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Promoting the Buildout of New Networks vs. Compelling Access to the Monopoly Loop: A Clash of Regulatory Paradigms

Christopher S. Yoo

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〈ABSTRACT〉

Telecommunications policymakers and commentators have long debated whether regulators should mandate access to existing facilities or instead promote incentives to invest in new network capacity by denying such access. After reviewing the history of mandating access to local telephone networks and last-mile broadband networks in the United States, this article reviews how mandating access to existing facilities necessarily embroils regulators with the troublesome problems associated with rate regulation, prevents firms from realizing the efficiencies associated with vertical integration, and impedes the emergence of competition by dampening both incumbents' and new entrants' incentives to make new investments in alternative network capacity. Empirical scholarship studying this issue also largely supports focusing on stimulating facilities-based competition instead of relying on access regulation to mandate sharing of the monopoly loop.

Key words: telecommunications, broadband, rate regulation, vertical integration, investment incentives

I. Introduction

The United States has long been a pioneer in telecommunications policy, often mandating that incumbents provide others with access to their networks. Indeed, this approach provided the foundation for both the breakup of AT&T and the implementation of the Telecommunications Act of 2000.

† President, 2010. 6. 27, 실시간 2010. 4. 25, 게재확정일자 2010. 5. 11.
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1996. Over the past decade, however, the advent of competition has allowed the U.S. to eliminate most of these access requirements. The U.S. is currently evaluating whether it should reverse course and begin imposing access requirements on broadband. The debate over whether to reintroduce access requirements has turned into the key controversy in U.S. telecommunications policy for the past five years and determined the fate of major reform legislation. It emerged as an issue in the last presidential campaign, with President Obama offering his endorsement for mandating access to broadband networks.

The time is thus ripe to reconsider the theoretical and empirical support for mandating access. Compelling access to a bottleneck facility to promote competition in complementary services is generally regarded as being based on what lower courts have called the "essential facility doctrine." Indeed, the doctrine formed the explicit basis for the breakup of AT&T. Although access provisions of the Telecommunications Act of 1996 did not explicitly adopt the essential facilities doctrine as its standard, it incorporated similar principles and thus was subject to the similar limitations. Leading commentators have noted that the doctrine’s central concern is about vertical integration, specifically that an enterprise that controls a monopoly input may be able to harm a vertically related market by refusing to share it. Indeed, courts and agencies ordering access to local telephone systems and commentators calling for access to last-mile broadband facilities acknowledge that their claims are fundamentally complaints about vertical integration.

The essential facility doctrine has been subject to extensive and trenchant critique. Not only does the doctrine require regulation of rates. It also has the unfortunate effect of discouraging investment in alternative network capacity and of preventing the realization of the benefits of vertical integration. Indeed, if applied to situations in which entry by firms competing directly with the monopoly facility is possible, it can have the perverse effect of locking the network into place.

II. U.S. Regulatory History

The U.S. has a long history of mandating access to both local telephone networks and to
local broadband networks.7 In recent years, the advent of competition has led policymakers to lift most of the access requirements.

1. Access to Local Telephone Networks

Throughout the early years of the telephone industry, the entire system was generally regarded as a single, fully integrated, natural monopoly.8 During the 1960s, however, policymakers began to question this premise. Although the local telephone service (also sometimes called last mile service) remained characterized by the high fixed costs associated with natural monopoly,9 policymakers began to recognize that certain complementary services—such as long distance service, customer premises equipment (CPE), and innovative, new services that combined data processing with traditional transmission services (which were initially called enhanced service and would eventually become known as information services)—could be competitively provided.10 Concerns remained that local telephone providers could use their control over the local loop to harm competition in markets for these complementary services. One concern was that local telephone companies could use supracompetitive returns earned in local telephone markets to cross subsidize their own proprietary complementary service offerings. Another was that local telephone companies would use exclusivity or tying arrangements to lock out competitive providers of those services. Yet another was the worry that companies would avoid rate regulation of local telephone services by bundling them with an unregulated service and charging excessive prices for the unregulated service that allowed them to earn the supracompetitive returns denied them by rate regulation of local services.11

The classic solution has been to structurally separate those portions of the telephone system that still exhibited natural monopoly characteristics from those that are potentially competitive and to require that the monopolist provide equal access to all providers of complementary services. Requiring that potentially competitive and inherently monopolistic lines of business be structurally separated into distinct corporate entities made it more difficult for enterprises to use profits from their monopoly businesses to cross subsidize business units that faced competition. Structural separation also made discrimination against unaffiliated providers of complementary services easier to police.

8) See, e.g., GERALD R. FAULHABER, TELECOMMUNICATIONS IN TURMOIL 107 (1987) (Indeed, until the late 1960s few questioned that the telephone industry was a natural monopoly.); PETER W. HUBER ET AL., FEDERAL TELECOMMUNICATIONS LAW §2.1.2, at 86 (2d ed., 1999) ("Is the telephone industry (or any part of it) a natural monopoly? Until the 1960s, the answer was generally presumed to be yes, from end to end."); see also AREEDA & HOVENKAMP, supra note 4, ¶ 787c, at 526 (3d ed., 2008) ("Until the 1990s or 1970s long distance telephone connections between local exchanges in the United States were considered as much a natural monopoly as the local exchanges themselves...").
9) See, e.g., ROGER G. NOLL & BRUCE M. OWEN, THE ANTICOMPETITIVE USES OF REGULATION: PRINCIPLES AND INSTITUTIONS 127 (1971) ("That the provision of local telephone service is a natural monopoly is generally conceded."); STEPHEN G. BREWER, REGULATION AND ITS REFORM 281 (1982) ("Local telephone service seems to be generally accepted as a natural monopoly.").
Regulators could simply insist that local telephone companies offer to competitors the same terms of interconnection that it provided to its own affiliated complementary services. If properly implemented, this approach would allow consumers to enjoy the benefits of relying on competition instead of direct governmental intervention to discipline industry actors while still protecting consumers against potential anticompetitive abuses in those portions of the industry that remained uncompetitive.

This rationale animated many of the major regulatory initiatives undertaken by the Federal Communication Commission (FCC). For example, in 1968, the FCC issued its landmark Carterfone decision that eventually led to the adoption of regulations requiring that AT&T open its network to CPE manufactured by competitive providers. The same considerations underlay the FCC's Computer Inquiries, which required that large carriers who wished to offer enhanced services do so through a separate subsidiary while offering unaffiliated enhanced service providers nondiscriminatory access to their transmission facilities. Most importantly, the court that ordered the breakup of AT&T based its decision on the same justification when ordering the Bell System to spin off its local telephone operations into independent companies and forbidding these newly created local telephone companies from providing long distance, CPE, or information services.

The Telecommunications Act of 1996 also contained provisions preventing the local telephone companies created by the breakup of AT&T from offering long distance, manufacturing CPE, or providing certain information services. The Act also required all incumbent local telephone companies to provide unbundled access to all of its network elements at any technically feasible point. The unbundling requirement imposed by the 1996 Act did include one key limitation, however: It limited unbundled access to those elements that are "necessary" and the absence of which would "impair" the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer.

The U.S. Federal Communications Commission (FCC) initially applied unbundling to a wide range of elements associated with local telephone service. In its landmark 2003 Triennial Review Order, the FCC declined to eliminate the unbundled access requirements on local telephone service, only to see that decision overturned on judicial review.
Over time, the emergence of competition has permitted U.S. policymakers to eliminate most of the remaining restrictions. For example, the statute lifted the restriction prohibiting local telephone providers that used to be part of AT&T from offering long distance service as soon as those local providers took sufficient steps to guarantee competition. By 2003, the FCC approved allowing all local telephone companies to offer in-region long distance service in every state except for Alaska and Hawaii. In 2007, the FCC abolished these restrictions altogether as long as the local telephone companies complied with other safeguards.

Approval to sell long distance automatically lifted the restriction preventing these local telephone companies from manufacturing CPEx. The FCC also eliminated the regulation prohibiting local telephone companies from bundling CPEx and allowed the industry to take over setting the technical standards that CPE manufacturers had to meet in order to connect their devices to the network. The FCC subsequently eliminated the access requirements for information services.

2. Access to Local Broadband Networks

The FCC has also imposed a wide range of access requirements on DSL networks. When the FCC first confronted DSL, the agency required that DSL services be governed by a tariff, which essentially subjected DSL to an access requirement. The FCC had to address precisely which network elements should be subject to the 1996 Act’s UNE access requirements. Because the 1996 Act by its own terms applies only to elements used in telephone exchange service and exchange access, the initial order implementing the statute declined to subject packet switches to UNE access requirements. The FCC also ruled that collocation did not extend to equipment used to provide only enhanced services. However, it did extend to equipment supporting both conventional telephone and enhanced services if the equipment was necessary to provide conventional telephone service. The order did mandate UNE access to all loops connecting central offices to end users, including the loops used to provide DSL. The order also obligated incumbent local telephone companies to fulfill any requests to condition existing loops to make them DSL compatible. A subsequent order confirmed that collocation included multifunction equipment that could be used to provide both voice and data and further Notice of Proposed Rulemaking, 18 F.C.C.R. 16876, 17237-38 ¶¶419, 17239 ¶422, 17263-64 ¶456, 17265-66 ¶464-68 (2003), modified, 18 F.C.C.R. 19020 (2003), vacated in relevant part sub nom. U.S. Telecom Ass’n v. FCC, 359 F.3d 554, 586-87 (D.C. Cir. 2004).

29) Local Competition Order, supra note 19, at 15713 ¶427.
30) Id., at 15704-95 ¶¶580-881.
31) Id., at 15691-92 ¶¶380-382.
32) Id.
services. Perhaps most importantly, the FCC’s *Line Sharing Order* mandated UNE access to the high frequency portion of the loop used to carry DSL so that two competitors could provide services over the same loop, with one offering conventional telephone service in the lower frequencies and the other offering DSL in the upper frequencies.\(^3\)

The courts soon began to question the breadth of the FCC’s rulings, beginning with the Supreme Court’s decision in *AT&T Corp. v. Iowa Utilities Board*, which remanded the FCC’s initial UNE access rules for construing the “necessary” and “impair” standards too broadly.\(^3\) On remand, the FCC reiterated that incumbent local telephone companies must condition DSL loops upon request.\(^3\) Although UNE access to loops generally included all attached electronics, the FCC specifically exempted packet switches and DSLAMs on the grounds that the incumbents did not maintain a monopoly position with respect to these functions.\(^3\) Granting UNE access to them would deter investment in a nascent market.\(^3\) The FCC did permit UNE access to DSLAMs located in remote terminals that were too small to permit physical collocation.\(^3\)

In 2000, the D.C. Circuit struck down the FCC’s decision permitting the collocation of multifunction equipment as a violation of the statutory provision authorizing collocation only if “necessary for interconnection or access to unbundled network elements.” In response, the FCC revised its rules in 2001 to limit collocation of multifunction equipment to equipment whose primary purpose is to provide the requesting carrier either with interconnection that is “equal in quality” to that provided by the incumbent local telephone company for its own services or with “non-discriminatory access” to an unbundled network element.\(^3\) These revisions to the collocation rules were sufficient to survive judicial scrutiny.\(^3\)

In the meantime, the D.C. Circuit further hastened the deregulation of DSL by striking down the FCC’s decision requiring line sharing.\(^3\) The court reasoned that the FCC’s findings that DSL faced robust competition from cable modem providers meant that line sharing violated the “necessary” and “impair” requirements of the 1996 Act.\(^3\) On remand, the FCC eliminated line sharing and lifted the UNE access obligations to most high-capacity loops in its landmark 2003 *Triennial Review Order*, which also eliminated the limited exceptions it had recognized for UNE access to DSLAMs and other packet switching equipment.\(^3\) Although the D.C. Circuit invalidated portions of the *Triennial Review Order* that
addressed local telephone service, it explicitly affirmed the parts of the FCC’s decision dealing with broadband. The FCC also disaffiliated DSL services that SBC Communications offered through its separate subsidiary. The FCC did intervene, however, when a small rural local telephone company known as Madison River Communications attempted to preserve its local telephone revenues by preventing its DSL customers from accessing the ports needed to utilize Internet telephony.

The FCC was considerably more tentative in its regulatory approach to cable modem service. On multiple different occasions between 1998 and 2002, the FCC declined to decide which regulatory classification should apply to cable modem service, let alone decide the scope of any access obligations that might apply. This reluctance to do so drew rebuke from two members of the Supreme Court. Because cable modems arose from a technology subject to joint municipal–federal oversight, some ambiguity existed as to the proper division of regulatory jurisdiction. In the absence of a clear assertion of federal authority, several municipal regulators attempted to exercise jurisdiction over cable modem systems, by mandating access to those systems either through municipal ordinance or as a condition for the transfer of licenses needed to complete a cable merger. Municipal regulation was soon cut short by a series of judicial decisions holding that municipal authorities lacked the jurisdiction to compel multiple ISP access.

The FCC’s role in providing regulatory approval for cable mergers also forced it to confront requests for mandatory access to cable modem systems. In 1999 and 2000, the FCC declined to require AT&T to provide independent ISPs with nondiscriminatory access to its cable modem systems as a condition of its acquisitions of TCI and MediaOne. In the midst of these merger reviews, the FCC initiated a notice of inquiry seeking comment on whether it should impose access requirements on cable modem systems. In 2000, however, the Federal Trade Commission imposed (and the FCC later imple-

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52. See MediaOne, 257 F.3d at 360; Portland, 216 F.3d at 675.
53. See MediaOne, 257 F.3d at 363–64; Portland, 216 F.3d at 879–76. 54. See AT&T–MediaOne Order, supra note 49, at 9872–73 ¶ 127; Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations from Tele-Communications, Inc., Transferor, to AT&T Corp., Transferee, Memorandum Opinion and Order, 14 F.C.C.R. 3160, 3203–08 ¶ 192–96 (1999).
mented) just such a requirement when approving America Online’s acquisition of Time Warner.\(^{56}\) When the issue arose again in 2002 during regulatory clearance of Comcast’s acquisition of AT&T’s cable assets, the FCC returned to its initial position and declined to make its approval of the merger conditional on the company’s willingness to provide multiple ISP access.\(^{57}\) The net result was that, unlike DSL, cable modem services remained largely free of access requirements with the exception of AOL Time Warner.

The regulatory regime governing broadband finally began to take shape in 2002, when the FCC issued its Cable Modem Declaratory Ruling determining that cable modem service is an interstate “information service” exempt from both the common carriage regime established under Title VI to govern cable television services.\(^{58}\) In addition, the FCC declined to impose the tariffing and unbundling requirements created by the Computer Inquiries to cable modem service, noting that the agency previously “has applied these obligations only to traditional wireline services and facilities, and has never applied them to information services provided over cable facilities.”\(^{59}\) Declaring that cable modem systems constituted information services did not resolve exactly how FCC would regulate cable modem systems. On the contrary, the FCC specifically sought comment on what, if any, access requirements it should impose on cable modem service.\(^{60}\)

The FCC’s Cable Modem Declaratory Ruling touched off a three-year court battle over its validity that would ultimately be resolved by the Supreme Court. Finally, the Supreme Court’s 2005 decision in National Cable & Telecommunications Ass’n v. Brand X Internet Services sustained the FCC’s Cable Modem Declaratory Ruling concluding that cable modem service was an “information service” that was not subject to the access requirements imposed on telecommunications services.\(^{61}\)

Shortly thereafter, the FCC issued its Wireline Broadband Order, which ruled that DSL and other broadband services provided by local telephone companies also constituted information services that were not subject to Title II’s common carriage and tariffing requirements.\(^{62}\) In addition, the order eliminated the Computer Inquiry rules with respect to all broadband technologies used to provide Internet service. This ruling did not extend the requirements to broadband technologies used to provide traditional telephone service, such as frame relay services, stand-alone asynchronous


\(^{57}\) Applications for Consent to the Transfer of Control of Licenses from Comcast Corporation and AT&T Corp., Transferees, to AT&T Comcast Corporation, Memorandum Opinion and Order, 17 F.C.C.R. 22245, 22299-301 ¶¶ 135-137 (2002).


\(^{59}\) Id. at 4825 ¶¶ 43-44.

\(^{60}\) Id. at 4840-41.

\(^{61}\) 545 U.S. 907, 1001-02 (2005).

transfer mode ("ATM") services, and gigabit Ethernet services. The FCC also found insufficient evidence to justify mandating nondiscriminatory access to content and application providers, while reserving the right to change its mind should circumstances warrant. At the same time, the FCC issued a Policy Statement recognizing its intention to preserve consumers' rights to access content, run applications, and attach devices as they see fit, subject to the needs of law enforcement, protection against harm to the network, and reasonable network management. Two years later, the Wireline Broadband Order was sustained on judicial review.

Since the Wireline Broadband Order, the FCC has taken additional steps to deregulate broadband services provided by local telephone companies. For example, the FCC has granted waivers giving Verizon, AT&T, and Qwest pricing flexibility for certain business-oriented broadband technologies that were previously subject to price cap regulation. Most importantly, the FCC has granted waivers to both Verizon and AT&T deregulating the broadband services still subject to the Computer Inquiry rules following the Wireline Broadband Order on the grounds that wireline broadband services face enough competition from other providers to justify foregoing retail access requirements. The net result is to eliminate the remaining retail access requirements on broadband services provided by local telephone companies.

The FCC's orders clearing a number of recent mergers reaffirmed its decision not to give content and application providers nondiscriminatory access to last-mile broadband networks. The orders concluded that competition was sufficiently robust to prevent network providers from discriminating against any particular content or applications and pointed to the lack of evidence in the record that any network provider had engaged in such practices. The FCC has also issued rulings declaring that broadband over power line and wireless broadband constitute information services. In March 2007, the FCC issued a

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notice of inquiry seeking specific examples of network providers disfavoring particular content and seeking comment on the impact of any such behavior on consumers. Most recently, the FCC ruled that Comcast’s network management policies with respect to BitTorrent violated the Policy Statement issued by the Commission in 2005 only to see that decision overturned by the courts. The FCC has continued to weigh whether it should adopt network neutrality rules mandating that broadband network providers give non-discriminatory access to all content and application providers. In the aftermath of the BitTorrent decision, the FCC flirted with reversing its longstanding decisions that broadband is not a telecommunications service subject to the common carriage obligations created by Title II of the Communications Act of 1934, but ultimately decided against it. Finally, on December 21, 2010, the FCC adopted its Open Internet Order, in which enacted rules requiring transparent disclosure of network management practices; prohibiting last-mile providers from blocking lawful content, applications, services, and nonharmful devices; and barring unreasonable discrimination in transmitting lawful network traffic. In so doing, the FCC created exceptions to these rules for reasonable network management and specialized services. It also required mobile broadband providers to comply with the transparency rule and prohibited them from blocking services that compete directly with their voice or video services. It declined to extend the prohibition of unreasonable discrimination to mobile broadband providers, opting instead to monitor the development of the mobile broadband marketplace and to defer any further adjustments to the regulatory framework until they are shown to be necessary.

III. The Inevitability of Rate Regulation

As leading antitrust commentators have pointed out, compelling access to an essential facility does not prevent the monopolist from harming competition. Although some have suggested that these problems can be avoided simply by imposing a nondiscrimination mandate, such a mandate would not prevent the monopolist from simply charging both its own affiliate and competitors interconnection fees that were prohibitively expensive. Doing so would not affect the its bottom line, since any losses
incurred by the complementary services division would be offset dollar-for-dollar by higher profits earned by its local telephone operations. It would, however, effectively lock out competitors.

In the absence of some control of rates, compelling access simply requires that the monopolist share the essential facility with its competitors without providing any benefits consumers. If rates are not regulated, the monopolist would be expected simply to share the facility with everyone willing to pay the monopoly price. Compelling access to a monopoly facility thus requires rate regulation in order to be effective. Such access will engender incessant complaints about the rate charged. As Professors Areeda and Hovenkamp have noted, once access is ordered, the plaintiff is likely to claim that the defendant's price for access to an essential facility (1) is so high as to be the equivalent of a continued refusal to deal, or (2) is unreasonable, or (3) creates a "price squeeze" in that the defendant charges so much for access and so little for the product it sells in competition with the plaintiff that the latter cannot earn a reasonable profit.

Policymakers have long struggled to develop a principled basis for evaluating the reasonableness of rates. Rate regulation has long raised difficult questions of valuation and allocation of joint costs. The classic ratemaking methodology also provides insufficient incentive to reduce costs and encourages firms to use capital costs over operating costs even when doing so is inefficient. Lastly, it subjects economic pricing to the delays and biases inherent in the regulatory process. The Supreme Court has thus recognized that determining what constitutes a reasonable rate has proven to be an "embarrassing question" as well as a "laborious and baffling task."

Moreover, disputes over the reasonableness of rates are especially difficult to resolve when the good subject to rate regulation varies in quality, as is the case with broadband, in which quality of service varies along as many as four dimensions. When quality varies, the regulated firm can evade the effect of rate regulation simply by degrading quality. Indeed, this is just what happened in the case of attempts to subject the cable industry to rate regulation, in which regulation actually caused quality-adjusted cable rates to increase. It is further complicated when the interface through which the firms will interconnect is complex. As the Supreme Court has noted,

78) AREEDA & HOVENKAMP, supra note 4, at 177; RICHARD A. POSNER, ANTITRUST LAW: AN ECONOMIC PERSPECTIVE 208 (1976).
79) AREEDA & HOVENKAMP, supra note 4, at 177a, at 276.
the complexity of the interfaces in telecommunications networks gives network owners a nearly endless source of nonprice ways in which they can defeat access.\(^{87}\)

As a result, the essential facility doctrine necessarily requires the government to oversee fairly comprehensive oversight over the entire business relationship. The difficulties the FCC confronted when attempting to implement other access regimes, such as long-distance interconnection,\(^{88}\) access to cable television systems,\(^{89}\) and the unbundled access requirements of the Telecommunications Act of 1996,\(^{90}\) provide an eloquent demonstration of these problems. It is particularly telling that two distinguished scholars of network industries who are not particularly noted for deregulatory views have suggested that access regimes have proven so unworkable that they should be abandoned.\(^{91}\)

**IV. The Lost Benefits of Vertical Integration**

Structural separation and mandating access limits firms’ ability to engage in vertical integration. Although the economic literature was once quite hostile toward the practice, it is now widely recognized that vertical integration can give rise to substantial efficiencies.\(^{92}\) Some efficiencies are technological.\(^{93}\) Others result from eliminating the classic problem of double marginalization\(^{94}\) or rationalizing input substitution when inputs can be used in variable proportions.\(^{95}\)

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87) See <i>Verizon Commc'ns Inc. v. Law Offices of Curtis V. Tonko, LLP</i>, 540 U.S. 398, 414 (2004) (recognizing that interconnections disputes are “highly technical” and multifaceted “given the ever-changing, complex, and costly changing interaction of competitive and incumbent LECs implementing the sharing and interconnection obligations”); <i>AT&T Corp. v. Iowa Util. Bd.</i>, 525 U.S. 366, 429 (1999) (Breyer, J., dissenting in part) (“The more complex the facilities, the more critical their relation to the firm’s managerial responsibilities, the more extensive the sharing demanded, the more likely that the administrative and social costs of compulsory sharing will become serious.”).

88) See <i>MC I v. AT&T Co.</i>, 706 F.2d 1081, 1131–32 (7th Cir. 1983); <i>United States v. AT&T</i>, 552 F. Supp. 131, 188, 189–90 & n.238 (D.D.C. 1982), aff’d mem. sub nom. <i>Maryland v. United States</i>, 460 U.S. 1001 (1983); <i>Huber et al.</i>, supra note 8, at 136–40; Faulhaber, supra note 8, at 61–63.


94) For the seminal statements, see Joseph J. Spangler, Vertical Integration and Antitrust Policy, 58 J. POL. ECON. 347 (1950); Fritz Machlup & Martha Tabor, Bilateral Monopoly, Successive Monopoly, and Vertical Integration, 27 ECONOMICA 101 (1950).

95) For the seminal economic analyses, see Leland W. McConnell, Ideal Output and the Interdependence of Firms, 61 ECON. J. 785 (1951); Meyer Borenstein, A Theory of Full-Line Forcing, 55 NW. U. L. REV. 62 (1960); and John M. Venn & Daniel A. Graham, Profitability of Monopolization by Vertical Integration, 79 J. POL. ECON. 904 (1971).
Vertical integration can also eliminate free riding on resale services. Finally, as Oliver Williamson recognized in the seminal work for which he was recently awarded the Nobel Prize, vertical integration can also benefit consumers by eliminating the transaction costs needed to guard against opportunistic behavior.

Although a vibrant literature has emerged identifying circumstances under which firms have substantial incentive to engage in vertical integration, the models on which these studies are based tend to be very stylized and depend on restrictive assumptions. This in turn causes the results to be rather fragile and to tend to collapse whenever any of the models' assumptions are relaxed. Just as importantly, even when vertical integration is feasible and profitable, the welfare implications of these cases are typically ambiguous.

These theoretical models are backed by a substantial empirical literature confirming that vertical integration tends to benefit consumers in the vast majority of cases. One leading study focuses on voice messaging services, such as voice mail, which were made impossible by the line of business restrictions imposed during the breakup of AT&T and by Computer II. These were introduced by local telephone companies in 1990 and by 1994 were yielding consumer benefits of $1.27 billion per year. The telephone company first applied to provide these services in 1981. But for the regulatory intervention delayed the introduction by five to seven years, which harmed consumers by at least $1.1 billion per year.

The broader empirical literature on vertical integration leads to similar conclusions. A comprehensive review of the empirical literature on vertical integration by Francine Lafontaine and Margaret Slade concluded that aside from a few isolated studies, the weight of the evidence indicated that "under most circumstances, profit-maximizing vertical-integration decisions are efficient, not just from firms' but also from the consumers' points of view," a conclusion that they did not have in mind when they began their review of the evidence and which they found somewhat surprising. The survey concluded that "faced with a vertical arrangement, the burden of evidence should be placed on competition authorities to demonstrate that that arrangement is harmful before the practice is attacked." Moreover, the survey found "clear evidence that restrictions on vertical integration that are imposed ... on owners of retail networks are usually detrimental to consumers." They thus called on "government agencies to reconsider..."
the validity of such restrictions." \textsuperscript{105}

A recent survey of the literature by leading vertical integration theorist and former FCC Chief Economist Michael Riordan similarly concludes, "A general presumption that vertical integration is pro-competitive is warranted by a substantial economics literature identifying efficiency benefits of vertical integration, including empirical studies demonstrating positive effects of vertical integration in various industries." \textsuperscript{107}

Two recent reviews of the empirical literature on vertical contractual restraints similarly concluded that such practices tend to benefit consumers in the vast majority of cases. For example, a recent survey of the empirical literature on vertical restraints conducted by four members of the Federal Trade Commission's senior staff found "a paucity of support for the proposition that vertical restraints/vertical integration are likely to harm consumers." \textsuperscript{108} Only one study unambiguously found that vertical integration harmed consumers, and in that study the welfare losses were "miniscule." \textsuperscript{109} On the other hand, "a far greater number of studies found that the use of vertical restraints in the particular context studied improved welfare unambiguously." \textsuperscript{110} The survey thus concluded, "Most studies find evidence that vertical restraints/vertical integration are pro-competitive." \textsuperscript{111}

The weight of the evidence thus "suggests that vertical restraints are likely to be benign or welfare enhancing," \textsuperscript{112} which in turn provides empirical support for placing the burden on those opposing the practice. \textsuperscript{113}

Another survey of the empirical literature on vertical restraints found the empirical evidence to be "quite striking," "surprisingly consistent," "consistent and convincing," and even "compelling." \textsuperscript{114} As a general matter, "privately imposed vertical restraints benefit consumers or at least do not harm them." In contrast, government mandates or prohibitions of vertical restraints "systematically reduce consumer welfare or at least do not improve it." \textsuperscript{115} The authors conclude that "the empirical evidence suggests that in fact a relaxed antitrust attitude towards [vertical] restraints may well be warranted." \textsuperscript{116}

The theoretical and empirical literature on vertical integration thus both strongly suggest that regulatory regimes mandating structural separation and prohibiting vertical integration imposes substantial consumer harm. The loss of these welfare benefits represents another way in which compelling access can harm consumers.

V. The Impact on Investment Incentives

The most important problem with compelling access to monopoly facilities is the manner in which it reduces incentives to invest in alternative network capacity that would compete with the monopoly facility. One reason is that, as the well...
known "tragedy of the commons" demonstrates, people tend to underinvest in resources that are shared. Even more importantly, as Areeda and Hovenkamp note, "the right to share a monopoly discourages firms from developing their own alternative inputs." As the Supreme Court has noted in its 2004 Trinko decision, compelling a telephone company to share monopoly facility "may lessen the incentive for the monopolist, the rival, or both to invest in those economically beneficial facilities." Without access, those firms would have to invest in alternative sources of supply. By rescuing those firms from having to undertake those investments, compelling access threatens to entrench the monopolist into place.

This underscores the extent to which mandating access to a bottleneck facility represents a surrender to the bottleneck. Such an approach might be appropriate if entry by a competitor to the bottleneck were impossible. In that event, any dampering of incentives to invest in alternative network capacity would be beside the point, because such entry would be impossible. Indeed, that was the case with the breakup of AT&T. When that is the case, there is little point in trying to promote entry by new facilities competing directly with the bottleneck, and it is appropriate for policymakers to focus their attention on the secondary goal of promoting competition in complementary services. The situation is quite different when competitive entry is feasible. When that is the case, competition policy should focus on stimulating the investments needed to dissipate the monopoly.

It is for this reason that courts applying this doctrine insist that the facility cannot be obtained from other sources or self-provisioned independently or when the party can compete effectively without access to the facility. It also explains why the courts have construed the "necessary" and "impair" requirements in the unbundled access requirements imposed by the 1996 Act to take into account whether it was available through alternative sources of supply.

When alternative sources of supply are available, policymakers should deny access even if entry by a competitive facility can only occur at significant cost and in the relatively long run. The reason is that access means that competition will never emerge. In short, late is better than never. Approaches that dislodge bottlenecks by stimulating competitive entry have the advantage...
of having built-in exit strategies embedded within them. Mandated sharing of a bottleneck facility, in contrast, implicitly envisions that the regime of regulatory oversight will persist indefinitely. The inevitable lag in adjusting regulation also raises the risk that regulations, such as access, that protect incumbents from new entry will continue to exist long after the justifications for enacting the regulation have long disappeared.\(^{125}\)

As a result, courts have held that the level of competition that already exists between DSL and cable modem systems is sufficient to undercut the justification for requiring last-mile providers to make their network available to competitors.\(^{126}\) The feasibility of competitive entry is further underscored by recent investments in fiber to the home (such as Verizon's FiOS network) and 4G wireless technologies (such as WiMax and LTE). Although the choice between unregulated and regulated monopoly is sufficiently stark to justify regulatory intervention, unregulated oligopoly performs sufficiently better than unregulated monopoly to tip the balance in favor of deregulation.\(^{127}\)

The growing body of empirical scholarship generally supports the conclusion that promoting competition by enhancing investments in new network capacity is more effective in promoting broadband adoption than mandating access to existing facilities. Empirical studies generally indicate that competition from new, facilities-based entrants is an effective driver of broadband deployment and adoption.\(^{128}\) At the same time, while far from uniform, the majority of studies find an absence of empirical support for claims that mandating access promotes deployment. For example, studies of local telephone system have been largely critical of unbundling, finding it either to be negatively correlated with investments in local telephone networks\(^{129}\) or finding no


\(^{126}\) See United States Telecom Ass'n v. FCC, 290 F.3d 415, 426–28 (D.C. Cir. 2002).


significant correlation between the two. Empirical studies of broadband networks have been somewhat less critical, either finding that unbundling has a small but statistically insignificant effect on broadband adoption or finding some indications that unbundling is having a negative effect on investment.

A handful of studies do find a positive relationship between unbundling and investment. These studies have been critiqued for anomalies in their specifications (both in terms of anomalous results and important variables omitted) and for assuming that unbundling policies are exogenous instead of entertaining the possibility that regulators impose unbundling requirements in response to investments by incumbents. In addition, studies comparing the impact of inter-platform competition and unbundling uniformly find the former to be more important.

A few caveats are in order. Almost all of the

134 See Declaration of Robert W. Crandall, Evert M. Ehlich and Jeffrey A. Eisenach Regarding the Berkman Center Study (NISP Public Notice 13), at 28–31, International Comparison and Consumer Survey Requirements in the Broadband Data Improvement Act, 25 F.C.C.R. 11903 (2010) (GN Docket No. 09-47). Notably, one study applied bivariate correlations to find that competition and unbundling are positively correlated with broadband diffusion, but found that statistical significance disappeared in two of these multivariate regression specifications. See García–Murillo, supra note 133, at 102.
135 See Bouckert et al., supra note 128, at 669; Dennis & Gruber, supra note 128, at 155; Distaso et al., supra note 128, at 102–03; García–Murillo, supra note 133, at 101, 102; Howell, supra note 132, at 44; Lee, supra note 131, at 179.
empirical analyses are not based on time series data, which means that they necessarily fail to control for technology's inherent tendency to diffuse over time. In addition, many of these studies focus on adoption rather than investment. That said, to the extent that the empirical record favors one side of the debate or the other, it tends to favor promoting competition through encouraging investment in new networks rather than by mandating access to existing networks. As a recent survey of the empirical literature concluded, "although few empirical findings support the non-negative effect of access regulation on investment, most of the evidence shows that local loop unbundling based on forward-looking cost methodology discourages both ILECs and CLECs from investing in networks." 

By now, the implications for broadband policy should be manifest. The decision whether to mandate access should turn not on its impact on markets for complementary services, but rather on its effect on stimulating additional competition in the last mile. If access were mandated, any would-be last-mile entrant would realize that even if it were successful, it would be forced to make its platform available to all content and application providers under rates that would limit it to ordinary returns. In addition, the would-be builder would not find a group of content and applications providers clamoring for additional capacity, since mandating access to the existing platform would rescue them from having to invest in alternative distribution arrangements.

In the process, mandating access to the monopoly facility risks dampening incentives to invest in new last-mile technologies to the extent that it cements the existing last-mile oligopoly into place. Although such a policy might be justifiable if entry by alternative network capacity were impossible, it is indefensible when LTE, WiMax, and other technologies are actively searching for capital to support their deployment and when what represents the state of the art in transmission is undergoing rapid technological change. At best, the inevitable lag in enacting new regulations will cause economic losses. At worst, by destroying incentives to build new technologies, regulation might cement the market concentration that represents the central focus of broadband policy into place. Under these circumstances, mandating network neutrality would appear to pose a serious threat to dynamic efficiency.

VI. Conclusion

The decision whether to mandate access to telecommunications networks thus confronts policymakers with a choice between two regulatory paradigms, one that focuses on breaking down the monopoly by stimulating competitive entry and another that surrenders to the monopoly and simply seeks to allocate the monopoly loop. The theoretical and empirical literature both suggest that consumers would benefit more if

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137) See Cambini & Jiang, supra note 136, at 569; Lee & Brown, supra note 133, at 34.
138) Cambini & Jiang, supra note 136, at 569. Accord id. at 571 (concluding that although the "evidence in empirical findings exhibits a certain disunity," "[t]he majority of the studies concludes that local loop unbundling based on forward-looking cost methodology discourages both ILECs and CLECs from investing in networks").
policymakers would follow the first course by refusing to mandate access.

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