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Is There a Role for Common Carriage in an Internet-Based World?

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ARTICLE

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ABSTRACT

During the course of the network neutrality debate, advocates have proposed extending common carriage regulation to broadband Internet access services. Others have endorsed extending common carriage to a wide range of other Internet-based services, including search engines, cloud computing, Apple devices, online maps, and social networks. All too often, however, those who focus exclusively on the Internet era pay too little attention to the lessons of the legacy of regulated industries, which has long struggled to develop a coherent rationale for determining which industries should be subject to common carriage. Of the four rationales for determining the scope of common carriage—whether industry players (1) hold themselves out as serving all comers, (2) are "affected with a public interest," (3) are natural monopolies, or (4) offer transparent transmission

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capability between points of the customers choosing without change—each has been discredited or is inapplicable to Internet-based technologies.

Moreover, common carriage has long proven difficult to implement. Nondiscrimination is difficult to enforce when products vary in terms of quality or cost and forecloses demand-side price discrimination schemes (such as Ramsey pricing) that can increase economic welfare. In addition, the academic literature has long noted that the obligation to keep rates reasonable is difficult to apply, has trouble accommodating differences in quality, provides weak incentives to economize, creates systematic biases toward inefficient solutions, raises difficult questions about how to allocate common costs, deters innovation, and requires collusion by creating entry barriers, standardizing products, pooling information, providing advance notice of any pricing changes, and allowing the government to serve as the cartel enforcer. Three historical examples—early local telephone companies known as competitive access providers, the detariffing of business services, and Voice over Internet Protocol—provide concrete illustrations of how refraining from imposing common carriage regulation can benefit consumers.

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I. INTRODUCTION

Without question, the Internet represents the most important development in the communications sector over the past quarter century. Many early scholars optimistically endorsed what has become known as "Internet exceptionalism" and argued that the past no longer served as a useful starting point for legal analysis.[1] Interestingly, in recent years,

1. *See generally* Tim Wu, *Is Internet Exceptionalism Dead?*, *in* THE NEXT DIGITAL DECADE: ESSAYS ON THE FUTURE OF THE INTERNET 179 (Berin Szoka & Adam Marcus eds., 2010) (reviewing the history of Internet exceptionalism); Eric Goldman, *The Third Wave of Internet Exceptionalism*, INFORMIT (Feb. 23, 2009), http://www.informit.com/articles/article.aspx?p=1325266 (defining Internet exceptionalism and describing its development). For the leading early scholarly statement expounding what is now known as "Internet exceptionalism," see David R. Johnson & David Post, *Law and Borders—The Rise of Law in Cyberspace*, 48 STAN. L. REV. 1367, 1387–91 (1996). For a somewhat polemical exposition of this position, see John Perry Barlow, *A Declaration of the Independence of Cyberspace*, ELEC. FRONTIER FOUND. (Feb. 8, 1996), http://homes.eff.org/~barlow/Declaration-Final.html.

commentators have increasingly turned to one of the most traditional forms of regulation: common carriage.

The debate over network neutrality that has dominated Internet policy for the past decade provides the most salient example. The embrace of common carriage came about slowly: when some early critics equated network neutrality with common carriage,[2] many network neutrality proponents appeared reluctant to equate the two regimes.[3] The D.C. Circuit's decision holding that the Federal Communications Commission (FCC) lacked the jurisdiction to sanction Comcast for blocking peer-to-peer file-sharing[4] prompted a sea change in this regard, with many network neutrality proponents now embracing common carriage.[5] The FCC explored moving in this direction. Despite

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2. *See* Bruce M. Owen, *Antecedents to Net Neutrality*, REGULATION, Fall 2007, at 14, 14 ("[T]he architects of the concept of net neutrality . . . . have simply resurrected the traditional but uncommonly naïve 'common carrier' solution to the threats they fear."); Christian Sandvig, *Network Neutrality Is the New Common Carriage*, 9 INFO: J. POL'Y, REG. & STRATEGY FOR TELECOMM., INFO. & MEDIA, no. 2/3, 2007, at 136, 143–44 ("The parallel between common carrier regulation and the network neutrality is a fairly obvious one.") Randolph J. May, *The "Common Carrier" Free Press*, FREE STATE FOUND. (Apr. 27, 2009), http://freestatefoundation.blogspot.com/2009/04/common-carrier-free-press.html ("[A]ll net neutrality-like mandates . . . in effect constitute common carrier-like regulation . . . .").

3. *See, e.g.*, Tim Wu, *Why Have a Telecommunications Law? Anti-Discrimination Norms in Communications*, 5 J. ON TELECOMM. & HIGH TECH. L. 15, 16–17, 32–35 (2006) (noting the heavy criticism of common carriage and proposing the substitution of a simple antidiscrimination rule); *Part 2: Uses for Devices of Multiple Capabilities Cannot Always Be Predicted or Channeled*, COOK REP. ON INTERNET PROTOCOL, TECH., ECON., & POL'Y (Cook Network Consultants, Ewing, N.J.), Jan.–Feb. 2006, at 71, 91–92, *available at* http://cookreport.com/newsletter-sp-542240406/pdf?download=61:pdf; Hance Haney, *Eric Schmidt and Laurence Tribe on Common Carriage and Net Neutrality Regulation*, TECH. LIBERATION FRONT (Aug. 24, 2007), http://techliberation.com/2007/08/24/eric-schmidt-and-laurence-tribe-on-common-carriage-and-net-neutrality-regulation/ (quoting Google Chairman and CEO Eric Schmidt during a discussion of network neutrality as stating that "common carriage . . . is a mistake" and expressing hope that any common carrier obligations would be applied "pretty narrowly" (internal quotation marks omitted)); John Windhausen, Jr., *Good Fences Make Bad Broadband: Preserving an Open Internet Through Net Neutrality*, PUB. KNOWLEDGE 38 (Feb. 6, 2006), http://www.publicknowledge.org/pdf/pk-net-neutrality-whitep-20060206.pdf.

4. Comcast Corp. v. FCC, 600 F.3d 642, 644, 661 (D.C. Cir. 2010).

5. *See, e.g.*, TIM WU, THE MASTER SWITCH: THE RISE AND FALL OF INFORMATION EMPIRES 311–12 (2010) (arguing that net neutrality "is essentially the application of the idea of common carriage to a twenty-first-century industry"); Susan P. Crawford, *Transporting Communications*, 89 B.U. L. REV. 871, 910–12, 919 (2009) (discussing *Comcast* and suggesting that "[t]he time is ripe for a re-statement of and re-commitment to . . . common carriage"); Sascha D. Meinrath & Victor W. Pickard, *Transcending Net Neutrality: Ten Steps Toward an Open Internet*, 12 J. INTERNET L. 1, 14, 18 (2008) (noting that *Comcast* best exemplifies "the potential for abusing net neutrality" and recommending common carriage); Nate Anderson, *Making ISPs Common Carriers: Just a Simple "Error Correction"*, ARS TECHNICA (Apr. 19, 2010), http://arstechnica.com/tech-policy/2010/04/making-isps-common-carriers-just-a-simple-error-correction/ (quoting Susan Crawford and Tim Wu).

having ruled on six separate occasions that last-mile broadband services were not telecommunications services subject to common carriage obligations,[6] the FCC floated a proposal in May 2010 that would have reversed course.[7] The FCC's December 2010 Open Internet Order ultimately declined to follow this path,[8] although a proceeding that would reclassify broadband Internet access to bring it within the common carriage regime remains open.[9]

More recently, regulatory authorities have begun to consider whether to extend common carriage to services beyond broadband Internet access. Consider, for example, Voice over Internet Protocol ("VoIP"), which is an over-the-top application that rides on the infrastructure provided by traditional telephone and cable companies. The FCC has long ruled that non-interconnected VoIP services—those that cannot receive calls originating on the traditional telephone network—are not subject to common carriage regulation under Title II of the Communications Act of 1934.[10] The

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6. *See* Appropriate Regulatory Treatment for Broadband Access to the Internet over Wireless Networks, Declaratory Ruling, 22 FCC Rcd. 5901, 5909–11 ¶¶ 19–28 (2007) ("[W]e find that wireless broadband Internet access service is similarly an 'information service.'"); 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. 13281, 13285–87 ¶¶ 8–10 (2006) (categorizing BPL's services as information services); Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd. 14853, 14862–65 ¶¶ 12–14, 14909–12 ¶¶ 102–107 (2005) (categorizing the services provided as information services, not telecommunication services); Inquiry Concerning High-Speed Access to the Internet over Cable and Other Facilities, Declaratory Ruling and Notice of Proposed Rulemaking, 17 FCC Rcd. 4798, 4820–23 ¶¶ 34, 38 (2002) (finding "that cable modem service . . . is an information service" and not a telecommunications service), *aff'd sub nom.* Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs., 545 U.S. 967, 996–1000, 1003 (2005); Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Notice of Proposed Rulemaking, 17 FCC Rcd. 3019, 3029–34 ¶¶ 17–27 (2002) ("[W]ireline broadband Internet access service is an information service . . . ."); Federal-State Joint Board on Universal Service, Report to Congress, 13 FCC Rcd. 11501, 11520–26 ¶¶ 39–43, 11536–40 ¶¶ 73–81 (1998) ("We find that Internet access services are appropriately classed as information, rather than telecommunications, services.").

7. JULIUS GENACHOWSKI, THE THIRD WAY: A NARROWLY TAILORED BROADBAND FRAMEWORK 3–5 (2010), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-297944A1.pdf; AUSTIN SCHLICK, A THIRD-WAY LEGAL FRAMEWORK FOR ADDRESSING THE *COMCAST* DILEMMA 2–5 (2010), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-297945A1.pdf.

8. Preserving the Open Internet, Report and Order, 25 FCC Rcd. 17905, 17950–51 ¶ 79 (2010) (rejecting characterization of last-mile broadband providers as common carriers); *see also id.* at 18046 (Copps, Comm'r, concurring) (criticizing the FCC's refusal to bring last-mile broadband providers within the common carriage regime governing telecommunications services).

9. *See* Framework for Broadband Internet Service, Notice of Inquiry, 25 FCC Rcd. 7866, 7866–67 ¶ 1 (2010); *id.* at 7919–20 (statement of Copps, Comm'r).

10. Petition for Declaratory Ruling That Pulver.com's Free World Dialup Is Neither Telecommunications Nor a Telecommunications Service, Memorandum Opinion and

French government has adopted a different stance, demanding that Skype register as a traditional telecommunications provider (presumably subject to common carriage regulation) and referring Skype to the Paris public prosecutor for its refusal to do so.[11]

Others have proposed invoking common carriage regulation to govern the terms under which the networks comprising the Internet interconnect with one another.[12] Most notably, the European Telecommunications Network Operators' Association ("ETNO") submitted a proposal during the International Telecommunications Union's December 2012 World Conference on International Telecommunications that would extend the regime governing the settlement of international telephone calls to the Internet.[13] Others scholars have proposed extending common carriage regulation to other services, including search engines,[14] cloud computing,[15]

Order, 19 FCC Rcd. 3307, 3309–10 ¶ 5, 3312–14 ¶¶ 9–12 (2004). For the formal definition of "interconnected VoIP services," see IP-Enable Services, First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd. 10245, 10256–58 ¶¶ 23–24 (2005).

11. David Jolly, *French Regulators Seek Inquiry into Skype*, N.Y. TIMES, Mar. 13, 2013, at B7.

12. James B. Speta, *A Common Carrier Approach to Internet Interconnection*, 54 FED. COMM. L.J. 225, 275 (2002). For a more skeptical assessment, see Philip J. Weiser, *The Future of Internet Regulation*, 43 U.C. DAVIS L. REV. 529, 548–50 (2009).

13. *ETNO Paper on Contribution to WCIT: ITRs Proposal to Address New Internet Ecosystem*, EUROPEAN TELECOMM. NETWORK OPERATORS' ASS'N 7, 9 (Sept. 7, 2012), http://www.etno.eu/datas/itu-matters/etno-ip-interconnection.pdf (proposing an amendment that would (1) extend the ITU regulations governing international interconnection to include the Internet and (2) specify that interconnection agreements should, "where appropriate, respect[] the principle of sending party network pays"). Interestingly, the sole scholarly authority ETNO cites in support of its position is my recent book. *Id.* at 5 & n.2, 6 (citing CHRISTOPHER S. YOO, THE DYNAMIC INTERNET: HOW TECHNOLOGY, USERS, AND BUSINESSES ARE TRANSFORMING THE NETWORK 105–06 (2012)). I pointed out to ETNO that this represented a miscitation of my work. Although ETNO cites a passage of my book illustrating circumstances under which sending party network pays would be the appropriate framework, that passage was immediately followed by examples when the contrary principle ought to obtain. *See* YOO, *supra*, at 106–07. Instead of supporting regulation of IP interconnection, my book advocates preserving and encouraging pricing flexibility by refusing to regulate interconnection. *Id.* at 107–08. ETNO representatives responded that the proposal cited my work only in the introductory section establishing that the economic and technological environment surrounding the Internet is changing and recognized that my book does not support its call for extending ITU regulations to IP interconnection. This is technically true, although I remain concerned that casual readers might nonetheless mistakenly regard their citation of my work as an endorsement of their position.

14. Oren Bracha & Frank Pasquale, *Federal Search Commission? Access, Fairness, and Accountability in the Law of Search*, 93 CORNELL L. REV. 1149, 1206, 1208–09 (2008); Andrew Odlyzko, *Network Neutrality, Search Neutrality, and the Never-Ending Conflict Between Efficiency and Fairness in Markets*, 8 REV. NETWORK ECON. 40, 48, 52–53 (2009). For contrary views, see Mark A. Jamison, *Should Google Be Regulated as a Public Utility?*, 9 J.L. ECON. & POL'Y 223, 235–36, 245–46 (2013); and Marina Lao, *Search, Essential Facilities, and the Antitrust Duty to Deal*, 11 NW. J. TECH. & INTELL. PROP. 275, 290 (2013).

Apple devices,[16] online maps,[17] and social networks such as Facebook.[18]

The move is somewhat surprising and backward looking. What is even more striking is that the proposals advocating common carriage regulation for the Internet exhibit so little awareness of common carriage's regulatory history. Far from being a tried and true regulatory solution, the government has long recognized that common carriage is susceptible to a wide range of inefficiencies, structural biases, and manipulation.[19] Common carriage has also been the subject of a wide range of scholarly criticism as well.[20]

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15. Kevin Werbach, *The Network Utility*, 60 DUKE L.J. 1761, 1821–23 (2011). Although early commentators often referred to early versions of the cloud as a "computer utility" or a "network utility," they were careful to note that these services were too competitive and specialized to be regarded as public utilities. *See* C.C. BARNETT, JR., ET AL., THE FUTURE OF THE COMPUTER UTILITY 85–94 (1967); D.F. PARKHILL, THE CHALLENGE OF THE COMPUTER UTILITY 150 (1966); Manley R. Irwin, *The Computer Utility*, DATAMATION, Nov. 1966, at 22, 25–27; Delbert D. Smith, *The Interdependence of Computer and Communications Services and Facilities: A Question of Federal Regulation*, 117 U. PA. L. REV. 829, 853–59 (1969); Paul Baran, *Communication Policy Issues for the Coming Computer Utility* 2, 5–6, 9–12, 21–22 (RAND Paper Series No. P-3685, 1968).

16. *See* Bill Davidow, *Is Apple a Common Carrier?*, FORBES (Apr. 20, 2011), http://www.forbes.com/sites/billdavidow/2011/04/20/is-apple-a-common-carrier/ (arguing in favor of updating the concept of common carriage to encompass companies such as Apple).

17. *See* JONATHAN ZITTRAIN, THE FUTURE OF THE INTERNET AND HOW TO STOP IT 184–85 (2008).

18. *See id.* at 184 (referencing Facebook in the context of network neutrality principles); *see also* Danah Boyd, *Facebook Is a Utility; Utilities Get Regulated*, APOPHENIA (May 15, 2010), http://www.zephoria.org/thoughts/archives/2010/05/15/facebook-is-a-utility-utilities-get-regulated.html; Zeynep Tufekci, *Google Buzz: The Corporatization of Social Commons*, TECHNOSOCIOLOGY (Feb. 17, 2010), http://technosociology.org/?p=102. For a contrary view, see Adam Thierer, *The Perils of Classifying Social Media Platforms as Public Utilities* 51 (Mercatus Ctr., George Mason Univ., Working Paper No. 12-11, 2012), *available at* http://mercatus.org/sites/default/files/PerilsClassifyingSocialMediaPublicUtilities.pdf

19. *See, e.g.*, NAT'L TELECOMMS. & INFO. ADMIN., U.S. DEP'T OF COMMERCE, NTIA REGULATORY ALTERNATIVES REPORT 13–31 (1987), *available at* http://www.its.bldrdoc.gov/publications/87-222.aspx; John Haring & Evan Kwerel, *Competition Policy in the Post-Equal Access Market* 5–11 (FCC Office of Plans & Pol'y, Working Paper, 1987), *available at* http://www.fcc.gov/Bureaus/OPP/working_papers/oppwp22.pdf. *See generally* Scott M. Schoenwald, *Regulating Competition in the Interexchange Telecommunications Market: The Dominant/Nondominant Carrier Approach and the Evolution of Forbearance*, 49 FED. COMM. L.J. 367, 414–16 (1997) (providing a brief overview of these criticisms).

20. For textbook discussions of the problems associated with the regulatory tools used to implement common carriage, see, e.g., DENNIS W. CARLTON & JEFFREY M. PERLOFF, MODERN INDUSTRIAL ORGANIZATION 672–78 (3d ed. 2000); JEFFREY CHURCH & ROGER WARE, INDUSTRIAL ORGANIZATION: A STRATEGIC APPROACH § 26.2.2, at 847–52 (2000); 1 ALFRED E. KAHN, THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS 27–32 (1970) [hereinafter 1 KAHN]. *See generally* 2 ALFRED E. KAHN, THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS 11–59, 93–94, 108–12, 325–27 (1971) [hereinafter 2 KAHN]; W. KIP VISCUSI, JOSEPH

Indeed, the FCC has been attempting to reform common carriage regulation since 1979.[21]

Any assessment for applying common carriage principles to the Internet must come to grips with this legacy. This Article seeks to fill this void. Part II reviews the definitions of common carriers and analyzes the extent to which common carriage applies to Internet-based services under current law. Part III examines the policy considerations disfavoring common carriage identified in the literature, focusing on the difficulties in enforcing nondiscrimination and in regulating rates as well as the danger that common carriage might facilitate collusion. Part IV reviews the lessons of three examples where portions of the industry abandoned common carriage regulation. A brief conclusion follows.

II. A BRIEF INTRODUCTION TO COMMON CARRIAGE REGULATION

Before one can analyze the relative merits of common carriage regulation, one must understand what it is and what it entails. Subpart A reviews the various definitions of common carriage that have been put forth over the years. Subpart B discusses the duties that follow from being classified as a common carrier.

A. The Definition of Common Carriage

The Communications Act of 1934 defines "common carrier" as "any person engaged as a common carrier for hire, in interstate or foreign communication by wire or radio or interstate or foreign radio transmission of energy."[22] The circular nature of this definition inevitably leads those seeking to determine what a common carrier is to look to other sources. Interestingly, a number of recent scholars have reviewed the historical justifications of common carriage only to conclude (against their interests) that they fail to yield a coherent rationale.[23]

E. HARRINGTON, JR. & JOHN M. VERNON, ECONOMICS OF REGULATION AND ANTITRUST 431–36, 560–71 (4th ed. 2005).

21. *See* Policy and Rules Concerning Rates for Competitive Carrier Services and Facilities Authorizations Therefor, Notice of Inquiry and Proposed Rulemaking, 77 F.C.C.2d 308, 309–10 ¶¶ 1–3 (1979). *See generally* Schoenwald, *supra* note 19, at 375–83 (reviewing the regulatory history).

22. 47 U.S.C. § 153(11) (2012). This definition is subject to statutory exceptions and excludes radio broadcasting. *Id.*

23. *See* Kevin Werbach, *Only Connect*, 22 BERKELEY TECH. L.J. 1233, 1247 (2007) ("Common law sources are also unhelpful, offering competing and largely inconsistent rationales."); Thomas B. Nachbar, *The Public Network*, 17 COMMLAW

1. Holding Out. The leading case in defining common carriage comes from the D.C. Circuit's 1976 decision in *National Association of Regulatory Utility Commissioners v. FCC* (*NARUC I*), which held that a common carrier is a firm that "undertakes to carry . . . all people indifferently" and "hold[s] oneself out indiscriminately to the clientele one is suited to serve."[24] The court made clear that "business may be turned away either because it is not of the type normally accepted or because the carrier's capacity has been exhausted."[25] The key is that the provider does not make "individualized decisions, in particular cases, whether and on what terms to deal."[26]

Requiring companies that assert a willingness to serve all customers to honor that commitment is uncontroversial and quite sensible. In effect, it sounds in contract and simply requires that providers stand behind their promises.[27] It is subject to a number of objections, however. Critics point out that it both lacks a historical pedigree and fails to explain why certain industries are subject to common carriage and why some are not.[28]

More problematically, any definition that allows a firm's description of the services it offers to determine whether it is a common carrier will inevitably be subject to manipulation. A provider could avoid common carriage obligations simply by limiting its offers to a subset of the overall customer base instead of making them available to the public at large.[29] The result would place control over whether a firm is a common carrier under the control and discretion of the firm potentially subject to regulation.[30] Few firms voluntarily subject themselves to such

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CONSPECTUS 67, 109 (2008) ("It is hard to find a specific characteristic that leads to nondiscriminatory access and rate regulation.").

24. Nat'l Ass'n of Regulatory Util. Comm'rs v. FCC (*NARUC I*), 525 F.2d 630, 641 (D.C. Cir. 1976) (footnote omitted) (internal quotation marks omitted).

25. *Id.*

26. *Id.* (footnote omitted).

27. Nachbar, *supra* note 23, at 86–87. Some have tied this contractual aspect to the law of bailments, which placed a fiduciary responsibility on entities holding themselves out as general carriers of particular types of goods. William Jones, *The Common Carrier Concept as Applied to Telecommunications: A Historical Perspective* 9–10 (1980), *available at* http://www.cybertelecom.org/notes/jones.htm (last visited Nov. 1, 2013); *see also* Crawford, *supra* note 5, at 878 (citing Jones, *supra*, at 9–10); Richard S. Whitt, *Evolving Broadband Policy: Taking Adaptive Stances to Foster Optimal Internet Platforms*, 17 COMMLAW CONSPECTUS 417, 494–95 (2009).

28. *See* Daniel A. Lyons, *Net Neutrality and Nondiscrimination Norms in Telecommunications*, 54 ARIZ. L. REV. 1029, 1043–44 (2012); Nachbar, *supra* note 23, at 88–93.

29. *See NARUC I*, 525 F.2d at 642.

30. *See* James H. Lister, *The Rights of Common Carriers and the Decision Whether to Be a Common Carrier or a Non-Regulated Communications Provider*, 53 FED. COMM. L.J. 91, 93, 96 (2000) ("The definitions of 'common carrier' . . . are flexible enough to give

regulation.[31] Although the FCC did not stop AT&T from evading common carriage restrictions by filing a tariff applicable to a single customer, that decision did not withstand judicial review.[32]

The only viable alternative is to base the holding out rationale on some foundation other than the regulated firm's assent. To do so, however, would create a deep internal contradiction: the fact that holding out is rooted in contract means that it derives its normative force from the fact that the provider has acceded to certain terms of service.[33] But the imposition of mandatory carriage obligations simultaneously overrides that assent.[34] It is for this reason that commentators have criticized holding out as "a conspicuously empty" justification for imposing common carriage obligations.[35]

2. "Affected with a Public Interest." Others calling for imposing common carriage on IP-based communications invoke the hoary bromide that such regulation is justified for industries "affected with the public interest."[36] Interestingly, most of these references fail to acknowledge that they are invoking a *Lochner*-era doctrine that is almost universally regarded as discredited.[37]

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providers discretion in structuring many communications services as either common carrier or non-common carrier services.").

31. As the Supreme Court observed regarding the firms subject to regulation in *Munn v. Illinois*, "obviously Munn and Scott had not voluntarily dedicated their business to a public use. They intended only to conduct it as private citizens, and they insisted that they had done nothing which gave the public an interest in their transactions or conferred any right of regulation." Nebbia v. New York, 291 U.S. 502, 533–34 (1934).

32. AT&T Communications, Revisions to Tariff F.C.C. No. 12, 4 FCC Rcd. 4932, 4938 ¶ 57 (1989), *rev'd and remanded sub nom.* MCI Telecomms. Corp. v. FCC, 917 F.2d 30, 37 (D.C. Cir. 1990). *See generally* PETER W. HUBER, MICHAEL K. KELLOGG & JOHN THORNE, FEDERAL TELECOMMUNICATIONS LAW § 9.5.3.1, at 9-77 to -78 (2d ed. Supp. 2013).

33. *See* Nachbar, *supra* note 23, at 92.

34. *Id.*

35. *Id.* at 93.

36. *See* BRETT M. FRISCHMANN, INFRASTRUCTURE: THE SOCIAL VALUE OF SHARED RESOURCES 103, 218 (2012); Bracha & Pasquale, *supra* note 14, at 1208–09; Nachbar, *supra* note 23, at 79–84 (exploring the "businesses affected with the public interest" rationale as a potential justification for imposing nondiscriminatory access); Speta, *supra* note 12, at 277–78; Whitt, *supra* note 27, at 491–92; Wu, *supra* note 3, at 17 ("The oldest and hardest question in the field of common carriage is what exactly constitutes a 'business affected with a public interest.' On today's networks, that usually means distinguishing private from public information networks." (footnote omitted)).

37. DANIEL F. SPULBER & CHRISTOPHER S. YOO, NETWORKS IN TELECOMMUNICATIONS: ECONOMICS AND LAW 395–96 (2009); Peter Decherney, Nathan Ensmenger & Christopher S. Yoo, *Are Those Who Ignore History Doomed to Repeat It?*, 78 U. CHI. L. REV. 1627, 1678–79 (2011) (reviewing WU, *supra* note 5).

This principle, which was first developed in England,[38] received its most famous articulation in the landmark case of *Munn v. Illinois*.[39] *Munn* arose during the era when the Supreme Court regularly held that a wide range of economic regulation represented an unconstitutional infringement of an individual's substantive due process right to the freedom of contract.[40] The desire to uphold imposing rate regulation on railroads led *Munn* to recognize an exception to this right for industries "affected with a public interest," which included ferries, wharves, warehouses, taverns, inns, mills, bridges, turnpike roads, and common carriers.[41]

As an initial matter, one must bear in mind that *Munn* was a constitutional decision that determined when permitting an infringement on individuals' economic rights was permissible.[42] Holding that the government has the power to take a particular action says nothing about whether doing so would be desirable as a matter of regulatory policy.

In addition, the coherence of this doctrine came under immediate conceptual attack by liberals and conservatives alike.[43] Justice Field's dissent cogently pointed out that the public has an interest in industries as diverse as housing, textile manufacturing, the construction of machinery, and the printing of books.[44] Courts rejected arguments that the fact that a firm obtained property through eminent domain[45] or was operating under a state franchise[46] was by itself sufficient to render an industry "affected with the public interest."[47] Instead, the inquiry was governed by a multifactor balancing test, with no one factor being dispositive.[48] Later courts held that the test encompassed

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38. *See* MATTHEW HALE, DE PORTIBUS MARIS, *reprinted in* A COLLECTION OF TRACTS RELATIVE TO THE LAW OF ENGLAND, FROM MANUSCRIPTS 72, 78 (Francis Hargrave ed., 1787) (c. 1670).

39. Munn v. Illinois, 94 U.S. 113, 125–26 (1876).

40. Howard J. Vogel, *The "Ordered Liberty" of Substantive Due Process and the Future of Constitutional Law as a Rhetorical Art: Variations on a Theme from Justice Cardozo in the United States Supreme Court*, 70 ALB. L. REV. 1473, 1482, 1485 n.68 (2007).

41. *Munn*, 94 U.S. at 126–30.

42. *Id.* at 125–26, 130.

43. *See* Stephen A. Siegel, *Understanding the* Lochner *Era: Lessons from the Controversy over Railroad and Utility Rate Regulation*, 70 VA. L. REV. 187, 200–07 (1984) (surveying the critiques).

44. *Munn*, 94 U.S. at 140–41 (Field, J., dissenting).

45. FORD P. HALL, THE CONCEPT OF A BUSINESS AFFECTED WITH A PUBLIC INTEREST 96–97 (1940).

46. Nebbia v. New York, 291 U.S. 502, 534 (1934).

47. *Id.*; HALL, *supra* note 45, at 96–97.

48. HALL, *supra* note 45, at 17–55, 90–145.

such industries as banking,[49] fire insurance,[50] and even the wholesale marketing of ice.[51] Chief Justice Taft's valiant attempt to distill the inquiry into a workable test[52] is recognized even by proponents of the test to have failed.[53] The absence of clear guidance allowed judges to impose their own preferences over which industries were subject to rate regulation.[54]

The Supreme Court soon agreed, recognizing in *Nebbia v. New York* that "there is no closed class or category of businesses affected with a public interest."[55] After *Nebbia*, the Court regarded the doctrine as "discarded,"[56] and "the doctrine . . . disappeared from constitutional jurisprudence."[57] Similarly, in *Jackson v. Metropolitan Edison Co.*, the Supreme Court rejected claims that industries "affected with a public interest," such as electrical utilities, were state actors, citing as its principal authority *Nebbia*'s language, concluding that "affected with a public interest" was "not susceptible of definition and form[ed] an unsatisfactory test."[58]

The category of industries affected with a public interest is thus best regarded as a *Lochner*-era concept whose relevance and legitimacy evaporated when the Court declined to subject economic regulation to invasive judicial review. Unfortunately, many of the participants in the debate fail to recognize its problematic nature.[59]

More recently, some scholars have attempted to revive the category of businesses affected with a public interest by redefining the category to refer to "infrastructure," defined to be resources that create positive spillovers.[60] Reconceptualizing the scope of common carriage in this manner does not seem

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49. Noble State Bank v. Haskell, 219 U.S. 104, 110–13 (1911).

50. German Alliance Ins. Co. v. Lewis, 233 U.S. 389, 417 (1914).

51. Consumers' Light & Power Co. v. Phipps, 251 P. 63, 65 (Okla. 1926). This decision was later effectively overruled. New State Ice Co. v. Liebmann, 285 U.S. 262, 279–80 (1932).

52. Chas. Wolff Packing Co. v. Court of Indus. Relations, 262 U.S. 522, 535 (1923).

53. Nachbar, *supra* note 23, at 80.

54. *See* 1 KAHN, *supra* note 20, at 4; 2 KAHN, *supra* note 20, at 93 ("The courts at certain times in effect have substituted their judgment for that of the regulators . . . .").

55. Nebbia v. New York, 291 U.S. 502, 536 (1934).

56. Olsen v. Nebraska *ex rel*. W. Reference & Bond Ass'n, 313 U.S. 236, 245 (1941).

57. Siegel, *supra* note 43, at 206 n.85.

58. Jackson v. Metro. Edison Co., 419 U.S. 345, 353 (1974) (quoting *Nebbia*, 291 U.S. at 536).

59. For notable exceptions, see Crawford, *supra* note 5, at 883–85. *See also* Nachbar, *supra* note 23, at 81; Werbach, *supra* note 15, at 1790.

60. *See* FRISCHMANN, *supra* note 36, at 104–05; Crawford, *supra* note 5, at 884; Eli M. Noam, *Beyond Liberalization II: The Impending Doom of Common Carriage*, 18 TELECOMM. POL'Y 435, 439 (1994); Whitt, *supra* note 27, at 492–93.

consistent with the history of common carriage. As an initial matter, the definition appears to be underinclusive, as resources such as inns and taverns do not seem to be the type of resources that generate positive externalities.[61] At the same time, the definition fails to include a wide variety of other resources, such as printing presses, refinement of metallic ores, steam engines, and computers, that generate positive spillovers for other products but have never been subject to common carriage regulation.[62]

More fundamentally, mandated access represents a counterintuitive way to correct for positive externalities. The core problem associated with positive externalities is systematic underproduction.[63] Products that generate positive externalities create benefits for others that producers do not take into account when they are making their production decisions.[64] The conventional response is to tax activities that generate negative externalities to subsidize activities that generate positive ones.[65] Regulation, however, represents an implicit tax rather than a subsidy.[66] Thus, to the extent that the Internet generates positive externalities, imposing regulation would represent the opposite policy, systematically causing the systematic bias toward underproduction to worsen.

In addition, the literature on General Purpose Technologies (GPTs), a related concept that also focuses on technologies that generate positive externalities, identifies a different way that mandating access can harm activities that generate positive externalities.[67] Drawing on the insights of the New Institutional

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61. *See* Daniel A. Lyons, *Public Use, Public Choice, and the Urban Growth Machine: Competing Political Economies of Takings Law*, 42 U. MICH. J.L. REFORM 265, 294–95 (2009) (noting that bars can produce negative externalities in the form of increased crime); Joseph Blocher, Note, *Private Business as Public Good: Hotel Development and* Kelo, 24 YALE L. & POL'Y REV. 363, 393 (2006) ("[T]he positive externalities generated by a modern hotel are likely to be small or nonexistent.").

62. *See* RICHARD G. LIPSEY, KENNETH I. CARLAW & CLIFFORD T. BEKAR, ECONOMIC TRANSFORMATIONS: GENERAL PURPOSE TECHNOLOGIES AND LONG-TERM ECONOMIC GROWTH 131–32 (2005); *see also* Lyons, *supra* note 28, at 1044.

63. *See* N. GREGORY MANKIW, PRINCIPLES OF MICROECONOMICS 198, 201–02 (4th ed. 2007).

64. *Id.*

65. *See* A.C. PIGOU, THE ECONOMICS OF WELFARE 192 (4th ed. 1932) ("[T]he State . . . [may] remove the divergence in any field by 'extraordinary encouragements' or 'extraordinary restraints' . . . . [such as] bounties and taxes.") For a modern application, see LIPSEY, CARLAW & BEKAR, *supra* note 62, at 519–20.

66. *See* Richard A. Posner, *Taxation by Regulation*, 2 BELL J. ECON. & MGMT. SCI. 22, 27–29, 41 (1971) ("By this test regulation is in part a system of taxation or public finance.").

67. *See* LIPSEY, CARLAW & BEKAR, *supra* note 62, at 98, 100–04 (arguing that "one of the most important aspects of GPTs is that they rejuvenate the growth process by

Economics, GPT theory indicates that another way to compensate for positive externalities is to allow the producers of the platform technology to internalize more of the positive externalities they generate by permitting them to vertically integrate into complementary products.[68] Mandating nondiscriminatory access would render this alternative institutional arrangement impossible.

Judicial attempts to apply the "affected with the public interest" test and the concept of infrastructure have both thus failed to provide a reliable basis for determining which industries should be subject to common carriage regulation. Some commentators nonetheless draw comfort from the historical persistence of the doctrine, suggesting that its historical pedigree gives the concept validity, tied in some unspecified way to the transportation and communications industries.[69]

Such reasoning violates the fundamental maxim that descriptive propositions cannot entail normative ones.[70] Simply put, one cannot derive an "ought" from an "is" unless one holds a theory that judicial decision-making inexorably tends toward socially beneficial outcomes,[71] the normative justifications for common carriage must rise or fall on their own merits without resort to history. Any other approach would risk falling into the well-recognized logical fallacy of simply appealing to tradition.[72]

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creating spillovers that go far beyond the concept of measurable externalities," and describing the necessary conditions for "technological externalities"); Mark A. Jamison & Janice A. Hauge, *Do Common Carriage, Special Infrastructure, and General Purpose Technology Rationales Justify Regulating Communication Networks?* 11–14 (Univ. of Fla., Dep't of Econ., Pub. Util. Research Ctr., Working Paper No. 13-09, 2013), *available at* http://warrington.ufl.edu/centers/purc/purcdocs/papers/1309_Jamison_Do_Common_Carriage.pdf (arguing that the application of mandatory access or nondiscriminatory access rules to communication technology is problematic because those technologies exhibit characteristics that differ from traditional GPTs).

68. *See* Timothy F. Bresnahan & M. Trajtenberg, *General Purpose Technologies: "Engines of Growth"?*, 65 J. ECONOMETRICS 83, 94–96 (1995).

69. *See* Crawford, *supra* note 5, at 885, 915; Nachbar, *supra* note 23, at 81–84, 109; Speta, *supra* note 12, at 252–53, 255, 257; Whitt, *supra* note 27, at 491–92; Wu, *supra* note 3, at 30–31.

70. 3 DAVID HUME, A TREATISE OF HUMAN NATURE pt. 1, § 1, at 469–70 (L.A. Selby-Bigge ed., 1896); *see* Patrick M. O'Neil, *A Reconciliation of the Humean Is/Ought Problem to an Objective Moral Order*, 3 CATH. SOC. SCI. REV. 195, 195 (1998).

71. *See, e.g.*, Omychund v. Barker, (1744) 26 Eng. Rep. 15 (Ch.) 22–23 ("[A] statute very seldom can take in all cases, therefore the common law, *that works itself pure* by rules drawn from the fountain of justice, is for this reason superior to an act of parliament."); LON L. FULLER, THE LAW IN QUEST OF ITSELF 140 (1940); Richard A. Posner, *The Law and Economics Movement*, 77 AM. ECON. REV. (PAPERS & PROC.) 1, 5 (1987).

72. *See, e.g.*, T. EDWARD DAMER, ATTACKING FAULTY REASONING: A PRACTICAL GUIDE TO FALLACY-FREE ARGUMENTS 115–17 (7th ed. 2013).

In the context of network neutrality, the appeal to history suffers from an even more fundamental shortcoming. Proponents and critics of network neutrality both recognize that historically common carriage only applied to consumers; it provided no access to competitors who wished to interconnect with the incumbent's network or to providers of complements who wished to provide services through the incumbent's network.[73] Giving content and application providers a right to network access would thus represent a significant expansion beyond common carriage's historical scope. As such, it requires an affirmative normative rationale to justify deviating from the past.

Moreover, analogies to the past are only persuasive to the extent that the relevant circumstances remain the same. The technological and economic environment surrounding the Internet is much more robust, variegated, and competitive than those surrounding industries subjected to common carriage regulation in the past. Indeed, the Internet itself has undergone a dramatic transformation over the past two decades, becoming much more diverse in terms of end users, applications, end user and transmission technologies, and business relationships.[74]

As a result, attempts to imbue the phrase, "affected with the public interest," with meaning must be based on more than just history. Until the concept is given a coherent definition (and the failure of past attempts provides little cause for optimism in this regard), it cannot serve as an adequate basis for determining which firms are properly regarded as common carriers.

3. Monopoly Power. The other traditional basis for common carriage is the presence of monopoly power. Drawing on the language in *Munn* upholding regulation in part on the fact that the grain elevators at issue were a "virtual monopoly,"[75] some scholars found monopoly power to be the touchstone of common carriage.[76]

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73. *See, e.g.*, HUBER, KELLOGG & THORNE, *supra* note 32, § 1.3.1, at 1-13 to -16, § 5.11.1, at 5-163; Barbara A. Cherry, *Misusing Network Neutrality to Eliminate Common Carriage Threatens Free Speech and the Postal System*, 33 N. KY. L. REV. 483, 501 (2006); Speta, *supra* note 12, at 258. In this respect, analogies to the interconnection requirements that applied to the telegraph system are misplaced. *See* FRISCHMANN, *supra* note 36, at 218; Wu, *supra* note 3, at 29–30. Those interconnection requirements were imposed by statute and were not a historical aspect of common carriage. HUBER, KELLOGG & THORNE, *supra* note 32, § 1.3.1, at 1-14. *But see* Adam Candeub, *Network Interconnection and Takings*, 54 SYRACUSE L. REV. 369, 377–96 (2004) (recognizing the conventional wisdom, but arguing that the law was not as well settled as many presume).

74. YOO, *supra* note 13, at 13–69.

75. Munn v. Illinois, 94 U.S. 113, 131–32 (1876) (internal quotation marks omitted).

76. The seminal statement is Bruce Wyman, *The Law of the Public Callings as a Solution of the Trust Problem* (pt. 2), 17 HARV. L. REV. 217, 222–25 (1904). *See also* Speta,

As a purely historical matter, common carriage was not limited to industries with monopoly power.[77] As part of its attempt to exempt new entrants from common carriage requirements, the FCC ruled that even providers who held themselves out as serving all comers were not common carriers unless they possessed market power, only to see this decision struck down on judicial review as exceeding the FCC's statutory authority.[78] Congress subsequently amended the statute to give the FCC the authority to exempt firms that lacked monopoly power from common carriage requirements.[79] After experimenting with different approaches, the FCC now applies a traditional market-power framework to determine when it should exercise its so-called forbearance authority.[80]

Even skeptical commentators recognize that it has become the dominant, if not the sole, criterion for determining the scope of common carriage.[81]

It is hard to argue that the market for last-mile broadband is a monopoly.[82] The most recent data collected by the FCC indicate that as of June 2012, 99% of U.S. households live in census

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supra note 12, at 252, 255, 257 (providing a brief history of common carrier rules and noting that monopoly power was a key concern). For more modern discussions, see generally CHARLES M. HAAR & DANIEL W. FESSLER, THE WRONG SIDE OF THE TRACKS (1986); Jim Rossi, *The Common Law "Duty to Serve" and Protection of Consumers in an Age of Competitive Retail Public Utility Restructuring*, 51 VAND. L. REV. 1233 (1998).

77. *See, e.g.*, Barbara A. Cherry, *How Elevation of Corporate Free Speech Rights Affects Legality of Network Neutrality*, 63 FED. COMM. L.J. 591, 619–20 (2011); Nachbar, *supra* note 23, at 97–100; Speta, *supra* note 12, at 255–56; Wu, *supra* note 3, at 30–31; *see also* Crawford, *supra* note 5, at 883–84 ("There appears to be only a weak correlation between market power or natural monopoly and the historical imposition of non-discrimination obligations.").

78. Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor, Second Report and Order, 91 F.C.C.2d 59, 61 n.5 (1982), *vacated and remanded sub nom.* MCI Telecomms. Corp. v. FCC, 765 F.2d 1186, 1195–96 (D.C. Cir. 1985). The Supreme Court would ultimately uphold this conclusion. MCI Telecomms. Corp. v. AT&T Co., 512 U.S. 218, 233–34 (1994).

79. 47 U.S.C. § 160(a)–(b) (2012); *see* Babette E.L. Boliek, *FCC Regulation Versus Antitrust: How Internet Neutrality Is Defining the Boundaries*, 52 B.C. L. REV. 1627, 1649 & n.106 (2011) ("There is no doubt that Congress has expressly permitted, in fact encouraged, the FCC to forbear from regulating technologies or services that have matured into competitive markets." (citing 47 U.S.C. § 160)).

80. Petition of Qwest Corp. for Forbearance Pursuant to 47 U.S.C. § 160(c) in the Phoenix, Arizona Metropolitan Statistical Area, Memorandum Opinion and Order, 25 FCC Rcd. 8622, 8642–43 ¶¶ 37–38 (2010), *petition denied sub nom.* Qwest Corp. v. FCC, 689 F.3d 1214, 1234 (10th Cir. 2012).

81. *See* Whitt, *supra* note 27, at 477; *see also* Crawford, *supra* note 5, at 882–83 (describing the monopoly rationale and how it drives competition for high-speed Internet service).

82. *See generally* Christopher S. Yoo, *Technological Determinism and Its Discontents*, 127 HARV. L. REV. (forthcoming 2014) (reviewing SUSAN CRAWFORD, CAPTIVE AUDIENCE (2013)).

blocks with access to two or more fixed line or mobile wireless broadband providers capable of providing the benchmark speeds of 3 Mbps downstream and 768 kbps upstream, and 92% have access to three or more.[83] In addition, 88% of U.S. households have access to two or more providers providing service at the higher standard of 6 Mbps downstream and 1.5 Mbps upstream, and 62% have access to three or more.[84] Even at the highest tier reported (10 Mbps downstream and 1.5 Mbps upstream), 62% had access to two or more providers, and 23% had access to three or more.[85]

The biggest change in the market is wireless broadband. Although service based around 3G technologies remained relatively slow, wireless broadband providers began to deploy a 4G technology known as Long Term Evolution (LTE), which is delivering on average much higher speeds.[86] Although some have expressed skepticism that LTE can ever be a substitute for fixed-line broadband, recent studies appearing in the trade press indicate that market leaders, Verizon and AT&T, provide average download speeds of 14 Mbps and 19 Mbps respectively, with average peaks of 49 Mbps and 58 Mbps.[87] Late arrivers, Sprint and T-Mobile, are lagging behind, but Sprint is able to provide average download speeds of 10 Mbps and peak speeds of 33 Mbps.[88] And on the horizon is the next-generation wireless technology known as LTE Advanced, which is already being deployed in other countries and is capable of delivering speeds of up to 150 Mbps to 300 Mbps.[89]

If anything, the June 2012 data underrepresent the current competitiveness of the market. As of November 2012, Verizon had extended LTE to 83% of its service area, and AT&T only reached 51%, while Sprint had just started to roll out LTE in mid-2013, and T-Mobile had not yet begun.[90] Verizon completed

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83. INDUS. ANALYSIS & TECH. DIV., FED. COMMC'NS COMM'N, INTERNET ACCESS SERVICES: STATUS AS OF JUNE 30, 2012, at 10 fig.5(b) (2013), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-321076A1.pdf.

84. *Id.*

85. *Id.*

86. Patrick Linder, *Lightning-Fast Data Speeds and Expanding Coverage: A 4G LTE Performance Review*, ROOTMETRICS (Mar. 11, 2003), http://www.rootmetrics.com/special-reports/lte-performance-review/.

87. *Id.*

88. *Id.*

89. Yoo, *supra* note 82.

90. Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, Sixteenth Report, 28 FCC Rcd. 3700, 3706–07 ¶ 2, 3745 tbl.3, 3823 tbl.28, 3824–31 ¶¶ 187–197 (2013).

its LTE deployment in mid-2013, while AT&T plans to reach 80% of the country by the end of 2013 and complete its buildout by the end of 2014.[91] Sprint and T-Mobile are moving aggressively, each forecasting to reach two thirds of the country by the end of 2013.[92] Even smaller, regional providers, such as Leap, US Cellular, and C-Spire, are beginning to deploy the technology.[93] Once these wireless providers complete the buildout of their networks, the market should be even more competitive. As of October 2012, 98% of U.S. residents live in census blocks served by two or more 3G wireless providers, with 92% being served by three or more and 82% being served by four or more.[94] This is in addition, of course, to the services offered by fixed line providers. The extensive investment in infrastructure underscores the industry participants' belief that investing in competitive infrastructure is still financially viable.

Although competition policy would ideally hope for even more competitors, the high fixed cost nature of this industry makes such entry unlikely.[95] Fortunately, empirical studies indicate that markets with three firms are workably competitive, with most of the competitive benefit occurring with the entry of the second or third firm and minimal benefits resulting from entry in markets that already have three to five firms.[96] Indeed, antitrust authorities routinely approve four-to-three mergers.[97] Moreover, one must also take into account that regulation is costly and enforcement is imperfect. FCC and FTC Chief Economist and current OIRA head Howard Shelanski has observed that the regulatory cost-benefit calculus changes once a market becomes an oligopoly, even if it remains quite concentrated.[98] The poor performance of unregulated monopoly justifies bearing the significant costs of regulation.[99] However, an unregulated oligopoly performs sufficiently better as to tip the balance in favor of deregulation.[100]

The case for imposing common carriage regulation because of market power is even harder to make with respect to IP-based

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91. *Id.*.

92. *Id.* at 3745 tbl.3, 3827–31 ¶¶ 191–200.

93. *Id.* at 3745 tbl.3, 3824 tbl.28, 3827–31 ¶¶ 198–200.

94. *Id.* at 3700, 3706 ¶ 2, 3750 tbl.9.

95. Christopher S. Yoo, *Beyond Network Neutrality*, 19 HARV. J.L. & TECH. 1, 9, 29–30, 63–64 (2005).

96. Timothy F. Bresnahan & Peter C. Reiss, *Entry and Competition in Concentrated Markets*, 99 J. POL. ECON. 977, 978 (1991).

97. Yoo, *supra* note 95, at 61 n.233.

98. 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).

99. *Id.* at 86–87.

100. *Id.* at 84, 87.

services other than broadband Internet access. The markets for VoIP, cloud services, wireless devices, and online mapping services are all subject to robust competition.[101] Even though the leading search engines and social networking platforms have relatively high market shares, the facts that they themselves are new entrants and switching costs are low counsel strongly against regulatory intervention.[102]

4. Transmission Without Transformation. An alternative definition of common carriage emerged in *National Association of Regulatory Utility Commissioners v. FCC* (*NARUC II*), a follow-up decision in which the court emphasized a second requirement that *NARUC I* only mentioned in passing.[103] This requirement, formulated by the FCC and noted to have "peculiar applicability to the communications field," holds that common carriage also requires that customers "transmit intelligence of their own design and choosing."[104]

This approach eventually became embedded in the statute, which now ties common carriage obligations to the definition of "telecommunications carrier" when it states that "[a] telecommunications carrier shall be treated as a common carrier under this chapter only to the extent that it is engaged in providing telecommunications services."[105] The statute further defines "telecommunications service" as "the offering of telecommunications for a fee directly to the public."[106] "Telecommunications" is in turn defined as "the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received."[107] The Supreme Court and the FCC have characterized telecommunications as "pure" transmission capability over a path that is virtually "transparent" in terms of interaction with customer information.[108] If a firm instead combines transmission with

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101. *See id.* at 73–76.

102. Christopher S. Yoo, *When Antitrust Met Facebook*, 19 GEO. MASON L. REV. 1147, 1150–53, 1160–62 (2012).

103. Nat'l Ass'n of Regulatory Util. Comm'rs v. FCC (*NARUC II*), 533 F.2d 601, 609 (D.C. Cir. 1976)

104. *NARUC II*, 533 F.2d at 609 (internal quotation marks omitted).

105. 47 U.S.C. § 153(51) (2012). This provision gives the FCC the discretion over whether fixed and mobile satellite services are subject to common carriage. *Id.*

106. *Id.* § 153(53).

107. *Id.* § 153(50).

108. Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs., 545 U.S. 967, 976–77 (2005) (citing Amendment of Section 64.702 of the Commission's Rules and

other functions, such as "generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information," it is offering an "information service."[109] Information services are exempt from common carriage regulation.[110] Congress and the FCC have both noted that information services and telecommunications services represent mutually exclusive categories.[111]

In other words, firms that offer pure, transparent transmission capability to the public between points chosen by the end user with no computer processing or storage are common carriers. Firms that instead offer a service that combines transmission with additional functions, such as computer processing or storage, provide an information service that is not subject to common carriage. It is true that all Internet-based services rely on some form of transmission (i.e., telecommunications), but the fact that transmission is offered only when combined with other functions means that they are not providing the type of pure transmission capability associated with common carriage.[112]

The FCC has ruled that a wide variety of forms of broadband access, including cable-modem service, DSL, wireless broadband, and broadband over powerline, are information services that are not subject to common carriage.[113] In *National Cable & Telecommunications Association v. Brand X Internet Services*, the Supreme Court upheld this decision with respect to cable-modem services as a reasonable interpretation of the statute.[114]

In so holding, the *Brand X* Court followed the FCC by noting two prominent ways that most broadband providers

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Regulations (Second Computer Inquiry), Final Decision, 77 F.C.C.2d 384, 420 ¶ 96 (1980) [hereinafter Computer II Final Decision]).

109. 47 U.S.C. § 153(24) (internal quotations omitted).

110. *Brand X*, 545 U.S. at 975–78.

111. S. REP. NO. 104-23, at 1–2, 18, 23, 98 (1995); Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd. 14853, 14862–65 ¶¶ 12–17, 14909–12 ¶¶ 102–106 (2005), *petition for review denied sub nom.* Time Warner Telecom, Inc. v. FCC, 507 F.3d 205 (3d Cir. 2007); Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities, Internet Over Cable Declaratory Ruling, Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities, Declaratory Ruling and Notice of Proposed Rulemaking, 17 FCC Rcd. 4798, 4821–23 ¶¶ 37–38 (2002), *aff'd sub nom.* Nat'l Cable & Telecomm. Ass'n v. Brand X Internet Servs., 545 U.S. 967, 987–91, 1000 (2005); Federal-State Joint Board on Universal Service, Report to Congress, 13 FCC Rcd. 11501, 11520–26 ¶¶ 39–48, 11536–40 ¶¶ 73–82 (1998).

112. *Brand X*, 545 U.S. at 987–88, 999–1000.

113. *See supra* note 6 (demonstrating that the FCC has consistently ruled that different forms of broadband access are considered information services).

114. *Brand X*, 545 U.S. at 989–1000.

combine processing and storage with transmission. The first is caching, in which broadband access providers store popular content on a server located in its local facilities rather than downloading separate copies for every individual request for web content.[115] Caching content locally reduces the burden on the long-haul network, reduces latency based on distance, reduces server congestion, and protects content against denial of service attacks.[116] Some companies known as Content Delivery Networks (CDNs) have turned such caching services into a business model.[117] At the same time, large content providers such as Google have begun to place duplicate content in multiple locations known as server farms.[118] The Supreme Court concluded that these caching services constitute sufficient acquiring, storing, retrieving, and utilizing information to make classifying Internet access as an information service a reasonable interpretation of the statute.[119]

The second is known as the Domain Name System (DNS).[120] The Internet Protocol (IP) is often described as the glue that holds the entire Internet together.[121] It operates on addresses that are represented as numbers, with IP version 4 (IPv4) addresses often being depicted as four numbers between 0 and 255 separated by periods, such as 128.91.34.233 (which is one of the IP addresses for the University of Pennsylvania).[122] Most browsers do not use IP addresses.[123] Instead, they expect end users to rely on domain names, which are often the name of a company or an institution followed by ".com," ".gov," ".edu," or ".us."[124] DNS is the system that translates the domain name into the IP address that identifies the physical location where the resource being accessed resides.[125] DNS thus represents an essential function that is offered by every broadband Internet access provider. Indeed, as the Supreme Court has noted in *Brand X*, "[a] user cannot reach a third-party's Web site without DNS."[126]

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115. *See id.* at 998–1000.
116. *See id.*
117. YOO, *supra* note 13, at 66–68.
118. *Id.* at 68.
119. *Brand X*, 545 U.S. at 999–1000.
120. YOO, *supra* note 13, at 85–86.
121. ANDREW S. TANENBAUM, COMPUTER NETWORKS § 5.6, at 432 (4th ed. 2003).
122. *Id.* § 5.6.2, at 437.
123. *Id.* § 7.1, at 579–80.
124. *Id.* § 7.1.1, at 580–82.
125. YOO, *supra* note 13, at 85–86.
126. Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs., 545 U.S. 967, 999 (2005).

Although all of the mappings of domain names to IP addresses used to reside in a single file maintained by a single person, Internet engineers soon concluded that this system would not scale.[127] Instead of relying on a single point for resolving DNS inquiries, the Internet was redesigned so that each IP address was associated with a single authoritative server. Providers receiving a DNS request query the authoritative server to determine the proper address.[128] Any use of the Internet that relies on DNS thus necessarily invokes a vast array of DNS servers distributed throughout the world. These DNS servers represent computing power sufficient to establish Internet communications as information services rather than telecommunications services.

Moreover, DNS providers are increasingly offering "smart DNS" functions that increase the functionality of the services offered by broadband Internet access providers.[129] Because DNS queries often involve significant delays, most DNS providers do not send a separate request to the authoritative server for every query. Instead, they cache DNS responses and simply resolve duplicate queries submitted within the designated "time to live" by retrieving the cached address instead of independently verifying each individual request.[130] Other services include faster name resolution, greater network security, protection against denial of service attacks, botnet detection, web error redirection, parental controls, and a host of other advanced services.[131]

Even more importantly, as the phenomenon of caching makes clear, content can reside in more than one location. It is the DNS that determines from which location a particular end user retrieves the information.[132] Moreover, some domain names resolve to two or more IP addresses. For example, the domain name "http://www.upenn.edu" encompasses two IP addresses: 128.91.34.233 and 128.91.34.234. DNS will determine which of the two addresses will serve the particular request.[133] Similarly, if

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127. YOO, *supra* note 13, at 85–86.

128. TANENBAUM, *supra* note 121, § 7.1, at 580–83; *see* Paul Mockapetris, *Domain Names—Concepts and Facilities* 40 (Internet Eng'g Task Force Network Working Grp., Request for Comments No. 1034, 1987), *available at* http://tools.ietf.org/pdf/rfc1034.pdf.

129. *See* Christopher S. Yoo, *Rough Consensus and Running Code: Integrating Engineering Principles into Internet Policy Debates*, 63 FED. COMM. L.J. 341, 351 (2011); Mockapetris, *supra* note 128, at 2–3.

130. *See* Mockapetris, *supra* note 128, at 12.

131. YOO, *supra* note 13, at 90–91.

132. *See* TANENBAUM, *supra* note 121, § 7.1, at 580; *see also* Christopher S. Yoo, *Protocol Layering and Internet Policy*, 161 U. PA. L. REV. 1707, 1768–69 (2013); Yoo, *supra* note 129, at 351.

133. *See* TANENBAUM, *supra* note 121, § 7.1, at 580–83.

one is in Japan and enters "www.google.com," DNS will automatically redirect the request to the Japanese language version of Google's website available at "www.google.co.jp."

Thus, when an end user accesses content that is stored in multiple locations across the Internet, it is DNS—and not the end user—that decides which of the many content storage locations is the closest and least congested and routes the request to that location.[134] The fact that DNS determines from which of the multiple available endpoints a particular query will be served makes it hard to characterize Internet communications as being between "points specified by the user" as required by the definition of telecommunications service.[135]

The Supreme Court specifically cited the reliance on DNS as sufficient to render reasonable the FCC's conclusion that Internet services involve "acquiring . . . retrieving, utilizing, or making available" website addresses sufficient to render Internet access an information service.[136] In addition, the Court noted that the FCC ruled that instead of offering standalone transmission, broadband Internet access providers offer a suite of services, such as e-mail, newsgroups, and webpage hosting that combine computer processing with transmission.[137] Broadband Internet access providers also typically include spam filtering, virus protection, and a wide range of other services that far exceed the transparent transmission associated with telecommunications services.[138]

Anyone attempting to argue that Internet access is a telecommunications service subject to common carriage requirements thus faces a difficult burden. Not only must they rebut numerous FCC decisions concluding the contrary,[139] they must overcome the Supreme Court's decision in *Brand X* upholding the FCC's decision exempting cable modem service from Title II common carriage regulation.[140]

Of course, to say that those wishing to subject Internet access to common carriage face a heavy burden is not to say that it is impossible. Although a run of agency precedents creates a presumption, an agency can change course without its decision being arbitrary or capricious so long as it provides a reasoned

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134. *Id.* § 7.1, at 580–83, 586–87.

135. 47 U.S.C. § 153(50) (2012).

136. Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs., 545 U.S. 967, 999 (2005) (alteration in original) (quoting 47 U.S.C. § 153(20) (2000)).

137. *Id.* at 987, 998.

138. *See* YOO, *supra* note 13, at 90–91.

139. *See supra* note 6 and accompanying text.

140. *Brand X*, 545 U.S. at 989–1000.

explanation.[141] Moreover, *Brand X* upheld the FCC's conclusion that Internet access was not subject to common carriage regulation on the basis of *Chevron* deference, concluding that the FCC's interpretation of the statute was reasonable and confirming that agencies retain the latitude to change their interpretations of statutes.[142] As such, *Brand X* leaves open the possibility that a later court would find some other interpretation of the FCC's statutory mandate also to be reasonable, including one concluding that Internet access is a telecommunications service.

Indeed, the FCC appeared to have considered taking just such a course in the summer of 2010 when it floated a proposal to reclassify last-mile broadband access as a telecommunications service subject to the common carriage requirements enumerated in Title II.[143] Although the proposal offered for the FCC to use its forbearance authority to waive many of these requirements, this decision would be discretionary and subject to reconsideration at the FCC's pleasure.[144] The fact that the proposal relied almost exclusively on the dissent in *Brand X* rather than the majority opinion implicitly conceded that it was inconsistent with the Supreme Court's decision.[145]

That said, even under *Chevron* deference, step one requires analyzing the text of the statute.[146] Only if the text is ambiguous do courts proceed to *Chevron* step two, where they defer to any reasonable construction of the statute put forth by the agency that administers the statute.[147] The fact that broadband Internet access combines transmission with processing and storage makes it quite likely that a reviewing court would regard the plain language of the statute as controlling.[148] Moreover, any such argument would have to contend with the D.C. Circuit's 2010 decision in *Comcast Corp. v. FCC*, which held that the FCC's attempt to sanction

141. FCC v. Fox Television Stations, Inc., 556 U.S. 502, 514–15 (2009).

142. *Brand X*, 545 U.S. at 980–81, 986.

143. *See supra* note 7 and accompanying text (describing the FCC's proposal to reclassify broadband access as a telecommunications service).

144. GENACHOWSKI, *supra* note 7, at 2, 5–6; SCHLICK, *supra* note 7, at 3–6.

145. *See* SCHLICK, *supra* note 7, at 3, 5–6.

146. Chevron U.S.A. Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 842–43 (1984).

147. *Id.* at 843.

148. *See, e.g.*, Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs., 545 U.S. 967, 986–89 (2005) (affirming the FCC's conclusion that "cable modem service is not a telecommunications offering because the consumer uses the high-speed wire always in connection with the information-processing capabilities provided by Internet access").

Comcast's network management practices fell outside of its Title II jurisdiction as well as its ancillary authority under Title I.[149]

A reviewing court must thus overcome a number of obstacles before it could conclude that broadband Internet access is subject to common carriage under the current statute. These obstacles do not conclusively foreclose the possibility of extending common carriage regulation to Internet-based services. Congress may, of course, enact new legislation declaring broadband Internet access providers to be common carriers or giving the FCC the authority to do so. It thus makes sense to evaluate the extent to which doing so would represent good policy.

Any attempt to subject end-user devices to common carriage obligations would also likely fail, as multiple judicial precedents exist squarely holding that the FCC lacks Title II jurisdiction over such devices.[150] Common carriage would be even more difficult to apply to services such as search engines, cloud computing, online maps, and social networks, as all of them involve computer processing and many of them represent standalone, over-the-top services that do not provide any transport whatsoever and require end users to obtain their own transport from an independent provider.[151] The lone exception is interconnected VoIP, which because of its close connection with conventional telephony falls within the FCC's Title II or ancillary jurisdiction.[152]

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149. Comcast Corp. v. FCC, 600 F.3d 642, 645, 654, 661 (D.C. Cir. 2010). The D.C. Circuit will likely shed more light on the scope of the *Comcast* decision when it resolves the pending judicial challenges to the Open Internet Order. *See* Preserving the Open Internet, Report and Order, 25 FCC Rcd. 17905, 17926–31 ¶¶ 37, 42, 17968–71 ¶¶ 118, 122, 17980–81 ¶ 136 (2010).

150. *See* Am. Library Ass'n v. FCC, 406 F.3d 689, 691–92 (D.C. Cir. 2005) (holding that the FCC does not have the authority to regulate end-user devices after the completion of a broadcast transmission).

151. *See Brand X*, 545 U.S. at 988–90; *supra* text accompanying notes 12–21.

152. The FCC has invoked this jurisdiction to impose requirements regarding interconnected VoIP regarding service outage reporting, number portability, disability access, E911 service, and universal service. *See* Proposed Extension of Part 4 of the Commission's Rules Regarding Outage Reporting to Interconnected Voice Over Internet Protocol Service Providers and Broadband Internet Service Providers, Report and Order, 27 FCC Rcd. 2650, 2674–79 ¶¶ 60–67 (2012) (showing that the FCC has jurisdiction over VoIP regarding the above requirements); Telephone Number Requirements for IP-Enabled Services Providers, Report and Order, Declaratory Ruling, Order on Remand, and Notice of Proposed Rulemaking, 22 FCC Rcd. 19531, 19543–48 ¶¶ 21–29 (2007) (same); IP-Enabled Services, Report and Order, 22 FCC Rcd. 11275, 11286–89 ¶¶ 21–24, 11292–93 ¶¶ 34–35 (2007) (same); Universal Service Contribution Methodology, Report and Order and Notice of Proposed Rulemaking, 21 FCC Rcd. 7518, 7538–41 ¶¶ 38–45 (2006) (same); IP-Enabled Services, First Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd. 10245, 10261–66 ¶¶ 26–36 (2005) (same).

B. The Duties of Common Carriers

The affirmative obligations imposed on common carriers are established by the provisions of Title II of the Communications Act of 1934.[153] For our purposes, it suffices to focus on four: entry restrictions and the duty to serve, the obligation to charge rates that are nondiscriminatory, the obligation to charge rates that are just and reasonable, and structural separation.

1. Entry Restrictions and the Duty to Serve. Before initiating service, common carriers must obtain regulatory authorization in the form of a certificate of public convenience and necessity.[154] Until authorized by the authorities to discontinue service,[155] common carriers that have established service must satisfy all reasonable requests for service.[156]

2. Nondiscrimination. Section 202 prohibits charges that constitute "unjust or unreasonable discrimination."[157] The traditional regulatory instrument employed to ensure nondiscrimination is the tariff. The tariffing process begins when telecommunications carriers file schedules containing all of the rates, terms, and conditions under which they will offer service at least 120 days before they are to go into effect, during which time the agency has the option to review the rates.[158]

The Supreme Court has called the tariff the embodiment of the "antidiscriminatory policy which lies at 'the heart of the common-carrier section of the Communications Act.'"[159] Once the tariff has been approved, regulators ensure nondiscrimination by requiring the carrier to offer service under the terms specified by the tariff to any requesting party that qualifies to receive the service. Concerns about secret discounts led courts to treat the tariffed rate as a floor, as well as a ceiling.[160] Under the so-called filed rate doctrine, the tariffed terms constitute the entirety of the contractual agreement between the customer and the carrier and leave the parties no latitude to adjust prices, services, or any other

153. 47 U.S.C. §§ 201–203 (2012).

154. *Id.* § 214(a).

155. *Id.* § 214(a)(3).

156. *Id.* § 201(a).

157. *Id.* § 202(a).

158. *Id.* § 203(a), (b)(1).

159. AT&T Co. v. Cent. Office Tel., Inc., 524 U.S. 214, 223 (1998) (quoting MCI Telecomms. Corp. v. AT&T Co., 512 U.S. 218, 229 (1994)).

160. *Id.* at 221–24; *MCI Telecomms. Corp.*, 512 U.S. at 229–31.

terms, even if one of the parties materially misrepresents the terms.[161]

3. Just and Reasonable Rates. Section 201(b) requires that all charges be "just and reasonable."[162] The obligation to charge reasonable rates found its roots in the earliest beginnings of English law[163] and has a long history in U.S. law.[164] Indeed, the duty was included in the very first federal telecommunications regulatory statute, the Mann-Elkins Act, enacted in 1910.[165]

Unless structural separation or vertical disintegration is also imposed, rate regulation is necessary to prevent a vertically-integrated provider from favoring its own proprietary complementary services at the expense of those offered by unaffiliated providers. Absent rate regulation, the firm can exclude its competitors without violating its nondiscrimination obligations simply by charging an arbitrarily high price. A price sufficiently high would effectively lock out all competitors without imposing any harm on the common carrier.[166] Its only effect would be to transfer profit from one part of the company to another.[167]

And even if structural separation is mandated, to the extent that the provider is a monopoly, rate regulation is necessary to ensure that consumers receive some benefit. Unless accompanied by a mandatory reduction in price, a mere nondiscrimination mandate would only require that the monopoly be shared, which

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161. 47 U.S.C. § 203(c). The seminal case on the filed rate doctrine is *Louisville & Nashville Railroad v. Maxwell*, 237 U.S. 94, 97–100 (1915). For a modern reaffirmation in the context of telecommunications, see *Cent. Office Tel.*, 524 U.S. at 221–23.

162. 47 U.S.C. § 201(b).

163. *See* Allnutt v. Inglis, (1810) 104 Eng. Rep. 206 (K.B.) 210–11 (Lord Ellenborough, C.J.); HALE, *supra* note 38, at 77–78. *See generally* Herbert Hovenkamp, *Regulatory Conflict in the Gilded Age: Federalism and the Railroad Problem*, 97 YALE L.J. 1017, 1045 (1988) ("As early as the 17th century, the common law had derived the duty to charge reasonable rates from the common carrier's obligation to serve everyone. . . .").

164. *See* H.W. Chaplin, *Limitations upon the Right of Withdrawal from Public Employment*, 16 HARV. L. REV. 555, 556–57 (1903) (identifying charging reasonable rates as one of the three fundamental duties imposed on common carriers). *See generally* Joseph D. Kearney & Thomas W. Merrill, *The Great Transformation of Regulated Industries Law*, 98 COLUM. L. REV. 1323, 1330–31 (1998) ("For almost a century, public utility companies and common carriers had one common characteristic: All were required to offer their customers service under rates and practices that were just, reasonable, and non-discriminatory.").

165. *See* SPULBER & YOO, *supra* note 37, at 234.

166. *See* VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 168–69; Christopher S. Yoo, *Vertical Integration and Media Regulation in the New Economy*, 19 YALE J. ON REG. 171, 192–93 (2002).

167. *See* VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 238–40; Yoo, *supra* note 166, at 192–93.

would only lead the monopolist to charge everyone the full monopoly price.[168]

That said, some have suggested that rate regulation is not part of common carriage. Some claim that a simple nondiscrimination mandate would be sufficient.[169] Others say an interconnection requirement would be enough and that end users' ability to arbitrage along different paths is sufficient to protect their interests.[170] This is clearly the minority position. Even those favoring these regimes generally recognize that some rate regulation is required and focus on regimes that will minimize the burdens.[171]

4. Structural Separation. The imposition of rate regulation inevitably requires regulators to mandate structural separation. Carriers can evade rate regulation simply by vertically integrating into an unregulated complementary market, bundling the goods, and building the monopoly markup into the price of the unregulated good.[172] Firms that use the same assets to produce both regulated and unregulated goods can allocate common costs to the regulated good.[173] This gives the firm a competitive advantage in the unregulated market, while allowing it to rely on regulation to ensure that it recovers all of the common costs in the regulated market.[174]

For this reason, it is generally understood that any firm subject to common carriage regulation must be prohibited from entering into unregulated lines of business.[175] Structural separation has the added benefit of making nondiscrimination easier to enforce. When all transactions are done at arm's length, regulators can simply require that the provider offer the same terms to all of its customers.[176]

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168. F.M. SCHERER & DAVID ROSS, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 109 (3d ed. 1990); Yoo, *supra* note 166, at 244–47.

169. Wu, *supra* note 3, at 43–44.

170. Noam, *supra* note 60, at 452. Kevin Werbach makes a similar point but acknowledges the need for some form of rate regulation. Werbach, *supra* note 23, at 1294–98.

171. Speta, *supra* note 12, at 276; Werbach, *supra* note 23, at 1298.

172. Yoo, *supra* note 166, at 192–96.

173. SPULBER & YOO, *supra* note 37, at 293.

174. *Id.*

175. *Id.*

176. *Id.* at 130–31.

III. CONSIDERATIONS WEIGHING AGAINST IMPOSING COMMON CARRIAGE ON INTERNET-BASED SERVICES

Even if the legal barriers can be overcome, as a matter of policy, proposals advocating the extension of common carriage regulation to Internet-based services must engage the substantial body of scholarship analyzing the regime's shortcomings. This Part will review some of the high points of this literature and discuss the problems in enforcing nondiscrimination, the challenges in determining reasonable rates, and the danger that common carriage might facilitate collusion.

A. Enforcing Nondiscrimination

The textbook definition of discrimination is a price differential for the same product that is not justified by differences in product quality or cost.[177] Identifying discrimination thus requires far more than simply seeing whether firms are charging customers the same price. Regulators must examine whether any of the price differences may be justified by variations in product attributes or in the cost of serving those customers. Interestingly, regulators must make these evaluations even when the prices charged are the same.[178] Charging two customers the same price can be discriminatory if providing the product or service to those customers differs in terms of quality or cost.[179]

In addition, economists and policymakers have long recognized the potential virtues of demand-side price discrimination that is related not to differences in product quality or cost, but rather based on the intensity of different customers' preferences for the product. The insights and challenges posed by this type of discrimination are reflected in the longstanding debate over Ramsey pricing.[180]

1. Differences in Quality. As noted above, any nondiscrimination mandate must evaluate whether any price

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177. *See, e.g.*, SCHERER & ROSS, *supra* note 168, at 489; JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 133–34 (1988).

178. *See* HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE § 14.6, at 581 (3d ed. 1994); SCHERER & ROSS, *supra* note 168, at 489, 510, 513–14.

179. *See* HOVENKAMP, *supra* note 178, § 14.6, at 581; SCHERER & ROSS, *supra* note 168, at 489, 510, 513–14.

180. *See* Christopher S. Yoo, *Network Neutrality and the Economics of Congestion*, 94 GEO. L.J. 1847, 1901–04 (2006).

differences are justified by variations in product quality. As a result, common carriage regimes work best for commodities for which product quality does not vary. Classic examples include water, natural gas, and electric power.[181]

For Internet-based services, the sources of variations in quality are vast. As an initial matter, quality of service on broadband networks varies along as many as four dimensions: bandwidth, delay, jitter, and reliability.[182] Whereas voice communications on the telephone network operated only within a narrow range of service parameters, the services that network providers offer and that applications demand can vary widely. Indeed, the benefits from allowing more diverse offerings were one of the reasons for declining to subject enhanced services to common carriage regulation.[183]

Moreover, the inherent limits on propagation speeds means that users communicating with distant locations will necessarily receive less bandwidth.[184] The feedback-based congestion control mechanisms embedded in the Transmission Control Protocol (TCP) exacerbate this problem by allowing transmission sessions with shorter feedback loops to increase their sending rates more rapidly than sessions with longer feedback loops.[185] Further difficulties arise from the fact that quality of service is also the product of how other subscribers are using the network. If everyone generates traffic at the same time, everyone receives lower quality of service in ways that could justify cost differentials but are difficult to observe.[186]

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181. *See* CHURCH & WARE, *supra* note 20, § 26.2.3, at 853–54; Eli M. Noam, *Towards an Integrated Communications Market: Overcoming the Local Monopoly of Cable Television*, 34 FED. COMM. L.J. 209, 219 (1982).

182. TANENBAUM, *supra* note 121, § 5.4.1, at 397.

183. Computer II Final Decision, *supra* note 108, at 428–30 ¶¶ 115–118. Interestingly, the nondiscrimination mandate embodied in the Open Internet Order is more restrictive than the nondiscrimination mandate reflected in traditional common carriage. Under common carriage, providers can charge different prices for different classes of service so long as they make that service available to all similarly situated customers. Although the Open Internet Order permits providers to offer different classes of service to *end users*, it forbids offering different classes of service to *content and application providers* even if they make each class of service available to everyone. Lyons, *supra* note 28, at 1058.

184. YOO, *supra* note 13, at 46–48; *see* Erik Brynjolfsson, Paul Hofmann & John Jordan, *Cloud Computing and Electricity: Beyond the Utility Model*, COMM. ACM, May 2010, at 32, 34. The natural limits imposed by the speed of light are exacerbated in wireless networks, where natural attenuation and the addition of noise requires data destined for more distant locations to be encoded using modulations that necessarily provide less bandwidth. YOO, *supra* note 13, at 46–48.

185. Christopher S. Yoo, *Herbert Wechsler in Cyberspace: Applying the Critique of Neutral Principles to Internet Policy* (forthcoming 2014).

186. Christopher S. Yoo, *Network Neutrality, Consumers, and Innovation*, 2008 U. CHI. LEGAL F. 179, 206.

This is why many observers regard Internet-based services as particularly ill-suited to common carriage regulation.[187] For example, cloud computing is based on networking services that are highly differentiated and nonfungible in terms of service level and functionality, with the needs of different customers varying widely.[188]

2. Differences in Cost. Moreover, when production technologies vary, regulators imposing nondiscrimination mandates must carefully scrutinize production technologies and costs. Indeed, the failure to take such cost differentials into account has been a major source of criticism of the way price discrimination is addressed under the antitrust laws.[189]

Such cost differentials are likely to be quite prevalent in Internet access services. As an initial matter, Internet access is provided by a wide range of production technologies, including cable modem service, fiber-based service, DSL service, and wireless broadband. Each of these services varies widely both in terms of cost and in terms of product quality.

Even more importantly for our purposes, even within the same production technology, the cost of providing service can vary widely from customer to customer. In network industries, the primary expense is in the fixed cost needed to establish the principal line providing service to a neighborhood, which is large compared to the cost of connecting individual subscribers to that line.[190] When that is the case, the principal determinant of unit cost is the density of subscribers in any particular area, as increases in density permits fixed costs to be amortized over a larger number of subscribers.[191]

One would thus expect subscribers in more densely populated areas to pay less than those in areas in which subscribership is sparser. Most regulatory authorities mandate rate averaging to ensure that all customers pay the same amount regardless of location. For example, public utility commissions have generally set rates for local telephone service that are uniform across the entire state even though the real costs of

187. Yoo, *supra* note 180, at 1852–53.

188. *See* Ergin Bayrak, John P. Conley & Simon Wilkie, *The Economics of Cloud Computing*, 27 KOREAN ECON. REV. 203, 211–12 (2011); Brynjolfsson, Hofmann & Jordan, *supra* note 184, at 34; Kenji E. Kushida, Jonathan Murray & John Zysman, *Diffusing the Cloud: Cloud Computing and Implications for Public Policy*, 11 J. INDUS. COMPETITION & TRADE 209, 212 (2011).

189. *See, e.g.*, CHURCH & WARE, *supra* note 20, § 5.5, at 177; VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 343–44.

190. *See* Shelanski, *supra* note 98, at 60, 89–90.

191. *See id.* at 60, 85, 89–90; *see also* Bresnahan & Reiss, *supra* note 96, at 980–83.

providing service vary.[192] In this way, somewhat ironically, the traditional implementation of common carriage violates fundamental principles of nondiscrimination. Stated somewhat differently, by implicitly requiring urban subscribers to cross-subsidize the connectivity of rural subscribers, uniform rate structure violates the fundamental principle of nondiscrimination that the actual rates charged be subsidy free.[193] Indeed, the Supreme Court recognized that imposing such cross subsidies in the name of promoting universal service represented "state-sanctioned discrimination."[194]

Implementing nondiscriminatory pricing is also greatly complicated by the manner in which the cost of providing service varies over different parts of the day and different locations.[195] The primary source of costs in the Internet is congestion, which arises when multiple subscribers use the network at the same time.[196] Congestion, moreover, only becomes problematic when network components become fully saturated, making the actual costs of providing service highly dependent on actual levels of usage.[197] More specifically, they are likely to vary widely from moment to moment.[198] In addition, technologies such as cable-modem service and wireless broadband aggregate traffic locally, making subscribers highly susceptible to the usage levels of their immediate neighbors.[199] This means that congestion can also vary geographically, with one node being saturated, while the adjacent node is not.

Any true pricing scheme that was truly nondiscriminatory would thus vary from minute to minute as well as from place to place. Such a regime would face significant implementation problems. As an initial matter, the localized nature of the Internet means that each network provider is only aware of local conditions. It has no systematic way of discerning congestion levels of its downstream partners when it hands off traffic.[200] Although those channel partners could share that information, network providers jealously guard information about the

192. *See* Shelanski, *supra* note 98, at 60.

193. *See, e.g.*, CHURCH & WARE, *supra* note 20, § 26.2.1, at 846; VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 445–47.

194. Verizon Commc'ns Inc. v. FCC, 535 U.S. 467, 480 (2002).

195. Yoo, *supra* note 186, at 189–90, 194–95, 201–02, 206–11.

196. *Id.* at 189, 207–11.

197. Daniel F. Spulber & Christopher S. Yoo, *On the Regulation of Networks as Complex Systems: A Graph Theory Approach*, 99 NW. U. L. REV. 1687, 1709–13 (2005).

198. Yoo, *supra* note 186, at 210–11.

199. *Id.* at 201–02, 208–11.

200. *Id.* at 210–11.

configuration of their networks and the loads being carried by them.[201] In addition, network providers would have to provide extensive new systems to monitor and propagate information about network usage and pricing at a timescale relevant to actual costs.[202] Moreover, although permitting traffic levels to grow without any change in price so long as the network is slack would reflect actual costs, such an approach would cause network resources to become locked out as soon as they became saturated. Such sharp discontinuities in network behavior can cascade into synchronization that can lead to wide-scale disruptions and inefficient usage of network resources.[203] Finally, subscribers' ability to adjust to dynamic pricing is rather limited. Indeed, research indicates that they cannot process pricing plans that involve more than three dayparts.[204]

All of these considerations are likely to make nondiscrimination mandates difficult to implement. They are also likely to cause real-world prices to deviate from true nondiscriminatory prices.

3. Demand-Side Price Discrimination. Like all products characterized by high fixed costs and lower marginal costs, services provided by network industries confront a fundamental pricing problem. Academic scholarship on networks and regulators has long recognized how price discriminatory regimes such as Ramsey pricing can alleviate these problems.

The pricing problem is best understood in terms of the impact of high fixed cost on the relative position of the marginal cost and average cost curves.[205] Usually fixed costs place consistent downward pressure on marginal cost as those upfront investments are amortized over increasingly large volumes. The impact of fixed costs on average costs decays exponentially to the point where further increases in production only cause small marginal reductions on average

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201. *See* VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 168; YOO, *supra* note 13, at 43, 78–81; Yoo, *supra* note 186, at 233–34.

202. *See* Yoo, *supra* note 180, at 1884–85; Yoo, *supra* note 186, at 208–10.

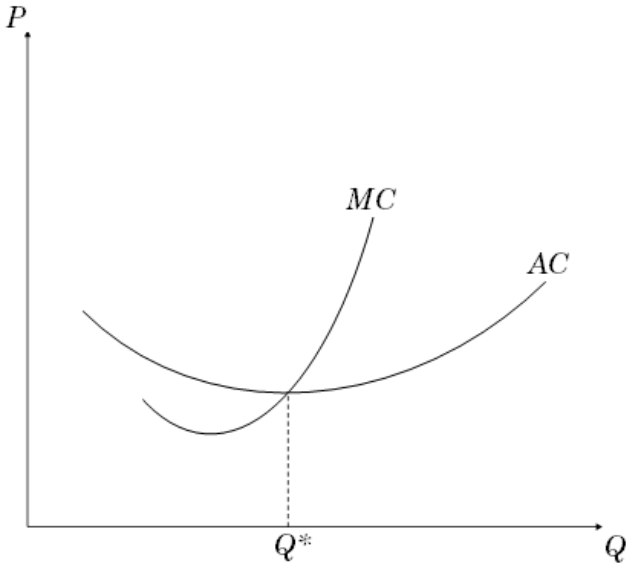
203. *See* Sally Floyd & Van Jacobson, *Random Early Detection Gateways for Congestion Avoidance*, 1 IEEE/ACM TRANSACTIONS ON NETWORKING 397, 397–402, 405 (1993) (discussing how the RED algorithm avoids synchronization to maintain an average queue size); Bob Braden et al., *Recommendations on Queue Management and Congestion Avoidance in the Internet* 3–4 (Internet Eng'g Task Force Network Working Grp., Request for Comments No. 2309, 1998), *available at* http://tools.ietf.org/pdf/rfc2309.pdf.

204. Yoo, *supra* note 186, at 209.

205. Yoo, *supra* note 180, at 1901–02.

cost.[206] At small volumes of production, the ability to realize scale economies causes variable cost initially to reinforce this downward pressure on marginal cost and average cost.[207] Sources of scale economies are typically exhaustible, however.[208] Moreover, as production volumes increase, the cheapest sources of raw materials will become exhausted, and producing firms will have to manage an increasing number of resources.[209] At some point, the economies of scale become replaced by diseconomies of scale, at which point variable costs begin to place upward pressure on average cost.[210] Eventually, as the upward pressure on average cost associated with variable cost dominates the increasingly weak downward pressure associated with fixed cost, the marginal cost curve will cross the average cost curve, and the average cost curve will begin to rise (indicated in Figure 1 by Q^*).[211] The larger the fixed costs, the higher the quantity at which this crossover point will occur.[212]

Figure 1: The Impact of Fixed Cost on the Relationship Between Marginal and Average Cost



206. *Id.*

207. VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 85–87.

208. Yoo, *supra* note 180, at 1901.

209. CHURCH & WARE, *supra* note 20, § 3.2, at 63–67, § 4.1.2, at 120–21, § 14.1.1, at 500–01; SCHERER & ROSS, *supra* note 168, at 103.

210. SCHERER & ROSS, *supra* note 168, at 104.

211. *See id.* at 102–06.

212. *See id.* at 98–100.

The maximization of economic welfare must satisfy two conditions. First, price must equal marginal cost, otherwise further increases in production would cause economic welfare to decrease.[213] Second, price must equal or exceed average cost, otherwise the producing firms will go out of business, and the short-run equilibrium will not be stable in the long run.[214] It is easy to identify prices that both equal marginal cost and equal or exceed average cost if industry demand is sufficiently large to permit multiple firms to produce volumes that exceed Q^*. If, on the other hand, the total industry volume is less than Q^*, no price-quantity pairs exist that both equal marginal cost and equal or exceed average cost. Any prices that equal average cost and thus permit the firm to break even necessarily exceed marginal cost and create some degree of deadweight loss.

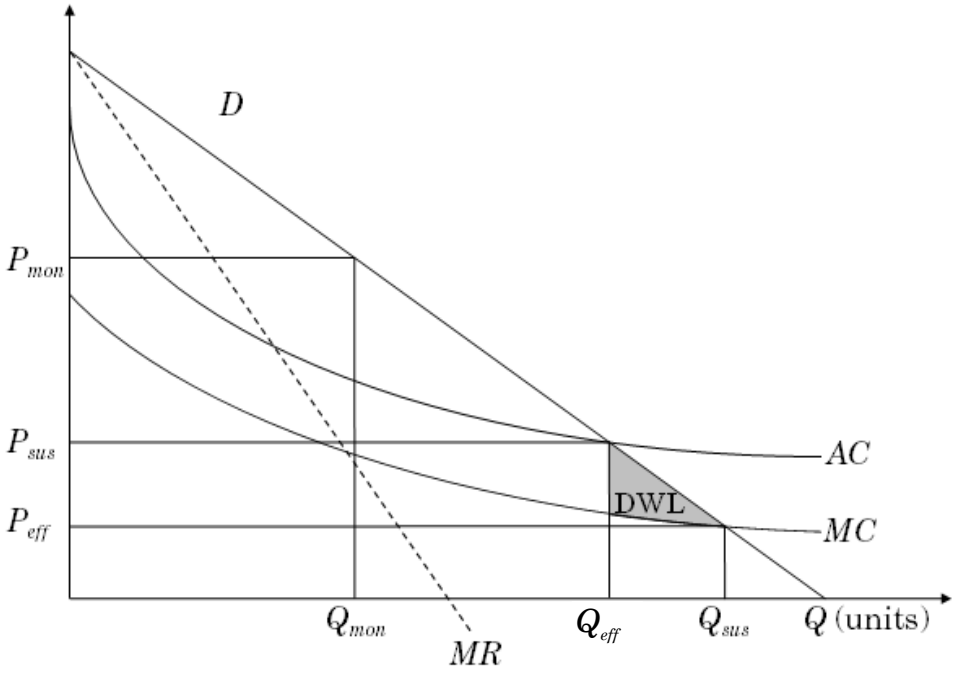
Monopolists seeking to maximize their profits will produce where marginal revenue equals marginal cost (represented in Figure 2 by P_{mon} and Q_{mon}). At this point, prices are inefficiently high, in that they exceed marginal cost. The traditional policy response is to regulate rates to drive down the prices charged by the monopolist. To be sustainable, however, the price must permit the monopolist to cover its production costs, which requires that the prices equal or exceed average cost. Absent price discrimination, the lowest sustainable price that equals or exceeds average cost is represented in Figure 2 by P_{sus}. The fact that P_{sus} exceeds marginal cost means that it is inefficient and leads to a shortfall in production equal to the difference between Q_{sus} and Q_{eff}. The monopolist could serve consumers between Q_{sus} and Q_{eff} by charging them prices that fall below average cost and compensating by charging other customers prices that exceed average cost. In short, this is the only way both to maximize economic efficiency and to allow the monopolist to cover its costs so that it can remain in the market.[215]

213. *See* Yoo, *supra* note 180, at 1901. Indeed, the late Alfred Kahn called marginal cost pricing "[t]he central policy prescription of microeconomics." 1 KAHN, *supra* note 20, at 65.

214. Yoo, *supra* note 180, at 1901.

215. *Id.* at 1901–02.

Figure 2: The Inevitability of Deadweight Loss in the Presence of Nondiscriminatory Pricing and High Fixed Cost[216]



It is for this reason that economic textbooks regard price discrimination as a necessary condition to maximizing economic welfare in industries, like telecommunications, that require substantial fixed-cost investments.[217] Indeed, this is the insight underlying Ramsey pricing, which allocates a higher proportion of the fixed costs to those consumers that are the least price sensitive (and thus will reduce their purchases only minimally even though prices exceed marginal cost) and a lower proportion of the fixed costs to those consumers who are the most price sensitive (and who will decrease their consumption sharply in response to any increase in price).[218]

The FCC has been reluctant to permit Ramsey pricing in the context of unbundling out of concern that it would raise prices on those elements that are the most difficult to replicate, which it believed was inconsistent with the statute's focus on promoting

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216. This Figure was adapted from Yoo, *supra* note 180, at 1902 fig.2.

217. *See, e.g.*, CHURCH & WARE, *supra* note 20, § 25.2.1, at 795; JEAN-JACQUES LAFFONT & JEAN TIROLE, COMPETITION IN TELECOMMUNICATIONS § 2.2.1.1, at 61–65 (2000); SCHERER & ROSS, *supra* note 168, at 496–99; VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 417–18.

218. Yoo, *supra* note 180, at 1902.

competition.[219] One study estimated the welfare loss stemming from the refusal to implement Ramsey pricing for local telephone service at approximately $30 billion per year.[220]

B. Determining When Rates Are Just and Reasonable

Another aspect of common carriage is rate regulation, as demonstrated by the requirement that rates be just and reasonable. The Mann-Elkins Act of 1910 assigned responsibility for assessing rates to the Interstate Commerce Commission, which was focused primarily on the railroads and paid little attention to telephony.[221] The Communications Act of 1934 transferred the authority to review rates to the newly created FCC, which promptly launched an investigation into AT&T's rates.[222] The FCC used studies by members of the Special Investigation staff regarding the Long Lines Department's operations to obtain a $12 million reduction in long distance rates, announced on December 2, 1936.[223] The process used to set these rate reductions was surprisingly informal, consisting of informal negotiations with AT&T, which the FCC, in a self-congratulatory manner, lauded as avoiding the necessity of protracted rate proceedings and litigation.[224] Indeed, this would represent the only formal investigation of AT&T's rates for nearly three decades, as the FCC adopted a policy of "continuing surveillance," during which rate adjustments were negotiated through informal discussions.[225] Perhaps most shocking was the fact that these proceedings were immune from judicial review, as courts did not regard the public notices announcing the products of these negotiations to be agency action.[226]

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219. Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Interconnection Between Local Exchange Carriers and Commercial Mobile Radio Service Providers, First Report and Order, 11 FCC Rcd. 15499, 15853 ¶ 696 (1996), *aff'd sub nom.* Verizon Commc'ns Inc. v. FCC, 535 U.S. 467, 515–16 (2002).

220. Robert W. Crandall, *Is It Time to Eliminate Telephone Regulation?*, *in* TELECOMMUNICATIONS POLICY: HAVE REGULATORS DIALED THE WRONG NUMBER 17, 23 (Donald L. Alexander ed., 1997).

221. SPULBER & YOO, *supra* note 37, at 234.

222. *See* FED. COMMC'NS COMM'N, FINAL REPORT OF THE TELEPHONE RATE AND RESEARCH DEPARTMENT 7–8 (1938). For a useful overview, see Steven M. Spaeth, *Industrial Policy, Continuing Surveillance, and Raised Eyebrows: A Comparison of Informality in Administrative Procedure in Japan and the United States*, 20 OHIO N.U. L. REV. 931, 941–42 (1994).

223. Carl I. Wheat, *The Regulation of Interstate Telephone Rates*, 51 HARV. L. REV. 846, 854 (1938).

224. FED. COMMC'NS COMM'N, *supra* note 222, at 6–9.

225. *See* Policy and Rules Concerning Rates for Dominant Carriers, Report and Order and Second Further Notice of Proposed Rulemaking, 4 FCC Rcd. 2873, 2884–85 ¶¶ 19–20 (1989) [hereinafter AT&T Price Cap Order].

226. *See* Pub. Utils. Comm'n v. United States, 356 F.2d 236, 238–40 (9th Cir. 1966).

This cozy world of collusive cooperation began to unravel when the federal government began to suspect that it was being overcharged.[227] This led the FCC to launch its first cost study in nearly thirty years, which showed a wide disparity in the returns AT&T was earning on seven different classes of service.[228] This led to a formal investigation of AT&T's rates.[229] More importantly for our purposes, it induced the FCC to adopt formal rate proceedings for the first time,[230] albeit with some hesitation, which drew the ire of one of the sitting FCC Commissioners.[231]

1. Rate-of-Return Regulation. As the Supreme Court has noted, determining whether a particular rate is reasonable is an "embarrassing question."[232] Justice Brandeis similarly called assessing the reasonableness of rates a "laborious and baffling task."[233] The most accurate basis for determining the reasonableness of a rate would be to compare it to the prices charged for comparable products bought and sold in an open market.[234] The problem was that "utilities, unlike merchandise or land, are not commonly bought and sold in the market."[235] As a result, no such market benchmarks could exist. Another commonly used, market-based approach to valuation is calculating the net present value of the utility's earning stream. Capitalizing earnings necessarily embroiled regulatory authorities in a "vicious circle," since the rate would depend on the utility's earnings, and the earnings were largely determined by the rates the utility was permitted to charge.[236] "The heart of the matter is that rates cannot be made to

227. *See GSA Requests Phone Rate Slash*, 61 PUB. UTIL. FORT. 467, 467 (1958).

228. AT&T Co. and the Associated Bell System Companies Charges for Interstate and Foreign Communication Service, Memorandum Opinion and Order, 2 F.C.C.2d 871, 871 ¶ 1 (1965); *see supra* note 222 and accompanying text (explaining that the cost study conducted in August 1964 was indeed nearly thirty years after the FCC's creation pursuant to the Communications Act of 1934).

229. AT&T Co. and the Associated Bell System Companies Charges for Interstate and Foreign Communication Service, Interim Decision and Order, 9 F.C.C.2d 30, 32–33 ¶ 1 (1967).

230. *Id.* at 37–38 ¶ 15.

231. *See* Nicholas Johnson, *The Second Half of Jurisprudence: The Study of Administrative Decisionmaking*, 23 STAN. L. REV. 173, 186–87 (1970) (reviewing KENNETH CULP DAVIS, DISCRETIONARY JUSTICE: A PRELIMINARY INQUIRY (1969)).

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

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

234. *Cost or Price Analysis*, RESEARCH CORP. OF THE UNIV. OF HAW. § 2.125.2, https://www.rcuh.com/Webhelp/policies_and_procedures/2-procurement/2.125_cost_or_price_analysis_.htm (last updated Aug. 24, 2005).

235. *Sw. Bell Tel. Co.*, 262 U.S. at 292.

236. *Id.*

depend upon 'fair value' when the value of the going enterprise depends on earnings under whatever rates may be anticipated."[237]

As a result, regulators must base their assessments on data other than market-based outcomes. To implement its new, more formal approach to evaluating the reasonableness of rates, the FCC naturally turned to the framework that state regulators had developed over the span of decades: rate-of-return regulation (also known as cost of service ratemaking).[238] Rate-of-return regulation focuses on the cost of the inputs rather than the value of the outputs according to the following formula:

$$R = O + Br,$$

where R is the total revenue the carrier is permitted to generate (sometimes called the revenue requirement), O is the carrier's operating expenses incurred during that particular rate year (such as taxes, wages, energy costs, and depreciation), B is the amount of capital investments that must be recovered over multiple rate years (also known as the "rate base"), and r is the appropriate rate of return allowed on the capital investment.[239]

Once the total revenue requirement is set, prices are set for each service in a manner designed to allow the firm to satisfy that requirement. If there is only one product and one rate class, rates are then determined simply by dividing the total revenue requirement by the number of units consumers are expected to demand.[240] If, as is usually the case, the regulated firm offers multiple products (e.g., local and long distance services) and more than one class of service (e.g., residential and business services), the calculus is considerably more complex.[241] Regulators then monitor the overall revenue and profit earned by the regulated entity to make sure that unexpected variations do not cause major deviations from the targets.

Rate-of-return regulation has been the subject of widespread criticism. For example, the National Telecommunications and

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237. Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591, 601 (1944) (footnote omitted).

238. *See* Kathleen B. Levitz, *Loosening the Ties That Bind: Regulating the Interexchange Services Market for the 1990's*, (FCC Office of Plans & Pol'y, Working Paper, Mar. 9, 1987), *reprinted in* 2 FCC Rcd. 1495, 1496, 1502 n.2 (1987).

239. *See, e.g.*, RICHARD J. PIERCE, JR., ECONOMIC REGULATION: CASES AND MATERIALS 51–52 (1994).

240. *See* CHURCH & WARE, *supra* note 20, § 26.2.1, at 842–46.

241. *See id.* § 26.2.1, at 845–47; 1 KAHN, *supra* note 20, at 150–52; VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 443–45.

Information Administration states: "Almost from its inception, there has been criticism of this traditional, and predominant, communications regulatory tool. Since the early 1960s, a number of economists have identified and, in some cases, sought to quantify, the excessive costs attributable to rate of return regulation."[242] Crandall and Waverman similarly observe, "The disadvantages of [rate-of-return] regulation . . . have been well identified in the literature."[243] The FCC has been trying to develop alternative methodologies since the late 1970s.[244]

More recently, regulators have begun to move away from formal tariffs for nondominant firms. For example, the FCC attempted to exempt MCI and Sprint from tariff filings because they lacked a dominant position.[245] As AT&T lost its dominant position, the FCC eventually attempted to allow AT&T to comply only with the tariff procedures for nondominant carriers.[246] The courts rejected the FCC's actions, holding that the statute required the filing of tariffs and did not give the FCC the power to create exceptions.[247]

Congress eventually amended the statute to give the FCC the discretion to forbear from enforcing the statutory tariff requirements whenever the agency finds that tariffs are not necessary to protect consumers or to ensure reasonable and nondiscriminatory rates and that forbearing would be in the public interest.[248] The FCC has exercised its forbearance authority to completely detariff long-distance services rates.[249]

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242. NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 10.

243. ROBERT W. CRANDALL & LEONARD WAVERMAN, TALK IS CHEAP: THE PROMISE OF REGULATORY REFORM IN NORTH AMERICAN TELECOMMUNICATIONS 98 (1995).

244. AT&T Price Cap Order, *supra* note 225, at 2888–89 ¶¶ 27–28, 2891–93 ¶¶ 34–35.

245. Tariff Filing Requirements for Nondominant Carriers, Notice of Proposed Rulemaking, 8 FCC Rcd. 1395, 1396 ¶ 6, 1399 ¶ 28 (1993); Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor, Sixth Report and Order, 99 F.C.C.2d 1020, 1035 ¶ 26, 1036 app. A (1985), *vacated and remanded sub nom.* MCI Telecomms. Corp. v. FCC, 765 F.2d 1186, 1195–96 (D.C. Cir. 1985); Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor, Second Report and Order, 91 F.C.C.2d 59, 65 ¶ 12, 73 ¶ 30, 74 ¶ 32 (1982).

246. Motion of AT&T Corp. to Be Reclassified as a Non-Dominant Carrier, Order, 11 FCC Rcd. 3271, 3273 ¶¶ 1–2, 3281 ¶ 12, 3282 ¶ 13 (1995).

247. MCI Telecomms. Corp. v. AT&T Co., 512 U.S. 218, 231–32, 234 (1994); Sw. Bell Corp. v. FCC, 43 F.3d 1515, 1517, 1526 (D.C. Cir. 1995); AT&T Co. v. FCC, 978 F.2d 727, 729 (D.C. Cir. 1992); *MCI Telecomms. Corp.*, 765 F.2d at 1187–88.

248. 47 U.S.C. § 160(a) (2012).

249. Policy and Rules Concerning the Interstate, Interexchange Marketplace, Implementation of Section 254(g) of the Communication Act of 1934, as Amended, Second Report and Order, 11 FCC Rcd. 20730, 20731–33 ¶¶ 1, 3 (1996), *petition for review denied sub nom.* MCI WorldCom, Inc. v. FCC, 209 F.3d 760, 761, 763, 766 (D.C. Cir. 2000).

After initially ruling to the contrary,[250] the FCC has also ruled that local telephone companies do not have a dominant position in digital subscriber lines (DSL) and thus do no need to file tariffs for those services.[251] Instead, carriers simply have to post their terms of service on their website.[252]

a. Determining the Proper Rate Base. One of the most longstanding challenges is determining how to value capital expenses that comprise the rate base (*B*). Establishing the proper way to determine the value of the cost of the rate base has proven to be one of the most difficult problems in economic regulation.[253] Indeed, in *Verizon Communications Inc. v. FCC*, the Supreme Court characterized the word "cost" as "a chameleon," "virtually meaningless," and "protean."[254]

The biggest controversy has surrounded whether the rate base should be calculated based on historical cost or replacement cost.[255] *Munn v. Illinois* originally eschewed any judicial involvement in evaluating the reasonableness of rates, insisting that that was the province of legislatures.[256] The Supreme Court changed course in the landmark case of *Smyth v. Ames*, which held that the Constitution entitled regulated firms to rates based on the "fair value" of their assets.[257] And by fair value, the Court meant the assets' current market value as measured by replacement cost.[258]

More recently, regulatory authorities have begun to turn an even more stringent form of replacement cost, exemplified by the FCC's adoption of Total Element Long-Run Incremental Cost (TELRIC), used to implement rates set under the Telecommunications Act of 1996.[259] This calculation was based not on the replacement cost of the assets actually purchased, but

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250. GTE Tel. Operating Cos., GTOC Tariff No. 1, GTOC Transmittal No. 1148, Memorandum Opinion and Order, 13 FCC Rcd. 22466, 22466 ¶¶ 1–2, 22474–76 ¶¶ 16–19 (1998).

251. Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd. 14853, 14862–65 ¶¶ 12–17 (2005), *petition for review denied sub nom.* Time Warner Telecom, Inc. v. FCC, 507 F.3d 205, 208 (3d Cir. 2007).

252. *Id.* at 14901 ¶ 90.

253. *See* 1 KAHN, *supra* note 20, at 45–51.

254. Verizon Commc'ns Inc. v. FCC, 535 U.S. 467, 500–01 (2002) (internal quotation marks omitted).

255. *See* SPULBER & YOO, *supra* note 37, at 127–28.

256. Munn v. Illinois, 94 U.S. 113, 133–34 (1876).

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

258. *See* Siegel, *supra* note 43, at 227–32.

259. *Verizon*, 535 U.S. at 491–97 & n.16; 47 C.F.R. § 51.505(b) (2012); *see also* Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56.

rather on the replacement cost of the most efficient technology available at the time that rates were being set.[260] In other words, TELRIC bases rates not on the replacement cost of the actual network, but rather on that of a hypothetical network based around the most efficient components if the network were rebuilt from scratch today.[261]

The contrary position received its canonical statement in Justice Brandeis's landmark concurrence in *Missouri* ex rel. *Southwestern Bell Telephone Co. v. Public Service Commission*.[262] Brandeis recognized that replacement cost might well represent the best evidence of present value, as it would reflect changes in demand and technology occurring after the assets were originally purchased.[263] The problem was that determining replacement cost, however, was an inherently speculative endeavor fraught with uncertainty. Instead, Brandeis advocated relying on historic cost for the pragmatic reason that it was less subjective and less susceptible to manipulation.[264]

Rather than resolve this controversy, the Supreme Court instead chose to abandon the enterprise of evaluating rates altogether. Beginning in *Federal Power Commission v. Hope Natural Gas Co.*, the Supreme Court invoked notions of judicial deference and restraint to uphold any rate, whether based on historical or replacement cost, so long as it fell within a broad zone of reasonableness.[265]

The problem is that the debate between historical and replacement cost is not merely academic. The choice between them can have dramatic implications for both the rates paid by consumers and the returns earned by companies. For example, when *Smyth* was decided, the country was in the midst of a depression, and in this deflationary environment, replacement costs meant lower rates, and historical cost meant higher rates.[266] In following years, replacement cost tended to cause rates to increase, particularly during World Wars I and II.[267] Indeed,

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260. 47 C.F.R. § 51.505(b)(1).

261. Although TELRIC requires determining replacement costs of the hypothetically most efficient assets, it does not require basing rates on the hypothetically most efficient locations. *See id.* In recognition that locations of central offices cannot easily be moved, it takes the locations of the existing wire centers as given. *See id.*

262. Missouri *ex rel.* Sw. Bell Tel. Co. v. Pub. Serv. Comm'n, 262 U.S. 276, 299–302 (1923) (Brandeis, J., concurring).

263. *Id.*

264. *See id.* at 308–10; *see also* 1 KAHN, *supra* note 20, at 39 & nn.40–41.

265. Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591, 602 (1944). *See generally* SPULBER & YOO, *supra* note 37, at 128.

266. *See* 1 KAHN, *supra* note 20, at 39; Siegel, *supra* note 43, at 222–23.

267. *See* 1 KAHN, *supra* note 20, at 40; Siegel, *supra* note 43, at 233–34.

during times of inflation, replacement cost methodologies can provide regulated firms with a windfall. In addition, the uncertainty surrounding replacement cost determinations, and particularly those made around hypothetical combinations of assets, made rate hearings costly and maddeningly inconsistent in terms of results.[268] As noted later, it can be particularly difficult to apply when technology is in a state of flux.

The result is that, aside from TELRIC, regulatory authorities have ended their endless fights over how best to determine replacement cost and generally relied on more stable and less arbitrary measures of historical cost.[269] Historical cost is not without its own drawbacks, however. Guaranteeing a return on outdated technology can reward obsolescence.[270] As such, one of the most difficult administrative problems associated with common carriage regulation remains unresolved.

b. The Lack of Incentive to Economize on Costs. A widely cited problem with rate-of-return regulation is that the regulated firm has no incentive to economize on costs. The cost-plus nature guarantees the firm a return on its expenditures, which dampens their incentive to economize as well as their incentive to invest in cost-reducing improvements.[271] Firms subject to rate regulation may also avoid deploying new technologies that would render its investments in its rate base obsolete before they have the chance to recover those costs.[272]

Conversely, regulated firms may overspend on quality to avoid interruptions that would weaken political support or undertake costs that would make management processes and labor relations easier.[273] Regulators attempt to curb inappropriate

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268. Review of the Commission's Rules Regarding the Pricing of Unbundled Network Elements and the Resale of Service by Incumbent Local Exchange Carriers, Notice of Proposed Rulemaking, 18 FCC Rcd. 18945, 18948–49 ¶¶ 6–7 (2003); *see also* Shelanski, *supra* note 98, at 79–80.

269. 1 KAHN, *supra* note 20, at 39, 41–42; *see also* CHURCH & WARE, *supra* note 20, § 26.2.1, at 844.

270. SPULBER & YOO, *supra* note 37, at 225–26.

271. Policy and Rules Concerning Rates for Dominant Carriers, Second Report and Order, 5 FCC Rcd. 6786, 6789 ¶ 22 (1990) [hereinafter LEC Price Cap Order], *petition for review dismissed sub nom.* Nat'l Rural Telecom Ass'n v. FCC, 988 F.2d 174, 177 (D.C. Cir. 1993); AT&T Price Cap Order, *supra* note 225, 2889–90 ¶¶ 29–30; CHURCH & WARE, *supra* note 20, § 26.2.2, at 847, § 26.2.3, at 852; CRANDALL & WAVERMAN, *supra* note 243, at 100; NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 27–29; 2 KAHN, *supra* note 20, at 48; SPULBER & YOO, *supra* note 37, at 129; Haring & Kwerel, *supra* note 19, at 1489.

272. NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 19–20, 27, 29; *see* CHURCH & WARE, *supra* note 20, § 26.2.3, at 848–49.

273. CHURCH & WARE, *supra* note 20, § 26.2.3, at 848–49, 852, 2 KAHN, *supra* note 20, at 50, 53; NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 27. For a review of the

expenditures by only allowing carriers to recover investments that were "prudent," usually determined by whether the asset for which recovery is sought is "used and useful."[274] Realistically, this authority enables regulators to catch only the most egregious of excesses.[275] And in any event, it can never evaluate investments that were never made but should have been.

Moreover, ex post evaluation always runs the risk of hindsight bias, denying recovery of investments and expenditures that were prudent at the time they were undertaken but ended up not panning out.[276] The problem is that once investments are sunk, regulated firms are vulnerable to regulatory opportunism should regulators arbitrarily strand costs by finding them to be imprudent.[277] The risk of such expropriation can cause firms to underinvest systematically in their networks.[278]

A closer review of the literature reveals a number of subtleties. Consider the role of regulatory lag. The natural instinct is to regard it as a shortcoming because delays in updating rates can cause them to deviate from reasonable cost. During the period between rate hearings, however, prices no longer depend on costs.[279] As a result, the regulated firm can keep any cost savings it is able to achieve, providing some limited incentive to economize.[280] Of course, this incentive varies with the length of time remaining until the next rate hearing.[281] As the rate hearing approaches, the incentive to keep costs down weakens.[282]

In addition, the guarantee of a rate of return may create a moral-hazard problem that gives regulated firms excess

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empirical literature, see Paul L. Joskow & Nancy L. Rose, *The Effects of Economic Regulation*, *in* 2 HANDBOOK OF INDUSTRIAL ORGANIZATION 1450, 1484–86 (Richard Schmalensee & Robert D. Willig eds., 1989).

274. *See, e.g.*, JAMES C. BONBRIGHT, ALBERT L. DANIELSEN & DAVID R. KAMERSCHEN, PRINCIPLES OF PUBLIC UTILITY RATES 257–58 (2d ed. 1988); SPULBER & YOO, *supra* note 37, at 129.

275. *See* CHURCH & WARE, *supra* note 20, § 26.2.2, at 851–52; 2 KAHN, *supra* note 20, at 47; NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 27–28.

276. Daniel F. Spulber & Christopher S. Yoo, *Toward a Unified Theory of Access to Local Telephone Networks*, 61 FED. COMM. L.J. 43, 84 (2008).

277. Yoo, *supra* note 166, at 294–95.

278. Thomas P. Lyon, *Regulation with 20-20 Hindsight: "Heads I Win, Tails You Lose"?*, 22 RAND J. ECON. 581, 581–82 (1991) (citing John Panzar).

279. *See* 2 KAHN, *supra* note 20, at 48 (discussing regulatory lag).

280. CARLTON & PERLOFF, *supra* note 20, at 669; 2 KAHN, *supra* note 20, at 48; VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 432–33; *see* Paul L. Joskow, *Inflation and Environmental Concern: Structural Change in the Process of Public Utility Price Regulation*, 17 J.L. & ECON. 291, 294 (1974).

281. *See* STEPHEN G. BREYER, REGULATION AND ITS REFORM 48 (1982).

282. *Id.*

incentives to undertake risky projects.[283] If so, reviewing expenditures for prudence may actually bring investment closer to optimal levels.[284] Indeed, pre-committing a "used and useful" regime may benefit common carriers by preventing regulatory authorities from increasing the costs they declare to be imprudent.[285]

c. Determining the Proper Rate of Return. Determining the appropriate rate of return often proves even more difficult than determining the appropriate rate base.[286] The regulator must decide whether to focus on the regulated entity's cost of capital or that of represented industry participants.[287] The regulator must determine whether to evaluate the current risk level or the one at the time the capital expenditures were made.[288] In determining the weighted average cost of capital, regulators must take into account the different tax treatment of each instrument.[289] They must also decide whether the risk premium includes protection against inflation or reflects pioneering new services that are not yet proven.[290] This determination is complicated by the fact that small differences in rates of return can have dramatic effects on the total revenue that the carrier is allowed to generate.[291]

In the end, setting rates of return is as much about a political bargain allocating benefits between consumers and firms as it is about economics.[292] It should thus come as no surprise that firms that practice in multiple jurisdictions often find wide variance in the rate of return they are permitted to earn.[293]

d. Overcapitalization and the Averch-Johnson Effect. In addition to debates over how best to determine the rate base and the rate of return, debates over rate-of-return regulation have been dominated by concerns that the ratemaking formula may be

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283. *See* H. Stuart Burness, W. David Montgomery & James P. Quirk, *Capital Contracting and the Regulated Firm*, 70 AM. ECON. REV. 342, 349–50 (1980).

284. Lyon, *supra* note 278, at 582, 584, 586–88, 591.

285. *See* Richard J. Gilbert & David M. Newbery, *The Dynamic Efficiency of Regulatory Constitutions*, 25 RAND J. ECON. 538, 538–39, 547–48, 551 (1994) (internal quotation marks omitted).

286. SPULBER & YOO, *supra* note 37, at 129.

287. 1 KAHN, *supra* note 20, at 45–46.

288. *Id.* at 46.

289. *Id.* at 50–51.

290. *Id.* at 51.

291. SPULBER & YOO, *supra* note 37, at 129.

292. CHURCH & WARE, *supra* note 20, § 26.2.1, at 844; 1 KAHN, *supra* note 20, at 42–44.

293. NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 14.

creating systematic biases in firm behavior.[294] The most famous such bias is the Averch-Johnson effect, which suggests that firms will favor capital-intensive solutions over solutions that emphasize operating costs, such as labor.[295] This is because the ratemaking formula allows regulated firms to earn a rate of return on its capital expenses, whereas operating expenses are reimbursed dollar-for-dollar without any additional markup.[296] So long as the regulated rate of return exceeds the firm's actual cost of capital, it should find it profitable to do so.[297]

Stated slightly more formally, an unregulated firm would increase its use of both labor and capital until the marginal cost of each factor equals the marginal value that it generates.[298] The constraint mentioned above that the regulated rate of return exceeds the actual cost of capital exaggerates the profit signal for capital, which means that the firm will increase its use of capital beyond the socially optimal point, at which point production no longer employs the socially optimal mix.[299]

While conceptually appealing, the Averch-Johnson effect is subject to a number of caveats.[300] As an initial matter, the effect may compensate for the fact that uncertainty dictates that some capital investments may not pan out.[301] In addition, the effect does not occur if management seeks to maximize revenue instead of profits.[302]

Moreover, a necessary condition for the effect to occur is that the regulated rate of return exceeds the firm's cost of capital, otherwise all capital investments will be unprofitable, and the firm will exit the market.[303] Consequently, the effect will not occur if inflation temporarily causes the firm's cost of capital to rise above the regulated rate of return after the rate is set.[304] In addition, any tendency toward overcapitalization

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294. SPULBER & YOO, *supra* note 37, at 129.

295. Harvey Averch & Leland L. Johnson, *Behavior of the Firm Under Regulatory Constraint*, 52 AM. ECON. REV. 1052, 1068 (1962).

296. *See id*. at 1053–54.

297. *See id.*

298. *Id.* at 1055–56.

299. *Id.* at 1053, 1057.

300. *See* NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 25–26.

301. 2 KAHN, *supra* note 20, at 56–57.

302. Elizabeth E. Bailey & John C. Malone, *Resource Allocation and the Regulated Firm*, 1 BELL J. ECON. & MGMT. SCI. 129, 137–38 (1970).

303. Averch & Johnson, *supra* note 295, at 1054–55.

304. Leland L. Johnson, *Behavior of the Firm Under Regulatory Constraint: A Reassessment*, 63 AM. ECON. REV. 90, 90, 95 (1973); *see also* Paul L. Joskow & Richard Schmalensee, *Incentive Regulation for Electric Utilities*, 4 YALE J. ON REG. 1, 7 & n.29 (1986)

may be offset if raising larger amounts of capital causes capital costs to rise.[305]

Other factors may create downward pressure on capital costs. The extent to which regulators provide higher rates of return when rates are stable or declining may give firms the incentive to reduce costs.[306] Moreover, during the lag when prices are fixed, firms can increase profits by cutting costs.[307] In addition, regulatory authorities may disallow certain capital expenditures as imprudent.[308]

Another exception follows from Averch and Johnson's second finding, which is typically overlooked in the literature. If the firm can use the same inputs to make a second product, it can also earn a rate of return that exceeds its cost of capital by entering that market as well.[309] Indeed, it has the incentive to do so even if it runs a loss, so long as the difference between the regulated rate of return and the actual cost of capital exceeds the margin of the loss.[310] To the extent that regulation is imperfect and regulated firms are still able to exercise monopoly power, the tendency to expand output and price below marginal cost may actually be beneficial.[311]

Given this multitude of considerations, it comes as no surprise that empirical tests of the Averch-Johnson effect are all over the map.[312] Some studies confirm a tendency toward overcapitalization.[313] Others find undercapitalization[314] or are inconclusive.[315]

("Due to regulatory lag, the actual rates of return . . . may be above or below the commission-determined fair rate of return at any instant.").

305. 2 KAHN, *supra* note 20, at 57–58.

306. *Id.* at 57.

307. Joskow & Schmalensee, *supra* note 304, at 7–8.

308. VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 462; Joskow & Schmalensee, *supra* note 304, at 8.

309. *See* Averch & Johnson, *supra* note 295, at 1058–59.

310. *Id.* at 1059.

311. 2 KAHN, *supra* note 20, at 106–07.

312. *See* CARLTON & PERLOFF, *supra* note 20, at 676; NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 26; Joskow & Rose, *supra* note 273, at 1477–79.

313. *See* CARLTON & PERLOFF, *supra* note 20, at 676; Leon Courville, *Regulation and Efficiency in the Electric Utility Industry*, 5 BELL J. ECON. & MGMT. SCI. 53, 72 (1974); Jean Mirucki, *A Study of the Averch-Johnson Hypothesis in the Telecommunications Industry*, 12 ATLANTIC ECON. J. 121, 121 (1984); H.C. Petersen, *An Empirical Test of Regulatory Effects*, 6 BELL J. ECON. 111, 124 (1975); Robert M. Spann, *Rate of Return Regulation and Efficiency in Production: An Empirical Test of the Averch-Johnson Thesis*, 5 BELL J. ECON. & MGMT. SCI. 38, 50 (1974).

314. *See* David P. Baron & Robert A. Taggart, Jr., *A Model of Regulation Under Uncertainty and a Test of Regulatory Bias*, 8 BELL J. ECON. 151, 164–65 (1977).

315. *See* CARLTON & PERLOFF, *supra* note 20, at 676; Randy A. Nelson & Mark E. Wohar, *Regulation, Scale Economies, and Productivity in Steam-Electric Generation*, 24

Despite these caveats, the general consensus is that the Averch-Johnson effect does affect firm behavior, even if disagreement still exists as to its direction and magnitude.[316] Whatever the precise impact of the effect, it does underscore that introducing regulation would distort decisions away from those that marketplace participants would make in the absence of regulation.

e. Setting Prices and Allocating Common Costs. The dynamism of Internet-related markets makes it more difficult to set prices in an efficient manner. As noted earlier, the most straightforward way to generate individual prices is to divide the revenue requirement by the projected demand.[317] This yields a good result when industry demand and market shares are relatively stable. When demand is uncertain, however, prices may give the regulated firm a windfall if demand unexpectedly spikes, or it may fail to meet the revenue requirement if demand fails to meet expectations.

Another classic problem associated with rate-of-return regulation is the reduction in pricing flexibility.[318] As the user base becomes more heterogeneous, users will want an increasingly diverse range of increasingly customized products.[319] Some consumers may be willing to pay high prices for more features or higher quality. Others may wish to buy a no-frills version at a cheaper price. The creation of new products will inevitably require the regulatory approval of new price-product combinations. The inevitable lag means that regulation will cause the product offerings and prices to be increasingly out of step with consumer demand.[320] The faster the rate of change, the more significant this wedge will become.

Regulated pricing suffers from an even more fundamental problem. Because the approach to pricing described above simply divides total cost by total quantity,[321] it represents a classic example of average cost pricing. As such, it deviates from the benchmark of marginal cost pricing that represents the central

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INT'L ECON. REV. 57, 74–75 (1983); Charles W. Smithson, *The Degree of Regulation and the Monopoly Firm: Further Empirical Evidence*, 44 S. ECON. J. 568, 579 (1978).

316. 2 KAHN, *supra* note 20, at 50, 59; NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 26.

317. *See supra* note 240 and accompanying text.

318. LEC Price Cap Order, *supra* note 271, at 6791 ¶ 35; NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 17.

319. YOO, *supra* note 13, at 16–18.

320. Yoo, *supra* note 95, at 52.

321. *See supra* text accompanying notes 240, 317.

policy prescription of microeconomics.[322] Of course, when fixed costs are high, it is impossible to charge prices that both equal marginal cost and equal or exceed average cost.[323] In that case, Ramsey pricing indicates that the most efficient outcome would be to charge in inverse proportion to the elasticity of demand.[324] Again, the average-cost approach to pricing embedded in rate-of-return regulation is at odds with this outcome.

The problem becomes much worse if the same assets are used to produce more than one service.[325] When this occurs, basic principles of cost causality require that costs associated exclusively with one product be allocated to that product. All of the other costs are regarded as common costs.[326] The question is by what metric those common costs should be allocated to individual products.

The classic answer is to allocate them on the basis of some observable measure of utilization (such as minutes), revenue, or attributable cost assigned to each service.[327] These are merely projections, and any deviation in fact can cause the firm to run a deficit. In addition, the choice among these measures is fundamentally arbitrary but has important consequences for the prices charged each class of customers.[328] A more fundamental problem is that these measures are extremely unlikely to bear any resemblance to marginal cost.[329]

Finally, the landmark article by Nobel Laureate George Stigler and Claire Friedland has launched an empirical literature assessing whether rate regulation actually lowers prices.[330] Although a burgeoning literature has emerged, it has not provided any simple policy inferences.[331]

f. Variations in Product and Service Quality. As noted earlier, nondiscrimination mandates work best when the product

322. *See supra* note 213 and accompanying text.

323. *See supra* Figure 2; *supra* text accompanying notes 215–218.

324. *See supra* text accompanying notes 215–218.

325. *See* LEC Price Cap Order, *supra* note 271, at 6789 ¶ 22; CRANDALL & WAVERMAN, *supra* note 243, at 109; NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 13–14.

326. CHURCH & WARE, *supra* note 20, § 26.2.1, at 846; VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 443.

327. CHURCH & WARE, *supra* note 20, § 26.2.1, at 846; 1 KAHN, *supra* note 20, at 151; VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 443.

328. VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 443–45.

329. 1 KAHN, *supra* note 20, at 151–52; VISCUSI HARRINGTON & VERNON, *supra* note 20, at 444.

330. George J. Stigler & Claire Friedland, *What Can Regulators Regulate? The Case of Electricity*, 5 J.L. & ECON. 1, 4 (1962).

331. *See* Joskow & Rose, *supra* note 273, at 1464, 1473–74.

being regulated is a commodity and is created through a uniform production technology.[332] When product quality and production costs vary, it can be very difficult to determine when price differentials are not justified by differences in cost.

A similar effect arises with respect to rate regulation of monopolies. A regulated firm prevented by rate regulation from charging higher prices can still increase its profits simply by degrading quality.[333] Indeed, empirical studies indicate that this is precisely what occurred in the cable television industry, when rate regulation actually caused quality-adjusted cable rates to rise.[334] Conversely, if the rate-regulated firm is operating in a competitive (presumably oligopolistic) environment, the inability to compete on price may naturally lead it to compete based on quality.[335]

The only alternative would be to regulate quality as well. The problem is that quality requirements would be notoriously hard to specify, let alone monitor and enforce, and even then they would have bite only when the party in question was blatantly deficient.[336]

g. The Impact on Innovation. Firms subject to rate-of-return regulation have often been criticized for their failure to innovate.[337] As an initial matter, regulated firms may be reluctant to deploy innovations when doing so would obsolete existing equipment that has not been fully amortized. Moreover, the fact that its return is capped means that it benefits little from innovations that improve profitability.[338]

Moreover, innovative activity typically carries greater risks than the firm's existing lines of business, with the risk levels also varying from innovation to innovation. If the rate-of-return

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332. *See supra* note 181 and accompanying text.

333. *See* David Besanko, Shabtai Donnenfeld & Lawrence J. White, *Monopoly and Quality Distortion: Effects and Remedies*, 102 Q.J. ECON. 743, 743–44, 756–57 (1987); David Besanko, Shabtai Donnenfeld & Lawrence J. White, *The Multiproduct Firm, Quality Choice, and Regulation*, 36 J. INDUS. ECON. 411, 418 (1988); Kenneth S. Corts, *Regulation of a Multi-Product Monopolist: Effects on Pricing and Bundling*, 43 J. INDUS. ECON. 377, 393–95 (1995).

334. *See* THOMAS W. HAZLETT & MATTHEW L. SPITZER, PUBLIC POLICY TOWARD CABLE TELEVISION: THE ECONOMIES OF RATE CONTROLS 61–63 (1997); Gregory S. Crawford, *The Impact of the 1992 Cable Act on Household Demand and Welfare*, 31 RAND J. ECON. 422, 444–45 (2000).

335. CARLTON & PERLOFF, *supra* note 20, at 677–78 & n.33; VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 564–66.

336. 1 KAHN, *supra* note 20, at 22; VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 361–62.

337. Haring & Kwerel, *supra* note 19, at 9.

338. NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 19.

formula applies a single, uniform rate of return, the regulated entity has little incentive to pursue ventures in which the risk exceeds the rate-of-return benchmark imposed by the authorities. Conversely, the possibility that an investment may be declared imprudent may deter regulated firms from pursuing innovations with higher risk.[339]

Other commentators find some incentive to innovate in some areas.[340] Some argue that rate regulation induces firms to pursue innovations that increase the productivity of labor over capital.[341] Others find the theory to be ambiguous.[342] The empirical evidence is probably best characterized as thin and inconclusive.[343]

h. Asymmetric Information. A related problem endemic to rate-of-return regulation is that all of the information needed to set rates is typically under the control of the firm being regulated.[344] Because the firm's interests are not completely aligned with the regulator's, this information asymmetry gives rise to a classic principal–agent problem in which the principal (the regulator) has limited ability to obtain and verify the relevant information as well as a limited number of inducements to alter the behavior of the agent (the regulated firm).[345]

i. Compliance Costs. The final drawback of rate-of-return regulation is its costs. A 1987 NTIA study estimated compliance costs at $8 to $10 per line per year for an annual cost of $1.1 billion.[346] In addition, a local telephone company reported that the state public utility commission took an average of 329 days to approve its tariffs, with a peak of 390 days. A major federal rate proceeding took three years.[347]

2. Price Caps. The problems associated with rate-of-return regulation led regulatory authorities to experiment with an

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339. Thomas P. Lyon, *Regulatory Hindsight Review and Innovation by Electric Utilities*, 7 J. REG. ECON. 233, 233–37 (1995).

340. NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 18–19; V. Kerry Smith, *The Implications of Regulation for Induced Technical Change*, 5 BELL J. ECON. & MGMT. SCI. 623, 628 (1974).

341. *See* Smith, *supra* note 340, at 628.

342. *See* Wesley A. Magat, *Regulation and the Rate and Direction of Induced Technical Change*, 7 BELL J. ECON. 478, 478–79, 490 (1976); Koji Okuguchi, *The Implications of Regulation for Induced Technical Change: Comment*, 6 BELL J. ECON. 703, 703–05 (1975).

343. Joskow & Rose, *supra* note 273, at 1482–84.

344. CRANDALL & WAVERMAN, *supra* note 243, at 101; SPULBER & YOO, *supra* note 37; Shelanski, *supra* note 98, at 78.

345. CRANDALL & WAVERMAN, *supra* note 243, at 101; Shelanski, *supra* note 98, at 78.

346. NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 23–24.

347. *Id.* at 16.

alternative rate-setting regime known as "price caps." Simultaneously developed in the early 1980s in the United Kingdom by government economist Stephen Littlechild[348] and in the United States by AT&T researchers Peter Linhart, Roy Radner, and Frank Sinden,[349] the scheme was deployed in the United Kingdom in 1984 and in the United States in 1989.[350] By 2003, it had been adopted by 40 states before the onset of the trend towards deregulation.[351]

The principles underlying price caps are relatively straightforward. The primary source of the disincentive to economize was the fact that prices were tied to costs, such that any increase in efficiency would lead directly to a reduction in revenue.[352] Price caps are designed to make the prices a firm can charge independent of any reductions in cost.[353] In addition, price caps were supposed to mitigate the principal–agent problem by shifting the focus to information that was more externally observable and verifiable and by giving the regulator the ability to offer the regulated firm higher-powered incentives.[354]

The basic strategy was to regulate prices, not profits or revenues, and to do so based on information that was not firm-specific. The formula for determining the change from maximum price allowed during the previous year is:

$$\Delta P = CPI - X,$$

where *CPI* is an adjustment for inflation based on the consumer price index and X is a factor set by the regulator to

348. *See* STEPHEN C. LITTLECHILD, REGULATION OF BRITISH TELECOMMUNICATIONS PROFITABILITY ¶¶ 13.4, 13.6, 13.12, 13.16, at 1234–36 (1983) (detailing the "local tariff reduction scheme," now known as price caps).

349. *See* Peter B. Linhart & Roy Radner, *Deregulation of Long-Distance Telecommunications*, *in* POLICY RESEARCH IN TELECOMMUNICATIONS 102, 108–11 (Vincent Mosco ed., 1984); Peter B. Linhart, Roy Radner & Frank W. Sinden, *A Sequential Mechanism for Direct Price Regulation*, *in* PRICE CAPS AND INCENTIVE REGULATION IN TELECOMMUNICATIONS 130 (Michael A. Einhorn ed., 1991); *see also* P.B. Linhart, R. Radner & F.W. Sinden, *A Sequential Principal-Agent Approach to Regulation* (Bell Labs. Econ. Discussion Paper No. 264, 1983), *available at* http://pages.stern.nyu.edu/~rradner/publishedpapers/53SequentialApproachRegulation.pdf.

350. AT&T Price Cap Order, *supra* note 225, at 2884 ¶ 18.

351. David E.M. Sappington & Dennis L. Weisman, *Price Cap Regulation: What Have We Learned from 25 Years of Experience in the Telecommunications Industry?*, 38 J. REG. ECON. 227, 232 tbl.2, 233–34 (2010).

352. VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 439.

353. *Id.*; Sappington & Weisman, *supra* note 351, at 230.

354. Mark A. Jamison, *Regulation: Price Cap and Revenue Cap*, *in* 1 ENCYCLOPEDIA OF ENERGY ENGINEERING AND TECHNOLOGY 1245, 1246 (Barney L. Capehart ed., 2007).

reflect increases in productivity.[355] The maximum price could also be adjusted to reflect other exogenous changes outside the control of the regulated firm.[356]

The hope was that by basing adjustment to prices on an index of inflation as well as an estimate of improvements in industry productivity, price caps would lower the information required by agencies to regulate rates.[357] Price caps also promised to eliminate many of the systematic biases inherent in rate-of-return regulation. Because rates did not depend on costs, price caps would give regulated firms the incentive to economize on costs and would eliminate arguments over how to calculate the rate base and the proper rate of return.[358] It would also eliminate the bias in favor of capital expenditures over operating expenditures identified by Averch and Johnson and would obviate the need to allocate common costs across products.[359] Moreover, because the regulated firm would retain the benefits of its efforts, it was hoped that price caps would make regulated firms more innovative.[360]

Price caps can also promote pricing flexibility by allowing the maximum price to apply to a basket of goods rather than to individual products. Overall prices would comply with the price cap so long as the weighted average of the prices of those goods fell below the relevant threshold.[361] This left regulated firms considerable latitude to vary the prices they charge for different goods as well as to engage in regimes such as Ramsey pricing.[362]

Although price caps were once regarded as something of a panacea, later scholars suggested that the concept had been "oversold,"[363] with each component posing its own challenges. Consider first the adjustment for inflation. The inflation index used to make this adjustment must be independent of the firm in order avoid problems of endogeneity.[364] For example, under the FCC's price cap scheme, the inflation index is measured by the

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355. *Id.* at 1246–48; Sappington & Weisman, *supra* note 351, at 229.

356. VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 439–40; Sappington & Weisman, *supra* note 351, at 240–41.

357. CHURCH & WARE, *supra* note 20, § 26.2.3, at 854.

358. *Id.* § 26.2.3, at 853–54.

359. Ronald R. Braeutigam & John C. Panzar, *Diversification Incentives under "Price-Based" and "Cost-Based" Regulation*, 20 RAND J. ECON. 373, 375–77 (1989).

360. CHURCH & WARE, *supra* note 20, § 26.2.3, at 854.

361. *Id.* § 26.2.3, at 853.

362. *Id.* § 26.2.3, at 854.

363. Richard Schmalensee, *Good Regulatory Regimes*, 20 RAND J. ECON. 417, 434 (1989).

364. *See* CHURCH & WARE, *supra* note 20, § 26.2.3, at 853.

Gross National Product Price Index.[365] While the avoidance of endogeneity is critical, the fact that it does not represent inflation in any particular sector means that it will not reflect the true changes in any one industry. If so, the adjustments set may create either windfalls or shortfalls for regulated firms. The uncertainty surrounding the approximate index has deterred the adoption of price caps.[366] Indeed, the errant index problem has been compared to Russian Roulette.[367]

Uncertainty about costs also limits the benefits of price caps.[368] If cost reductions are not observable by regulators, they may be forced to include a cushion in the price caps to make sure that regulated firms cover their costs.[369] The larger the uncertainty, the larger this cushion must be.[370] Driving prices further away from marginal cost maintains incentives for cost reduction (and thus productive efficiency) at the expense of allocative inefficiency.[371] At certain levels of uncertainty, rate-of-return regulation becomes preferable.[372] Cost-based pricing will be more allocatively efficient, but at the cost of weaker incentives to maximize productive efficiency.[373]

But the biggest challenge has been in determining how to set the *X* factor.[374] Regulators and commentators have struggled with the proper way to calibrate the *X* factor.[375] Those setting price caps must thread a needle. Setting the *X* factor too low will simply provide a windfall to network providers without yielding benefits to consumers. On the other hand, setting the *X* factor too high would deny providers a reasonable return and reduce incentives to invest.[376]

Even more problematic is the extent to which price caps can also leave regulated firms vulnerable to regulatory opportunism.

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365. LEC Price Cap Order, *supra* note 271, at 6792 ¶ 50.

366. James M. MacDonald, John R. Norsworthy & Wei-Hua Fu, *Incentive Regulation in Telecommunications: Why States Don't Choose Price Caps*, *in* INCENTIVE REGULATION FOR PUBLIC UTILITIES 27, 28 (Michael Crew ed., 1994).

367. JORDAN JAY HILLMAN & RONALD R. BRAEUTIGAM, PRICE LEVEL REGULATION FOR DIVERSIFIED PUBLIC UTILITIES: AN ASSESSMENT 69 (1989).

368. MacDonald, Norsworthy & Fu, *supra* note 366, at 38–39.

369. VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 440.

370. *Id.*

371. Bailey & Malone, *supra* note 302, at 139–41.

372. NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 13–14.

373. Schmalensee, *supra* note 363, at 434.

374. VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 440.

375. Jeffrey I. Bernstein & David E.M. Sappington, *Setting the X Factor in Price-Cap Regulation Plans*, 16 J. REG. ECON. 5, 6 (1999).

376. VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 440; *see also* LEC Price Cap Order, *supra* note 271, at 6790 ¶¶ 30–32.

As noted earlier, the *X* factor has traditionally included an additional increase beyond actual productivity gains to ensure that consumers share in the benefits created by price caps.[377] Determining how much should be shared is essentially a political decision. As part of the determination of how large to set the sharing dividend, regulators may be tempted to examine profits. In the process, they would destroy the independence between prices and returns that makes the incentives to economize and innovate so high-powered.[378] Unfortunately, regulatory authorities lack any way to credibly commit not to ratchet up the *X* factor in response to cost savings.[379]

The British experience under price caps is instructive. After initially setting British Telecom's *X* factor at 3% in 1984, the United Kingdom increased it to 4.5% in 1989, 6.25% in 1991, and 7.5% in 1993. This effect sharply dampens the incentive to economize on costs.[380] The experience in the United States was similar, as the *X* factor grew from 3.3% in 1990[381] to 4% in 1995[382] and 6.5% in 1997,[383] with many of those adjustments applying retroactively. The D.C. Circuit rejected these efforts as arbitrary and capricious.[384]

The empirical literature is divided on price caps' effect on rates, with most studies finding that price caps lead to modestly lower prices[385] and some studies concluding the opposite.[386] Although early studies show that price caps led to the deployment of more modern equipment,[387] other empirical

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377. CHURCH & WARE, *supra* note 20, § 26.2.3, at 853–54.

378. VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 441–42.

379. CHURCH & WARE, *supra* note 20, § 26.2.4, at 858; VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 441–42.

380. Jamison, *supra* note 354, at 1249–50.

381. LEC Price Cap Order, *supra* note 271, at 6787–88 ¶¶ 5–7, 6799 ¶ 100.

382. Price Cap Performance Review for Local Exchange Carriers, First Report and Order, 10 FCC Rcd. 8961, 9053–54 ¶ 209 (1995).

383. Price Cap Performance Review for Local Exchange Carriers, Fourth Report and Order in CC Docket No. 94-1 and Second Report and Order in CC Docket No. 96-262, 12 FCC Rcd. 16642, 16652 ¶ 18 (1997).

384. U.S. Tel. Ass'n v. FCC, 188 F.3d 521, 525–26 (D.C. Cir. 1999).

385. *See, e.g.*, Robert Kaestner & Brenda Kahn, *The Effects of Regulation and Competition on the Price of AT&T Intrastate Telephone Service*, 2 J. REG. ECON. 363, 370–72 (1990); Alan D. Mathios & Robert P. Rogers, *The Impact of Alternative Forms of State Regulation of AT&T on Direct-Dial, Long-Distance Telephone Rates*, 20 RAND J. ECON. 437, 451–52 (1989). For a review of early surveys of the literature, see Sappington & Weisman, *supra* note 351, at 236–39.

386. *See, e.g.*, Christopher R. Knittel, *Regulatory Restructuring and Incumbent Price Dynamics: The Case of U.S. Local Telephone Markets*, 86 REV. ECON. & STAT. 614, 622 (2004).

387. *See* Sappington & Weisman, *supra* note 351, at 236–37.

studies find that price caps deter investment.[388] The empirical evidence on quality is mixed, with some studies finding no deterioration of quality,[389] others drawing the opposite conclusion,[390] and still others finding mixed results,[391] although these outcomes may have been the result of direct regulatory intervention.[392]

3. Regulation of Nonprice Terms and Conditions. Common carriage mandates work best when the product is a commodity[393] and when the interface between products is relatively simple, easy to monitor, and requires little information from the network.[394] Interconnection becomes considerably harder to police when the product varies in quality and the interface is complex. When that is the case, providers who are reluctant to provide service have access to a nearly endless source of nonprice ways in which they can defeat access.[395]

As a result, disputes over reasonableness are likely to spill beyond price into other aspects of the business relationship. As a result, regulators will have to oversee a wide variety of nonprice terms.[396] Indeed, the FCC's experiences in implementing TELRIC and other access regimes are far from encouraging in this regard.[397] These problems are likely to worsen as the end users,

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388. *See, e.g.*, Jaison R. Abel, *The Performance of the State Telecommunications Industry Under Price-Cap Regulation: An Assessment of the Empirical Evidence* (Nat'l Regulatory Research Inst. Research Report No. 00-14, 2000), *available at* http://ipu.msu.edu/library/pdfs/nrri/Abel-State-Telecom-Price-Cap-Regulation-00-14-Sept-00.pdf.

389. *See, e.g.*, Aniruddha Bannerjee, *Does Incentive Regulation "Cause" Degradation of Retail Telephone Service Quality?*, 15 INFO. ECON. & POL'Y 243, 263–65 (2003); Donald J. Kridel, David E.M. Sappington & Dennis L. Weisman, *The Effects of Incentive Regulation in the Telecommunications Industry: A Survey*, 9 J. REG. ECON. 269, 298–300 (1996).

390. *See, e.g.*, LORENZO BROWN, MICHAEL A. EINHORN & INGO VOGELSANG, INCENTIVE REGULATION: A RESEARCH REPORT 87–88 (1989).

391. *See generally* Chunrong Ai, Salvador Martinez & David E. Sappington, *Incentive Regulation and Telecommunications Service Quality*, 26 J. REG. ECON. 263 (2004); Luis Otávio Façanha & Marcelo Resende, *Price Cap Regulation, Incentives and Quality: The Case of Brazilian Telecommunications*, 92 INT'L J. PRODUCTION ECON. 133 (2004); Marcelo Resende & Luis Otávio Façanha, *Price-Cap Regulation and Service-Quality in Telecommunications: An Empirical Study*, 17 INFO. ECON. & POL'Y 1 (2005).

392. Sappington & Weisman, *supra* note 351, at 248–49.

393. *See* Yoo, *supra* note 95, at 40–41.

394. *See* Gerald R. Faulhaber, *Policy-Induced Competition: The Telecommunications Experiments*, 15 INFO. ECON. & POL'Y 73, 76–86 (2003).

395. Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, L.L.P., 540 U.S. 398, 414 (2004); AT&T Corp. v. Iowa Utils. Bd., 525 U.S. 366, 394–96 (1999) (Breyer, J., concurring in part and dissenting in part).

396. Yoo, *supra* note 180, at 1896–97.

397. *See* Yoo, *supra* note 95, at 40–42.

applications, technologies, and business relationships associated with the Internet become increasingly diverse.[398]

C. Enduring Structural Separation

Structural separation also represents a significant source of welfare loss. Economists have long recognized that vertical integration can lower prices, particularly when both levels are highly concentrated.[399] It can also promote productive efficiency by rationalizing production when inputs can be used in variable proportions.[400] Vertical integration can also reduce transaction costs and help protect against opportunism.[401] As noted earlier, it can also mitigate the systematic underproduction associated with positive spillovers by allowing the owner of the infrastructure to internalize a greater percentage the benefits that it creates.[402]

A recent survey of the empirical literature indicates that, aside from a few isolated studies, the weight of the evidence indicates that "under most circumstances, profit-maximizing vertical-integration decisions are efficient, not just from firms' but also from the consumers' points of view," a conclusion that the researchers did not have in mind when they began their review of the evidence and which they found somewhat surprising.[403] Moreover, the survey found "clear evidence that restrictions on vertical integration that are imposed . . . on owners of retail networks are usually detrimental to consumers."[404] They thus called on "government agencies to reconsider the validity of such restrictions."[405]

The FCC's prior experience with structural separation has not been sanguine. For example, the line-of-business restrictions imposed by the breakup of AT&T forced the court to consider hundreds of waiver requests.[406] These requests

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398. *See id.* at 40.

399. *See, e.g.*, Joseph J. Spengler, *Vertical Integration and Antitrust Policy*, 58 J. POL. ECON. 347, 352 (1950).

400. *See, e.g.*, John M. Vernon & Daniel A. Graham, *Profitability of Monopolization by Vertical Integration*, 79 J. POL. ECON. 924, 924–25 (1971).

401. *See, e.g.*, OLIVER E. WILLIAMSON, MARKETS AND HIERARCHIES: ANALYSIS AND ANTITRUST IMPLICATIONS 104, 124 (1975) (arguing that vertical integration economizes on transactions and suppresses opportunistic profit haggling).

402. *See* Yoo, *supra* note 166, at 193; *see also supra* note 60 and accompanying text.

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

404. *Id.*

405. *Id.*

406. SPULBER & YOO, *supra* note 37, at 330.

could take over four years to process and were estimated to cost over one billion dollars.[407]

The experience under the structural separation mandated by the *Computer Inquiries* was similar. The separate subsidiary requirements prevented phone companies from offering caller ID and other services. One econometric study estimated the welfare losses from the delayed introduction of these services exceeded one billion dollars each year.[408] These costs led the FCC to abolish the structural separation requirement in favor of an accounting separation requirement.[409]

The general theory and empirical evidence as well as the FCC's experience all suggest that the structural separation imposes significant harms. That fact counsels extreme caution before embracing a regulatory regime that would mandate it.

D. Facilitating Collusion

Another drawback is that common carriage regulation has long been recognized to facilitate collusion.[410]

1. Barriers to Entry. As an initial matter, common carriage typically imposes access controls. As noted earlier, federal law requires interstate carriers to obtain a certificate of public convenience and necessity before constructing or extending any new facilities.[411] At best, the clearance process delays entry.[412] At worst, it can block entry altogether, as evidenced by Congress's enactment of a provision prohibiting states from using the certificate process from forestalling the emergence of competition.[413]

In addition, firms may use common carriage regulation as an entry barrier. It has long been recognized that industry-wide

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407. *See* Paul H. Rubin & Hashem Dezhbakhsh, *Costs of Delay and Rent-Seeking Under the Modification of Final Judgment*, 16 MANAGERIAL & DECISION ECON. 385, 385–88, 397 (1995).

408. Jerry A. Hausman, *Valuing the Effect of Regulation on New Services in Telecommunications*, *in* 1997 BROOKINGS PAPERS ECON. ACTIVITY: MICROECONOMICS 1, 14–15.

409. Amendment of Sections 64.702 of Commission's Rules & Regulations (Third Computer Inquiry), Report and Order, 104 F.C.C.2d 958, 1002–11 ¶¶ 79–97 (1986), *aff'd and modified by* 2 FCC Rcd. 3035, 3037 ¶ 10 (1987), *vacated and remanded sub nom.* California v FCC, 905 F.2d 1217, 1238–39 (9th Cir 1990).

410. *See, e.g.*, Andrew F. Daughety & Robert Forsythe, *The Effects of Industry-Wide Price Regulation on Industrial Organization*, 3 J.L. ECON. & ORG. 397, 428–29 (1987).

411. *See supra* note 154 and accompanying text.

412. *See* Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor, Further Notice of Proposed Rulemaking, 84 F.C.C.2d 445, 455 ¶ 30 (1981) [hereinafter Competitive Carrier Further NPRM].

413. *See* 47 U.S.C. § 253(a) (2012).

regulation can benefit incumbents despite the additional costs of compliance if new entrants and fringe players will find it harder to bear the regulatory burden.[414] Indeed, there are examples where firms have actively sought regulation in order to create entry barriers.[415]

2. Standardization of Products and Pricing. Cartels are much easier to form and enforce when products are homogeneous. When products are uniform, any coordination designed to reduce competition need only focus on a single dimension: price.[416] When products are heterogeneous, however, any price agreement must take into account all of the ways that products can vary. This makes agreements both harder to reach and to police.[417] Indeed, if products are so customized that each is individualized, cartel cheating may be almost impossible to detect or prevent.[418] Another practice that tends to undermine oligopoly discipline is unsystematic price discrimination.[419] Indeed, secret price discrimination is one of the best ways for cartel members to cheat.[420] Cartels also function best when demand is more or less constant, which in turn helps ensure that prices remain stable.[421]

Common carriage has the effect of facilitating collusion along each of these dimensions. In short, standardizing both products and prices makes cartel agreements easier to reach and any defection from the cartel cheating easier to identify.[422] Moreover, by preventing competitors from deviating pricing either up or down, common carriage can use the government to serve as an effective cartel enforcer. At the same time, entry restrictions and the ratemaking process can help stabilize demand.

3. Pooling of Information and Advance Notice of Product Changes. Common carriage has the effect of making all pricing

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414. Herbert Hovenkamp, *Antitrust Policy After Chicago*, 84 MICH. L. REV. 213, 276–77 (1985).

415. For a survey of this literature, see Robert E. McCormick, *The Strategic Use of Regulation: A Review of the Literature*, *in* THE POLITICAL ECONOMY OF REGULATION: PRIVATE INTERESTS IN THE REGULATORY PROCESS 13, 18–25 (Robert A. Rogovsky & Bruce Yandle eds., 1984).

416. SCHERER & ROSS, *supra* note 168, at 279.

417. CARLTON & PERLOFF, *supra* note 20, at 135; SCHERER & ROSS, *supra* note 168, at 279.

418. *See* SCHERER & ROSS, *supra* note 168, at 279–80.

419. HOVENKAMP, *supra* note 178, § 14.5b, at 578; SCHERER & ROSS, *supra* note 168, at 500; VISCUSI, HARRINGTON & VERNON, *supra* note 20, at 349–50.

420. HOVENKAMP, *supra* note 178, § 4.1a2, at 150–51.

421. CARLTON & PERLOFF, *supra* note 20, at 137.

422. HOVENKAMP, *supra* note 178, § 4.1a3, at 151–52.

information visible and easily available to all other industry participants. In addition, it requires every provider to announce to all of its competitors any planned changes in prices or product offerings long in advance. The loss of lead time dampens the incentive to make price cuts.[423]

Pooling of pricing information has long been recognized as a facilitating practice that makes it easier to form and maintain a cartel.[424] As the FCC recognized:

> Tariff posting also provides an excellent mechanism for inducing noncompetitive pricing. Since all price reductions are public, they can be quickly matched by competitors. This reduces the incentive to engage in price cutting. In these circumstances firms may be able to charge prices higher than could be sustained in an unregulated market. Thus, regulated competition all too often becomes cartel management.[425]

Such information is particularly helpful to cartels if that information pertains to changes in product or changes to price.[426]

4. Ability to Use the Government to Enforce Cartel Pricing. Finally, cartels need some means to enforce the cartel by preventing price cutting. Cartels often find them difficult to enforce, as any mechanism must not reveal to the government they are colluding.

Common carriage provides for an open and legal way to enforce prices. By requiring that prices conform exactly to the published rate, common carriage prohibits any deviations from the established price. Under the filed rate doctrine, regulated entities cannot cut their prices. Moreover, to the extent that these are enshrined in regulation, any compliance with these prices is immune from antitrust scrutiny.[427]

In addition, common carriage gives any member of the public the right to challenge any proposed change to a tariff.[428] Firms have routinely used this authority to oppose price reductions proposed by their competitors.[429] As such, tariffing creates the same opportunity for interference as competitor suits in antitrust

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423. Schoenwald, *supra* note 19, at 415–16.

424. HOVENKAMP, *supra* note 178, § 5.3, at 215–17.

425. Competitive Carrier Further NPRM, *supra* note 412, at 454 ¶ 26.

426. CARLTON & PERLOFF, *supra* note 20, at 138; HOVENKAMP, *supra* note 178, § 4.1, at 147.

427. *See* Parker v. Brown, 317 U.S. 341, 368 (1943).

428. 47 U.S.C. § 204(a)(1) (2012). *See generally* Schoenwald, *supra* note 19, at 411–12.

429. *See* Haring & Kwerel, *supra* note 19, at 10.

law, where a less efficient competitor can try to prevent its rival from competing on the merits.

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The imposition of common carriage thus facilitates collusion in a wide variety of ways. The danger of expediting the formation and maintenance of a cartel provides another important reason to resist common carriage.

E. The Displacement of Business Judgment

A final criticism is that rate-of-return regulation necessarily means "substituting the judgments of lawyers for those of business persons and engineers."[430] This inevitably means that decisions will be made in no small part on political considerations.[431] Decisions about production, investment, and pricing are more properly made by people with industry-specific expertise and who are ultimately accountable to their shareholders for the performance of their business.

IV. LESSONS FROM HISTORY

Two historical examples provide apt illustrations of the potential downsides of common carriage regulation.

A. Competitive Access Providers

Long before the enactment of the Telecommunications Act of 1996, competition began to emerge in local telephone service. The arrival of fiber optics fostered the emergence of a new type of company known as competitive access providers (CAPs).[432] CAPs initially focused on offering long distance bypass services, which allowed corporate customers to place long distance telephone calls without having to access the Bell System's local telephone facilities. The eventual expansion of CAP networks to cover the entire core business districts of major metropolitan areas made it possible for CAPs to begin to offer local telephone service in direct competition with the incumbents.[433]

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430. CRANDALL & WAVERMAN, *supra* note 243, at 99 (quoting William J. Baumol, *Reasonable Rules for Rate Regulation: Plausible Policies for an Imperfect World*, *in* PRICES: ISSUES IN THEORY, PRACTICE AND PUBLIC POLICY 108, 108–23 (Almarin Phillips & Oliver E. Williamson eds., 1968)).

431. CRANDALL & WAVERMAN, *supra* note 243, at 99–100; NAT'L TELECOMMS. & INFO. ADMIN., *supra* note 19, at 14–15.

432. SPULBER & YOO, *supra* note 37, at 237.

433. *Id.*

CAP-provided services possessed many advantages over those provided by the incumbent local telephone companies. First, CAP networks tended to employ more modern technology, which allowed them to offer a greater range of features and a more attractive price structure than could the incumbent local telephone companies.[434] Unlike the incumbents, moreover, CAPs were not required to provide uniform services according to published tariffs approved by the FCC. As a result, they were able to respond more quickly to market demands and to tailor pricing and terms of service to each customer's needs.[435] Lastly, the untariffed nature of CAP services also allowed them to avoid the cross subsidies embedded in the system of access charges created by the FCC.[436]

B. Detariffing Business Services

The emergence of competition in portions of the telecommunications industry has provided some impetus towards eliminating tariffing requirements. The FCC's attempts to detariff long distance are described above. State public utility commissions have also been detariffing business services to permit providers to tailor their offerings to individual customers' needs. Individual businesses have begun to demand increasingly specialized services. As a result, state public utility commissions have had to entertain a growing tide of petitions seeking permission to deviate from the published tariffs.[437]

A similar move is taking place in local residential service, as competition from wireless services is leading local phone companies to request detariffing of rates. For example, Qwest asked the Idaho Public Utility Commission to deregulate its rates in light of the emergence of effective competition.[438] The Idaho Public Utility Commission rejected the petition because it was not persuaded by the evidence that mobile telephony has become the functional equivalent of traditional wireline telephony.[439]

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434. Specifically, use of fiber optics provided dramatic improvements in the amount of available bandwidth. *Id.* It also decreased service costs in general and made them much less distance sensitive. Fiber optics also allowed CAPs to take advantage of the efficiencies made possible by computer processing, such as improved switching and digital compression. *Id.*

435. *Id.*

436. *Id.*

437. *See*, *e.g.*, Petition of AT&T N.C. for Further Detariffing of Services and Modifications to Its Price Plan, Docket No. P-55, 2008 WL 1913889, at *388–89 (N.C. Utils. Comm'n Apr. 14, 2008); *see also* SPULBER & YOO, *supra* note 37, at 243.

438. Application of Qwest Corp. for Deregulation of Basic Local Exchange Rates, Order No. 29360, 2003 WL 22417269, at *1 (Idaho Pub. Utils. Comm'n Oct. 20, 2003).

439. *Id.* at *20.

Over time, state public utility commissions have largely deregulated local phone service for businesses and have begun to deregulate residential local phone services as well.[440]

C. VoIP

The final case is interconnected VoIP. When VoIP was first introduced, it was largely exempt from all of the obligations imposed on local telephone service. Over time this has begun to change. Beginning in 2005, VoIP has become subject to universal service, e911, disability access, number portability, and service outage reporting requirements.[441]

What is interesting is the extent to which VoIP is different from conventional telephony. Unlike traditional telephone service, VoIP rides on a packet network that only transmits data on a best efforts basis. As a result, it is much less reliable than conventional telephony.[442] Because it rides on a general instead of a specialized network, it also consumes more bandwidth.

At the same time, it is different from other types of Internet applications. The Internet was originally designed around one protocol called the Transmission Control Program.[443] This protocol ensured reliability by requiring that every receiving host send an acknowledgement to the sending host for every packet it received.[444] If the sending host did not receive a packet within the expected time frame, it would simply resend it.[445] This approach presumed that reliability was more important than expediency and that if a packet was dropped, the next available window was best used for resending a dropped packet instead of sending a new one.[446]

While this approach worked well for applications that were not particularly sensitive to delays of a fraction of a second, such as e-mail and web browsing, the Internet's protocol designers soon discovered that this design did not work well for packet

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440. Timothy J. Tardiff, *Changes in Industry Structure and Technological Convergence: Implications for Competition Policy and Regulation in Telecommunications*, 4 INT'L ECON. & ECON. POL'Y 109, 125 (2007).

441. *See supra* note 152 and accompanying text. Interconnected VoIP is also subject to CALEA because it is a substantial replacement for telephony, not because it falls within the FCC's Title II jurisdiction. *See* Proposed Extension of Part 4 of the Commission's Rules Regarding Outage Reporting to Interconnected Voice Over Internet Protocol Service Providers and Broadband Internet Service Providers, Report and Order, 27 FCC Rcd. 2650, 2675 ¶ 61, 2679 ¶ 69 (2012).

442. YOO, *supra* note 13, at 26 & tbl.2-2; Yoo, *supra* note 95, at 8.

443. YOO, *supra* note 13, at 43; Yoo, *supra* note 132, at 1737.

444. Yoo, *supra* note 132, at 1743.

445. *Id.* at 1744.

446. *Id.* at 1744–45.

voice.[447] The delays waiting for the retransmission timer to expire and for the packet to be resent rendered the service unusable. Like all real-time applications, packet voice is also more sensitive to jitter. As a result, the protocol architects created a new protocol called the User Data Protocol (UDP) that would send packets without waiting for acknowledgements.[448]

VoIP thus differs in important ways from both conventional telephony and traditional Internet applications, such as e-mail and web browsing. Specifically, it needs different services from and imposes different burdens on the networks on which it rides.[449] Common carriage runs the risk of lumping it together with applications that are quite different. Doing so would potentially harm VoIP, although as it turns out, the increases in bandwidth now allow VoIP to run fairly well on the best-efforts Internet on most occasions.[450] As a result, I would resist ARCEP's call for Skype to register as a conventional telephone company, as well as the proposal before the ITU to bring Internet interconnection into the system used to settle international telephone calls. Even more importantly, homogenizing the networks' services may threaten future applications that may place demands on the network that are different still.

V. CONCLUSION

With increasing frequency, common carriage is being invoked as a potential basis for regulating Internet-based services. The tone of these invocations often suggests that this recommendation simply represents a return to well established and uncontroversial principles.

Anyone calling for the return of common carriage should grapple with the reality that common carriage has been the subject of extensive criticism for the past half century. The existence of controversy does not by itself prove that imposing common carriage would necessarily be bad policy. It does suggest that proponents of common carriage actively engage with the institution's recognized shortcomings. Such a large corpus of scholarship simply cannot be ignored.

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447. David D. Clark, *The Design Philosophy of the DARPA Internet Protocols*, COMPUTER COMM. REV., Aug. 1988, at 106, 108–09.

448. Yoo, *supra* note 132, at 1744.

449. YOO, *supra* note 13, at 26–27.

450. Yoo, *supra* note 132, at 1744 n.176.