

University of Pennsylvania Carey Law School

Penn Law: Legal Scholarship Repository

Faculty Scholarship at Penn Law

1-1-2011

Deregulation vs. Reregulation of Telecommunications: A Clash of Regulatory Paradigms

Christopher S. Yoo

University of Pennsylvania Carey Law School

Follow this and additional works at: https://scholarship.law.upenn.edu/faculty_scholarship



Part of the [Administrative Law Commons](#), [Communications Law Commons](#), [Communication Technology and New Media Commons](#), [Law and Society Commons](#), [Science and Technology Law Commons](#), [Science and Technology Policy Commons](#), and the [Technology and Innovation Commons](#)

Repository Citation

Yoo, Christopher S., "Deregulation vs. Reregulation of Telecommunications: A Clash of Regulatory Paradigms" (2011). *Faculty Scholarship at Penn Law*. 411.

https://scholarship.law.upenn.edu/faculty_scholarship/411

This Article is brought to you for free and open access by Penn Law: Legal Scholarship Repository. It has been accepted for inclusion in Faculty Scholarship at Penn Law by an authorized administrator of Penn Law: Legal Scholarship Repository. For more information, please contact PennlawIR@law.upenn.edu.

Deregulation vs. Reregulation of Telecommunications: A Clash of Regulatory Paradigms

Christopher S. Yoo*

I. INTRODUCTION	847
II. MANDATING ACCESS TO TELECOMMUNICATIONS	848
A. <i>First Generation Access: Mandating Access to Local Telephone Systems and Vertical Structural Separation</i>	849
1. <i>The Inevitability of Rate Regulation</i>	851
2. <i>The Inability to Realize Efficiencies of Vertical Integration</i>	853
B. <i>Second Generation Access: Local Loop Unbundling</i>	856
1. <i>Administrative Difficulties</i>	857
2. <i>The Impact on Investment Incentives</i>	859
C. <i>Third Generation Access: The Ladder of Investment</i>	862
III. THE DEREGULATORY ALTERNATIVE	863
A. <i>The Emergence of Competition</i>	864
B. <i>Impact on Investment Incentives</i>	865
IV. DECIDING BETWEEN REGULATION AND DEREGULATION	865
V. CONCLUSION	867

I. INTRODUCTION

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, a policy epitomized by the two great landmarks of modern telecommunications policy: the breakup of AT&T¹ and the Telecommunications Act of 1996.² The basic policy approach was eventually extended to broadband networks as well³ and has been widely emulated by other

*Professor of Law, Communication, and Computer & Information Science and Founding Director, Center for Technology, Innovation and Competition, University of Pennsylvania.

1. *United States v. AT&T Co.*, 552 F. Supp. 131 (D.D.C. 1982), *aff'd mem. sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

2. For the unbundling provision of the Telecommunications Act of 1996, see 47 U.S.C. § 251(c)(3) (2006).

3. *See infra* notes 78–79 and accompanying text.

countries.⁴

At the prompting of the courts,⁵ the Federal Communications Commission (FCC) 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.⁶ Once the 2005 *Brand X* decision effectively signaled the Supreme Court's accession to this deregulatory trend,⁷ the FCC eliminated all access requirements on telephone and broadband systems alike.⁸

The inauguration of a new administration has caused policymakers to consider once again whether to begin mandating access to broadband networks, as evinced by the continuing controversy surrounding the policy initiative known as network neutrality.⁹ This Article reviews the arguments on both sides of this debate. Part II examines the case for regulation, focusing on the rationales and critiques surrounding three separate regulatory approaches: mandating access to local telephone networks, local loop unbundling, and promoting the ladder of investment. Part III lays out the case for deregulation. Part IV sets out the tradeoffs implicit in the choice between these two regulatory strategies.

II. MANDATING ACCESS TO TELECOMMUNICATIONS

This Part traces the origins of the policy of mandating access to telecommunications networks. The move to regulation takes place in three distinct phases. The first is mandating access to local telephone networks, exemplified by the regime imposed in the aftermath of the breakup of AT&T. The second is local loop unbundling, epitomized by the unbundled network element provisions of the Telecommunications Act of 1996. The third is a theory developed in Europe known as “the ladder of investment.”

4. See, e.g., Paul W.J. de Bijl & Martin Peitz, *Local Loop Unbundling in Europe: Experience, Prospects and Policy Challenges*, COMM. & STRATEGIES, 1st Qtr. 2005, at 33, 35–50, available at http://www.idate.fr/fic/revue_tech/414/CS57_BIJL_PEITZ.pdf (reviewing the development of local loop unbundling in the European Union).

5. For the leading judicial decisions overturning unbundling with respect to telephony, see *U.S. Telecom Ass'n v. FCC*, 359 F.3d 554, 586–87 (D.C. Cir. 2004); *GTE Serv. Corp. v. FCC*, 205 F.3d 416, 422–24 (D.C. Cir. 2000). For judicial decisions overturning unbundling with respect to broadband, see *U.S. Telecom Ass'n v. FCC*, 290 F.3d 415, 428–29 (D.C. Cir. 2002).

6. See *infra* notes 80–82 and accompanying text.

7. *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967 (2005).

8. See *infra* notes 116–21 and accompanying text.

9. Network neutrality has been one of the most hotly debated issues in telecommunications policy over the past several years. See Christopher S. Yoo, *Network Neutrality and the Economics of Congestion*, 94 GEO. L.J. 1847, 1855–60 (2006) (providing an overview of the early debate on net neutrality). The FCC finally adopted an order implementing network neutrality through a system of ex post, case-by-case enforcement. Preserving the Open Internet, Report and Order, 25 FCC Rcd. 17,905 (2010). Since then, parties have filed judicial challenges, and the House of Representatives voted to overturn the FCC's action. Editorial, *Net Neutrality Override*, WALL ST. J., Apr. 12, 2011, at A14.

A. *First Generation Access: Mandating Access to Local Telephone Systems and Vertical Structural Separation*

Since at least the days of John Stuart Mill, one of the central problems usually seen as justifying rate regulation is natural monopoly.¹⁰ Natural monopoly occurs when a single firm can serve the entire market more cheaply than can two firms, a condition known as “subadditivity.”¹¹ 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 face the lowest costs, which in turn permits that 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 farther until it is the only firm remaining in the industry. Thus large scale economies can cause markets that begin with multiple producers to inevitably collapse into monopoly.¹²

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.¹³ During the 1960s, however, policymakers began to question this premise. For example, technological developments like telephone handsets, fax machines, and answering machines employed by end users, known as customer premises equipment (CPE),¹⁴ were nothing 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.¹⁵ Lastly, firms began to offer innovative new services that combined data processing with traditional transmission. These precursors to the modern Internet, called first “enhanced services” and later “information services,”¹⁶ also did not evolve the large fixed costs associated with natural monopoly.¹⁷

As these other portions of the telephone network became potentially competitive,

10. JOHN STUART MILL, *PRINCIPLES OF POLITICAL ECONOMY* 132–54 (John W. Parker ed. 1849).

11. See William J. Baumol, *On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry*, 67 AM. ECON. REV. 809, 810 (1977).

12. See DANIEL F. SPULBER & CHRISTOPHER S. YOO, *NETWORKS IN TELECOMMUNICATIONS: ECONOMICS AND LAW* 119–20 (2009).

13. 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 3B PHILLIP E. AREEDA & HERBERT HOVENKAMP, *ANTITRUST LAW* ¶ 787c, at 366 (3d ed. 2008) (“Until the 1960s 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 . . .”).

14. CPE contrasts with “telecommunications equipment,” which consists of the switches and wires located in the heart of the network that the telephone company uses to provide service. See Daniel F. Spulber & Christopher S. Yoo, *Toward a Unified Theory of Access to Local Telephone Networks*, 61 FED. COMM. L.J. 43, 44, 44 n.3 (2008).

15. SPULBER & YOO, *supra* note 12, at 235.

16. *Id.* at 236.

17. See Glen O. Robinson, *The Titanic Remembered: AT&T and the Changing World of Telecommunications*, 5 YALE J. ON REG. 517, 520–29 (1988) (reviewing FAULHABER, *supra* note 13).

local telephone service remained characterized by the high fixed costs associated with natural monopoly.¹⁸ 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 network.¹⁹ 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.²⁰ Another was that local telephone companies would use exclusivity or tying arrangements to foreclose competitive providers of those complementary services.²¹ 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 unregulated services that would allow it to earn the supracompetitive returns denied to them by rate regulation of local services.²²

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 those complementary services that are potentially competitive, and to require that the local telephone provider make its network available to all providers of complementary services on an equal basis.²³ 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 these newly created local telephone companies from providing long distance, CPE, or information services.²⁴ 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,²⁵ and 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.²⁶

18. See, e.g., 2 ALFRED E. KAHN, *THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS* 127 (1971) ("That the provision of local telephone service is a natural monopoly is generally conceded."); STEPHEN BREYER, *REGULATION AND ITS REFORM* 291 (1982) ("Local telephone service seems to be generally accepted as a natural monopoly.").

19. SPULBER & YOO, *supra* note 12, at 236–37.

20. *Id.* at 130–31; Roger G. Noll & Bruce M. Owen, *The Anticompetitive Uses of Regulation: United States v. AT&T*, in *THE ANTITRUST REVOLUTION* 328, 338 (John E. Kwoka, Jr. & Lawrence J. White eds., 2d ed. 1994); Robinson, *supra* note 17, at 528.

21. Noll & Owen, *supra* note 20, at 339–42; Robinson, *supra* note 17, at 528; see also SPULBER & YOO, *supra* note 12, at 236 ("Policymakers soon became concerned that the incumbent local telephone companies would be able to use their monopoly control over the local telephone network to favor their own proprietary enhanced and information service offerings.").

22. SPULBER & YOO, *supra* note 12, at 145.

23. *Id.* at 131–32; Gerald R. Faulhaber, *Policy-Induced Competition: The Telecommunications Experiments*, 15 *INFO. ECON. & POL'Y* 73, 82–84 (2003); Robinson, *supra* note 17, at 529.

24. *United States v. AT&T Co.*, 552 F. Supp. 131 (D.D.C. 1982), *aff'd mem. sub nom Maryland v. United States*, 460 U.S. 1001 (1983).

25. *Use of the Carterfone Device in Message Toll Telephone Service*, Decision, 13 F.C.C. 2d 420 (1968).

26. The initial rules were based on a distinction between communications and data processing. Regulatory and Policy Problems Presented by the Interdependence of Computer and Communication Services and Facilities, Tentative Decision, 28 F.C.C. 2d 291 (1970). The FCC later based the rules on the distinction

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.²⁷ 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.²⁸ 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.

1. *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.”²⁹ Indeed, the doctrine formed the explicit basis for the breakup of AT&T.³⁰

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.³¹ 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.³²

The essential facility doctrine has been subject to extensive and trenchant critique.³³ 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,³⁴ 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

between basic and enhanced services. Amendment of Section 64.702 of the Commission’s Rules and Regulations (Second Computer Inquiry), 77 F.C.C. 2d 384 (1980) [hereinafter Computer II Final Decision]. See generally Robert Cannon, *The Legacy of the Federal Communication Commission’s Computer Inquiries*, 55 FED. COMM. L.J. 167 (2003) (reviewing the history of the *Computer Inquiries*).

27. SPULBER & YOO, *supra* note 12, at 130.

28. *Id.* at 131.

29. The seminal decision is *Hecht v. Pro-Football, Inc.*, 570 F.2d 982, 992 (D.C. Cir. 1977). For an overview and critique of the doctrine, see Daniel F. Spulber & Christopher S. Yoo, *Mandating Access to Telecom and the Internet: The Hidden Side of Trinko*, 107 COLUM. L. REV. 1822, 1826–64 (2007).

30. See *United States v. AT&T Co.*, 524 F. Supp. 1336, 1352–53, 1360–61 (D.D.C. 1981).

31. 3B AREEDA & HOVENKAMP, *supra* note 13, ¶ 771a, at 192–94; Bruce M. Owen, *Determining Optimal Access to Regulated Essential Facilities*, 58 ANTITRUST L.J. 887, 887–89 (1989); Gregory J. Werden, *The Law and Economics of the Essential Facility Doctrine*, 32 ST. LOUIS U. L.J. 433, 462 (1987).

32. See *AT&T*, 524 F. Supp. at 1373–74; Computer II Final Decision, *supra* note 26, at 461; LAWRENCE LESSIG, *THE FUTURE OF IDEAS* 165–66 (2001); TIM WU, *THE MASTER SWITCH* 295, 305–06, 311 (2010).

33. SPULBER & YOO, *supra* note 12, at 288–98.

34. See, e.g., Susan P. Crawford, *Transporting Communications*, 89 B.U. L. REV. 871 (2009); Thomas B. Nachbar, *The Public Network*, 17 COMMLAW CONCEPTUS 67 (2008).

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.³⁵ 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.³⁶ Such access will engender incessant complaints about the rate being charged. As Professors Areeda and Hovenkamp have noted, 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.³⁷

Policymakers have struggled to develop a principled basis for evaluating the reasonableness of rates.³⁸ Rate regulation has long raised difficult questions of valuation and allocation of joint costs.³⁹ 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.⁴⁰ It raises difficult questions about the proper rate of return and whether returns should be based on assets' historical cost or replacement cost.⁴¹ Lastly, it subjects economic pricing to the delays and biases inherent in the regulatory process.⁴² The Supreme Court has thus recognized that determining what constitutes a reasonable rate has proven to be an "embarrassing question"⁴³ as well as a "laborious and baffling task."⁴⁴

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

35. 3B AREEDA & HOVENKAMP, *supra* note 13, ¶ 771b, at 195; RICHARD A. POSNER, *ANTITRUST LAW: AN ECONOMIC PERSPECTIVE* 208 (1976).

36. Christopher S. Yoo, *Vertical Integration and Media Regulation in the New Economy*, 19 YALE J. ON REG. 171, 244–45 (2002).

37. 3B AREEDA & HOVENKAMP, *supra* note 13, ¶ 774e, at 276.

38. See National Telecommunications and Information Administration, U.S. Dept. of Commerce, NTIA Regulatory Alternatives Report 13–31 (1987), available at <http://www.its.bldrdoc.gov/pub/ntia-rpt/87-222/87-222.pdf> (reviewing the problems associated with rate regulation). For other useful discussions, see, e.g., JAMES C. BONBRIGHT, *PRINCIPLES OF PUBLIC UTILITY RATES* 547–622 (2d ed. 1988); ALFRED E. KAHN, *THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS* 27–54 (1988); KAHN, *supra* note 18, at 47–94, 345–47; W. KIP VISCUSI ET AL., *ECONOMICS OF REGULATION AND ANTITRUST* 364–74 (3d ed. 2000); George J. Stigler & Claire Friedland, *What Can Regulators Regulate?: The Case of Electricity*, 5 J.L. & ECON. 1 (1962).

39. SPULBER & YOO, *supra* note 12, at 66, 130–31.

40. *Id.* at 129.

41. *Id.* at 127–29.

42. Christopher S. Yoo, *Beyond Network Neutrality*, 17 HARV. J.L. & TECH. 1, 65 (2005).

43. *Smyth v. Ames*, 169 U.S. 466, 546 (1898).

44. *Missouri ex rel. Sw. Bell Tel. Co. v. Pub. Serv. Comm'n*, 262 U.S. 276, 292 (1923) (Brandeis, J., concurring in the judgment).

broadband, in which quality of service varies along as many as four dimensions.⁴⁵ When quality varies, the regulated firm can evade the effect of rate regulation simply by degrading quality.⁴⁶ Indeed, this is just what occurred during prior attempts to subject the cable industry to rate regulation, where regulation failed to lower quality-adjusted cable rates.⁴⁷

2. *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.⁴⁸ Some efficiencies are technological.⁴⁹ 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.⁵⁰

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.⁵¹ 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 producing firms to substitute other inputs. On the one hand, this input substitution benefits consumers by limiting the monopolist's ability to capture supracompetitive returns. On the other hand, it simultaneously harms consumers by producing the goods using a mixture of inputs that is suboptimal. Whether this causes economic welfare to increase or decrease depends on which of these two effects dominates.⁵²

45. Broadband quality of service can vary in terms of bandwidth, delay, jitter, and reliability. See ANDREW TANENBAUM, *COMPUTER NETWORKS* § 5.4 (4th ed. 2003).

46. See JEAN-JACQUES LAFFONT & JEAN TIROLE, *COMPETITION IN TELECOMMUNICATIONS* 54–55 (2000).

47. See generally THOMAS W. HAZLETT & MATTHEW L. SPITZER, *PUBLIC POLICY TOWARD CABLE TELEVISION* 2, 9, 43–44, 54, 95–99, 135, 208–10, 216 (1997); Gregory S. Crawford, *The Impact of the Household Demand and Welfare*, 31 *RAND J. ECON.* 422, 428, 444 (2000).

48. See Christopher S. Yoo, *Vertical Integration and Media Regulation in the New Economy*, 19 *YALE J. ON REG.* 171, 189–96 (2002) (reviewing the efficiencies that vertical integration can create). For more extensive discussions, see ROGER D. BLAIR & DAVID L. KASERMAN, *LAW AND ECONOMICS OF VERTICAL INTEGRATION AND CONTROL* 18–23, 31–42, 48–52 (1983); F.M. SCHERER & DAVID ROSS, *INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE* 519–27, 551–55 (3d ed. 1990); JEAN TIROLE, *THE THEORY OF INDUSTRIAL ORGANIZATION* 174–81 (1988); Bruce M. Owen, *Antitrust and Vertical Integration in "New Economy" Industries*, 38 *REV. INDUS. ORG.* 363, 370–75 (2011).

49. Martin K. Perry, *Vertical Integration: Determinants and Effects*, in 1 *HANDBOOK OF INDUSTRIAL ORGANIZATION* 183, 187 (Richard Schmalensee & Robert D. Willig eds., 1989).

50. SPULBER & YOO, *supra* note 12, at 236.

51. For the seminal statements, see Joseph J. Spengler, *Vertical Integration and Antitrust Policy*, 58 *J. POL. ECON.* 347 (1950); and Fritz Machlup & Martha Taber, *Bilateral Monopoly, Successive Monopoly, and Vertical Integration*, 27 *ECONOMICA* 101 (1960).

52. For the seminal economic analyses, see L.W. McKenzie, *Ideal Output and the Interdependence of*

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.⁵³ For example, when firms must make relationship-specific investments, they become vulnerable to opportunistic behavior, such as being held up. If the transaction costs needed to negotiate a contract protecting the parties against this problem become sufficiently large, the firms 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.⁵⁴

Although a 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.⁵⁵ 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.⁵⁶

The theoretical models showing that vertical integration tends to be welfare enhancing 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*. By requiring that such services would be provided by third parties, the FCC delayed the introduction of such services for ten years with an annual reduction of consumer welfare of over \$1 billion.⁵⁷

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, not just from firms' but also from the consumers' points of view."⁵⁸ The survey concluded that "faced with a vertical arrangement, the burden of evidence should be placed on competition authorities to demonstrate that that

Firms, 61 *ECON. J.* 785 (1951); Meyer Burstein, *A Theory of Full-Line Forcing*, 55 *NW. U. L. REV.* 62 (1960); and John M. Vernon & Daniel A. Graham, *Profitability of Monopolization by Vertical Integration*, 79 *J. POL. ECON.* 924 (1971).

53. See OLIVER E. WILLIAMSON, *MARKETS & HIERARCHIES* (1975).

54. OLIVER E. WILLIAMSON, *THE ECONOMIC INSTITUTIONS OF CAPITALISM* 89–94 (1985); Benjamin Klein Robert G. Crawford & Armen A. Alchian, *Vertical Integration, Appropriable Rents, and the Competitive Contracting Process*, 21 *J.L. & ECON.* 297, 302–04 (1978).

55. See James C. Cooper et al., *Vertical Antitrust Policy as a Problem of Inference*, 23 *INT'L J. INDUS. ORG.* 639, 643–44, 646–47 (2005); Herbert Hovenkamp, *Post-Chicago Antitrust: A Critique and Review*, 2001 *COLUM. BUS. L. REV.* 257, 278–79, 326.

56. See, e.g., Michael A. Salinger, *Vertical Mergers and Market Foreclosure*, 103 *Q.J. ECON.* 345, 349–50 (1988); Michael D. Whinston, *Tying, Foreclosure, and Exclusion*, 80 *AM. ECON. REV.* 837, 855–56 (1990).

57. Jerry A. Hausman, *Valuing the Effect of Regulation on New Services in Telecommunications*, in *BROOKINGS PAPERS ON ECON. ACTIVITY: MICROECONOMICS* 1, 3, 10, 14–15 (Clifford Winston et al. eds., 1997).

58. Francine Lafontaine & Margaret Slade, *Vertical Integration and Firm Boundaries: The Evidence*, 45 *J. ECON. LIT.* 629, 680 (2007).

arrangement is harmful before the practice is attacked.”⁵⁹ Moreover, the survey found “clear evidence that restrictions on vertical integration that are imposed . . . on owners of retail networks are usually detrimental to consumers.”⁶⁰ They thus called on “government agencies to reconsider the validity of such restrictions.”⁶¹ 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.”⁶²

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.”⁶³ In contrast, government mandates or prohibitions of vertical restraints “systematically reduce consumer welfare or at least do not improve it.”⁶⁴ The authors conclude that “the empirical evidence suggests that in fact a relaxed antitrust attitude towards [vertical] restraints may well be warranted.”⁶⁵ 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.”⁶⁶

A similar review of the empirical literature on vertical restraints conducted by four members of the Federal Trade Commission’s senior staff similarly found “a paucity of support for the proposition that vertical restraints/vertical integration are likely to harm consumers.”⁶⁷ Only one study unambiguously found that vertical integration harmed consumers, and in that study the welfare losses were “miniscule.”⁶⁸ 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.”⁶⁹ The survey thus concluded, “Most studies find evidence that vertical restraints/vertical integration are pro-competitive.”⁷⁰ The weight of the evidence thus “suggests that vertical restraints are likely to be benign or welfare enhancing,”⁷¹ which in turn provides empirical support for placing the burden on those opposing the practice.⁷²

The theoretical and empirical literature on vertical integration thus both strongly suggest that regulatory regimes mandating structural separation and prohibiting vertical

59. *Id.*

60. *Id.*

61. *Id.*

62. Michael H. Riordan, *Competitive Effects of Vertical Integration*, in HANDBOOK OF ANTITRUST ECONOMICS 145, 169 (Paolo Buccirossi ed., 2008).

63. See, e.g., Francine Lafontaine & Margaret Slade, *Exclusive Contracts and Vertical Restraints: Empirical Evidence and Public Policy*, in HANDBOOK OF ANTITRUST ECONOMICS 392, 408 (Paolo Buccirossi ed., 2008).

64. *Id.*

65. *Id.*

66. *Id.* at 409.

67. Cooper, *supra* note 55, at 648.

68. *Id.*

69. *Id.*

70. *Id.* at 658.

71. *Id.* at 662.

72. Cooper, *supra* note 55, at 661–62.

integration imposes substantial consumer harm. The loss of these welfare benefits represents another way in which compelling access can harm consumers.

B. Second Generation Access: 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.⁷³ 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.⁷⁴ 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.⁷⁵ The unbundling requirement imposed by the 1996 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.⁷⁶ 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.⁷⁷ The FCC has also imposed a wide range of unbundling requirements on DSL networks, including local loops.⁷⁸ Perhaps most importantly, the

73. Amendment of Sections 64.702 of the Commission's Rules and Regulations (Third Computer Inquiry), Report and Order, 104 F.C.C. 2d 958, 1002-11 ¶¶ 79-97 (1986).

74. This regime is known as "open network architecture" (ONA). *Id.* at 1063-66 ¶¶ 210-17. While ONA plans were being developed, major local telephone companies were governed by an interim regime known as "comparably efficient interconnection" (CEI). *Id.* at 1018-65 ¶¶ 111-218. The regime created by the Third Computer Inquiry was eventually overturned on judicial review. *See California v. FCC*, 39 F.3d 919, 925-30 (9th Cir. 1994) (overturning the regime); *California v. FCC*, 905 F.2d 1217, 1230-39 (9th Cir. 1990) (same). The FCC rolled its reconsideration of both CEI and ONA into the broadband proceedings opened in 2002. *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Notice of Proposed Rulemaking, 17 FCC Rcd. 3019, 3024 ¶ 8 (2002).

75. 47 U.S.C. § 251(c)(3) (1996).

76. *Id.* § 251(d)(2)(A)-(B) (emphasis added).

77. Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, First Report and Order, 11 FCC Rcd. 15,499 (1996) [hereinafter *Local Competition Order*]. 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. *Review of the Section 251 Unbundled Obligations of Incumbent Local Exchange Carriers*, Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, 18 FCC Rcd. 16,978, 17,237-38 ¶ 419, 17,239 ¶ 422, 17,263-64 ¶ 459, 17,265-86 ¶¶ 464-85(2003), *modified*, 18 FCC Rcd. 19,020 (2003), *vacated in relevant part sub nom.* U.S. Telecom Ass'n v. FCC, 359 F.3d 554, 586-87 (D.C. Cir. 2004).

78. 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. *GTE Telephone Operating Cos.*, Memorandum Opinion and Order, 13 FCC Rcd. 22,466 (1998). 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. *Local Competition Order*, *supra* note 77, at 15,713 ¶ 427. The FCC also ruled that collocation did not extend to equipment used to provide only

FCC's *Line Sharing Order* 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 in the lower frequencies.⁷⁹

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 established under Title II to govern telecommunications services, the regulatory regime established by Title VI to govern 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."⁸⁰ In addition, the FCC declined to impose the tariffing and unbundling requirements created by the *Computer Inquiries* to cable modem service.⁸¹ The Supreme Court's 2005 decision in *National Cable & Telecommunications Association v. Brand X Internet Services* subsequently upheld the FCC's decision.⁸²

1. 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 rendering the regime a nullity simply by charging excessive prices.⁸³

Moreover, unbundling poses numerous administrative difficulties. Unlike the access to local telephone networks 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 networks 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 at those interfaces processes for provisioning, monitoring, and billing the services provided.⁸⁴

As a result, local loop unbundling is likely to be very difficult to administer. As

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. *Id.* at 15,794–95 ¶¶ 580–81. The order did mandate UNE access to all loops connecting central offices to end users, including the loops used to provide DSL. *Id.* at 15,691–92 ¶¶ 380–82. The order also obligated incumbent local telephone companies to fulfill any requests to condition existing loops to make them DSL compatible. *Id.* A subsequent order confirmed that collocation included multifunction equipment that could be used to provide both voice and data services. *See* Deployment of Wireline Services Offering Advanced Telecommunications Capability, First Report and Order and Further Notice of Proposed Rulemaking, 14 FCC Rcd. 4761, 4776–79 ¶¶ 27–31 (1999) (presenting the described order).

79. *See* Deployment of Wireline Services Offering Advanced Telecommunications Capability, Third Report and Order in CC Docket No. 98-147 and Fourth Report and Order in CC Docket No. 96–98, 14 FCC Rcd. 20,912 (1999) (presenting the line sharing order).

80. Inquiry Concerning High-Speed Access to the Internet over Cable and Other Facilities, Declaratory Ruling and Notice of Proposed Rulemaking, 17 FCC Rcd. 4798, 4820–39 ¶¶ 34–69 (2002).

81. *Id.* at 4825 ¶ 43–44.

82. Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs., 545 U.S. 967, 1001–03 (2005).

83. SPULBER & YOO, *supra* note 12, at 275, 332, 369.

84. *Id.* at 182–84.

Justice Breyer warned in his separate opinion in *AT&T Corp. v. Iowa Utilities Board*, “[e]ven 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.”⁸⁵ Indeed,

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.⁸⁶

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.”⁸⁷ 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 result very different from the competitive market that the statute seeks to create.”⁸⁸

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, “[e]nforced sharing . . . requires antitrust courts to act as central planners, identifying the proper price, quantity, and other terms of dealing.”⁸⁹ 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.”⁹⁰ 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 implementing the sharing and interconnection obligations.”⁹¹

As a result, the essential facility doctrine necessarily requires the government to oversee the entire business relationship.⁹² The difficulties the FCC confronted when attempting to implement other access regimes, such as long-distance interconnection⁹³ and leased access to cable television systems⁹⁴ provide further demonstration of these

85. *AT&T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366, 428 (1999) (Breyer, J., concurring in part and dissenting in part).

86. *Id.* at 429 (citation omitted).

87. *Id.*

88. *See supra* notes 33–37, *infra* note 92, and accompanying text.

89. *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 408 (2004).

90. *Id.* at 410.

91. *Id.* at 414.

92. *Id.* at 414.

93. *See MCI Commc’ns v. AT&T Co.*, 708 F.2d 1081, 1131–32 (7th Cir. 1983); *United States v. AT&T Co.*, 552 F. Supp. 131, 188, 189–90, 190 n.238 (D.D.C. 1982), *aff’d mem. sub nom Maryland v. U.S.*, 460 U.S. 1001 (1983); HUBER ET AL., *supra* note 13, at 136–40; Faulhaber, *supra* note 23, at 77, 81, 81–83.

94. *See S. REP. NO. 102-92*, at 30–32 (1991), *reprinted in* 1992 U.S.C.C.A.N. 1133, 1163–65; H.R. REP. NO. 102-628, at 39–40 (1992); *Time Warner Entm’t Co. v. FCC*, 93 F.3d 957, 968–70 (D.C. Cir. 1996); Donna M. Lampert, *Cable Television: Does Leased Access Mean Least Access?*, 44 FED. COMM. L.J. 245, 266, n.122, 266–67 (1992).

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.⁹⁵

2. *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. One reason is that, as the well known “tragedy of the commons” demonstrates, people tend to overuse and underinvest in resources that are shared.⁹⁶ Even more importantly, as Areeda and Hovenkamp note, “the right to share a monopoly discourages firms from developing their own alternative inputs.”⁹⁷ 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.⁹⁸

In *Trinko*, a majority of the Supreme Court agreed, noting that “[c]ompelling 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.”⁹⁹ 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.¹⁰⁰ Indeed, that was the case with the breakup of AT&T, where local telephone service was still regarded as an intractable

95. See Paul L. Joskow & Roger G. Noll, *The Bell Doctrine: Applications in Telecommunications, Electricity, and Other Network Industries*, 51 STAN. L. REV. 1249 (1999).

96. Garrett Hardin, *The Tragedy of the Commons*, 162 SCI. 1243, 1244–45 (1968); see also Harold Demsetz, *The Private Production of Public Goods*, 13 J.L. & ECON. 293 (1970).

97. 3B AREEDA & HOVENKAMP, *supra* note 13, ¶ 771b, at 195–96; see also *id.* ¶ 773a(10), at 239–40 (“[F]orcing a defendant to share an input can actually impair competition to the extent that it reduces the plaintiff’s incentive to supply that input for itself.”); *id.* ¶ 774c, at 266 (noting that sharing causes the parties seeking access “to lose some or all of the incentive to produce an alternative to the input on their own”).

98. *AT&T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366, 428–29 (1999) (Breyer, J., concurring in part and dissenting in part) (citation omitted); accord *Verizon Commc’ns Inc. v. FCC*, 535 U.S. 467, 550–51 (2002) (Breyer, J., concurring in part and dissenting in part) (noting that compelling incumbents to share the cost-reducing benefits of a successful innovation destroys the incumbent’s incentives to innovate in the first place).

99. *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407–08 (2004).

100. 3B AREEDA & HOVENKAMP, *supra* note 13, ¶ 774c, at 266.

natural monopoly.¹⁰¹ 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 in unbundling requirements will deter 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.¹⁰² Indeed, many studies indicate that access actively discouraged such investments.¹⁰³ Even more importantly, studies have drawn similar conclusions about the impact that mandating access has had no significant effect or a negative effect on investments in last-mile broadband access services.¹⁰⁴ At the same

101. See *United States v. W. Elec. Co.*, 673 F. Supp. 525, 537 (D.D.C. 1987) (concluding that “[t]he exchange monopoly of the Regional Companies has continued because it is a natural monopoly”), *aff’d*, 894 F.2d 1387 (D.C. Cir. 1990); see also *Verizon Commc’ns Inc.*, 535 U.S. at 475–76 (noting that at the time of the breakup of AT&T, local telephone service was “thought to be the root of natural monopoly in the telecommunications industry”); Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Notice of Proposed Rulemaking, 11 FCC Rcd. 14,171, 14,173–74 ¶ 4 (1996) (noting the breakup of AT&T continued to treat local telephone service as a natural monopoly).

102. See Thomas W. Hazlett, *Rivalrous Telecommunications Networks With and Without Mandatory Sharing*, 58 FED. COMM. L.J. 477 (2006). For a recent survey, see Carlo Cambini & Yanyan Jiang, *Broadband Investment and Regulation: A Literature Review*, 33 TELECOMM. POL’Y 559, 569, 571 (2009).

103. See, e.g., Michael Grajek & Lars-Hendrik Röller, *Regulation and Investment in Network Industries: Evidence from European Telecoms*, 54 J.L. & ECON. (forthcoming 2011), available at <http://www.esmt.org/fm/479/ESMT-09-004.pdf>; Jerry A. Hausman & J. Gregory Sidak, *Did Mandatory Unbundling Achieve Its Purpose? Empirical Evidence from Five Countries*, 1 J. COMPETITION L. & ECON. 173 (2005); Allan T. Ingraham & J. Gregory Sidak, *Mandatory Unbundling, UNE-P, and the Cost of Equity: Does TELRIC Pricing Increase Risk for Incumbent Local Exchange Carriers?*, 20 YALE J. ON REG. 389 (2003); Robert S. Pindyck, *Mandatory Unbundling and Irreversible Investment in Telecom Networks*, 6 REV. NETWORK ECON. 274 (2007), available at <http://www.bepress.com/rne/vol6/iss3/2>; Troy Quast, *Did Federal Regulation Discourage Facilities-Based Entry into US Local Telecommunications Markets?*, 32 TELECOMM. POL’Y 572 (2008); William P. Zarakas et al., *Structural Stimulation of Facility Sharing: Unbundling Prices and Investment Strategy in Local Exchange Markets* (Brattle Group July 15, 2005) (unpublished manuscript), available at http://www.brattle.com/_documents/UploadLibrary/Upload357.pdf; see also Hans Friederiszick et al., *Analyzing the Relationship Between Regulation and Investment in the Telecom Sector* (European Sch. of Mgmt. & Tech. White Paper No. WP-108-01, 2008), available at www.esmt.org/fm/479/WP-108-01.pdf (concluding that access regulation reduces the investment incentives for new fixed-line entrants, and has no effect on investment incentives for incumbents or mobile operators). For articles drawing the related conclusion that setting access prices too low deters investment, see Robert W. Crandall et al., *Do Unbundling Policies Discourage CLEC Facilities-Based Investment?*, 4 TOPICS IN ECON. ANALYSIS & POL’Y 14 (2004), available at <http://www.bepress.com/bejeap/topics/vol4/iss1/art14/>; Agustín J. Ros & Karl McDermott, *Are Residential Local Exchange Prices Too Low?*, in EXPANDING COMPETITION IN REGULATED INDUSTRIES 149 (Michael A. Crew ed., 2000); James Zolnierek et al., *An Empirical Examination of Entry Patterns in Local Telephone Markets*, 19 J. REG. ECON. 143 (2001); James Eisner & Dale E. Lehman, *Regulatory Behavior and Competitive Entry* (2001) (unpublished manuscript presented at the 14th Annual Western Conference, Center for Research in Regulated Industries), available at <http://www.aestudies.com/library/elpaper.pdf>; Leonard Waverman et al., *Access Regulation and Infrastructure Investment in the Telecommunications Sector: An Empirical Investigation*, LECG (Sept. 2007), http://www.etno.be/portals/34/etno%20documents/lecg_final%20report.pdf.

104. For articles failing to find a statistically significant relationship between access to broadband networks and investment, see Inmaculada Cava-Ferreruela & Antonio Albau-Muñoz, *Broadband Policy Assessment: A*

time, empirical studies generally indicate that competition from new, facilities-based entrants is a more effective driver of broadband deployment and adoption.¹⁰⁵

Cross-National Empirical Analysis, 30 TELECOMM. POL'Y 445, 455 (2006); Sangwon Lee, *Broadband Deployment in the United States: Examining the Impacts of Platform Competition*, 8 INT'L J. ON MEDIA MGMT. 173, 179 (2006); Scott Wallsten & Stephanie Hausladen, *Net Neutrality, Unbundling, and their Effects on International Investment in Next-Generation Networks*, 8 REV. NETWORK ECON. 90, 91–94 (2009), available at <http://www.bepress.com/rne/vol8/iss1/6/>; Johannes M. Bauer et al., *Broadband Uptake in OECD Countries: Policy Lessons and Unexplained Patterns* (Sept. 20, 2003) (unpublished manuscript), available at <http://userpage.fu-berlin.de/~jmueller/its/conf/helsinki03/abstracts/papers/Bauer-Kim-Wildman-EITS.pdf>; Glen Boyle et al., *Catching Up in Broadband Regressions: Does Local Loop Unbundling Really Lead to Material Increases in OECD Broadband Uptake?* (July 2008) (unpublished manuscript), available at <http://ssrn.com/abstract=1184339>; Mario Denni & Harald Gruber, *The Diffusion of Broadband Telecommunications: The Role of Competition*, 68 COMM. & STRATEGIES 139 (2007); Walter Distaso et al., *Platform Competition and Broadband Uptake: Theory and Empirical Evidence from the European Union* (Sept. 2004) (unpublished manuscript), available at <http://ssrn.com/abstract=518382>; Marcelo Grosso, *Determinants of Broadband Penetration in OECD Nations* (2006) (unpublished manuscript), available at http://networkinsight.org/verve/_resources/GrossoM.pdf; Thomas Hazlett & Coleman Bazelon, *Regulated Unbundling of Telecommunications Networks: A Stepping Stone to Facilities-Based Competition?* 16–19 (Oct. 4, 2005) (unpublished manuscript), available at <http://mason.gmu.edu/~thazlett/pubs/Stepping%20Stone%20TPRC.10.04.05%20.pdf>.

For articles finding that access to broadband networks has a negative impact on investment, see Bouckaert et al., *Access Regulation, Competition, and Broadband Penetration: An International Study*, 34 TELECOMM. POL'Y 661, 669, 671 (2010); Denni & Gruber, *supra*, at 151, 153, 155; Bronwyn Howell, *Infrastructure Regulation and the Demand for Broadband Services: Evidence from OECD Countries*, 47 COMM. & STRATEGIES 33, 39 (2002), available at http://www.idate.org/fic/revue_telech/327/C&S47_HOWELL.pdf; Scott Wallsten & Stephanie Hausladen, *Net Neutrality, Unbundling, and Their Effects on International Investment in Next-Generation Networks*, 8 REV. NETWORK ECON. 90 (2009); Scott Wallsten, *Whence Competition in Network Industries? Broadband and Unbundling Regulations in OECD Countries*, TECH. POL'Y INST. (Dec. 2007), <http://www.techpolicyinstitute.org/files/s8.pdf>; see also Sangwon Lee & Seonmi Lee, *An Empirical Study of Broadband Diffusion and Bandwidth Capacity in OECD Countries*, 2 COMM. & CONVERGENCE REV. 36, 46 (2010) (finding local loop unbundling to be negatively correlated with broadband diffusion at a statistically insignificant level).

A handful of studies find a positive relationship between unbundling and investment. See Martha Garcia-Murillo, *International Broadband Deployment: The Impacts of Unbundling*, 57 COMM. & STRATEGIES 83, 96, 102 (2005); Sangwon Lee & Justin S. Brown, *Examining Broadband Adoption Factors: An Empirical Analysis Between Countries*, 10 INFO. J. POL'Y, REG. & STRATEGY FOR TELECOMM., INFO. & MEDIA 25, 34–35 (2008); Grosso, *supra*, at 21. 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. See Declaration of Robert W. Crandall, Evert M. Ehrlich and Jeffrey A. Eisenach Regarding the Berkman Center Study (NBP Public Notice 13), at 28–31, available at <http://www.naviganteconomics.com/docs/Crandall%20Ehrlich%20Eisenach%20Declaration%20FINAL.pdf>; International Comparison and Consumer Survey Requirements in the Broadband Data Improvement Act, 25 FCC Rcd. 11,963 (2010) (GN Docket No. 09-47). In addition, many of these studies focus on adoption rather than investment and fail to take into account the natural diffusion of technology over time. See Cambini & Jiang, *supra* note 102, at 569, 571; Crandall et al., *supra*, at 30; Lee & Brown, *supra*, at 34. 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 three multivariate regression specifications. See Garcia-Murillo, *supra*, at 102.

105. See Debra J. Aron & David E. Burnstein, *Broadband Adoption in the United States: An Empirical Analysis*, in DOWN TO THE WIRE: STUDIES IN THE DIFFUSION AND REGULATION OF TELECOMMUNICATIONS TECHNOLOGIES (Allan L. Shampine ed., 2003); Bouckaert et al., *supra* note 104, at 669; Denni & Gruber, *supra* note 104, at 155; Distaso et al., *supra* note 104, at 102–03; Garcia-Murillo, *supra* note 104, at 101, 102; Howell,

C. Third Generation Access: The Ladder of Investment

Later commentators, particularly those based in Europe, have developed a third justification for mandating access known as “the ladder of investment.”¹⁰⁶ Unlike previous theories, the ladder of investment does not provide access to elements which regulators regard as natural monopolies and are thus inherently incapable of being rendered competitive.¹⁰⁷ Instead, the ladder of investment theory provides access to those network elements that can be feasibly replicated. The hope is that by providing access to these elements, new entrants can enter more easily. Initially, they enter by reselling the incumbent’s services. Over time, they begin offering additional services until eventually they become a full-blown facilities-based competitor.¹⁰⁸

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 be too burdensome for new entrants to provide completely for themselves.

There is, however, an internal contradiction in this argument. As the Supreme Court has noted, “[t]he indispensable requirement for invoking the [essential facility] doctrine is the unavailability of access to the ‘essential facilities.’”¹⁰⁹ 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.¹¹⁰ The logic of the essential facility doctrine fails when the facility is otherwise available. As the Seventh Circuit noted when rejecting a similar request by MCI for access to portions of AT&T’s long distance network while MCI had not yet extended its own network to some parts of the country, “[t]here 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.”¹¹¹ 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

supra note 104, at 34–38, 44; Cava-Ferreruela & Albau-Muñoz, *supra* note 104; Denni & Gruber, *supra* note 104; Walter Distaso et al., *Platform Competition and Broadband Uptake: Theory and Empirical Evidence from the European Union*, 18 INFO. ECON. & POL’Y 87 (2006); Lee, *supra* note 104, at 179; Grosso, *supra* note 104.

106. Martin Cave, *Encouraging Infrastructure Competition via the Ladder of Investment*, 30 TELECOMM. POL’Y 223, 223 (2006); Yoshikazu Okamoto, *The Influence of Market Developments and Policies on Telecommunication Investment* 11 (OECD Digital Economy Papers No. 151, 2009), available at www.oecd.org/dataoecd/34/36/42037713.pdf; European Regulators Group (ERG), Common Position on the Approach to Appropriate Remedies in the New Regulatory Framework, ERG (03) 30 rev 1 (2003), available at http://www.erg.eu.int/doc/whatsnew/erg_0330rev1_remedies_common_position.pdf.

107. Cave, *supra* note 106, at 232.

108. Okamoto, *supra* note 106, at 11.

109. *Verizon Commc’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 411 (2004); accord *3B AREEDA & HOVENKAMP*, *supra* note 13, ¶ 773b, at 242–48.

110. *See, e.g., Alaska Airlines, Inc. v. United Airlines, Inc.*, 948 F.2d 536, 544 (9th Cir. 1991); *MCI Commc’ns, Corp. v. AT&T*, 708 F.2d 1081, 1132 (7th Cir. 1982).

111. *MCI*, 708 F.2d at 1147.

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.¹¹²

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.¹¹³ Although some reports offered some preliminary observations suggesting the viability of the ladder-of-investment theory,¹¹⁴ formal empirical analyses failed to corroborate these findings.¹¹⁵

III. 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.¹¹⁶ The FCC's landmark 2003 *Triennial Review Order* eliminated unbundling requirements on most DSL-related network elements,¹¹⁷ and its attempt to retain unbundling requirements on local telephone service was overturned by the courts and subsequently eliminated.¹¹⁸ As noted earlier, the Supreme Court's 2005 *Brand X* decision upheld the FCC's 2002 decision exempting cable modem service from access regulation.¹¹⁹ Shortly thereafter, the FCC eliminated any remaining access requirements on DSL.¹²⁰ The FCC has also issued rulings declaring that broadband over power line

112. Cave, *supra* note 106, at 235.

113. See Marc Bourreau et al., *A Critical Review of the "Ladder of Investment" Approach*, 34 TELECOMM. POL'Y 683, 686–89, 690–93 (2010) (reviewing the theoretical literature).

114. Okamoto, *supra* note 106, at 33.

115. See Grajek & Röller, *supra* note 103; Hausman & Sidak, *supra* note 103; Hazlett, *supra* note 102, at 487–97, 508; Jeffrey A. Eisenach & Hal J. Singer, *Irrational Expectations: Can a Regulator Credibly Commit to Removing an Unbundling Obligation?* (AEI-Brookings Joint Center Related Publication 07-28, 2007), available at <http://www.reg-markets.org/admin/authorpdfs/page.php?id=1434>.

116. U.S. Telecom Ass'n v. FCC, 290 F.3d 415, 428–29 (D.C. Cir. 2002).

117. Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, 18 FCC Rcd. 16,978, 17,327–33 ¶¶ 549–80 (2003).

118. Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, 18 FCC Rcd. 16,978, 17,237–38 ¶¶ 419, 17,239 ¶ 422, 17,263–64 ¶ 459, 17,265–86 ¶¶ 464–485 (2003), *vacated and remanded in relevant part sub nom.* United States Telecom Ass'n v. FCC, 359 F.3d 554, 586–87 (D.C. Cir. 2004), *on remand* Unbundled Access to Network Elements, Order on Remand, 20 FCC Rcd. 2533, 2641–61 ¶¶ 199–228 (2005), *aff'd sub nom.* Covad Commc'ns Co. v. FCC, 450 F.3d 528, 546–49 (D.C. Cir. 2006).

119. Inquiry Concerning High-Speed Access to the Internet over Cable and Other Facilities, Declaratory Ruling and Notice of Proposed Rulemaking, 17 FCC Rcd. 4798, 4820–39 ¶¶ 34–69 (2002), *aff'd sub nom.* Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs., 545 U.S. 967 (2005).

120. Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd. 14,853, 14,860–61 ¶ 9 n.15, 14,862–65 ¶¶ 12–17, 14,875–79 ¶ 41–46, 46 n.107, 14,804–98 ¶¶ 77–85, 14,904 ¶ 96 (2005), *petition for review denied sub nom.* Time Warner Telecom, Inc. v. FCC, 507 F.3d 205 (3d Cir. 2007); Petition of AT&T Inc. for Forbearance Under

and wireless broadband constitute information services.¹²¹

A. The 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 VoIP and wireless telephone providers.¹²² The number of wireline telephones has declined sharply, dropping from a high of 193 million in December 2000¹²³ to a low of 122 million as of June 2010.¹²⁴

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.¹²⁵ 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).¹²⁶ 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 a former FCC Chief Economist has pointed out, while unregulated *monopoly* performs sufficiently poorly to tip the balance in favor of incurring the costs of regulatory intervention, the fact that unregulated *oligopoly* performs substantially better tips the balance in favor of deregulation.¹²⁷

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

47 U.S.C. § 160(c) from Title II and *Computer Inquiry Rules with Respect to Its Broadband Services*, Memorandum Opinion and Order, FCC Rcd. 18,705, 18,718–19 ¶ 22, 18,723–24 ¶ 30 (2007); Press Release, FCC, Verizon Tel. Cos.' Petition for Forbearance from Title II & Computer Inquiry Rules with Respect to Their Broadband Services Is Granted by Operation of Law (Mar. 20, 2006), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-264436A1.pdf.

121. See United Power Line Council's Petition for Declaratory Ruling Regarding the Classification of Broadband over Power Line Internet Access Service as an Information Service, Memorandum Opinion and Order, 21 FCC Rcd. 13,281, 13,286 ¶ 9 (2006); Appropriate Regulatory Treatment for Broadband Access to the Internet over Wireless Networks, Declaratory Ruling, 22 FCC Rcd. 5901, 5901 ¶ 1 (2007).

122. Approximately 25 million households now rely on Voice over Internet Protocol (VoIP). FCC INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION, WIRELINE COMPETITION BUREAU, LOCAL TELEPHONE COMPETITION: STATUS AS OF JUNE 30, 2010, at 2 fig. 1 (Mar. 2011) [hereinafter FCC JUNE 2010 REPORT], available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-305297A1.pdf. The number of wireless telephone providers reached 277.6 million by the end of 2008, more than double the number of total wireline subscribers. Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Fourteenth Report, 25 FCC Rcd. 11,407, 11,504 ¶ 155 (2010). Moreover, in the first half of 2009, an estimated 21% of adults relied exclusively on their wireless phones for voice service. *Id.* at 11,603 ¶¶ 339–40.

123. FCC INDUSTRY ANALYSIS AND TECHNOLOGY DIVISION, WIRELINE COMPETITION BUREAU, LOCAL TELEPHONE COMPETITION: STATUS AS OF DECEMBER 31, 2001, at tbl. 1 (July 2002), available at http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/lcom1202.pdf.

124. FCC JUNE 2010 REPORT, *supra* note 122, at 1.

125. See *United States Telecom Ass'n v. FCC*, 290 F.3d 415, 428–29 (D.C. Cir. 2002) (holding such competition level is sufficient).

126. CHRISTOPHER S. YOO, *THE DYNAMIC INTERNET: HOW TECHNOLOGY, USERS, AND BUSINESSES ARE TRANSFORMING THE NETWORK* (forthcoming 2011).

127. See Howard A. Shelanski, *Adjusting Regulation to Competition: Toward a New Model for U.S. Telecommunications Policy*, 24 YALE J. ON REG. 55, 84–93 (2007).

one provider should have sufficient options to obtain service from another provider.

B. 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 anyone 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.¹²⁸ 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 access, that protect incumbents from new entry will continue to exist long after the justifications for enacting the regulation have long disappeared.¹²⁹ 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.

IV. 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.¹³⁰ Although some scholars have categorically asserted that because the dynamic efficiency gains will be compounded over time, they will invariably dominate

128. 3B AREEDA & HOVENKAMP, *supra* note 13, ¶ 774c, at 266.

129. Richard A. Posner, *Natural Monopoly and Its Regulation*, 21 STAN. L. REV. 548, 611–15 (1969).

130. Yoo, *supra* note 42, at 65.

the short-run static efficiency losses,¹³¹ 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.¹³² The fact that the deregulation focuses on structural rather than behavioral relief increases its implementability. In addition, deregulation decentralizes decision making 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 decision making is frequently influenced by political goals and public interest pressures that are not always consistent with good policy.¹³³ 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.¹³⁴ Administrative agencies are also often thought to exhibit a tendency to enlarge their jurisdiction even when the proper response would be to contract it.¹³⁵ 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 deregulation of 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 industry. This is exactly what happened in the Interstate Commerce Commission (ICC) when the emergence of the trucking industry eliminated whatever natural monopoly power was enjoyed by the railroad. Rather than deregulating railroads, the ICC 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.¹³⁶

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 to 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

131. See WALTER G. BOLTER ET AL., *TELECOMMUNICATIONS POLICY FOR THE 1980'S* 360 (1984); Janusz Ordover & William Baumol, *Antitrust Policy and High-Technology Industries*, OXFORD REV. ECON. POL'Y, Winter 1988, at 13, 32.

132. Yoo, *supra* note 130, at 67–68.

133. See BRUCE M. OWEN & RON BRAEUTIGAM, *THE REGULATION GAME* (1978); 2 KAHN, *supra* note 18, at 325–26.

134. See Christopher S. Yoo, *The Rise and Demise of the Technology-Specific Approach to the First Amendment*, 91 GEO. L.J. 245, 272–75 (2003).

135. See WILLIAM A. NISKANEN, JR., *BUREAUCRACY AND REPRESENTATIVE GOVERNMENT* (1971).

136. See Christopher S. Yoo, *Rethinking the Commitment to Free, Local Television*, 52 EMORY L.J. 1579, 1688–90 (2003).

necessarily puts network policy in the crosshairs of this tension.

If entry is impossible, policymakers should abandon the goal of trying to promote entry by new local telecommunications networks and instead focus on the secondary goal of promoting competition in complementary services through access regulation. In so doing, policymakers should 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.

V. CONCLUSION

The decision whether to mandate access to telecommunications networks thus presents 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 whenever competition is feasible, policymakers should generally follow the first course by refusing to mandate access. When competition is feasible but not yet present, policymakers should mandate access only if the short-run static efficiency losses dominate the long-run dynamic efficiency gains. Only if competition is infeasible can a simple policy inference in favor of access regulation be sustained. 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.