

A Clash of Regulatory Paradigms

When should policymakers promote competition, and when should they accept and regulate monopoly?

BY CHRISTOPHER S. YOO

U.S. telecommunications policy has reached a crossroads. During the 1980s and 1990s, regulations focused primarily on mandating access to the portions of the local telephone network that still represented a natural monopoly. This policy was epitomized by the two great landmarks of modern telecommunications policy: the breakup of AT&T in 1982 and the Telecommunications Act of 1996. The basic policy approach was eventually extended to broadband networks as well and has been widely emulated by other countries.

At the prompting of the courts, the Federal Communications Commission began to retreat from this policy during the 2000s in favor of a more deregulatory course. In response to the growing levels of competition, the FCC took steps toward eliminating mandatory access requirements on both telephone and broadband networks. Once the 2005 *Brand X* decision effectively signaled the Supreme Court's accession to this deregulatory trend, the FCC eliminated all major access requirements on telephone and broadband systems alike.

Despite this checkered historical record regarding mandatory network access, the FCC has mandated access to broadband networks under the policy initiative known as "network neutrality."

CHRISTOPHER S. YOO is the John H. Chestnut Professor of Law, Communication, and Computer and Information Science at the University of Pennsylvania and founding director of the school's Center for Technology, Innovation, and Competition.

This article is based on Yoo's paper "Deregulation vs. Reregulation of Telecommunications: A Clash of Regulatory Paradigms," *Journal of Corporation Law*, Vol. 36, No. 4 (2011).

This article reviews the history of traditional telephone network regulation, focusing on the rationales and critiques surrounding three separate regulatory approaches.

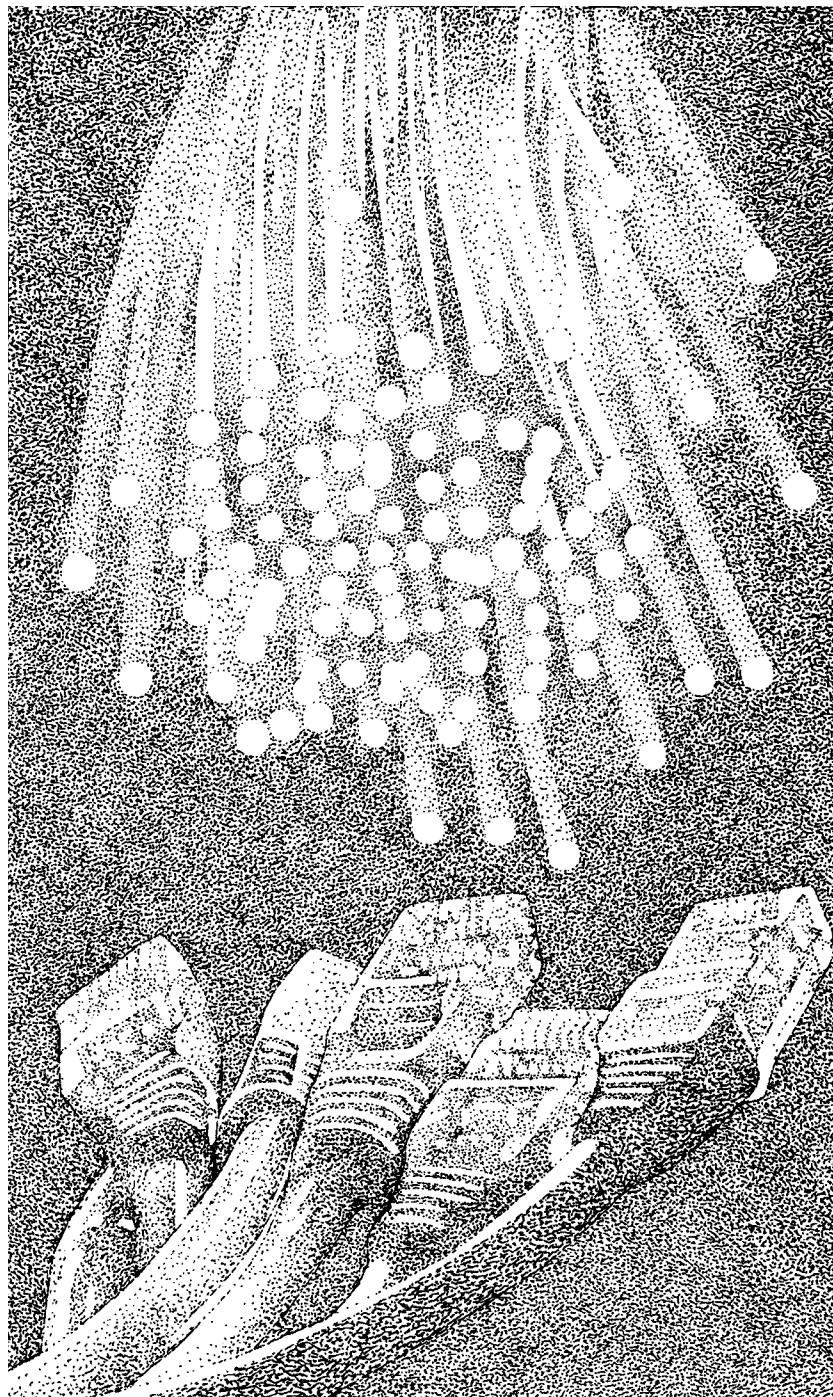
Mandating Access to Local Telephone Systems

Since at least the days of John Stuart Mill, natural monopoly has represented one of the central justifications for rate regulation. Natural monopoly occurs when a single firm can serve the entire market more cheaply than can two firms, a characteristic known as "subadditivity." A sufficient condition for subadditivity is the existence of scale economies throughout the entire range of production, such as occurs when fixed costs are very high. These scale economies permit the firm with the largest volume to enjoy the lowest costs, which in turn permits the firm to underprice all of its rivals. The resulting transfer of sales volume to the market-leading firm causes its cost and price advantage to widen still further until it is the only firm remaining in the industry. Thus, large economies of scale can cause markets that begin with multiple producers to collapse into monopoly.

Throughout most of the history of the telephone industry, the fact that telephone service required large fixed costs led most observers to believe that the entire telephone system was a single, fully integrated, natural monopoly. During the 1960s, however, policymakers began to question that premise. For example, telephone handsets, fax machines, answering machines, and other devices employed by end users to connect to the network—collectively known as customer premises equipment (CPE)—were noth-

ing more than small appliances that could be manufactured efficiently at fairly low volumes. In addition, the advent of microwave transmission, pioneered by a company known as Microwave Communications Inc. (later better known by its initials, MCI), allowed providers to offer long distance service without having to spend the large fixed costs needed to establish large networks of wires. Lastly, firms began to offer innovative new services that combined data processing with traditional transmission. These precursors to the modern Internet, initially called “enhanced services” and later “information services,” were not characterized by the large fixed costs associated with natural monopoly.

At that time, local telephone service remained characterized by the high fixed costs associated with natural monopoly. Policymakers became concerned that the continued existence of monopoly over local telephone service would allow the Bell System to prevent the emergence of competition in these other areas of the industry. One concern was that local telephone companies could use supracompetitive returns earned in local telephone markets to cross-subsidize their own proprietary CPE, long distance, and information services. Another was that local telephone companies would use exclusivity or tying arrangements to foreclose competitive providers of those complementary services. Yet another worry was that the Bell System could avoid rate regulation of local telephone services by bundling them with unregulated services and charging prices for those unreg-



ulated services that would allow it to earn the supracompetitive returns denied to them by rate regulation of local services.

The historic solution was to segregate those portions of the telephone system that still exhibited natural monopoly characteristics (in this case, local telephone service) from complementary services that are potentially competitive, and require the local telephone provider to make its network available to all providers of complementary services on an equal basis. Most dramatically, the court order breaking up AT&T required that the Bell System spin off its local telephone and CPE manufacturing operations into independent companies, mandated that the newly created local telephone companies provide equal access to all providers of complementary services, and forbade the newly created local telephone companies from providing long distance, CPE, or

information services. The decision was anticipated by both the FCC’s 1968 *Carterfone* decision, which eventually led to regulations requiring the Bell System to open its network to CPE manufactured by competitive providers, and the FCC’s second *Computer Inquiry* decision, which required that large carriers that wished to offer enhanced services do so through a separate subsidiary while offering unaffiliated enhanced service providers nondiscriminatory access to their transmission facilities.

Requiring potentially competitive and inherently monopolistic lines of business to 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. 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.

The Inevitability of Rate Regulation

This solution did come at a cost. 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.

Leading commentators have noted that the central concern of the essential facility doctrine is 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. As an initial matter, the doctrine requires direct regulation of rates. Although some have suggested that these problems can be avoided simply by imposing a nondiscrimination mandate, such a mandate would not prevent a vertically integrated monopolist from simply charging both its own affiliate and competitors interconnection fees that are prohibitively expensive. Doing so would not affect the monopolist’s 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 to consumers. If rates are not regulated, one would expect the monopolist 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 being charged. As Phillip Areeda and Herbert Hovenkamp noted in *Antitrust Law*, once access is ordered,

[t]he 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 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-intensive methods even when doing so is inefficient. It raises difficult questions about the proper rate of return and whether returns should be based on assets’ historical or replacement cost. Lastly, it subjects economic pricing to the delays and biases inherent in the regulatory process. As the Supreme Court recognized in *Smyth v. Ames* and Justice Brandeis’s celebrated concurrence in *Missouri ex rel. Southwestern Bell Telephone Co. v. Public Service Commission*, 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 service subject to rate regulation varies in quality. This is the case with broadband, in which quality of service varies along as many as four dimensions: bandwidth, delay, jitter, and reliability. When quality varies, the regulated firm can evade the effect of rate regulation simply by degrading quality. Indeed, this is just what occurred during prior attempts to subject the cable industry to rate regulation: regulation failed to lower quality-adjusted cable rates.

The Inability to Realize Efficiencies of Vertical Integration

In addition, mandating structural separation and equal access necessarily limits firms’ ability to enjoy the benefits of vertical integration. Although the law and scholarly commentary were once quite hostile toward the practice, vertical integration is now widely recognized as giving rise to substantial efficiencies. Some efficiencies are technological. Consider caller ID and voice mail, which have become increasingly popular features in telephone systems. As it turned out, the most efficient way to provide these services was through the switch already used to route the call, which was essentially a small computer that already had the capability and the information to perform these functions.

Other efficiencies are more price-theoretic. For example, economists have long recognized that two successive monopolists in a single chain of production may both try to charge the entire monopoly markup, which can lead to higher prices than if those two monopolists merged through vertical integration. Similarly, vertical integration can enhance economic welfare when a monopolist controls an input that can be combined with other inputs in variable proportions. Charging a supracompetitive price for the monopoly input causes downstream firms to substitute other inputs. On the one hand, this input substitution benefits consumers by limiting the monopolist’s ability to cap-

ture supracompetitive returns. On the other hand, it simultaneously harms consumers by using a mixture of inputs that is sub-optimal and thus more expensive. Whether vertical integration under these circumstances causes economic welfare to increase or decrease depends on which of these two effects dominates.

Finally, as emphasized in the work of Nobel Prize winner Oliver Williamson, vertical integration can also benefit consumers by eliminating the transaction costs needed to guard against opportunistic behavior. For example, when firms must make relationship-specific investments, they become vulnerable to being held up, which occurs when the purchaser balks at paying for goods after the fixed costs of investment have been incurred and when the goods cannot be repurposed to another use. If the transaction costs needed to negotiate a contract protecting the parties against such behavior become sufficiently large, firms may find it preferable to use vertical integration to eliminate the incentive for one level of production to appropriate surplus at the expense of the other.

The theoretical models showing that vertical integration tends to be welfare enhancing are supported 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 the FCC's second *Computer Inquiry*. By requiring that such services would be provided by third parties, the FCC delayed the introduction of such services for 10 years, which reduced consumer welfare by over \$1 billion annually.

The broader empirical literature on vertical integration leads to similar conclusions. For example, Francine Lafontaine and Margaret Slade conducted a comprehensive review of the empirical literature on vertical integration. Although they did not have any particular conclusion in mind when they began their review of the evidence, they were somewhat surprised to find that, aside from a few isolated studies, the weight of the evidence indicated that "under most circumstances, profit-maximizing vertical-integration decisions are efficient, from firms' and consumers' points of view." 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." 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."

Lafontaine and Slade's separate review of the empirical literature on vertical contractual restraints drew similar conclusions.

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." The authors conclude that "the empirical evidence suggests that in fact a relaxed antitrust attitude towards [vertical] restraints may well be warranted." Again, this conclusion came as something of a surprise: Lafontaine and Slade found the empirical evidence to be "quite striking," "surprisingly consistent," "consistent and convincing," and even "compelling."

A similar review 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." Of the 22 empirical studies they identified that analyzed the impact of vertical restraints on consumer welfare, only one found that vertical integration harmed consumers, and in that study the welfare losses were "miniscule." 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." The survey thus concluded, "Most studies find evidence that vertical restraints/vertical integration are pro-competitive." The weight of the evidence thus "suggests that vertical restraints are likely to be benign or welfare enhancing," which, in turn, provides empirical support for placing the burden on those opposing the practice.

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

Local Loop Unbundling

The growing recognition that the bar to vertical integration implicit in structural separation was preventing the realization of important efficiencies led the FCC to explore ways that firms could provide both types of services on an integrated basis while still guarding against potentially anticompetitive activity. As a result, the FCC's third *Computer Inquiry* amended the rules to allow major local telephone companies to provide information services on a vertically integrated basis so long as they gave other information service providers equal access to every element of their local telephone networks on an unbundled basis. The Telecommunications Act of 1996 similarly required all incumbent local telephone companies to provide unbundled access to all of their network elements at any technically feasible point. The unbundling requirement imposed by the act did include one key limitation: it required the FCC to determine whether access to those elements was "necessary" and whether the failure to provide access to those elements would "impair" the requesting carrier's ability to provide the services that it seeks to offer. The key network element

was the wire connecting customers' premises to the telephone company's central office, known as the "local loop."

The FCC initially applied unbundling to a wide range of elements associated with local telephone service. The FCC has also imposed a variety of unbundling requirements on digital subscriber line (DSL) networks, including local loops. Perhaps most importantly, the FCC's *Line Sharing Order* in 1999 mandated unbundled access to the high-frequency portion of the local loop used to carry DSL so that competitors could provide services over the same loop without having to offer conventional telephone service on the lower frequencies simultaneously.

The FCC was considerably more tentative in its regulatory approach to cable modem service. It postponed addressing the proper regulatory classification for cable modem service for several years before finally ruling that it was an interstate "information service" exempt from both the common carriage regime governing telecommunications services, the regulatory regime governing cable television services, and the tariffing and unbundling requirements created by the *Computer Inquiries*. In so ruling, the agency noted that it previously "has applied these obligations only to traditional wireline services and facilities, and has never applied them to information services provided over cable facilities." In addition, the FCC declined to impose the tariffing and unbundling requirements created by the *Computer Inquiries* to cable modem service. The Supreme Court's 2005 decision in *National Cable & Telecommunications Association v. Brand X Internet Services* subsequently upheld the FCC's decision.

Administrative difficulties | Local loop unbundling has been subjected to extensive criticism. As an initial matter, unbundling requires extensive rate regulation to prevent the local telephone company from undermining access simply by charging excessive prices.

Moreover, unbundling poses numerous administrative difficulties. Unlike the access required following the breakup of AT&T, unbundling gives competitors access to portions of the local telephone companies' networks rather than their entire networks. Unbundling thus requires local telephone companies to offer services at points in the middle of their networks where they have never before offered service. This in turn requires the local telephone company to create interfaces and put into place processes for provisioning, monitoring, and billing the services provided at those interfaces.

As a result, local loop unbundling is likely to be very difficult to administer. As Justice Breyer warned in his separate opinion in *AT&T Corp. v. Iowa Utilities Board*, "Even the simplest kind of compelled sharing... means that someone must oversee the terms and conditions of that sharing," which, in turn, can give rise to

"significant administrative and social costs." Breyer continued:

The more complex the facilities, the more central their relation to the firm's managerial responsibilities, the more extensive the sharing demanded, the more likely these costs will become serious.... And the more serious they become, the more likely they will offset any economic or competitive gain that a sharing requirement might otherwise provide.

Thus, "[r]ules that force firms to share every resource or element of a business would create not competition, but pervasive regulation, for the regulators, not the marketplace, would set the relevant terms." Justice Breyer reiterated these concerns in *Verizon Communications Inc. v. FCC*, adding the observation that unbundling produces only a thin form of competition that, instead of stimulating entry by competitors, focuses on "widespread sharing of entire incumbent systems under regulatory supervision—a

Perhaps the most controversial aspect of local loop unbundling is the manner in which it reduces incentives to invest in alternative network capacity that would compete with the monopoly facility. The well known "tragedy of the commons" demonstrates the tendency of people to overuse and underinvest in resources that are shared.

result very different from the competitive market that the statute seeks to create."

A majority of the Supreme Court expanded on these concerns in its 2004 decision in *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP*, in which the Court noted, "Enforced sharing... requires antitrust courts to act as central planners, identifying the proper price, quantity, and other terms of dealing." Furthermore, because unbundled access affects network elements "deep within the bowels" of a local telephone network, they can only be made available if "[n]ew systems [are] designed and implemented simply to make that access possible." Additionally, requests for unbundled access "are difficult for antitrust courts to evaluate, not only because they are highly technical, but also because they are likely to be extremely numerous, given the incessant, complex, and constantly changing interaction of competitive and incumbent LECs [local exchange carriers] implementing the sharing and interconnection obligations."

As a result, the essential facility doctrine necessarily requires the government to oversee the entire business relationship. The difficulties the FCC confronted when attempting to implement other access regimes, such as long distance interconnection and leased access to cable television systems in the early 1990s provide further demonstration of these problems. It is particularly telling that two distinguished scholars of network industries, Paul Joskow and Roger Noll, who are not particularly noted for deregulatory views, have suggested that access regimes have proven so unworkable that they should be abandoned.

The Impact on Investment Incentives

Perhaps the most controversial aspect of local loop unbundling is the manner in which it reduces incentives to invest in alternative network capacity that would compete with the monopoly facility. The well known “tragedy of the commons” demonstrates the tendency of people to overuse and 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.” Justice Breyer expressed the same concern in his separate opinion in *Iowa Utilities Board*:

[A] sharing requirement may diminish the original owner’s incentive to keep up or to improve the property by depriving the owner of the fruits of value-creating investment, research, or labor.... Nor can one guarantee that firms will undertake the investment necessary to produce complex technological innovations knowing that any competitive advantage deriving from those innovations will be dissipated by the sharing requirement.

In *Trinko*, a majority of the Supreme Court agreed, noting, “Compelling such firms to share the source of their advantage ... may lessen the incentive for the monopolist, the rival, or both to invest in those economically beneficial facilities.” In other words, 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. Indeed, the imposition of rate regulation eliminates the supracompetitive returns that spur competitive investment in the first place.

This underscores the extent to which mandating access to a bottleneck facility represents surrender to the bottleneck. Compelling firms to share their networks might be appropriate if entry by a competitor to the bottleneck were infeasible. In that event, any dampening of incentives to invest in alternative network capacity would be beside the point because such entry would not be forthcoming. Indeed, that was the case with the breakup of AT&T, where local telephone service was still regarded as an intractable natural monopoly. As a result, there seemed little point in trying to promote entry by new local telephone facilities competing directly with the incumbent, and it was appropriate for policymakers to focus their attention on the secondary goal of promoting competition in complementary services.

The situation is quite different, however, when competitive entry is feasible. When that is the case, competition policy should focus on stimulating the investments needed to dissipate the monopoly. The problem is that continued imposition of unbundling requirements deters investment in alternative network capacity. Indeed, a growing body of empirical work has failed to confirm that unbundling has promoted investments in competitive local telephone services. Indeed, many studies indicate that access actively discouraged such investments. Even more importantly, studies have drawn similar conclusions that mandating access has had no significant effect or a negative effect on invest-

ments in last-mile broadband access services. At the same time, empirical studies generally indicate that competition from new, facilities-based entrants is a more effective driver of broadband deployment and adoption.

Ladder of investment? | Later commentators, particularly those based in Europe, have developed a third justification for mandating access, known as “the ladder of investment.” Unlike previous theories, the ladder of investment does not provide access to elements that regulators regard as natural monopolies and are thus inherently incapable of being rendered competitive. The hope is that by providing access to elements that can feasibly be replicated, new entrants can enter more easily by simply reselling the incumbent’s services. Over time, they can begin offering additional services until eventually they become full-blown facilities-based competitors.

Under this approach, the role of the government is not to oversee access to portions of the network that are inherently uncompetitive. Instead, this approach calls for regulators to manage access to portions of the network that can feasibly be competitively provided, but that would initially be too burdensome for new entrants to provide completely for themselves.

There is, however, an internal contradiction in this argument. As the Supreme Court noted in *Trinko*, “The indispensable requirement for invoking the [essential facility] doctrine is the unavailability of access to the ‘essential facilities.’” It is for this reason that courts have insisted that the essential facility doctrine apply only to facilities that cannot be obtained from other sources. The logic of the essential facility doctrine fails when the firm requesting access can build the facility itself. As the Seventh Circuit noted when rejecting a similar request by MCI for access to portions of AT&T’s long distance network when MCI had not yet extended its own network to some parts of the country, “There was no sufficient explanation as to why MCI, on the one hand, was building its own network, and, on the other, was entitled to access in the interim to AT&T’s facilities.” Moreover, because mandating access discourages rivals from investing in new networks, unless carefully managed, such a regulatory regime could well have the perverse effect of forestalling competition from emerging at all.

Any regulator attempting to manage competition in the manner called for by the ladder of investment must calibrate its intervention very carefully. Setting prices too high causes access to be uneconomical, in which case the regulatory intervention will serve no purpose. Setting prices too low destroys incentives for competitors to invest in substitute resources. Not only must regulators set prices correctly; they must also credibly commit to eliminating this access over time. Otherwise, competitors can be expected to rely on the regulatory regime indefinitely rather than building alternative network capacity of their own.

These considerations make ladder-of-investment regulation very difficult to implement. A substantial theoretical literature has arisen identifying the substantial problems with implementing this approach. Although some reports offered some preliminary observations suggesting the theory’s viability, formal empiri-

cal analyses failed to show that its implementation promoted investment or facilitated competitive entry.

The Deregulatory Alternative

As Europe was developing new theories to justify continuing to mandate access to telecommunications networks, the United States embarked on a more deregulatory path. For example, in 2002, the D.C. Circuit struck down the FCC's decision requiring line sharing. The FCC's landmark 2003 *Triennial Review Order* eliminated unbundling requirements on most DSL-related network elements, and its attempt to retain unbundling requirements on local telephone service was overturned by the courts and subsequently eliminated. As noted earlier, the Supreme Court's 2005 *Brand X* decision upheld the FCC's 2002 decision exempting cable modem service from access regulation. Shortly thereafter, the FCC eliminated any remaining access requirements on DSL. The FCC has also issued rulings declaring that broadband over power line and wireless broadband constitute information services.

Emergence of competition | This deregulatory transformation in U.S. telecommunications policy was driven in no small part by the emergence of competition. With respect to telephony, incumbent local telephone companies face fierce competition from internet-based VoIP and wireless telephone providers. The number of traditional wireline telephones has declined sharply, dropping from a high of 193 million in December 2000 to a low of 112 million as of June 2011.

With respect to broadband, 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 provide unbundled access to their competitors. 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 LTE and WiMax). Although the scale economies inherent in telecommunications will necessarily prevent markets from being fully competitive, any regulatory regime must bear in mind that regulation is not costless. As former FCC chief economist Howard A. Shelanski has pointed out, while unregulated *monopoly* performs so poorly to tip the balance in favor of incurring the costs of regulatory intervention, unregulated *oligopoly* performs sufficiently better to tip the balance in favor of deregulation.

The emergence of competition effectively undercuts the case for continuing to mandate access to the existing network. In many cases, anyone who is denied service by one provider should have sufficient options to obtain service from another.

Impact on investment incentives | The shift to deregulation may still be justified even if the market has not yet become sufficiently competitive. This is because granting access would make it far less likely that the competing network will ever be built. In short, the existence of an access requirement would rescue any-

one needing access to the facility from having to undertake the risks of building a competing network. Denying access would provide the strongest incentives for creating the alternative network capacity. Although denying access would cause static efficiency losses in the short run, stimulating entry by a competitor would promote dynamic efficiency gains in the long run.

For this reason, policymakers should refuse to impose an access regime whenever entry is feasible. The fact that competitive entry may take a long time and be quite expensive does not justify imposing access because—in short—late is better than never. Approaches that dislodge bottlenecks by stimulating competitive entry rather than simply requiring that they be shared have the further advantage of having built-in exit strategies embedded within them. In contrast, by curtailing investment incentives, mandated sharing of a bottleneck facility implicitly presumes that the monopoly facility (and the regulatory regime overseeing how it will be shared) will persist indefinitely. Rather than committing to using behavioral regulation to engage in ongoing oversight indefinitely, deregulation promotes a structural solution that is less intrusive and requires much less ongoing supervision.

The inevitable lag in adjusting regulation also raises the risk that regulations, such as mandated access, that protect incumbents from new entry will continue to exist long after the justifications for enacting the regulation have disappeared. 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 into place the market concentration that represents the central focus of broadband policy.

Deciding Between Regulation and Deregulation

How then should policymakers determine the choice between deregulation and reregulation? The foregoing analysis suggests the following considerations: As an initial matter, policymakers should calibrate regulation to ensure that it applies only if competitive options do not exist in the market. If sufficient competitive alternatives exist, consumers are unlikely to be harmed by the refusal of any one provider to offer service.

If sufficient competitive alternatives are not available, policymakers should ask whether competitive entry is feasible. If so, they should assess the likely short-run static efficiency losses incurred while waiting for entry to occur against the long-run dynamic efficiency gains. Some scholars have categorically asserted that because the dynamic efficiency gains will be compounded over time, they will invariably dominate the short-run static efficiency losses. However, whether the dynamic efficiency gains will dominate the static efficiency losses depends on the magnitude of the gains and losses, the speed of entry, and the appropriate discount rate, among other considerations. Determining the welfare implications of network diversity requires a multifaceted inquiry that is not susceptible to a simple policy inference.

Finally, policymakers must take institutional considerations into account. The fact that deregulation focuses on structural rather than behavioral relief increases its implementability. In

addition, deregulation decentralizes decisionmaking and minimizes the potential adverse impact of regulatory delay. In addition, any access regime must take into account the fact that regulatory agencies reflect public preferences only imperfectly and that agency decisionmaking is frequently influenced by political goals and public interest pressures that are not always consistent with good policy. Policymakers may be susceptible to undervaluing the future benefits associated with the entry of alternative network capacity, which will no doubt seem uncertain and contingent, in favor of the immediate and concrete benefits of providing consumers with more choices in the here and now. Administrative agencies are also often thought to exhibit a tendency to enlarge their jurisdiction even when the proper response would be to contract it.

Consider, for example, the emergence of a technological alternative to a network that had previously been a natural monopoly. The proper policy response would be to deregulate the previously regulated industry, since the emergence of competition would vitiate the justification for regulation in the first place. An agency, however, has the incentive to do precisely the opposite. Rather than deregulate the old industry, all too often agencies respond by asserting jurisdiction over the new industry and extending the same restrictive legacy regulations applied to the old industry to the new one. This is exactly what happened when the emergence of the trucking industry eliminated whatever natural monopoly power was enjoyed by railroads. Rather than deregulating railroads, the Interstate Commerce Commission extended the regulatory regime governing railroads to the new competitor. A similar pattern emerged when cable television circumvented the supposed scarcity of the electromagnetic spectrum that justified intrusive regulation of broadcasting.

The reaction is understandable. Agency personnel have every reason to be reluctant to eliminate the justification for their continued employment. In addition, they no doubt grow to identify with the regulatory regimes that they administer and are likely to resent and try to control anything that disrupts them. But the emergence

of competition in a previously uncompetitive industry is precisely the type of disruption that should be embraced. Giving regulatory authorities gatekeeper authority over network architecture necessarily puts network policy in the crosshairs of this tension.

Only if entry is impossible can policymakers justify abandoning the primary goal of trying to promote entry by new local telecommunications networks and focusing instead on the secondary goal of promoting competition in complementary services through access regulation. In deciding whether to do so, they should take into account the institutional limitations of regulatory agencies. They should also include some mechanism for eliminating access mandates as soon as competition becomes feasible to make sure that regulation does not itself become the reason for the suppression of competition.

Conclusion

The decision whether to mandate access to telecommunications networks thus presents policymakers with a choice between two regulatory paradigms. One focuses on breaking down the monopoly by stimulating competitive entry; the other surrenders to the monopoly and simply seeks to allocate the monopoly facility. The theoretical and empirical literature both suggest that whenever competition is feasible, policymakers should generally follow the first course by refusing to mandate access. Moreover, when competition is feasible but not yet present, policymakers should mandate access only if the short-run static efficiency losses from monopoly dominate the long-run dynamic efficiency gains and should undertake a realistic assessment of the proposed regulatory authority's institutional capabilities. Access regulation is justified only if all of these criteria are satisfied. Given the overall level of competition that already exists in these markets and the current pattern of entry by new technologies, it is likely that the scope of this justification is already small and will only become smaller in the years to come. R

READINGS

- "Adjusting Regulation to Competition: Toward a New Model for U.S. Telecommunications Policy," by Howard A. Shelanski. *Yale Journal on Regulation*, Vol. 24 (2007).
- "Antitrust and Vertical Integration in 'New Economy' Industries with Application to Broadband Access," by Bruce M. Owen. *Review of Industrial Organization*, Vol. 38 (2011).
- *Antitrust Law*, by Phillip E. Areeda and Herbert Hovenkamp. Aspen Publishing, 2008.
- "Broadband Investment and Regulation: A Literature Review," by Carlo Cambini and Yanyan Jiang. *Telecommunications Policy*, Vol. 33 (2009).
- "Competitive Effects of Vertical Integration," by Michael H. Riordan. In *Handbook of Antitrust Economics*, edited by Paolo Buccirossi; MIT Press, 2008.
- "Encouraging Infrastructure Competition via the Ladder of Investment," by Martin Cave. *Telecommunications Policy*, Vol. 30 (2006).
- "Exclusive Contracts and Vertical Restraints: Empirical Evidence and Public Policy," by Francine Lafontaine and Margaret Slade. In *Handbook of Antitrust Economics*, edited by Paolo Buccirossi; MIT Press, 2008.
- *Markets and Hierarchies*, by Oliver E. Williamson. Free Press, 1975.
- *Networks in Telecommunications: Economics and Law*, by Daniel F. Spulber and Christopher S. Yoo. Cambridge University Press, 2009.
- *Public Policy toward Cable Television*, by Thomas W. Hazlett and Matthew L. Spitzer. MIT Press and AEI Press, 1997.
- "Rivalrous Telecommunications Networks With and Without Mandatory Sharing," by Thomas W. Hazlett. *Federal Communications Law Journal*, Vol. 58 (2006).
- "The Bell Doctrine: Applications in Telecommunications, Electricity, and Other Network Industries," by Paul L. Joskow and Roger G. Noll. *Stanford Law Review*, Vol. 51 (1999).
- "The Influence of Market Developments and Policies on Telecommunication Investment," by Yoshikazu Okamoto. OECD Digital Economy Papers No. 151, 2009.
- "Valuing the Effect of Regulation on New Services in Telecommunications," by Jerry A. Hausman. *Brookings Papers on Economic Activity: Microeconomics*, Vol. 28 (1997).
- "Vertical Antitrust Policy as a Problem of Interference," by James C. Cooper et al. *International Journal of Industrial Organization*, Vol. 23 (2005).
- "Vertical Integration and Firm Boundaries: The Evidence," by Francine Lafontaine and Margaret Slade. *Journal of Economic Literature*, Vol. 45 (2007).