priority on up to one-third of the video channels on systems they owned. Third party programmers would still have the right to lease channel space on the remaining capacity. This program proved wildly popular compared to VDT, and by June 1999 OVS operations were serving some 60,000 subscribers (down from the June 1998 high water mark of 66,000). Given that about 68 million households subscribe to cable, and another 14 million to satellite or other subscription video packages, the product of over a decade of diligent regulatory activity is underwhelming.¹⁰⁵

D. Local Exchange Unbundling

¶70 Local telephone networks are regulated common carriers, and here public policy has been most ambitious in creating an "open access" environment. Indeed, much of the 1996 Telecommunications

⁹⁹ Steve Gold, *Internet Ventures Files Groundbreaking FCC Petition*, NEWSBYTES, June 2, 1999.

¹⁰⁰ "Leased Access" Only Route to Broadband Competition, *Following FCC Report on Open Access Petition*, EDGE, ON & ABOUT AT&T, Feb. 1, 1999.

¹⁰¹ Ted Hearn, *FCC Rejects Leased Access for ISPs*, MULTICHANNEL NEWS, Feb. 14, 2000, at 2.

¹⁰² *Id.*

¹⁰³ *In re Telephone Company-Cable Television; Cross-Ownership Rules*, Sections 63.54 - 53.58, 3 F.C.C.R. 5849 (1988).

¹⁰⁴ Thomas W. Hazlett, *Economic and Political Consequences of the Telecommunications Act of 1996*, 50 HASTINGS L.J. 1359, 1383-85 (1999).

¹⁰⁵ *In re Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, 16 F.C.C.R. 6005 (2001) (Appendix B, Table B-1; Appendix C, Table C-1).

Act was aimed at dismantling the component parts of local telephone systems and offering them—at reasonable cost—to competitors. In creating a regulatory mandate for LECs to provide "unbundled network elements" (UNEs) at "any technically feasible point,"¹⁰⁶ the Act sought to allow competitive local exchange carriers (CLECs) to serve customers via infrastructure owned and operated by the incumbent local exchange carrier (ILEC). The idea was to separate service provision from conduit ownership, allowing a monopoly platform to supply competitive services.

¶71 In short, the "open access" concept in cable lifts directly from the UNE regulations in telephony. Yet, despite the common carrier status of telephone companies, and a long history of regulation to provide guidance in setting cost-based rates, the ambitious attempt to promote "reseller competition" has been controversial, litigious, and ultimately disappointing. According to recent economic analyses, regulators have simply failed to do what is allegedly simple: provide independent competitors access to monopoly infrastructure on the same terms the monopolist offers its own affiliates.

¶72 Lehman and Weisman note, for example, that UNE rates were set "artificially low," as regulators attempted to implicitly subsidize entrants.¹⁰⁷ Yet these very same competitors were damaged when ILECs responded by withdrawing capital inputs. Alfred Kahn, the dean of U.S. regulation economists, is even more critical of the policy forcing resale at regulated rates. In his 1998 book, *Letting Go: Deregulating the Process of Deregulation*, he details how regulators embraced a protected class, CLECs. However, just as Lehman and Weisman find, the attempt backfired as critical investments were deterred by fear of regulatory appropriation.

E. Reluctant Regulators

¶73 The expert agency charged with implementing "open access" rules itself believes that regulation is dangerous and unwise. The FCC has denied various requests to impose ISP access requirements on cable systems.¹⁰⁸ "Open access" advocates dismiss this stance as an aberration:

In our view, this approach profoundly underplays the importance of the FCC's activism in assuring competition in the past, and will jeopardize the innovative prospects for broadband Internet service in the future. It is based on a fundamentally misguided assumption also shared by many other commentators: that if we leave the cable industry alone, "the market" will take care of the problem.¹⁰⁹

¶74 The authors aim to drag the agency, kicking and screaming, to new regulatory achievements. Surely, Commission staff should come to understand how smart and effective they really are. But they have a long way to go. A most ironic FCC study, published in July 1999, documents the FCC's key role in creating the Internet—by not regulating it.¹¹⁰ While claiming credit for not creating rules that would have stymied network development is provocative, a consensus exists that government has assisted the "network of networks" by regulatory forbearance.¹¹¹

¶75 If the FCC is to levy new rules, agency officials will shape regulatory outcomes. Sweeping away the views of agency officials as unwise and lacking in understanding, and then awarding such officials a vast new charge, is not a serious way to implement public policy. Rather, a showing as to how administrative controls will produce an improved access regime in a reasonable timeframe is essential if substantive policy reform is to be achieved. How regulators may be forced to implement solutions they believe unwise begs explanation.

¹⁰⁶ Telecommunications Act of 1996, Pub. L. No. 104-104, § 251, 110 Stat. 56, 63 (1996).

¹⁰⁷ DALE E. LEHMAN & DENNIS L. WEISMAN, *THE TELECOMMUNICATIONS ACT OF 1996: THE 'COSTS' OF MANAGED COMPETITION* 109 (2000).

¹⁰⁸ See, e.g., BROADBAND TODAY, *supra* note 17.

¹⁰⁹ Lemley & Lessig, *supra* note 4, at 30.

¹¹⁰ JASON OXMAN, *THE FCC AND THE UNREGULATION OF THE INTERNET* (Federal Communications Commission, OPP Working Paper No. 31, 1999).

¹¹¹ See WILLIAM J. CLINTON & ALBERT GORE, JR., *A FRAMEWORK FOR GLOBAL ELECTRONIC COMMERCE* (July 1, 1997).

VI. "OPEN ACCESS" AND THE PACE OF THE RACE

*The crucial difference between cable and DSL, however, is the degree of governmental control over each DSL is heavily regulated by the FCC Cable, on the other hand, has historically been more loosely regulated by the FCC, and providers have not been required to open up their pipe to competitors.*¹¹²

¶76 Access regulation aims to assist consumers by limiting cable operators' market power. Clearly, a certain element of risk is involved in regulating access. As Shelanski warns, "policy makers should be cautious not to let those constraints harm consumers, slow the expansion of affordable broadband services, or keep electronic commerce from reaching its potential rate of growth."¹¹³

¶77 Two important sources of data are now available to measure the consumer trade-offs arising from access regulation. The market rivalry between cable modems and DSL (or ADSL¹¹⁴) offers the first avenue for exploring the impact of access regulation on consumers. Cable modem service is provided on a "closed" platform, while DSL and ADSL services are provided via telephone networks kept open by extensive unbundling and interconnection regulation. Consequently, comparing DSL and cable modem service creates a market test of the competing regulatory paradigms. Investor reactions to cable broadband access regulation yield the second empirical measure of regulation's adverse consequences. Economically, if regulation increases the likelihood of efficient network development, content providers and infrastructure suppliers should become more profitable. Theoretically, then, returns in the Internet sector should predict in a financial event study the likely effect of access policies.

A. The Race Between Cable and DSL

1. The Starting Line

¶78 The race between cable modem service and DSL has historical origins. These seem to favor DSL, whose development is traced to Bellcore in 1989.¹¹⁵ Although cable modems were invented at about the same time,¹¹⁶ cable's distribution network required significant upgrades before two-way technologies could be applied. As Maxwell noted:

ADSL . . . promises to be the dominant transmission technology for the first two generations of residential broadband. This promise arises from one simple fact—more than 700 million telephone access lines populate the world today, a figure moving inexorably to a billion; the only realistic alternative, CATV, cannot count even 10 million subscribers presently connected to lines suitable for residential broadband. CATV may catch up, but it will probably not be in time.¹¹⁷

¶79 The head start afforded ADSL is associated with cost. Cable system owners must expend about \$200 per home passed, or about \$300 per cable subscriber, to upgrade their plant to be capable of providing cable modem service.¹¹⁸ Assuming a 30 percent penetration rate for high-speed access subscribers—a rate far above current levels—the capital outlay alone for making a cable system internet capable comes to \$1,000 per user. Furthermore,

¹¹² John Schwartz, *How Much Room In the Fat Pipe?: Internet Providers' Fortunes Are Riding On Fight for 'Broadband' Access to Homes*, WASH. POST, Sept. 19, 1999, at H1.

¹¹³ Howard A. Shelanski, *The Speed Gap: Broadband Infrastructure and Electronic Commerce*, 14 BERKELEY TECH. L.J. 721, 744 (1999). Shelanski served as FCC Chief Economist, 1999-2000.

¹¹⁴ Asymmetric Digital Subscriber Line (ADSL) service allows faster downloads than uploads, thus saving bandwidth for incoming information. This is tailored to residential subscribers, who use network access primarily for email and web surfing. Business users hosting websites or sending large databases require two-way high speed connections.

¹¹⁵ MAXWELL, *supra* note 36, at 231.

¹¹⁶ *Id.* at 249.

¹¹⁷ *Id.* at 169-70.

¹¹⁸ These estimates are found in MAXWELL, *supra* note 36, at 183. The FCC projects costs to be about \$31 billion nationally, or over \$400 per cable subscriber. BROADBAND TODAY, *supra* note 17, at 26.

[T]his money must be spent (by a cable system owner) before connecting a single user and comes before the several hundred dollars needed to actually make the data connection. Telephone line-based network service providers will not be spending \$1000 for an entire user connection to an ADSL network and the majority of that cost occurs after a service order, not as an investment.¹¹⁹

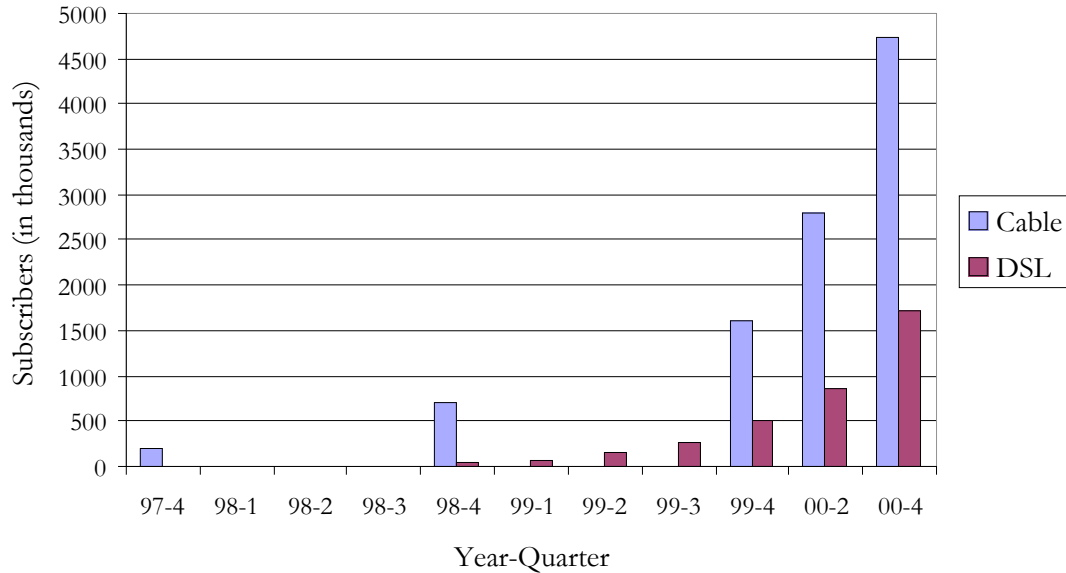
2. Cable Modems Are Winning

¶80

In terms of subscribership, cable modems have established a clear lead over DSL. (See Figure 6.) This victory is difficult to ascribe to any natural advantages cable broadband enjoys. Industry commentary in the early days of the bandwidth race cast DSL as the easy winner. In 1997, ZDNet reviewed alternative broadband access products and wrote the following:

Cable modems: May want to write the obit on this one. *PC Week* reports vendors are backing away from cable, given competition from digital subscriber line technology and cable's massive implementation headaches. Hewlett-Packard, IBM and Intel among those reportedly throwing in the towel.¹²⁰

Figure 6. Residential Broadband Subscribers



¶81

Yet, by 1999, DSL and cable were seemingly running neck and neck. This was a substantial change. As Mark Boslet noted, "[o]nly a couple of years ago, xDSL appeared a safe bet as winner [over cable modems]."¹²¹ Cisco CEO John Chambers was similarly quoted saying, "We think it's an equal jump ball between cable and DSL. . . . We don't think one architecture has an advantage over the other."¹²² Today, analysts see cable as the current and future champion in the broadband race. "Contrary to the hype and regulatory hope that DSL would catch up to cable modem deployment,

¹¹⁹ MAXWELL, *supra* note 36, at 183.

¹²⁰ Jon C.A. DeKeles, *Don't Get Robbed on the Road to Faster Access*, ZDNET, May 29, 1997, at http://www.zdnet.com/chkpt/adem2fpf/www.anchordesk.com/story/story_931.html.

¹²¹ Mark Boslet, *Cable Modems Have Mkt Lead, But xDSL Seen as Real Contender*, DOW JONES NEWS SERVICE, May 12, 1999.

¹²² *Id.*

cable still is deploying cable modems at roughly two times the rate of DSL in the residential market."¹²³

¶82 The conventional wisdom is that DSL could have been deployed much earlier and more aggressively, but lagged due to the incentives of local exchange companies. The emergence of cable modem service is credited with invigorating DSL's development:

The ILECs' aggressive deployment of DSL can be attributed in large part to the deployment of cable modem service. Although the ILECs have possessed DSL technology since the late 1980s, they did not offer the service, for concern that it would negatively impact their other lines of businesses. The deployment of cable modem service, however, spurred the ILECs to offer DSL or risk losing potential subscribers to cable. In various communities where cable modem service becomes available, the ILECs would soon deploy DSL service that was comparable in price and performance to the cable modem offering.¹²⁴

¶83 All else being equal, the "closed platform" of cable should suffer in its marketing efforts against DSL's "open platform." First, DSL offers consumers the clear advantages of additional choice. Second, DSL grants security to application developers who need not fear monopsony extractions in supplying content to DSL users. Despite these advantages, DSL subscription growth still does not match that of cable modem service.

¶84 Developments in capital markets indicate that DSL deployment is not likely soon to close the gap with cable modems. If anything, the DSL market is imploding.¹²⁵ Despite substantial expenditures of time and resources to set rates and terms of wholesale access at reasonable, cost-based levels, massive investments are being lost by DSL providers today.¹²⁶ As shown in Table 5, the financial markets are slaughtering the leading DSL "pure plays." Equity shares in the top national DSL suppliers, Covad, Rhythms, and NorthPoint, each lost in excess of 97.5% of their value in 2000.

DSL supplier	Market Cap (12-26-00)	Equity Returns through Dec. 26, 2000 from close on:		
		12/31/99	3/10/00	8/31/00
NorthPoint	\$41.8 mil.	-98.7%	-98.9%	-97.3%
Covad	\$267.1 mil.	-96.0%	-97.7%	-90.8%
Rhythms	\$64.7 mil.	-97.4%	-98.0%	-91.0%
Network Access	\$35.5 mil.	-97.7%	-97.7%	-90.6%
Log on America	\$4.40 mil.	-97.5%	-96.5%	-84.9%
Mean (unweighted)	--	-97.5	-97.8	-90.9

Source: Yahoo!Finance, www.finance.yahoo.com (Dec. 27, 2000).

¶85 The apparent inviability of existing DSL business models has left financial analysts pondering the question: What value does the ISP broadband reseller provide? According to at least one analyst, ISP broadband resellers do not provide much added value at all.¹²⁷ If this is correct, the implication

¹²³ Scott C. Cleland, *Expect Positive Cable Industry Outlook to Continue*, PRECURSOR GROUP, March 19, 2001.

¹²⁴ BROADBAND TODAY, *supra* note 17, at 27.

¹²⁵ Jeanie Stokes, *Stock Plunge the Last Straw?: DLEC Delisting Looms*, BROADBAND WEEK, Jan. 22, 2001, available at http://www.broadbandweek.com/news/010122/010122_news_stock.htm.

¹²⁶ Corey Grice, *Tough Times for High-Speed ISPs Despite Demand*, CNET NEWS.COM, Dec. 5, 2000, at <http://news.cnet.com/news/0-1004-200-4006449.html>.

¹²⁷ Nico Detourn writes:

is that ISP service is more efficiently bundled with transport—exactly as the leading broadband access service (cable) has developed.

¶86 The market for DSL may heroically rebound, and investors may discover a useful niche for broadband access resellers. But regulators cannot know that. By imposing an extra layer—an artificial middleman—in the vertical chain of production, costs are imposed on consumers. These added costs have already become painfully apparent. The *New York Times* recently reported "that growth in the number of [DSL] subscribers slowed in the third quarter [of 2000] from the previous three months, and was outpaced by the growth of cable subscribers."¹²⁸ This market test of alternative regulatory models is revealing, particularly as "it is clear that some of the [DSL] industry's woes are derived from the confusion inherent in the way competitors relate to one another."¹²⁹ The *Times* quotes a market expert who surmises that the regulatory model imposed on DSL is failing:

"The F.C.C. has put all of these companies in the same weird house," said Mike Lowe, an analyst with Cahners In-Stat. "No one takes ownership for problems while competitive entities are focused on continuous customer acquisition. It's generated mayhem."¹³⁰

¶87 The economic costs associated with forced vertical disintegration answer the assertion by Lemley and Lessig that "[t]he only argument we have been able to find suggesting that eliminating ISP competition might actually be desirable is that eliminating such competition gives cable companies supracompetitive revenues, and that those revenues will encourage them to deploy broadband access more quickly."¹³¹ In dismissing efficiencies which lower risk and speed capital deployment as "supracompetitive" profits, Lemley and Lessig show a fundamental misunderstanding of consumer welfare analysis. Rather than being bad for consumers, vertical integration creates certain real benefits.

3. Bundling Is Efficient

¶88 Not only is the bundled cable package (ISP connection tied to broadband conduit access) winning the market race against unbundled DSL competitors, broadband access suppliers who lack market power are unifying internet services. RCN, the leading cable overbuilder, bundles transport and service from its own ISP called RCN.com. It has acquired independent ISPs and rebranded them with its own name. According to a GAO report, wireless providers of broadband will also likely provide bundled transport and ISP services.¹³² Similarly, Echostar selected MSN as the exclusive ISP for its satellite-based system.¹³³ Hughes Electronics has modified the model, venturing with Earthlink to provide Internet service to rural areas,¹³⁴ while maintaining a similar relationship

Under even the fairest open access terms, transplanting an ISP's brand and customer base to the cable platform would not alone increase the service's basic competitiveness on a like-platform basis[] i.e., relative to other services coming over that same pipe. So, while it can be argued as a matter of principle that the cable system should be opened so other companies can fairly compete and offer more consumer choice, the issue is hollow at the core.

As a practical matter, the problem the ISPs face isn't in not being allowed to competitively offer branded high-speed access over closed systems controlled by AOL-Time Warner, or by AT&T and the cable ISP it controls through Excite@Home. It's that they have been unable to effectively compete with media and content companies such as Yahoo!, Lycos, the "original" Excite, and AOL in providing higher-margin, non-access services worth blinking and clicking at, even over the open telco system during dial-up's heyday.

The hard, historical reality of the ISP is that it hasn't evolved into more than an ISP. There are no regulations the feds can impose, or terms that the cablecos could offer, that would change that in any meaningful way.

Is Open Access Enough?, MOTLEYFOOL.COM, Oct. 2, 2000, at <http://www.fool.com/news/2000/isps001002.htm>.

¹²⁸ Simon Romero, *D.S.L. Service for Linking to Internet Is Problem Ridden*, N.Y. TIMES, Dec. 28, 2000, available at <http://www.nytimes.com/2000/12/28/technology/28PHON.html>.

¹²⁹ *Id.*

¹³⁰ *Id.*

¹³¹ Lemley & Lessig, *supra* note 4, at 43.

¹³² UNITED STATES GENERAL ACCOUNTING OFFICE, TECHNOLOGICAL AND REGULATORY FACTORS AFFECTING CONSUMER CHOICE OF INTERNET PROVIDERS (Oct. 12, 2000), available at <http://www.usiaa.org/news/gao.pdf>.

¹³³ Steve Caulk, *Echostar Offers New Service via Satellites*, DENVER ROCKY MOUNTAIN NEWS, Nov. 6, 2000, at 10B.

¹³⁴ *Technology Briefly*, L.A. TIMES, Nov. 16, 2000, at C3.

with Juno under Hughes' DirecPC service,¹³⁵ and partnering with AOL (which purchased a \$1.5 billion stake in Hughes in 1999). AOL has agreed to offer its interactive TV and ISP to set-top boxes via Hughes' service.¹³⁶ This multi-pronged foray enlisting the three largest U.S. ISPs rejects exclusivity, but falls far short of unbundling the platform for commodity resale.

¶89 Furthermore, problems encountered in broadband "open access" help explain the popularity of bundled service. Though independent ISPs have done well offering low-speed dial-up service, they have encountered difficulties offering high-speed DSL. Complaints are endemic.¹³⁷ As one cable journal recently reported:

Consumer advocacy groups are holding public meetings and filing lawsuits over the quality and availability of digital subscriber line service. CLECs and ISPs are pointing to the closing doors of their own operations and crying out—sometimes successfully—that the ILECs still aren't playing fair.

It's unclear how seriously the protests are being taken, or that they will ever amount to more than fragmented complaints. But the highly public complaints raise the possibility that over time the incumbents could have more of a problem on their hands than they realize: An increasingly bitter customer base, that combined with broadband competition and with lingering technical glitches could hamper DSL deployment.¹³⁸

¶90 Generally, economists have cited quality assurance as a rationale for bundling, and courts have endorsed those rationales, especially for new products.¹³⁹ For example, franchisors may stipulate that franchisees purchase inputs from specific suppliers to protect the reputation of the franchise. Given the potential for service problems that the consumer cannot easily attribute to the ISP rather than the transport provider, cable companies have three options. First, they can provide certification and monitoring of ISPs. Certifying and monitoring ISPs involves costs and errors. It also raises the possibility that individual ISPs will not fully bear the losses accruing from deficient service. Second, the cable companies can execute preferential agreements with one or a small number of ISPs, stating quality control mechanisms and using the threat of termination to police ISP behavior. Finally, cable companies can vertically integrate themselves into ISP provision. Absent the pressure for "open access," the second and third options seem to be the natural path regardless of delivery mechanism—DSL, cable, fixed wireless or satellite.

¶91 Aside from quality assurance and ease of troubleshooting, bundled provision also enhances the possibilities for price discrimination. Customer fees may depend on the number of e-mail addresses supplied, the amount of disk storage leased, the extent of web-hosting services, and so forth. Simple transport offers fewer dimensions to price. In a static world, the implications for consumer welfare are unclear. In a dynamic world marked by technological and strategic uncertainties, the extra profits

¹³⁵ Michael Bartlett, *Analyst Praises EarthLink's Satellite Broadband Internet Access*, NEWSBYTES, Nov. 16, 2000.

¹³⁶ Sallie Hofmeister, *AOL May Be Contender in Purchase of DirecTV*, L.A. TIMES, Dec. 13, 2000, at C1.

¹³⁷ One commentator writes:

It gets tiresome to see, but hardly a week goes by that I don't read yet another local or national news report about somebody's lousy experience with DSL: The lengthy wait for provisioning. The problems with connections that go down and aren't brought back up again, and the "not me" response by the involved LEC, ISP and DLEC when that happens. The cutoff without warning of service to ISP customers when a service provider (Jato in this case) goes belly up.

....

The results of this yawning gap between selling service and knowing what its users think are plain: DSL service quality generally seems to fall consistently behind that of cable, which itself is no day at the beach when it comes to trouble-free service.

Bill Menezes, *Are You Being Served?*, BROADBAND WEEK, Jan. 22, 2001, available at http://www.broadbandweek.com/news/010122/010122_opinion_bill.htm.

¹³⁸ Evan Blackwell, *DSL Groundswell: Winter of Discontent Could Get Ugly*, BROADBAND WEEK, Feb. 19, 2001, available at http://www.broadbandweek.com/news/010219/010219_news_ground.htm.

¹³⁹ See Benjamin Klein & Lester F. Saft, *The Law and Economics of Franchise Tying Contracts*, 28 J.L. & ECON. 345 (1985); *U.S. v. Jerrold Electronics Corp.*, 187 F. Supp. 545 (E.D. Pa. 1960) (endorsing bundling for new entrants as a means of ensuring seller's reputation), *aff'd*, 365 U.S. 567 (1961) (per curiam); *Hirsh v. Martindale-Hubbell, Inc.*, 674 F.2d 1343 (9th Cir. 1982) (bundling that improves quality is not illegal tying).

are likely to generate incentives for new applications, network expansion, and faster deployment of capital infrastructure.

B. Financial Market Reactions to "Open Access" Events

1. The Metrics

¶92 Internet Index. We examine a portfolio of companies that covers a broad swath of Internet players. The portfolio employed is the Inter@ctiveWeek Internet Index.¹⁴⁰ Events studied include actions by companies (such as merger announcements) and by regulators (such as merger approvals or access rule decisions) that impact Internet development generally and companies in the Internet Index specifically. Actions or policies expected to facilitate faster, cheaper, better network connectivity benefit shareholders of Amazon.com, Cisco, E*Trade, Cnet, 3Com, Yahoo, and other components of the index. This should be evident in higher share prices, *ceteris paribus*. On the other hand, shares of these companies decline on news interpreted by investors to result in negative marginal growth for high-speed networks.¹⁴¹

¶93 Excite@Home. We also look at Excite@Home's stock price, using it as a bellwether for the effects of the "open access" debate. Excite@Home has exclusive contracts with a number of cable companies, including AT&T, Cablevision, Comcast and Cox Communications. Some of these contracts expire in 2002, others later. "Forced access" would undo this business model. Hence, the firm's shares are directly impacted by the policy outcome and should signal important steps in policy enactment.

¶94 Financial analysts and the business press have repeatedly linked Excite@Home's stock price and shifts in the "open access" debate. Following the June 3, 1999 district court decision favoring Portland's push for "open access," CNET reported: "Wall Street reacted markedly to the court's decision. Stock in @Home slipped more than 10 percent to close at 94.5. ISPs Mindspring and AOL both posted significant gains today, largely coming late in the afternoon following the news."¹⁴² In response to the same ruling, an Excite@Home VP said, "It is bad public policy. It will only upset the financial markets, which it's already doing when you look at what's happening with cable stocks and our stock."¹⁴³

¶95 Industry analysts routinely mention the "open access" debate and its ramifications in explaining Excite@Home's stock price decline in 2000, which slid 80 percent from February through December. According to analyst Drake Johnstone, "The market is concerned about open access. AOL and Time Warner said they will open their lines to companies, and AT&T will follow suit after their deal ends with Excite@Home. This means more competition that will likely pose a threat to

¹⁴⁰ "The Inter@ctive Week Internet Index is designed to measure a cross section of companies involved in providing digital interactive services, developing and marketing digital interactive software and manufacturing digital interactive hardware. The Inter@ctive Week Internet Index was developed by the American Stock Exchange and *Inter@ctive Week*, a biweekly magazine published by Inter@ctive Enterprises L.L.C. The Index is market-value (capitalization) weighted" AMEX INTER@CTIVE WEEK INTERNET INDEX (IIX), at <http://www.mobidata.com/comp/iix.htm>.

¹⁴¹ Included in the Internet Index are: Akamai Technologies, Critical Path, Level 3 Communications, Scient, Amazon.com, Cisco Systems, Network Associates, Sportsline.com, AOL Time Warner, Doubleclick, Novell, Starmedia, Ariba, Ebay, Open Market, Sun Microsystems, At Home Corp., Egghead.com, Palm, Tibco Software, Broadcom, E*Trade, Priceline.com, Travelocity, Broadvision, Earthlink, Psinet, Verticalnet, Check Point Software, Exodus Communications, Qwest Communications, Vignette, Checkfree, Internet Capital, Qualcomm, Vocaltec, CMGI, Inktomi, RealNetworks, Verisign, Cnet Networks, Intuit, RSA Security, Webmethods, 3Com, Juniper Networks, Rhythms Netconn, Yahoo, and Sycamore Networks. See <http://finance.yahoo.com/q?s=@^iix>.

¹⁴² Corey Grice, *Oregon Ruling May Fuel Open Access Fight*, CNET NEWS.COM, June 4, 1999, at <http://news.com.com/2100-1033-226704.html?tag=rn>.

¹⁴³ Comment by Excite@Home senior vice president, Dan Gilbert. Corey Grice, *Excite@Home Tries to Debunk ISP Claims*, CNET NEWS.COM, June 16, 1999, at <http://news.com.com/2100-1033-227207.html?tag=rn>.

growth."¹⁴⁴ Morningstar agreed: "The open-access cable debate is still simmering, and the company [Excite@Home] will be strongly affected by pending regulatory decisions."¹⁴⁵

¶96 AOL. In addition to the Internet index and Excite@Home, we also track AOL's stock price. The link between "open access" and AOL's stock price is more subtle than for Excite@Home. Until the January 2000 announcement of the Time Warner merger, AOL had an interest in regulating access to high-speed cable networks. Its interests were diametrically opposed to Excite@Home's. Since January 2000, AOL has (in the forward-looking sense important to shareholders) become a cable company and owner of RoadRunner, an ISP with exclusive contracts to provide cable modem service over systems owned by Time Warner. Presumably, in a world of first bests, AOL would have found Excite@Home's strategy more attractive. Indeed, rumors had circulated in 1999 that AOL would buy Excite@Home. However, to secure regulatory approval, AOL and Time Warner have agreed to open up the merged entity's cable systems to competing ISPs, starting with Mindspring. This arrangement has value as precedent for the "open access" debate. Recent commentary suggests that AOL Time Warner's interests in the "open access" debate may in fact have switched a second time—back to favoring it.¹⁴⁶

¶97 An extra complication arises because it is unclear whether the Time Warner acquisition was AOL's best strategic choice. The stock market reacted poorly to AOL's January 10, 2000 announcement of the deal, marking its stock down 18 percent in the three days following. If that market reaction continued to be a correct assessment of the deal's impact on AOL, developments that raised the likelihood of the deal collapsing would arguably have boosted AOL's stock. One could argue that AOL's success as a dial-up ISP has been based on its exploitation of installed base made available at cross-subsidized, regulated rates. Hence, it is not clear whether the push for "open access" by opponents of the deal helped or hurt AOL's prospects in the eyes of investors.

2. The Events

¶98 Setbacks for "Open Access." The cause of "open access" has suffered a number of setbacks over the past three years. First, there were the mergers, notably AT&T's acquisitions of the cable companies TCI and MediaOne. Critics charged that AT&T would exclude independent ISPs from its broadband network. Other mergers also looked like attacks on the "open access" idea. For example, the fusion of Excite and @Home seemed to strengthen a company whose business model for high-speed service was based on exclusive contracts with cable companies.

¶99 Second, setbacks occurred at the local level. Governments in Portland, San Francisco and elsewhere have considered "open access" and either rejected it or failed to prevail in the courts when attempting to impose it.

¶100 Finally, the FCC has so far refused to mandate "open access." It has argued that broadband is new and its future uncertain. Its position has been that regulation at such an early point might reduce investment and prevent the emergence of product packages that will appeal to consumers.

¶101 Victories for "Open Access." "Open access" was the single most important policy issue in the AOL/Time Warner deal, first announced in January 2000. The FTC approved the deal in December 2000 on condition that AOL not offer its own high-speed Internet service over Time Warner cable systems until offering consumers the choice of independent high-speed ISPs (one prior to AOL's initiation of service, and two more within 90 days). (FCC approval came in January 2000 and did not deal with the cable modem access issue.)

¹⁴⁴ Corey Grice, *Stock in Excite@Home Flirts with New 52-Week Low*, CNET NEWS.COM, Mar. 8, 2000, at <http://news.com.com/2100-1033-237736.html?legacy=cnet>.

¹⁴⁵ George E. Nichols, *Excite@Home Issues Disappointing Results*, MORNINGSTAR.COM, April 20, 2000, at <http://news.morningstar.com/news/Wire/0,1230,1462,00.html>.

¹⁴⁶ See Edmund Sanders, *AOL-Time Warner Deal Could, Ironically, Lead to Open Access*, L.A. TIMES, Nov. 16, 2000, at C1 (describing an FCC filing by Comcast and Cox Communications that warned about deleterious effects from anticipated AOL Time Warner merger terms being imposed on other cable systems).

¶102 In the AOL/Time Warner merger and elsewhere, powerful interests continue to back "open access." Those interests include the regional Bell operating companies which offer DSL—a competitor to cable—but which must operate under federal line-sharing requirements and wholesale price control. Other players weighing in on "open access" include Microsoft, NBC (owned by General Electric), and Disney. Microsoft fears that its MSN Internet service won't be among the chosen few featured by cable companies. In the case of the AOL/Time Warner deal, NBC and Disney fear that AOL/Time Warner will block or hamper delivery of their content over AOL/Time Warner pipes. Other cable providers fear that the combined entity will try to keep its content out of competing broadband delivery systems. Thus, objections based on "open access" offered a line of defense against a different sort of competitive threat. As mentioned above, with "open access" imposed on AOL Time Warner, that company may itself emerge again as a leading proponent, particularly for overbuilders, satellite, and fixed wireless providers.

3. Results

¶103 Setbacks for "Open Access." Table 6 shows twenty-one dates and summary descriptions of events that arguably mark setbacks for the cause of "open access." These include announcements of mergers and favorable developments for a variety of mergers, including AT&T's purchase of cable operators TCI and MediaOne. Also included are various rumored deals that never took place, notably linkups of AOL and Excite@Home, and AT&T and Time Warner. Finally, this group of events also includes legal and political setbacks such as a Miami city council ruling in favor of the cable companies and the June 22, 2000 appeals court ruling that struck down Portland, Oregon's local access requirements.¹⁴⁷

¶104 The net returns for the Internet Index, Excite@Home and AOL are adjusted for movements in the S&P 500 index. The first of each pair of returns shows the net adjusted percentage increase on the event date shown. The second shows the net adjusted percentage increase on the day before, the day of, and the day after [-1, 0, +1].

¶105 Over the twenty-one dates, the mean net adjusted increase in the Internet index was 1.1 percent over one day and 1.7 percent over three days. The median returns were similarly positive (0.7 and 2.4 percent over one and three days). The t-statistics show that the means are statistically significant and positive. The net effect, though subject to important caveats, can be calculated. Cumulatively, investors marked up Internet stocks by 24.6 percent on the twenty-one event dates. Over the three-day windows, the cumulative return was 41.6 percent.

¶106 Unsurprisingly, Excite@Home reacted strongly to the setbacks for "open access." The mean increase over one day was 7.6 percent. Over three days, the mean increase was 8.1 percent. Again, the results were statistically significant. The cumulative effect over one day was 364 percent, and over three days 409 percent.

¶107 Lastly, the AOL reaction was more muted, and though positive on average, not statistically significant. Interestingly, AOL declined in value on some key dates: (1) the June 24, 1998 announcement of the AT&T/TCI merger, (2) the February 17, 1999 FCC approval of the same deal, (3) the April 12, 1999 story covering a Senate subcommittee's tepid reception to ISP arguments on "open access" for cable, (4) San Francisco's approval of the transfer of TCI's cable franchise to AT&T, and (5) the February 16, 2000 decision by Pennsylvania to shelve consideration of "open access" requirements for cable networks.

¶108 Victories for "Open Access." We were able to identify only eight stories with positive implications for open or forced access. (See Table 7.) They include the initial federal district court decision upholding Portland's "open access" requirement, votes in Broward County and Pittsburgh, and news stories on the AOL/Time Warner deal suggesting that an "open access" requirement would be enacted. Arguably, the ground shifted toward open or forced access more than this ratio of twenty-one "anti-open access" to eight "pro-open access" dates suggests.

¹⁴⁷ AT&T Corp. v. City of Portland, 216 F.3d 871 (9th Cir. 2000).

Table 6. Events signaling setbacks for "open access," Jan 1998–Oct 2000

		<i>Internet Index</i>		<i>Excite@Home</i>		<i>AOL</i>	
		1-day	3-day	1-day	3-day	1-day	3-day
24-Jun-98	AT&T/TCI announced, CNET	0.2%	1.5%	27.9%	24.5%	-4.2%	2.9%
10-Dec-98	Rumors of AT&T/ Time Warner deal	1.7%	4.2%	9.7%	10.3%	-0.5%	3.6%
31-Dec-98	ATT Passes Hurdle in plan to buy TCI, NYT	2.0%	2.4%	4.3%	3.6%	5.6%	-1.6%
19-Jan-99	AtHome/Excite deal	3.2%	-1.8%	11.6%	0.0%	1.5%	-3.4%
17-Feb-99	FCC gives green light to AT&T/TCI	-1.4%	-5.2%	7.4%	-5.1%	-1.6%	-2.7%
22-Mar-99	Comcast bid for MediaOne	1.6%	3.6%	5.0%	19.5%	9.3%	11.9%
12-Apr-99	ISPs get bad reception at FCC cable hearing	0.6%	2.9%	8.1%	11.2%	-2.6%	-1.5%
22-Apr-99	AT&T makes competing bid for MediaOne, NYT	0.9%	7.1%	-1.1%	10.3%	1.3%	7.4%
16-Jun-99	FCC chief urges localities to keep hands off Internet, San Jose Mercury News	4.4%	6.1%	13.7%	21.3%	8.6%	15.1%
27-Jul-99	SF OK's deal AT&T/TCI (but imposes "open access")	-0.5%	-1.7%	8.0%	8.1%	-3.8%	-5.6%
11-Aug-99	FCC declines to start formal probe of broadband	0.6%	4.0%	-1.0%	3.6%	6.0%	8.3%
17-Aug-99	FCC asserts right to regulate cable	1.4%	4.5%	2.0%	7.3%	1.0%	1.8%
29-Sep-99	Rumors of AOL buying Excite@Home, Fortune Street Life	2.3%	1.9%	15.4%	8.8%	1.3%	3.4%
19-Oct-99	Miami rules in favor of cable companies, Boston Globe	0.7%	-1.7%	4.2%	-1.7%	3.7%	2.4%
8-Nov-99	Rumors of AOL buying Excite@Home, Business Wire	2.8%	5.7%	13.6%	18.6%	2.5%	1.0%
16-Feb-00	Pennsylvania Lawmakers Shelve Bill on Cable Access for Internet Firms	0.9%	1.9%	-2.7%	8.2%	-2.4%	-4.7%
9-May-00	Excite names new chair, NYT; Rumored Comcast bid for ATHM (Stockrumours.com, also CNNfn)	0.0%	-5.1%	15.7%	13.4%	2.0%	0.1%
26-May-00	DOJ approves AT&T/MediaOne deal, NYT	-0.1%	2.5%	-3.9%	-5.0%	-1.6%	2.1%
5-Jun-00	FCC approves AT&T/MediaOne deal, NYT	0.2%	4.3%	-4.1%	-5.7%	-2.4%	4.3%
22-Jun-00	Sprint/WorldCom opposed by EU; Appeals Court Ruling on Seattle - Cable is not telecom	0.0%	-2.2%	14.0%	5.8%	1.4%	-3.7%
19-Oct-00	Excite, Comcast, AT&T, Cox and Radio Shack team up, PR Newswire	0.4%	0.0%	11.4%	12.0%	-9.0%	1.0%
	Mean	1.1%	1.7%	7.6%	8.1%	0.8%	2.0%
	Median	0.7%	2.4%	8.0%	8.2%	1.3%	1.8%
	Cumulative	24.6%	41.6%	364.2%	408.6%	17.1%	51.4%

Table 7. Events signaling victories for "open access," Jan 1998–Oct 2000

		<i>Internet Index</i>		<i>Excite@Home</i>		<i>AOL</i>	
		1-day	3-day	1-day	3-day	1-day	3-day
4-Jun-99	Portland judge upholds "open access," Washington Post	0.9%	-0.1%	-14.7%	-14.8%	7.9%	-0.1%
13-Jul-99	Broward County votes for nondiscriminatory access	0.6%	-1.2%	-2.2%	-8.6%	3.0%	-3.4%
28-Dec-99	Pittsburgh mandates "open access," PR Newswire	-0.4%	2.9%	1.1%	-0.9%	-2.8%	-4.9%
25-Jul-00	NBC opposes AOL/TW union, CNET	0.9%	0.1%	-3.8%	-7.2%	-2.3%	-4.1%
27-Jul-00	FCC vows scrutiny of AOL merger WP	-3.4%	-2.7%	-5.8%	-8.1%	1.7%	3.3%
6-Oct-00	Limits may soon emerge for AOL deal, NYT	-0.1%	0.3%	-9.1%	-4.4%	-0.6%	1.4%
16-Oct-00	Bad Bongos for AOL/TW, Cable World	1.6%	3.0%	-4.3%	-1.2%	-0.8%	-16.6%
10-Nov-00	AOL/TW shares dip on concerns about deal closing, Reuters, ZD Net	-1.1%	-3.2%	-0.6%	-5.9%	0.0%	-5.3%
	Mean	-0.1%	-0.1%	-4.9%	-6.4%	0.8%	-3.7%
	Median	0.3%	0.0%	-4.0%	-6.6%	-0.3%	-3.8%
	Cumulative	-1.0%	-1.0%	-33.2%	-41.0%	6.2%	-26.1%
	t-statistic	-0.23	-0.16	-2.75	-4.02	0.62	-1.72

¶109 Positive developments for "open access" were marked by essentially unchanged values of the Internet index. Internet investors were indifferent towards the push for "open access." The index price declined an average of 0.1 percent over both one and three days. This stands in contrast to our earlier results on setbacks for "open access." Excite@Home investors took a dimmer view of "open access," sending shares down 4.9 percent over one day and 6.4 percent over three days. This suggests that these eight dates were in fact significant for the "open access" debate. AOL's experience was again mixed, even perhaps negative. AOL share prices rose sharply with the June 3, 1999 Portland ruling in favor of "open access" (up 7.9 percent). They generally responded negatively to news revealing obstacles to the AOL/Time Warner merger.

¶110 These results show no positive effect for Internet stocks as a whole, yet submit to a variety of interpretations. First, we may not have identified a sufficiently complete set of events. Second, investors may not be savvy about what is good for development of the Internet. This is a tempting argument against the background tech stock boom-and-bust, but the argument is ultimately unsatisfying. Even if investors are too optimistic or pessimistic in general, targeted reactions should rationally assess new information. Third, the list of Internet companies omits many, including those firms yet unborn, to benefit from "open access."

¶111 Most plausible in our view is the interpretation that the push for "open access" is fraught with downside risk. Given likely efficiencies in vertical integration, at least through the tumultuous build-out phase of investment in broadband networks, forced disintegration may prove disruptive. There are also political costs associated with "open access," as rules generate rent-seeking. In particular, access rules necessitate regulatory oversight of wholesale pricing, setting up a battle for transfers between incumbent operators and independent ISPs. The expected result would include not only price controls, but rules governing quality of transport service and constraining cable operators in multiple dimensions. That investors in firms that benefit from enhanced broadband network

development show no enthusiasm for such regulations is evidence that such rules are not viewed by investors as likely to create efficiencies.

C. Analyst Sentiment

¶112 Related to the financial event study performed above, it is instructive to observe analyst sentiment. Financial institutions routinely evaluate public policy measures in an effort to predict how regulatory changes will impact investments. In one such recent study devoted specifically to the issue of cable open access, Deutsche Bank noted that "entire sectors' valuations hinge on the existence of high-speed links from the Internet to the home"148 It appraised the policy options and rendered a financial judgment as to how "open access" in cable would alter existing market relationships. This analysis can be summarized as follows:

1. *Open access rules introduce inefficiencies in marketing and service.* By artificially unbundling the shared networks used for cable modem service, access regulation will reduce the ability of cable operators to market high-speed Internet access and to guarantee quality of service to customers.

2. *Regulation is unnecessary to prevent content discrimination.* "Cable operators have no incentive to leverage or control available content because the primary attractiveness of the Internet is its wide variety of available content." In any event, "all content on the Internet is only 'one click' away."¹⁴⁹

3. *Open access regulation reduces infrastructure investment.* Investors are leery of rules which reduce property rights, and "[w]ithout exclusion, there are likely to be opportunities for others to free ride on the investments and marketing efforts of cable operators."¹⁵⁰

4. *The "open" DSL platform grew due to "closed" cable modems.* "Many analysts believe that recent investment in DSL by RBOCs [local Bell telephone companies] was spurred primarily by the competitive threat posed by cable operators."¹⁵¹ If "open access" rules are imposed, a decline in cable upgrades and a slowing of cable modem penetration would ironically hinder DSL development, as telephone companies become "more complacent."¹⁵²

5. *Cable "open access" raises rivals' costs.* The primary proponents of regulation in this area are ISPs and telephone companies. The latter benefit directly from low, regulated terms upon which they can resell cable conduit service, but the latter are "in direct competition with cable operators in offering broadband access . . . using DSL technology. As a result, RBOCs would like cable operators to face as difficult a regulatory environment as possible."¹⁵³

¶113 All of these conclusions are consistent with the theoretical arguments and empirical evidence presented above. It is notable that they are presented in an analysis aiming to unravel the financial implications of public policy for stock market investors.¹⁵⁴

VII. END-TO-END VS. CASE-BY-CASE

¶114 Some "open access" advocates stake their policy prescription on the essential nature of the Internet. Were cable's "closed platform" to garner millions of subscribers, it would fundamentally alter and eventually undermine the enormous social value of the Internet. As Lessig writes:

¹⁴⁸ DEUTSCHE BANK, CABLE OPEN ACCESS RULES 2 (Jan. 18, 2001).

¹⁴⁹ *Id.* at 7.

¹⁵⁰ *Id.* at 8.

¹⁵¹ *Id.* at 9.

¹⁵² *Id.*

¹⁵³ *Id.* at 4.

¹⁵⁴ It is also interesting that the Federal Communications Commission formally opposes "open access" regulation on the terms laid down by the financial community. "[T]he FCC has resisted heavy lobbying relative to imposing open access... the Commission chose a policy of non-intervention to avoid creating a cloud of regulatory uncertainty that would deter investment." BROADBAND!, *supra* note 75, at 65.

The argument in favor of open access . . . has taken hold in Washington. And for good reason. Innovation on the Internet has been fueled by a platform that is neutral among innovators. This neutrality, embodied in the network principle of end-to-end (build intelligence in the ends, while keeping the network itself simple), encourages the widest range of creators to develop new content and applications for the Internet. 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. Open platforms keep players honest.¹⁵⁵

¶115 The categorical argument that networks limiting access reduce social welfare is demonstrably false. Some benefits flow from the creation of open environments, but benefits may also be created in solutions limiting access to one degree or another. The set of trade-offs is large, their evaluation complex. Optimizing social value requires a mix that recognizes where openness is appropriate and where proprietary restrictions make sense. A simple rule forbidding all but entirely open systems would damage consumers by dramatically reducing both infrastructure investment and Internet functionality.

¶116 One good example of this complexity concerns the hardware devices that enable customers to create a broadband connection. The unregulated status of cable's "closed" platform has assisted the development of equipment standards that allow greater competitive access for rival manufacturers. The cable industry has aggressively promoted coordinated standards through its research consortium, CableLabs, and its cable modem standards initiative, OpenCable. Quality and price competition are encouraged, as CableLabs' certification of modems and other equipment assure compatibility. The result is an open platform on which a vibrant emerging market for cable broadband hardware thrives.

¶117 Despite regulated access, the telephone broadband platform lags behind. Cable "has already achieved significant success at developing standards that will bring down costs and expand the range of attractive products and services for cable."¹⁵⁶ Hampered by regulation, DSL providers do not enjoy sufficient flexibility to craft such investment-creating devices. "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 a cable anytime soon."¹⁵⁷ Opening some access via regulation closes others.

¶118 As a goal, "end-to-end" provides guidance but no answers; structural choices must be considered in light of the costs and benefits of alternative system architectures.¹⁵⁸ This is quite apparent in cable broadband. Mandating "open access" for ISPs attempting to connect customers to the Internet may benefit subscribers who prefer independent ISP X over cable-owned ISP Y. Yet, a policy forcing the cable system to drop its exclusive agreement with ISP Y may require bandwidth partitioning or performance adjustments that reduce average download speeds by Z percent.¹⁵⁹ There is no way to categorically establish whether the gain in value from a non-exclusive, "open" ISP access policy is fully offset by the loss in transport functionality. That is why end-to-end is only as good an organizing principle as case-by-case analysis shows it to be.¹⁶⁰

¹⁵⁵ Lawrence Lessig, *The Rules of Politics*, THE INDUSTRY STANDARD, Jan. 15, 2001, available at <http://www.thestandard.com/article/0,1902,21427,00.html>.

¹⁵⁶ BROADBAND!, *supra* note 75, at 61.

¹⁵⁷ *Id.*

¹⁵⁸ The "end-to-end" authorities cited by Lemley & Lessig characterize "end-to-end" as an organizing idea rather than a categorical policy prescription. "It is important to keep in mind that end-to-end arguments are one of several important organizing principles for systems design. While there will be situations where other principles or goals have greater weight, an end-to-end argument can facilitate the design conversation that leads to a more flexible and scalable architecture." Samrat Bhattacharjee et al., *Commentaries on "Active Networking and End-to-End Arguments"*, 12 IEEE NETWORK 69-70 (May/June 1998).

¹⁵⁹ While it is true that cable systems can host multiple ISPs, it is not true that they can do so without cost. These costs include administrative coordination (most problematic in billing), bandwidth sharing, and customer service.

¹⁶⁰ Exactly as the engineering logic leads. In Samrat Bhattacharjee et al., *supra* note 159, David P. Reed, Jarome H. Saltzer, and David D. Clark title their concluding section, "Take It Case by Case." *Id.* at 70.

- ¶119 The evidence suggests that cable's "closed" platform has helped promote high-speed access subscribership.¹⁶¹ The trade-offs often tilt in favor of limiting access to enhance performance. Rules that retard infrastructure investment or service penetration restrict functionality, harming consumers. While opening networks "end-to-end" may be worthwhile at a low price, sacrificing more valuable opportunities to do so is inefficient. If the facts show that customer preferences do not strongly favor one ISP over another, that the most popular ISPs would not be excluded by "closed" cable systems, that marketing new broadband services is best with "one-stop shopping" solutions to minimize supplier coordination failures, or that \$31 billion in cable system upgrades will take place more expeditiously when integrated ISPs are involved in the build-out, the case for mandated access fades. While access regulations may yet be salvaged by a showing of net consumer benefit,¹⁶² they cannot be plausibly advanced by a categorical assertion that "open" is superior to "closed."
- ¶120 It is not. Closed networks are vitally important, and productive, elements in the network of networks. Corporate local area networks are perhaps the most prominent example. Having millions of firms, and their workers, connected to the Internet through a series of private gateways, firewalls, and "closed" ethernets does not damage the Internet but broadens it. Ironically, America Online's 23 million dial-up subscribers may form the best example. Even as these web participants spend 70 percent of their online time browsing AOL content unavailable to those outside their network,¹⁶³ they contribute enormously to the Internet's social value. Had AOL been prohibited from offering private content, it is likely that fewer people would own computers, that fewer computer users would be online today, and that AOL would not have been nearly so profligate in marketing the web to millions of novice users ("carpet bombing" America with 250 million sign-up CDs¹⁶⁴).
- ¶121 The Internet's social value is not depreciated but is enhanced when market competitors consider a range of efficient solutions in extending access speed and capacity for users. Indeed, Internet growth is increasingly driven by the demand to bypass congested links, routing network traffic to systems where enhanced speed, capacity, and applications are made available due to gateways and toll booths limiting access. Rationing demand via a fee that pays for upgraded service allows better user control and faster transport.
- ¶122 This is the nature of cable modem service. No Internet user is "enclosed" by cable modems. Rather, the cable modem opportunity draws subscribers away from dial-up service over the "open access" public switched telephone network. (See Figure 7.¹⁶⁵) For some, this is a bargain. For others, dial-up is sufficient and priced right. This is hardly a distortion of Internet functionality, but a distinct advance in functionality for subscribers, which is why they are willing to pay higher rates to access broadband links. The advanced communications capability cable broadband brings to such users combines with economies of scale and network effects to raise the Internet's social value.
- ¶123 The policy question is: Would "open access" rules increase net benefits? That entails an examination of the gains from ISPs competing to resell cable modem service, the costs of regulation to adjudicate mandated access disputes, and dynamic impacts—increases or decreases in investments and innovations improving the network. It is simply not the case that "open" solutions dominate "closed" solutions in their dynamic effects. As powerful as are network effects from widespread interconnection of networks forming the Internet, incentives to build and improve networks and applications are often enhanced by vertical integration, exclusive service contracts, proprietary applications, or limited network access.

¹⁶¹ See *supra* Part VI.

¹⁶² Contradictory evidence may also be garnering, putting estimated costs in dispute.

¹⁶³ MERRILL LYNCH, INTERNET INFRASTRUCTURE 2000 94 (July 25, 2000).

¹⁶⁴ SWISHER, *supra* note 86, at 99.

¹⁶⁵ This diagram, taken from MAXWELL, *supra* note 36, at 109, is altered to include the cable modem on-ramp, "CATV Bypass."

¶124 In sum, the technical properties of "end-to-end" architecture do not, and cannot, resolve the cable modem ISP access question. Integrating transport service with the ISP connection does not foreclose communication with subscribers, just as the walled areas of AOL do not challenge the Internet's structural integrity. Indeed, by facilitating ways for open and closed networks to grow and prosper, the Internet expands its reach, "end-to-end."¹⁶⁶

¶125 Limiting the decentralized choices of network providers would ironically undermine this development. Rather than promoting "end-to-end" and respecting the organizing principle of Internet communications, cable "open access" regulation would impose a particular architecture on networks, eliminating the discretion of network creators.¹⁶⁷ This is inimical to the spontaneous development of the "network of networks," as it would force design requirements on the system rather than allowing networks to design their own standards and architectures. Cable operators who experiment with alternative ISP arrangements do not violate "end-to-end." Their network traffic interconnects using the standard protocols. The violation of "end-to-end" principles lies in top-down enforcement of rules dictating the architecture of individual networks:

In direct contrast to claims made by the advocates of open access rules, opponents of such rules argue they would entail regulation that results in the demise of the "end-to-end" principles governing the Internet. Instead of the currently decentralized network, cable access rules would be a big step towards putting development of the Internet, and the resulting technological innovations, under the control of centralized government regulations.¹⁶⁸

VIII. CONCLUSION

¶126 Market power plagues local cable television markets, and this bleeds into the emerging market for broadband access. Cable operators could pursue an economically efficient path, transitioning from multi-channel video to Internet on-ramp provider. Yet they fear regulatory appropriation. Pressure to treat cable systems as common carriers would intensify as cable operators shifted from packagers of video channels (electronic publishers) to suppliers of network access (platform providers). This would subject infrastructure owners to extensive rate regulation and other controls long resisted by the industry. It is not shocking, perhaps, that the business model touted by "open access" advocates as optimal is the one most feared by network owners, but the source of that fear is ironic. It is the cost and limitations of common carrier regulation and vertical disintegration that drives cable operators to resist a natural migration to an integrated broadband platform.

¶127 The "open access" rules proposed in the current policy debate do not strike at the monopoly element in broadband access. Bandwidth will not be allocated differently within cable television systems under mandated non-discrimination rules for Internet Service Providers. The opportunity for independent ISPs to access the same infrastructure on identical terms as integrated ISPs leaves market power unmitigated. Spectrum will continue to be overwhelmingly allocated to video, while broadband starves. Digital cable and video-on-demand will soak up the capacity provided by cable system upgrades, as these services do not incur the risks associated with the supply of passive transport services. Congestion due to limited bandwidth will keep Internet TV a distant prospect.

¶128 While the aims of "open access" will be unfulfilled, substantial regulatory costs will likely be incurred. The rules create administrative costs for public and private actors, as well as delays and uncertainties impacting investment. The history of cable regulation suggests that those costs will dominate any benefits generated. The large lead enjoyed in the bandwidth race by cable's "closed" platform suggests that "open" platforms may be less efficient, a conclusion buttressed by financial market evidence indicating that investors do not believe "open access" rules are likely to create

¹⁶⁶ "Essentially, cable operators have constructed sophisticated, community-wide end-to-end 'intranets.'" BROADBAND TODAY, *supra* note 17, at 23.

¹⁶⁷ The FCC has itself described cable modem access as being provided by a local area network. *See id.*

¹⁶⁸ DEUTSCHE BANK, *supra* note 149, at 9.

profitable opportunities for Internet content and infrastructure developers. Difficulties encountered in DSL deployment further suggest that vertical integration provides valuable information, including quality assurance, to network users. Vertical divestiture by "open access" rules augurs to sacrifice economies, retarding investment and network growth.

¶129 This view of the likely effect of regulation is supported by two additional sets of self-interested experts. First, competitive firms providing broadband access to customers typically do so via exclusive, or nearly exclusive, ISP agreements. Often these agreements are with vertically integrated ISPs. Since such firms have no monopoly power to protect, the presumed explanation for such behavior is economic efficiency. Second, firms building infrastructure to compete with cable modem service have announced strong support for "open access" rules. To advance regulation on their rivals, local telephone carriers reveal their appraisal that such rules will slow cable network build-out. This supports the current evidence that cable modems are winning the broadband race due in part to regulatory advantages.