

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the matter of

Restoring Internet Freedom

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WC Docket No. 17-108

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COMMENTS OF CALINNOVATES

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July 16, 2017

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## **INTRODUCTION**

CALinnovates is a coalition comprising technology leaders, recent startups, traditional telecommunications companies, entrepreneurs, and venture capitalists, all united around a shared desire to ensure that the Internet remains a vibrant and open space in which innovation continues to thrive.<sup>1</sup> Under the canopy of this diverse group is an organizing principle of trying to break through the rigidities of the dialectical positions of various parties-in-interest that threaten the very “innovation” and “open space” that the Internet embodied when it first appeared. It has become clear that where basic “rules of the road” are needed to further the free flow of the communications highway, the current “default” modus operandi—an absence of policy guidance from Congress and constant reversals of regulatory posture from the FCC—is unacceptable.

The time has come for Congress to step forward after twenty years of silence to establish clear guidelines ensuring that the Internet remains open, that certain pernicious per se anti-competitive practices are forbidden, and that the stifling of innovation—whether by government or by private actors—is prevented. With such larger policy guidance from Congress, the FCC can once again become an institution that plays a “refining” role in regulatory action rather than engages in broad sweeping pronouncements, and reversals, all flowing from electoral outcomes.

In the present proceeding,<sup>2</sup> the FCC proposes to alter the regulatory framework for the Internet that was dramatically changed just two years ago.<sup>3</sup> In 2015, the FCC reversed its long-

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<sup>1</sup> For more information about CALinnovates, please visit our website, <http://www.calinnovates.org/>.

<sup>2</sup> *In the Matter of Restoring Internet Freedom*, WC Dkt. No. 17-108, Notice of Proposed Rulemaking (rel. May 23, 2017) (“Internet Freedom NPRM”).

<sup>3</sup> See *In the Matter of Protecting and Promoting the Open Internet*, GN Dkt. No. 14-28, Report and Order on Remand, Declaratory Ruling, and Order (rel. Mar. 12, 2015) (“Title II Order”).

standing precedent and determined that broadband Internet access services (“BIAS”) should be classified as telecommunications services subject to Title II of the Telecommunications Act of 1996 rather than as Title I information services.<sup>4</sup> This change in classification allowed the FCC to greatly expand the scope of its regulation of the Internet.<sup>5</sup> Now, the FCC proposes to rescind the change in classification and once again classify BIAS as information services.<sup>6</sup> While CALinnovates generally supports the decision not to classify BIAS under Title II, the regulatory whiplash created by these changes in classification has had and will continue to have a significant detrimental effect on the development and delivery of Internet services and applications.

CALinnovates supports the FCC’s “continued commitment to an important principle underlying the Commission’s prior policies—that the Internet’s openness promotes innovation, investment, competition, free expression, and other national broadband goals.”<sup>7</sup> The FCC, however, does not have the appropriate tools to regulate a 21st century Internet. Its regulatory authority over the Internet is governed by the Telecommunications Act of 1996—the most recent update to a bill whose origin stretches back to the Roosevelt Administration.<sup>8</sup> Under the Telecommunications Act, the FCC has only two options: it can classify BIAS as an “information service” or it can classify BIAS as a “telecommunications service.”

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<sup>4</sup> Title II Order ¶¶ 283, 355-387.

<sup>5</sup> Compare, e.g., *Verizon v. FCC*, 740 F.3d 623, 628 (D.C. Cir. 2014) (vacating anti-blocking and anti-discrimination rules promulgated under Section 706 authority), with *U.S. Telecom Ass’n v. FCC*, 825 F.3d 674, 689 (D.C. Cir. 2016) (upholding anti-blocking, anti-throttling, and anti-paid prioritization rules under Title II).

<sup>6</sup> See Internet Freedom NPRM ¶¶ 33-34.

<sup>7</sup> Title II Order ¶ 76.

<sup>8</sup> The Telecommunications Act of 1996 amended the Communications Act of 1934.

The regulatory options for information services are relatively limited. Under this classification—in place until 2015—the FCC employed a “light touch” regulatory framework.<sup>9</sup> This framework allowed the Internet to grow and prosper, but left few options for the FCC to confront new issues that could emerge as the Internet continues to mature.<sup>10</sup>

Alternatively, under Title II, the FCC has substantial power to redefine and regulate permissible conduct for Internet providers.<sup>11</sup> In 2015, the FCC used this authority to promulgate a set of rules intended to protect and promote the open Internet.<sup>12</sup> The regulatory impact of Title II classification, however, extends far beyond net neutrality. Title II gives the FCC the ability to set prices and conditions of service, to prevent broadband carriers from discontinuing service, and to require utility-style tariffs.<sup>13</sup> Recognizing that many elements of the Title II framework are inconsistent with an open and innovative Internet, the FCC has exercised its “forbearance” authority to decline to enforce many aspects of the Telecommunications Act.<sup>14</sup> This forbearance, however, compounds uncertainty, which in turn discourages innovators and investors.

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<sup>9</sup> In issuing the Title II Order, the FCC maintained the rhetoric of “light touch” regulation. *See* Title II Order ¶ 274 (“[W]e find ... that BIAS is a telecommunications service subject to Title II and exercise our forbearance authority to establish a “light-touch” regulatory regime.”). The rhetoric, however, does not match the reality.

<sup>10</sup> *See generally Verizon*, 740 F.3d 623.

<sup>11</sup> *See generally Telecom Ass’n*, 825 F.3d 674.

<sup>12</sup> *See, e.g.*, Title II Order ¶ 289.

<sup>13</sup> *See* 47 U.S.C. § 201 (rates); *id.* § 214 (discontinuance); *id.* §§ 203-204 (tariffs).

<sup>14</sup> Title II Order ¶¶ 434-532.

In 2014, CALinnovates commented that regulation under Title II would be a mistake that could create serious disincentives for continued investment in the Internet.<sup>15</sup> Data over the past two years suggests this criticism was accurate.<sup>16</sup> Investment has declined; large-scale providers have slowed their investment in infrastructure development, and more innovative services have tabled expansion plans.<sup>17</sup> Reversing the Title II classification and returning to the light-touch regulatory framework would resolve some of the uncertainty that has recently hampered innovation and development—although the prospect of a future FCC re-reclassifying BIAS always exists.

Title I regulation, however, may not allow the FCC to address critical issues related to net neutrality. CALinnovates and its members strongly believe that net neutrality principles must be preserved. The only way to do so without subjecting the Internet to antiquated, ill-fitting regulation or regulatory uncertainty is through congressional action.

In the comments below, CALinnovates explains the necessity for legislative action and outlines principles upon which such action should be based. CALinnovates also submits an economic analysis it commissioned by Dennis W. Carlton and Bryan Keating discussing the harms caused by overregulation and regulatory uncertainty.

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<sup>15</sup> See *In the Matter of Protecting and Promoting the Open Internet*, GN Dkt. No. 14-28, Reply Comments of CALinnovates (Sep. 11, 2014) (“CALinnovates Title II Reply Comments”).

<sup>16</sup> See Michelle Di Ionna & Michael Mandel, *Investment Heroes 2016: Fighting Short-termism* 6 (Oct. 2016), [http://www.progressivepolicy.org/wp-content/uploads/2016/10/InvestHeroes\\_2016.pdf](http://www.progressivepolicy.org/wp-content/uploads/2016/10/InvestHeroes_2016.pdf) (“This year, as with last year, telecom and cable companies represent the largest share of estimated domestic capital expenditure on our list. However, increased regulatory uncertainty, combined with normal business decisions, mean that the companies in this sector had a net decrease in domestic capital spending in 2015.”).

<sup>17</sup> See, e.g., Mike Montgomery, *The Demise of Google Fiber Shows There Are No Easy Answers in Telecom*, Huffpost (Aug. 29, 2016 6:54 pm), [http://www.huffingtonpost.com/entry/the-demise-of-google-fiber-shows-there-are-no-easy\\_us\\_57c4bb7ae4b0c936aaba8eb7](http://www.huffingtonpost.com/entry/the-demise-of-google-fiber-shows-there-are-no-easy_us_57c4bb7ae4b0c936aaba8eb7).

## **DISCUSSION**

### **I. Regulation of the Internet Should Not Constrain Growth**

#### *A. An open Internet fosters innovation*

The Internet has grown and prospered because it is an open space in which innovators can deliver new products and services—or new twists on old products and services. As the Internet has grown, it has lifted the economy and dramatically improved the flow of information, goods, and services across the country and around the world. In the light-touch regulatory environment in place for most of the last two decades, innovation was unimpeded by complex regulatory regimes, and entrepreneurship prospered. Examples abound: In 1995, Amazon sold its first book; it is now one of the ten largest retailers on the planet.<sup>18</sup> Google was founded in 1998; in 2015, it restructured into Alphabet, Inc., now one of the world’s five most valuable publicly traded companies. Facebook, Twitter, YouTube, Uber, Netflix—companies that didn’t exist twenty years ago today help to entertain, educate, and connect billions of people. These companies—and countless others like them—may not have been able to succeed if they had not been given space to innovate and grow.

Although the light-touch regulatory framework helped the Internet grow into a vital part of everyday life, it must be acknowledged that the Internet *has* grown. The regulatory approaches that were appropriate when the Internet had a few million users and the digital economy was measured in billions of dollars may no longer be appropriate now that nearly four billion people regularly use the Internet and trillions of dollars of commerce flow over the

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<sup>18</sup> Lauren Gensler, *The World’s Largest Retailers 2017*, Forbes (May 24, 2017), <https://www.forbes.com/sites/laurengensler/2017/05/24/the-worlds-largest-retailers-2017-walmart-cvs-amazon/#7c48f37120b5>.

Internet each year.<sup>19</sup> CALinnovates broadly supports the *goals* of the Title II Order: preserving the Internet as an open environment in which growth and competition are encouraged.<sup>20</sup> The method of accomplishing those goals, however, was shortsighted. The Internet must be kept open, but the regulatory approach taken by the Commission in the Title II Order promotes openness at the cost of innovation, investment, competition and modernization.

B. *Regulatory uncertainty discourages investment and stifles innovation*<sup>21</sup>

As a general matter, companies invest only where there is a reasonable expectation of return on their investment. The regulatory uncertainty caused by the classification of BIAS as Title II telecommunications services has made it difficult for broadband providers to determine whether and when to invest in expanding and improving their networks. Building out broadband networks is capital-intensive, and regulatory uncertainty creates the possibility that firms that invest heavily in expanding and improving their networks may not be able to recoup their costs. Regulation under Title II gives the FCC the power to impose price controls and to mandate terms and conditions of service.<sup>22</sup> The FCC claimed in the Title II Order that it had no present intention to use these powers to establish ex ante rate regulations, but Title II classification opens the door to that possibility.<sup>23</sup> Companies considering investing in broadband cannot afford to

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<sup>19</sup> International Telecommunication Union, *ICT Facts and Figures 2016* (June 2016), <http://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2016.pdf>; ET Bureau, *Global E-Commerce Market Is Worth \$22 Trillion: UNCTAD*, *The Economic Times* (July 19, 2016), <http://economictimes.indiatimes.com/industry/services/retail/global-e-commerce-market-is-worth-22-trillion-unctad/articleshow/53274475.cms>.

<sup>20</sup> See CALinnovates Title II Reply Comments at 3-4.

<sup>21</sup> For a more detailed discussion of the impact of regulatory uncertainty on investment, please see the attached economic analysis.

<sup>22</sup> See 47 U.S.C. § 201.

<sup>23</sup> Title II Order at ¶¶ 451-52.

assume that the Commission will not change its position on whether these powers should be utilized.

Because of the sweeping breadth of Title II authority, the FCC invoked Section 10 of the Telecommunication Act to “forbear” from enforcing more than two dozen provisions of Title II.<sup>24</sup> In so doing, however, the Commission made clear that it may revisit those decisions. Acknowledging widespread concerns about the FCC’s rapid change of position with respect to Title II and “the burdens—or, at a minimum, regulatory uncertainty—that would be fostered by a sudden, substantial expansion of the actual or potential regulatory requirements and obligations relative to the *status quo* from the near-term past,” the FCC proposed “to proceed incrementally.”<sup>25</sup> This incremental procession could result in significant future regulatory burdens. The Commission confused the matter even further by determining that it could forbear from some provisions yet still apply the substantive requirements of those provisions under its retained authority.<sup>26</sup> The Order consequently left broadband providers uncertain about what rules applied and how the FCC would apply them.<sup>27</sup>

The Commission’s reversals on the appropriate classification of BIAS and its attempts to structure net neutrality rules also have inevitably resulted in extensive litigation. Each new rulemaking has been appealed, and the D.C. Circuit has struck portions of some rulemakings.

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<sup>24</sup> See Title II Order ¶ 493.

<sup>25</sup> Title II Order ¶ 495.

<sup>26</sup> See Title II Order ¶ 513.

<sup>27</sup> See, e.g., Mary M. Collins, *Title II Uncertainty Is Chilling the Outlook for ISP Spending*, Cablefax (Dec. 15, 2015), [http://www.cablefax.com/cablefax\\_viewpoint/title-ii-uncertainty-chilling-outlook-isp-spending](http://www.cablefax.com/cablefax_viewpoint/title-ii-uncertainty-chilling-outlook-isp-spending) (“with no clarity around the rules of the road, ‘we have to just put a stop on those kinds of investments.’”).

For example, in 2014 the D.C. Circuit considered the FCC’s 2010 Open Internet Order<sup>28</sup> and determined that the Commission’s transparency and open network management rules were an appropriate exercise of its authority under Section 706, but struck down the anti-blocking and anti-discrimination rules.<sup>29</sup> The Title II Order was likewise challenged in court,<sup>30</sup> and it is a near-certainty that the currently contemplated rule will draw a similar challenge.<sup>31</sup> While these cases are pending, service providers have no way of anticipating which rules will survive and which will be overturned, making it even more difficult to reasonably invest in network expansion and improvement.

Although regulation of BIAS under Title II directly affects only BIAS providers, the fear of uncertainty extends beyond companies considering investments in broadband. The incentives for “edge” providers to develop and deliver new services may similarly be reduced because of uncertainty concerning BIAS regulation or the possibility that edge providers could themselves be subject to additional regulation.<sup>32</sup> Investors and innovators will be less willing and less able to develop technology and applications that benefit consumers if they may need to jump through unnecessary and unproductive regulatory hoops in order to do so.

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<sup>28</sup> *In the Matter of Preserving the Open Internet Broadband Industry Practices*, GN Dkt. No. 09-191, Report and Order (rel. Dec. 23, 2010).

<sup>29</sup> *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014).

<sup>30</sup> *U.S. Telecom Ass’n v. FCC*, 825 F.3d 674, 689 (D.C. Cir. 2016).

<sup>31</sup> *See, e.g.*, Daniel Chaitin, *Net Neutrality Rollback Faces a ‘Tsunami of Resistance’*, Washington Examiner (May 1, 2017 12:01 am), <http://www.washingtonexaminer.com/net-neutrality-rollback-faces-a-tsunami-of-resistance/article/2621497> (“Talk of a second wave of legal action if Pai’s plan is implemented has begun.”).

<sup>32</sup> *See, e.g.*, Matthew Prince, *Thoughts on Network Neutrality, the FCC, and the Future of Internet Governance*, CloudFlare (Feb. 27, 2015), <https://blog.cloudflare.com/net-neutrality/>.

## **II. New Legislation Should Establish Clear Guidelines that Ensure that the Internet Is Kept Open without Creating Stifling Uncertainty**

It is time for Congress to take action by enacting new legislation setting forth a modern framework for regulating the Internet in a targeted fashion that fosters openness and innovation.

### *A. Only Congress can provide long-term certainty*

In the space of two years, two major changes have been proposed, with far-reaching consequences for investment and innovation. In two more years, new FCC commissioners might decide to once again classify BIAS as telecommunications services under Title II, and in 2020 or 2024 a new administration could further destabilize regulatory clarity by appointing a new Chair.<sup>33</sup> So long as the Commission has the discretion to determine not only how the rules are applied but also which rules apply, a cloud of uncertainty will hang over the Internet. The FCC on its own simply cannot provide the long-term certainty that innovators, investors, and consumers require. Congress should act to establish a modern framework for regulating the modern Internet through the enactment of affirmative bipartisan legislation.

### *B. New legislation is required*

The Telecommunications Act of 1996 was built on the framework established by the Communications Act of 1934 and maintained its “silos” for regulating communications services.<sup>34</sup> This framework may have been appropriate when these services were distinct, but it did not adequately anticipate and is not appropriate for the cross-cutting nature of the modern Internet. The Internet existed in 1996, of course, but it was hardly a focus of the

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<sup>33</sup> See Montgomery, *supra* n.17.

<sup>34</sup> See Paul Barbagallo, *Communication Act Rewrite Should Eliminate Regulatory ‘Silos,’ Panelists Say*, Bloomberg BNA (Oct. 19, 2012), <https://www.bna.com/communications-act-rewrite-n17179870512/> (describing silos).

Telecommunications Act: the term “Internet” appears less than a dozen times in the entire Act, and then only in a section on blocking and screening offensive material.<sup>35</sup> The FCC’s contemporary description of the Act likewise does not mention the Internet, instead referring only to “telephone service—local and long distance, cable programming and other video services, broadcast services and services provided to schools.”<sup>36</sup> Rather than attempting to shoehorn Internet regulation into a structure designed for regulating telephone, radio, and TV, Congress should start on a clean slate and build a new framework for effective regulation of the Internet.

C. *New legislation should ensure that the Internet remains open and innovative*

CALinnovates supports bipartisan legislation guided by four principles. Legislation should: (1) offer a clear way forward; (2) ensure fair competition; (3) foster permissionless innovation; and (4) maintain low capital entry barriers.<sup>37</sup> Specifically, Congress should not impose pervasive regulation modeled on Title II. Rather, it should enact targeted and clear rules that promote the four guiding principles described above. Such legislation should ensure that providers may not block or throttle lawful services; that Internet “fast lanes” for preferred content are not allowed to develop through paid prioritization with few exceptions; and that strong protections for consumer privacy are maintained, ideally under the auspices of the Federal Trade Commission. Legislation should also clarify that the FCC may not impose restrictions on Internet services—including edges providers as well as broadband providers—beyond those specified by the new statute. Legislation establishing a modern framework for regulation of the

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<sup>35</sup> See 47 U.S.C. § 230.

<sup>36</sup> Telecommunications Act of 1996, <https://www.fcc.gov/general/telecommunications-act-1996>.

<sup>37</sup> For a more complete description of these four principles, see CALinnovates Title II Reply Comments at 3-6.

Internet is the only way to ensure that the Internet remains open and innovative into the 21st century.

### **III. In the Absence of Legislation, the FCC Should Return to the Pre-2015 “Light Touch” Approach**

CALinnovates is a strong proponent of net neutrality and believes that many of the concerns addressed by the Title II Order are legitimate.<sup>38</sup> Nonetheless, we continue to believe that the burdens and uncertainty of regulation under Title II are currently unnecessary and far outweigh any marginal benefits.<sup>39</sup> The pre-Title II Order approach to regulating the Internet allowed great innovation and rapid development of Internet infrastructure. Although there are undoubtedly challenges that will need to be confronted as the Internet matures, the regulatory framework in place before the Title II Order should be restored until Congress acts to preserve the open Internet.

### **CONCLUSION**

For the foregoing reasons, the Commission should withdraw the Title II Order and vigorously work with the Congress for the enactment of new legislation to strike the proper balance between governing the Internet where necessary and permitting and encouraging innovation. The current spectacle—and it is a spectacle—of an inert Congress and a radically-shifting agency shaping Internet policy is disheartening, to say the least. As difficult as it is for the Washington policy centers to stand up to cross-cutting media campaigns, coordinated email

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<sup>38</sup> See, e.g., Mike Montgomery, *Day of Action Should Not Just Be One Day*, CALinnovates (July 12, 2017), <http://www.calinnovates.org/day-action-not-just-one-day/> (“the principles of net neutrality ... are foundational in the digital age”).

<sup>39</sup> See, e.g., Mike Montgomery, *How the FCC Can Save Net-Neutral Neutrality and Still Ruin the Internet*, Huffpost (Oct. 15, 2014), [http://www.huffingtonpost.com/mike-montgomery/how-the-fcc-can-save-net- b\\_5680464.html](http://www.huffingtonpost.com/mike-montgomery/how-the-fcc-can-save-net- b_5680464.html) (“By turning the Internet into a utility, we’ll bleed tech innovation with a thousand paper cuts.”).

drops, and harsh rhetoric from all sides, the dynamic needs to shift. And, it has to start with Congress.

For the past four years, the House has been hopelessly gridlocked in partisan rancor. However, in the Senate over the past several years, a number of forward-looking Members on the key jurisdictional Committees have begun quiet discussions and deliberations about a careful Telecom Rewrite, encompassing Title II and net neutrality. These promising talks have now been virtually halted by overheated accusations and veiled threats by interest groups all around. The talks should, bravely, begin anew.

But what should Congress consider doing with respect to net neutrality? It should start by proscribing certain pernicious anticompetitive or discriminatory practices, including but not limited to blocking and throttling. It should also begin to consider, through oversight hearings, whether the structure and relevance of the 1934 statute, as amended at the beginning to the Internet age, should be revised in critical ways to restrike the balance between regulation and entrepreneurial freedom and invention. For example, in the current statutory structure as described above, there are only two regulatory options based on the type of services provided (information services vs telecommunications services). Might there actually be three categories of activities, or more? Is it possible that information and telecommunications can actually bleed into one another, or intersect with new technological developments? Are these current distinctions any more pertinent than what used to be described as the quaint silos of long distance vs local telephone services? And if information and telecommunications services are really so hard-set, so hard-wired into the communications ecosystem, why do our antitrust agencies, for competitive analysis, now define certain markets as straddling voice, video, and data on multiple

platforms? Should there be consistency and equivalence of presumptions in our various enforcement regimes when it comes to telecommunications and Internet services?

Finally, Congress should also rethink the wisdom of maintaining a regulatory regime at the FCC that permits differential, industry-sector treatment through the use of rigid rules somehow tempered by a broad, magisterial power to “forbear”—very akin to the power of a “sovereign” to temper justice with mercy on an individual basis, with no precedential value to inform future conduct. This may have once seemed a “clever” allocation of regulatory power, but it is no longer a substitute for explicated policy standards.

Obviously, this FCC proceeding needs to be dealt with on its own terms. But, it could also, with good faith on all sides, provide a platform for reconsideration of a broader telecom/internet policy to take America deeper into the digital revolution.

Respectfully submitted,

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**ATTACHMENT**

# An Economic Framework for Evaluating the Effects of Regulation on Investment and Innovation in Internet-Related Services

Dennis W. Carlton and Bryan Keating<sup>1</sup>

July 14, 2017

In 2015, the Federal Communications Commission (“Commission”) implemented a new regulatory framework for the Internet (the *2015 Order*).<sup>2</sup> We discuss the *2015 Order* and its implications in greater detail below but, at a high-level, the regulatory framework had two components: (1) it classified broadband Internet access service (BIAS) providers as “common carriers” under Title II of the Communications Act of 1934, which imposed certain “utility-style” regulations and created the potential for the Commission to regulate providers’ prices and other terms of service;<sup>3</sup> and (2) it created certain “bright-line” rules related to prohibitions on blocking or throttling, as well as charging for preferential treatment of content (“paid prioritization”), that placed constraints on the ways in which BIAS providers

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<sup>1</sup> Dennis W. Carlton is the David McDaniel Keller Professor of Economics at the Booth School of Business at the University of Chicago and is associated with Compass Lexecon. Bryan Keating is an Executive Vice President at Compass Lexecon. This paper was funded by CALinnovates, a technology advocacy coalition with a broad base of members from the startup community and corporations, some of which participate in the net neutrality debate. The views expressed in this paper are those of the authors and not necessarily of CALinnovates or its members.

<sup>2</sup> Federal Communications Commission, *In the Matter of Protecting and Promoting the Open Internet*, GN Docket No. 14-28, Report and Order on Remand, Declaratory Ruling, and Order, March 12, 2015 (hereinafter *2015 Order*).

<sup>3</sup> The Commission defines BIAS as:

A mass-market retail service by wire or radio that provides the capability to transmit data to and receive data from all or substantially all Internet endpoints, including any capabilities that are incidental to and enable the operation of the communications service, but excluding dial-up Internet access service. This term also encompasses any service that the Commission finds to be providing a functional equivalent of the service described in the previous sentence, or that is used to evade the protections set forth in this Part.

*2015 Order* ¶ 25.

BIAS providers are also commonly referred to as Internet Service Providers or ISPs.

could interact with content (or “edge”) providers.<sup>4</sup> The Commission is now reconsidering the appropriate regulatory regime to apply to the Internet.<sup>5</sup>

In this paper, we discuss the economics of regulation with a specific focus on the implications of the first component of the *2015 Order* for incentives to invest and innovate.<sup>6</sup> There is broad recognition among economists that investment and innovation increase overall welfare and benefit consumers by promoting economic growth and delivering new goods and services.<sup>7</sup> But there is disagreement among policy makers as to how to devise policies that best advance such goals for the Internet.

We provide an overview of what economics has to say about utility-style regulation from both a theoretical and empirical perspective in general and with specific reference to the Internet. We first review the theoretical understanding of both the benefits and costs of regulation, with special emphasis on the effect of utility-style regulation on investments, innovation, quality, and entry. We demonstrate that, while regulation can create benefits by improving on market outcomes under certain circumstances, it also can create costs by distorting incentives and leading to undesirable unintended consequences. Specifically, regulation can distort incentives for firms to make investments, which ultimately lead to innovation and higher quality products. Regulations can also distort incentives for firms to enter, a process that itself enhances competition and benefits consumers. Thus, regulations have both benefits and costs. Regulations carry with them both explicit costs (monitoring and compliance) and implicit costs (the

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<sup>4</sup> We discuss the roles of BIAS providers and edge providers in the Internet ecosystem in greater detail in Section 3.

<sup>5</sup> Federal Communications Commission, *In the Matter of Restoring Internet Freedom*, WC Docket No. 17-108, Notice of Proposed Rulemaking, May 18, 2017 (hereinafter *2017 NPRM*).

<sup>6</sup> Aspects of the second component are discussed in Gary S. Becker, Dennis W. Carlton, and Hal S. Sider (2010), “Net Neutrality and Consumer Welfare,” *Journal of Competition Law & Economics*, 6(3): 497–519.

<sup>7</sup> See, e.g., Dennis W. Carlton and Jeffrey M. Perloff (2005), *Modern Industrial Organization*, 4<sup>th</sup> Ed., Boston: Pearson Addison Wesley, Chapter 16 (discussing inventions and technological progress as important for economic growth); W. Kip Viscusi, John M. Vernon, and Joseph E. Harrington Jr. (2000), *Economics of Regulation and Antitrust*, 3<sup>rd</sup> Ed., Cambridge: The MIT Press, Chapter 4 (discussing the importance of technological change).

risks of regulatory capture and unintended consequences that arise from distorted incentives) that must be accounted for in weighing the net benefits of any proposed regulation.

We then apply this framework to Internet-related services, specifically looking at how regulations of the Internet can impact investment and innovation by providers of both “core” network services and “edge” services (*e.g.*, providers of content and other services delivered over the core network). Because the Internet encompasses a complex ecosystem of networks, systems, and products that interact with each other in multi-faceted ways, regulation of this industry is particularly prone to create distortions and lead to unintended consequences. Finally, we review empirical studies that analyze the effects of various regulations on investment in telecommunications and related industries. The available empirical literature demonstrates that attempts to extensively regulate new or rapidly changing technologies can result in significant harm to consumer welfare.

A short summary of our paper is easy to describe. As a general matter, the theoretical and empirical economics literature demonstrates that regulation is imperfect, not because regulators are necessarily malevolent but because, for even well-meaning and thoughtful regulators, the information requirements for efficient regulation are onerous and therefore replacing market decision-making with regulator decision-making can produce inefficiencies. When, despite its problems, regulation is needed to address certain issues, as a general matter, regulation should be used to target specific problems in such a way as to develop clear “rules of the road” and minimize uncertainty. It would be a mistake to target regulation at problems that may not exist because regulation itself can cause problems in the form of economic distortions and inefficiency. Moreover, implementing regulation in a way that yields broad discretion to the regulator creates uncertainty for firms subject to the regulation. It is preferable to develop clear rules that address agreed-upon problems in a way that minimizes regulatory discretion and thus uncertainty.

Utility-style regulation such as that imposed under Title II, including elements such as price or entry rules, non-discrimination requirements, prohibitions on “unjust or unreasonable” charges and terms, or

resale/unbundling requirements, in combination with a regulatory framework that allows for broad discretion in its implementation, can be expected to reduce incentives to invest and develop high-quality and innovative products and services. The costs to society's welfare from delayed innovation in rapidly changing industries that require on-going investment such as the Internet are likely to be especially high.

## 1 Background on Regulation of the Internet

As part of the *2015 Order*, the Commission began to regulate BIAS providers under Title II of the Communications Act of 1934.<sup>8</sup> The regulatory regime embodied in Title II has a long history in the United States. Indeed, Congress modeled the provisions of Title II after railroad regulations established by the Interstate Commerce Act of 1887.<sup>9</sup> Title II provides a framework that allows the Commission to regulate the prices and other terms of service offered by telecommunications firms that it classifies as “common carriers.”<sup>10</sup> Title II also allows the Commission to require common carriers to offer service to all comers upon reasonable request at published rates and to interconnect with one another. Although the Commission simultaneously indicated that it would exercise regulatory forbearance and “eschew the future use of prescriptive, industry-wide rate regulation,” the *2015 Order* nonetheless opened the door to much higher levels of regulation than previously existed for the Internet for at least two reasons.

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<sup>8</sup> *2015 Order*, ¶ 5.

<sup>9</sup> See, e.g., Bruce M. Owen, “Net Neutrality and Title II of The Communications Act,” *SIEPR Policy Brief*, January 2015, available at <https://publicpolicy.stanford.edu/publications/net-neutrality-and-title-ii-communications-act>.

For a discussion of the history of regulation of the railroads and telecommunications, see Dennis W. Carlton and Randal C. Picker (2014), “Antitrust and Regulation,” in *Economic Regulation and Its Reform: What Have We Learned?*, ed. Nancy L. Rose, Chicago: The University of Chicago Press.

<sup>10</sup> 47 U.S.C. § 151 et seq. (especially §§ 201-231).

First, the Commission explicitly did not forbear from certain important provisions of Title II. Specifically, the *2015 Order* did not forbear from or rule out applying Sections 201, 202, and 207 of the Communications Act.<sup>11</sup>

- Section 201 states: (i) “[i]t shall be the duty of every common carrier ... to furnish such communication service upon reasonable request,” and (ii) “[a]ll charges, practices, classifications, and regulations for and in connection with such communication service, shall be just and reasonable, and any such charge, practice, classification, or regulation that is unjust or unreasonable is declared to be unlawful.”<sup>12</sup>
- Section 202 states: “[i]t shall be unlawful for any common carrier to make any unjust or unreasonable discrimination in charges, practices, classifications, regulations, facilities, or services ... by any means or device, or to make or give any undue or unreasonable preference or advantage to any particular person, class of persons, or locality, or to subject any particular person, class of persons, or locality to any undue or unreasonable prejudice or disadvantage.”<sup>13</sup>
- Section 207 states: “Any person claiming to be damaged by any common carrier ... may either make complaint to the Commission ... or may bring suit ... in any district court of the United States of competent jurisdiction.”<sup>14</sup>

Taken together, these provisions establish the possibility of utility-style rate and other regulation and an enforcement mechanism based on complaints to the Commission or federal courts.

Second, although the *2015 Order* does forbear from utilizing large sections of Title II, the degree of forbearance could be changed by future Commissions.<sup>15</sup> The reliance on forbearance from the statutory

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<sup>11</sup> *2015 Order*, ¶¶ 434, 453.

<sup>12</sup> 47 U.S.C. § 201.

<sup>13</sup> 47 U.S.C. § 202.

<sup>14</sup> 47 U.S.C. § 207. The *2015 Order* also explicitly refrained from forbearing 47 U.S.C. §§ 206, 208-210. (See *2015 Order*, ¶ 453.)

language introduces uncertainty about how the Commission will enforce its rules in the future and subjects the enforcement of the regulatory framework to the whims of the political process. Indeed, the *2015 Order* itself, even if it is now rescinded, creates substantial uncertainty by demonstrating that changes in the political administration can cause substantial shifts in regulatory posture. We discuss the economic effects of such uncertainty further below.

The *2015 Order* also adopted a new general “standard for Internet conduct” rule that broadly prohibits ISPs from “unreasonably interfer[ing] with or unreasonably disadvantag[ing] (i) end users’ ability to select, access, and use broadband Internet access service or the lawful Internet content, applications, services, or devices of their choice, or (ii) edge providers’ ability to make lawful content, applications, services, or devices available to end users.”<sup>16</sup> Under the *2015 Order*, the Commission enforces this general conduct standard on a case-by-case basis.<sup>17</sup> While the *2015 Order* claims to be mindful that “vague or unclear regulatory requirements could stymie rather than encourage innovation,” as discussed further below, the general conduct standard along with the just-and-reasonable standards embodied in Sections 201 and 202 create exactly such uncertainty.

The Commission is now considering whether to modify or reverse the *2015 Order*.<sup>18</sup> Specifically, the *2017 NPRM* indicates that:<sup>19</sup>

... we propose to reinstate the information service classification of broadband Internet access service and return to the light-touch regulatory framework first established on a bipartisan basis during the Clinton Administration.

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<sup>15</sup> *2015 Order*, p. 322. See also *2015 Order*, pp. 321-384 (Dissenting Statement of Commissioner Ajit Pai) and pp. 385-400 (Dissenting Statement of Commissioner Michael O’Rielly).

<sup>16</sup> *2015 Order*, ¶ 21.

<sup>17</sup> *2015 Order*, ¶¶ 29, 133-153, 441. In applying this standard, the Commission relies on a case-by-case analysis that considers a list of at least seven factors.

<sup>18</sup> *2017 NPRM*.

<sup>19</sup> *2017 NPRM*, ¶ 24.

Such a move would remove the common-carrier designation that the *2015 Order* placed on BIAS providers. It would also remove the general conduct standard.<sup>20</sup> In its place, the Commission is considering whether “different approaches such as self-governance or *ex post* enforcement” may better enhance the Commission’s goals of promoting innovation and investment and benefiting consumers.<sup>21</sup> As one example, the *2017 NPRM* asks whether existing antitrust rules already provide an adequate framework within which to address claims that certain behaviors may be anti-competitive.<sup>22</sup>

## 2 Regulation can weaken investment incentives

Promoting investment is a stated goal of both the *2015 Order* and the *2017 NPRM*.<sup>23</sup> For example, the *2015 Order* states that the Commission “adopted open Internet rules to protect and promote the ‘virtuous cycle’ that drives innovation and investment on the Internet—both at the ‘edges’ of the network, as well as in the network itself.”<sup>24</sup> Similarly, the *2017 NPRM* expresses a goal “to restore the market-based policies necessary to preserve the future of Internet Freedom, and to reverse the decline in infrastructure investment, innovation, and options for consumers.”<sup>25</sup>

There appears to be broad recognition that utility-style regulation is not appropriately applied to the Internet. For example, in a statement accompanying the *2015 Order*, former Commission Chairman Tom Wheeler characterized utility-style regulation as “burdensome regulation that would harm investment.”<sup>26</sup>

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<sup>20</sup> *2017 NPRM*, ¶ 72.

<sup>21</sup> *2017 NPRM*, ¶ 70.

<sup>22</sup> *2017 NPRM*, ¶ 78. For a discussion of the relative merits of regulation versus antitrust enforcement, see Carlton *et al.* (2014) and Viscusi *et al.* (2000).

<sup>23</sup> *2015 Order*, ¶¶ 2, 37-40; *2017 NPRM*, ¶ 73.

<sup>24</sup> *2015 Order*, ¶ 2.

<sup>25</sup> *2017 NPRM*, ¶ 5.

<sup>26</sup> *2015 Order*, p. 315.

Similarly, in a 2010 filing in a prior Commission proceeding, the Department of Justice (DOJ) acknowledged the possibility that price regulation could deter investment and innovation:<sup>27</sup>

...care must be taken to avoid stifling the infrastructure investments needed to expand broadband access. In particular, price regulation would be appropriate only where necessary to protect consumers from the exercise of monopoly power and where such regulation would not stifle incentives to invest in infrastructure deployment.

The recognition that regulation is imperfect does not mean that unregulated markets always perform better than regulated ones. Markets can also be imperfect. Hence, it would be wrong to conclude that all regulation is necessarily bad.<sup>28</sup> However, it is important to consider the costs associated with regulation and balance those costs against the expected benefits, accounting for the fact that, in the face of uncertainty and asymmetric information, any regulation is likely to be imperfect. As a general matter, interfering with market-based mechanisms via regulation has the potential to create distortions that reduce economic performance.

The concept of economic performance incorporates both static and dynamic efficiencies.<sup>29</sup> Static efficiency refers to the efficient use of resources given a particular state of technology. For example, as we discuss further below, when firms set prices equal to marginal costs, a market is said to be statically efficient in the sense that all sales for which the value of the unit exceeds the costs of producing the unit are made. Dynamic efficiency refers to the ability of an industry to survive and implement technological change—*e.g.*, through investment and innovation—that reduces costs or improves the quality of the product or service. A firm that cannot cover its costs will not survive, let alone innovate.

Given the inherent costs of regulation and the likelihood of unintended consequences, discussed further below, regulation should be imposed only when the evidence shows that there exist sufficient market

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<sup>27</sup> *Economic Issues in Broadband Competition: A National Broadband Plan for Our Future*, GN Dkt. No. 09-51, Ex Parte Submission of the United States Department of Justice, January 4, 2010, p. 28.

<sup>28</sup> For example, regulation may be appropriate to prevent opportunistic expropriation of economic rents by firms with market power. Such behavior could have the effect of diminishing incentives to invest.

<sup>29</sup> See generally, Viscusi *et al.* (2000), Chapter 4.

inefficiencies or consumer harm such that the benefits of regulation are more than sufficient to outweigh the inevitable costs. Regulations can affect incentives to invest, incentives to provide high-quality services, and incentives to enter, which in turn affect the likelihood of developing innovative new products and services. They can also be costly to administer. For these reasons, it is important to weigh carefully the costs and benefits of contemplated regulation. We consider each of these potential factors below.

## 2.1 The Economics of Regulation

In textbook models of perfect competition, efficient outcomes in the short run are reached when firms set price equal to the marginal cost of producing a good or service.<sup>30</sup> In practice, such outcomes are rarely achieved. The existence of imperfect competition raises the possibility that regulation could theoretically achieve better outcomes that correct for market inefficiencies.<sup>31</sup>

For example, when firms set price above marginal cost, it creates a distortion referred to by economists as “deadweight loss.” The deadweight-loss distortion arises from the fact that, when prices exceed marginal costs, some sales that would benefit society (in that the value to a customer of a good or service would exceed the cost of producing the good or service) do not occur. With constant returns to scale (meaning that there are no fixed costs), regulators could, in principle, obtain accurate measures of marginal costs and establish price regulations that require firms to set prices at marginal cost. In a more complicated situation without constant returns to scale, a regulator could try to regulate prices to ensure that the firm covers its costs in a way that minimizes deadweight loss. In the absence of administrative costs associated with complying with and enforcing the regulation and other potential costs associated limitations on product variety, increases in operating costs, and possible effects on competition, such a policy could

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<sup>30</sup> Such an outcome reflects static efficiency, for a given state of technology, as described in the prior section. To the extent firms incur fixed costs (or increasing returns to scale), firms pricing at marginal cost would not be able to cover their fixed costs and could not survive in the long run.

<sup>31</sup> See generally, Carlton and Perloff (2005), Chapter 20 (discussing regulation and deregulation).

theoretically lower prices and increase output relative to market-based outcomes—*i.e.*, it could reduce or eliminate the “deadweight loss.”

Likewise, in principle, regulation could either improve or harm dynamic efficiencies by altering firms’ incentives to invest in and develop innovative services. Specifically, regulation that affects prices and quantities will influence the return on investment that industry participants can realize from capital investment projects. All else equal, policies that increases the return on investment will lead to more investment and policies that reduce the return on investment will lead to less investment.

A regulatory approach that seeks to improve static and/or dynamic efficiencies also creates a substantial risk of producing *worse* outcomes than would occur in an unregulated market. For example, if lack of access to adequate information causes regulators to set the regulated price too low, they might induce some or all firms to exit the market or to cut back on supply, thereby reducing output below the competitive level and creating even larger deadweight loss. They may also diminish the incentives to invest and innovate by reducing the return on investment. Similarly, if regulators set the regulated price too high, then the regulators themselves create the same type of “deadweight loss” distortion as would be created by imperfect competition. As we discuss further below, regulation that creates or increases uncertainty about what business practices are permissible can have similar effects by reducing the expected return to investments.

At least in the United States, when possible, economists generally favor the use of markets, constrained by the application and enforcement of antitrust laws, rather than regulation to create the incentives for efficient outcomes for society.<sup>32</sup>

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<sup>32</sup> See, *e.g.*, Carlton *et al.* (2014) and Viscusi *et al.* (2000).

## 2.2 The Effect of Regulatory Imperfection on Investment

In industries requiring substantial investment, regulatory imperfection can lead to additional adverse consequences. When considering whether to invest in a capital-intensive project, firms typically evaluate the net present value of the expected profit stream that would flow from the investment and compare that value to returns from other uses of money. If the expected return on investment for a project exceeds the firm's "hurdle rate," then the firm will find it profitable to invest. Regulation that reduces returns to investment in capital projects below what they would have been absent the regulation undermines investment incentives and reduces the supply of new facilities and services that offer innovative features.

One factor that can reduce *expected* returns on investment is uncertainty about what business practices are permissible. In industries that require firms to invest continuously and adapt to ever-changing consumer demand—a description that can apply to both BIAS providers and edge providers—regulation can have detrimental effects on investment and innovation due to uncertainty regarding firms' ability to recoup investment over the long run.<sup>33</sup> Uncertainty about what business behaviors will be allowed or disallowed can have the effect of lowering the expected rate of return due to fear of usurpation by the political process.

For example, Bernanke (1983) finds that, when investments are irreversible (in the sense that it would be costly to reverse or repurpose the investments), informational uncertainty affects the expected return on investment over time:<sup>34</sup>

Postponing commitment will be desirable if improved information is more valuable to the investor than short-run return. Thus, the dynamics of investment become very sensitive to expectations about the rate of information arrival.

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<sup>33</sup> See, e.g., Ben S. Bernanke (1983), "Irreversibility, Uncertainty, and Cyclical Investment," *The Quarterly Journal of Economics*, 98(1): 85-106.

<sup>34</sup> Bernanke (1983), p. 86.

Uncertainty about how regulations will be interpreted and enforced can create exactly such dynamics. For example, to the extent that Internet firms (both BIAS providers and edge providers) are uncertain about how the Commission and/or the courts will interpret the general conduct standard or the meaning of “just and reasonable” rates or terms in the context of Internet services, those firms have an incentive to withhold from making marginal investments until new information, in the form of Commission proceedings and court cases, resolve or mitigate the uncertainty, if they ever do. Such new information, which will impact the returns that firms can expect to make on their investments, can help firms better allocate capital. When investments are irreversible, firms have an incentive to wait to obtain such information in order to optimize their investment decisions.<sup>35</sup> The presence of such uncertainty does not mean that Internet firms will make no investments, but it can foreclose certain investments and delay the implementation of efficient investments.

### **2.3 The Effect of Regulatory Imperfection on Quality**

Regulatory imperfection can also have adverse effects on incentives to improve quality.<sup>36</sup> There is agreement amongst economists that regulation distorts incentives to invest in service quality.<sup>37</sup> The basic intuition is straightforward. Regulation that could have the effect of capping the prices that firms can charge creates incentives for firms to maximize profits by reducing costs (as opposed to increasing demand by investing in quality), including reducing costs by providing lower-quality products and

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<sup>35</sup> See also *Real Options and Investment under Uncertainty: Classical Readings and Recent Contributions* (2001), Eds. Eduardo S. Schwartz and Lenos Trigeorgis, Cambridge: The MIT Press (discussing real options theory, which modifies traditional approaches to net present value calculations by accounting for the possibility that managerial decisions could alter a project once investment as begun).

<sup>36</sup> See, e.g., E. Glen Weyl (2010), “A Price Theory of Multi-Sided Platforms,” *American Economic Review*, 100(4): 1642-1672.

<sup>37</sup> See, e.g., Timothy J. Brennan (1989), “Regulating by Capping Prices,” *Journal of Regulatory Economics*, 1: 133–47 (“If the price caps are not tied to quality in some way, and if quality can be varied by the regulated firm, it may have an incentive to reduce quality inefficiently in the face of a price control. The argument is analogous to the familiar argument regarding the failure of a landlord to maintain a rent-controlled apartment.”); David E.M. Sappington (2002), “Price Regulation,” in *Handbook of Telecommunications Economics*, Vol. 1, North-Holland.

services.<sup>38</sup> In other words, there is an inherent trade-off between prices and quality. Regulation that focuses on price can affect that trade-off by diminishing incentives to invest in quality.

Alternative regulatory mechanisms such as rate-of-return regulation may impose high informational burdens on the regulator.<sup>39</sup> For example, the relevant concept of profit for measuring rates of return is *economic* profit. However, available financial indicators typically only provide measures of accounting profit.<sup>40</sup> Calculation of profitability is also difficult because the calculation of economic profit must take into account the risk-adjusted rate of return. A competitive rate of return for an investment accounts for the riskiness of that investment, with riskier projects corresponding to higher competitive rates of return. Hence, what appear to be high profits might merely be the competitive reward for past risk-taking.

Sappington and Weisman (2010) discuss the potential distortions that arise from certain types of regulation:<sup>41</sup>

[T]he firm usually is not automatically reimbursed for the costs of increased service quality under incentive regulation plans like [price cap regulation]. When it faces a

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<sup>38</sup> Such an effect need not arise only from explicit price caps. For example, uncertainty about what business practices the Commission might use its discretion to find unjust or unreasonable could have a similar effect. Firms may find it unattractive to participate in markets in which they face the constant prospect that their business practices could be found unlawful.

<sup>39</sup> See, e.g., Paul L. Joskow (2014), “Incentive Regulation in Theory and Practice: Electricity Distribution and Transmission Networks,” in *Economic Regulation and Its Reform: What Have We Learned?* ed. Nancy L. Rose, Cambridge, MA, and Chicago: NBER and The University of Chicago Press Books, pp. 291–344 at 336 (“Incentive regulation has been promoted as a straightforward and superior alternative to traditional cost-of-service or rate-of-return regulation. In practice, incentive regulation is more a complement to than a substitute for traditional approaches to regulating legal monopolies. In some ways it is more challenging. Whether the extra effort is worth it depends on whether the performance improvements justify the additional effort. Incentive regulation in practice requires a good accounting system for capital and operating costs, cost reporting protocols, data collection, and reporting requirements for dimensions of performance other than costs.”)

<sup>40</sup> The term “economic profit” refers to profits in excess of those necessary to provide a competitive return on the assets invested in the firm.

<sup>41</sup> David E. M. Sappington and Dennis L. Weisman (2010), “Price cap regulation: what have we learned from 25 years of experience in the telecommunications industry?,” *Journal of Regulatory Economics*, **38**(3): 227-257 at 234 (citing Michael A. Spence (1975), “Monopoly, quality, and regulation” *The Bell Journal of Economics* **6**(2): 417-429 at 420.); David E. M. Sappington and Dennis L. Weisman (1996), “Potential pitfalls in empirical investigations of the effects of incentive regulation plans in the telecommunications industry,” *Information Economics and Policy*, **8**(2), 125–140 at 125-126.

binding price ceiling, a regulated monopolist is unable to capture the full incremental surplus generated by an increase in service quality. Consequently, when the firm bears the full cost of the increased quality, it will deliver less than the surplus-maximizing level of quality.”

Regulation that fails appropriately to reward higher quality does not imply that the regulator has made a “mistake” that it might have sought to avoid. Instead, the presence of uncertainty and asymmetric information causes the regulator to lack the information necessary to adjust appropriately regulated prices or other utility-style regulations to account for differences in service quality. In a seminal paper, Spence (1975) writes:<sup>42</sup>

What distinguishes the regulatory duopoly, in degree if not in kind, is the severe informational problem facing the regulatory authority. In addition to the familiar difficulty of knowing costs (especially marginal costs), there are two additional informational problems. One is simply measuring quality...[Second] The implied schedule of prices and qualities is difficult to compute and this is the source of the informational problem.

In other words, in order effectively to regulate price and quality, the regulator must be able to measure both quality and the relationship between price, quality, and consumer welfare. This situation often presents daunting informational challenges to the regulator.

Moreover, even if the regulator could obtain such information, distortions to the incentives to provide service quality remain. In order to develop a fully flexible regulatory mechanism, it would also be necessary for the regulator to know how individual customers value different levels of service quality along all relevant dimensions of quality. This is because firms may tailor products to meet the diverse preferences of consumers with respect to multiple dimensions of quality. It is unrealistic to expect the regulator to be able to obtain and process such information. However, if regulation does not fully account for differences in service quality, regulation will tend to eliminate different quality levels that may appeal to different types of consumers. For example, “one-size-fits-all” regulation may tend to make certain products that would appeal to specific subsets of consumers unprofitable to offer.

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<sup>42</sup> A. Michael Spence (1975), “Monopoly, Quality, and Regulation,” *The Bell Journal of Economics*, 6(2): 4 17-429, p. 424.

The unregulated Internet marketplace has resulted in rapid output growth, improved service quality, a wide range of services, and declining prices. An unregulated market can result in experimentation with different business models and network management practices as BIAS providers respond to the anticipated growth in bandwidth demand. If consumers prefer the business models and network management practices currently in use or put into practice in the future, service providers will have strong incentives to maintain them. Thus, the market provides a mechanism for firms to experiment with and discover an appropriate balance between price, quality, and other product features.

## **2.4 The Effect of Regulatory Imperfection on Competition and Entry**

From the perspective of economics, promoting competition generally enhances consumer welfare. As the Commission has recognized, competition is the best way of ensuring that markets perform well. For example, in the Business Data Services proceeding, the Commission stated that “competition is best... Where competition exists, there is little for government to do except to maintain the traditional oversight of telecommunications services, because competition is the single best way of ensuring that customers benefit.”<sup>43</sup>

Entry of efficient firms can be expected to increase not only the welfare of customers of the entrant but also that of buyers that patronize other service providers (including edge providers) who respond to the enhanced competition that drives down quality-adjusted prices. Therefore, any regulation must be careful not to deter the entry of such firms.

Although it is particularly important not to let regulation block the emergence of new competition, the application of utility-style regulation, especially under a regulatory framework that allows broad

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<sup>43</sup> *In the Matter of Business Data services in an Internet Protocol Environment, Investigation of Certain Price Cap Local Exchange Carrier Business Data Services Tariff Pricing Plans, Special Access for Price Cap Local Exchange Carriers; AT&T Corp. Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, WC Docket Nos. 16-143, 15-247, 05-25, RM-10593, Tariff Investigation Order and Further Notice of Proposed Rulemaking, May 2, 2016, ¶ 5.

discretion as to which business practices are permissible, could do just that by lowering the incentives to enter and invest. First, by reducing the return on investment, regulation can limit the incentive for new firms to enter in the same way it can deter incumbent firms from investing in new capital projects. Second, the prospect of uncertainty about how existing regulations will be enforced and whether new regulations will be implemented in the future can deter firms from making investments or entering *de novo* for the same reasons as discussed in the previous section. Policies that deter entry favor incumbent firms while harming potential entrants and innovators.

Moreover, regulation that deters entry can create a vicious cycle whereby investment is undermined and competition does not develop, or does not develop as quickly or expansively as it otherwise would, thus perpetuating the market conditions that triggered regulation. Such effects can occur in both the core of the network and also at the edge, where the quality of the core network affects decisions about what edge services to invest in. Absent unnecessary regulation, competition could continue to develop, benefiting consumers while avoiding regulations' costs.

## **2.5 The Costs of Regulation**

In weighing the costs and benefits of regulation, two final considerations are pertinent—the administrative costs of regulation and the possibility that regulation will be unduly influenced by the industry being regulated as well as by other firms seeking to benefit by applying the regulations to others with the consequence that, in the long run, consumers are harmed. The costs of regulation, to both the regulator and to firms in the regulated industry, can be substantial. From the point of view of the regulator, developing and maintaining a well-functioning regulatory regime requires resources, which may be considerable. Similarly, firms in the regulated industry must expend resources to influence the regulations to their advantage.<sup>44</sup> In order to assess accurately whether regulation is beneficial, it is

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<sup>44</sup> Such activity is sometimes referred to by economists as “rent-seeking” or “regulatory capture.”

necessary to consider whether the potential benefits of regulation in terms of reducing deadweight loss are sufficient to offset any costs associated with imposing and complying with the regulatory framework.

We have so far assumed regulators are well meaning and trying to improve social welfare. The economics literature shows that this may not always be the case. Instead regulators are appointed by politicians who are supported by special interest groups whose favor they must solicit. One way is to use regulation, especially so-called “public-interest” regulation, in order to impose requirements on firms that represent gifts to the supporters of the politicians that appoint the regulators.<sup>45</sup> Interest groups, including industry participants, have an incentive to use the regulatory process, including complaint resolution processes, to achieve outcomes that favor themselves and not necessarily overall social welfare as happens, for example, when the regulatory process impedes entry of new competitors. Such “regulatory capture” can lead to unintended consequences that exacerbate the harmful effects of regulation. Similarly, self-interested industry participants may use regulation to inhibit the introduction of new products or innovative packaging or pricing of existing products.

## **2.6 Cost-Benefit Analysis of Utility-Style Regulation**

Sound policy making would require a full assessment of both the potential benefits and costs of regulation before recommending its implementation.<sup>46</sup> Consider benefits. Even if a market were not fully competitive, it would not follow that regulatory intervention would necessarily improve market performance. The ability to improve market performance is uncertain because of the complexity of market conduct and the limited information available to regulators. For example, it is inevitable that price regulation will impose costs and give rise to adverse unintended consequences. This fact does not imply

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<sup>45</sup> See, e.g., George Stigler (1971), “The Economic Theory of Regulation,” *Bell Journal of Economics and Management Science*, 2(1): 3-21; Jean-Jacques Laffont and Jean Tirole (1991), “The politics of government decision-making: A theory of regulatory capture,” *The Quarterly Journal of Economics*, 106(4): 1089-1127; Jean-Jacques Laffont and Jean Tirole (1993), *A Theory of Incentives in Procurement and Regulation*, Cambridge: The MIT Press, Chapter 11 (“Regulatory Capture”).

<sup>46</sup> See 2017 NPRM, § IV.C for a discussion of cost-benefit analysis.

that price regulation is never justified. But it does imply that regulations that set a particular price or even affect pricing flexibility should be imposed only if there is strong evidence of significant likely benefits that could offset the inevitable costs.

Although it is particularly important not to let regulation block the emergence of new competition, the prospect of utility-style regulation under a framework that allows for broad regulatory discretion could do just that by lowering the incentives for core and edge providers to enter and invest.

### 3 Application of Theory to the Internet

In the previous section, we discussed the economics of regulation, especially as it pertains to incentives to invest. We now apply those economic principles to the Internet. We specifically consider the effects of utility-style regulation on investment and innovation in Internet-related services.

In Internet-related services, investment and innovation can occur in both the “core” network or at the “edge” of the network.<sup>47</sup> The “core” network typically includes the network infrastructure and services that firms use to provide consumers access to the Internet.<sup>48</sup> Firms such as AT&T, Charter, Comcast, Verizon, and others develop and maintain broadband networks and sell Internet access services to end-users. Other providers such as Level 3, NTT, and others provide so-called “backbone” services that connect networks to one another. References to the “edge” of the network typically refer to content,

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<sup>47</sup> See, e.g., Jay Pil Choi, Doh-Shin Jeon, and Byung-Cheol Kim (2015), “Net Neutrality, Network Capacity, and Innovation at the Edges,” unpublished draft, available at [http://www.law.northwestern.edu/research-faculty/searlecenter/events/internet/documents/Kim\\_Choi\\_Jeon\\_NN-QoS-May%2022-2015-Revision.pdf](http://www.law.northwestern.edu/research-faculty/searlecenter/events/internet/documents/Kim_Choi_Jeon_NN-QoS-May%2022-2015-Revision.pdf); Carlo Reggiani and Tommaso Valletti (2016), “Net Neutrality and Innovation at the Core and at the Edge,” *International Journal of Industrial Organization*, 45(2016): 16-27.

<sup>48</sup> ISPs provide customers with access to the Internet. ISPs typically connect with other ISPs as well as so-called backbone providers and content delivery networks through peering and transit relationships in order to provide their customers with connectivity to the broader Internet. (See, e.g., David Clark, Steven Bauer, William Lehr, K.C. Claffy, Amogh Dhamdhere, Bradley Huffacker, and Matthew Luckie, “Measurement and Analysis of Internet Interconnection and Congestion,” September 9, 2014, unpublished draft, available at <http://groups.csail.mit.edu/ana/Measurement-and-Analysis-of-Internet-Interconnection-and-Congestion-September2014.pdf>.)

applications, and devices that connect to the “core” network. Firms such as Netflix, Google, Amazon, and many others provide edge services. However, distinctions between these categories are often blurred, making regulation aimed only at either the “core” or “edge” imprecise. For example, firms such as Comcast and Google own and operate both core networks and edge services.

BIAS providers can be thought of as providing a two-sided platform that serves Internet customers on one side and content providers on the other side.<sup>49</sup> However, as just mentioned, the division between end-users and edge providers is often indistinct. For example, many users generate their own content (“user-generated content”). Indeed, the Commission has previously found that:<sup>50</sup>

We propose not to adopt a specific definition of “content, application, or service provider,” because any user of the Internet can be such a provider. For example, anyone who creates a family website for sharing photographs could be reasonably classified as a “content provider.”

For those situations in which it is possible to draw a clear distinction between the “core” network and the “edge” of the network, given the two-sided nature of the market, it is important to consider the potential effects of regulation on investment at the edge of the network as well as in the core network. Given the interactions between the core of the network and the edge of the network, regulations that interfere with economic incentives in one component of the Internet ecosystem can cause serious repercussions and distortions in other aspects of the ecosystem.

Investment in broadband networks is costly. For example, the Commission estimates that Internet Service Providers (ISPs) have collectively invested more than \$1.5 trillion over approximately the past 20

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<sup>49</sup> In practice, the rise of user-generated content (*e.g.*, through social media) blurs the distinction between end-users and content providers. This blurring of the distinction makes unclear how any Commission rules that treat end users differently than edge providers would be enforced or interpreted.

<sup>50</sup> Federal Communications Commission. (2009), *In the matter of preserving the open internet; broadband industry practices*, Notice of Proposed Rulemaking, October 22, 2009 (cited in Michael L. Katz (2017), “Wither U.S. Net Neutrality Regulation?” *Review of Industrial Organization*, 50:441-468, note 21).

years.<sup>51</sup> Such investment has been substantial and ongoing, but the prospect of utility-style regulation endangers future investment for the reasons that we describe in the previous section.

The Commission's general conduct standard and the Title II statutory prohibitions against unjust and unreasonable discrimination in charges, practices, facilities, and services that are embodied in the *2015 Order*'s refusal to forbear from Sections 201, 202, and 207 create uncertainty and disincentives to invest in core networks. From a practical point of view, the *2015 Order* means that BIAS providers must assess every pricing decision (including, for example, the use of non-linear pricing schedules such as usage-based billing, which could cause consumers to internalize the costs they impose on the network and lead to more efficient usage patterns and which the Commission said it would address under the general conduct standard) and proposed product offerings to determine the legal risk that such decisions would be characterized as unreasonable or unjust. Such a degree of regulatory oversight creates the risk that welfare-enhancing strategies could be delayed or deferred entirely due to regulatory concerns. In addition to uncertainty as to whether certain practices would be permitted and what pricing would be allowed, the regulatory uncertainty enhances the risk that BIAS providers would find it necessary to defend their decisions in a court and incur the costs of litigation.

Such costs may be particularly onerous for smaller BIAS providers. In many cases, regulatory compliance costs are largely invariant to the number of customers a provider has. Smaller providers, by definition, have fewer customers over which to spread the fixed costs of regulatory compliance and therefore may be less likely than otherwise to undertake investments that incur the risk of a regulatory proceeding. Smaller providers, such as municipal ISPs, have indicated that the uncertainty caused by the *2015 Order* has caused them not to undertake investments in quality and service that they otherwise would have made.<sup>52</sup>

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<sup>51</sup> 2017 NPRM, ¶ 2.

<sup>52</sup> Letter from William Bottiggi *et al.* to The Honorable Ajit Pai, "Re: Ex Parte Submission, Restoring Internet Freedom, WC Docket No. 17-108," May 11, 2017, *available at*

Because these rules are so complex and so difficult to fathom, we must pay lawyers and consultants to provide advice and direction to minimize any risk that we will be judged after-the-fact to be out of compliance. Moreover, even with this advice, we often delay or hold off from rolling out a new feature or service because we cannot afford to deal with a potential complaint and enforcement action.

To the extent that regulation diminishes incentives to invest in the core network, the linked nature of the Internet means that such regulation can also have adverse consequences for the investment decisions of firms that rely on broadband networks to distribute their products (*e.g.*, content or edge providers).<sup>53</sup> This conclusion follows from the fact that, in many cases, content and the core network infrastructure are complements to one another. Investments that increase the speed and reliability of the core network make content that requires higher speed and/or more reliable networks more valuable. Investments by BIAS providers that expand the number of broadband subscribers also enable content providers to reach a larger audience. This spillover, which benefits content providers, increases their own incentives to invest (which, in turn, benefits subscribers of other BIAS providers). Similarly, content that attracts customers to the Internet increases the value of the core network. Regulation that prevents access providers from realizing the full value of their investment depresses investment in BIAS services, which can also have spillover effects on content providers.

Regulation that affects pricing raises special issues in a two-sided market.<sup>54</sup> The distortions that regulation seeks to reduce can occur on either side of the market and interactions between the two sides of the market can exacerbate the distortions. For example, consider a regulation that prevents BIAS providers from charging certain fees to one side (*e.g.*, usage-based billing to end-users). Such a policy creates

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<https://ecfsapi.fcc.gov/file/105110692413807/170511> Letter from 19 Municipal ISPs.pdf. See also *2017 NPRM*, ¶ 47 (“[s]ince reclassification, small providers—including non-profit, municipal ISPs—have been forced to reduce their investment and halt the expansion of their networks, and slow, if not delay, the development and deployment of innovative new offerings.”)

<sup>53</sup> Regulations may also directly impact edge providers’ ability to enter into and invest in certain business models. For example, we understand that sponsored broadband plans that allow an edge provider to pay to have its data exempted as an incentive to attract consumers to its service or content have been called into question.

<sup>54</sup> See, *e.g.*, E. Glen Weyl (2010), “A Price Theory of Multi-Sided Platforms,” *American Economic Review*, 100(4): 1642-1672.

incentives for the platform to charge higher prices than it otherwise would to the other side of the market (a phenomenon sometimes referred to as the “waterbed effect”).<sup>55</sup> The economic mechanism by which this phenomenon occurs is that restrictions on the ability to charge positive prices to one side of the market effectively increases the marginal cost of serving the other side of the market, thereby creating an incentive to raise prices.

Interactions between content and access services are complex and run in multiple directions. Full evaluation of the impact of regulation on investment incentives faced by providers of content and broadband access services depends on the size of the spillover effects and other factors.<sup>56</sup> We are unaware of any empirical evidence that attempts to measure the consequence of the various spillover effects of investment on each side of the market and also are unaware of any empirical analysis that supports the view that utility-style regulation is required to preserve the appropriate incentives for investment in Internet content. Of course, that does not mean that one should be blind to the existence of such evidence. But it is better to wait for such evidence before crafting policies to fix problems that may not exist, especially when the regulatory mechanism itself may create problems.

In the next section, we briefly discuss the available empirical evidence.

#### **4 Empirical evidence demonstrates that utility-style regulation often retards investment and innovation**

The history of regulation casts considerable doubt on the ability of even well-meaning regulators to determine which business models and network management practices are likely to work best in the future,

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<sup>55</sup> See, Katz (2017); Christos Genakos and Tommaso Valletti (2011), “Testing the ‘Waterbed’ effect in mobile telephony,” *Journal of the European Economic Association*, 9(6):1114–1142.

<sup>56</sup> See generally Katz (2017).

especially in rapidly changing industries. It should not be assumed without evidence that market performance can be improved by utility-style regulation when considering the incentives to invest.

The evidence for efficiency-enhancing effects of the utility-style regulations contained in the *2015 Order* on investment incentives is limited. For example, Brennan (2017) notes that the *2015 Order* cited only four incidents over 10 years that potentially would have violated the terms of the *2015 Order*.<sup>57</sup>

Moreover, these four instances related to the provisions of the *2015 Order* that governed interactions between BIAS providers and edge providers. The empirical justification for utility-style regulation facilitated by classifying BIAS providers as common carriers under Title II has also been questioned. For example, Hazlett and Wright (2017) examine the empirical justifications for Title II regulation in the *2015 Order* and find that “the facts that are cited by the Commission provide no plausible case for Title II regulation of U.S. broadband networks.”<sup>58</sup> Specifically, the authors investigate each of the four empirical claims that the Commission made in justifying the *2015 Order*: “(a) Capital investments made by broadband ISPs went up following the imposition of the 2010 network neutrality rules; (b) FCC wireless auction No. 97, which registered relatively high bids for AWS-3 licenses in January 2015, demonstrated that there was no depressing effect on network investment due to FCC network neutrality rules; (c) Since the 1980s, mobile markets have developed under ‘light touch common carrier’ regulation that establishes the pro-efficiency basis of such rules, which are said to be analogous to the FCC’s 2015 OIO2 Title II reclassification (for fixed and wireless broadband services); (d) The application of Title II rules to DSL

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<sup>57</sup> Timothy Brennan (2017), “The Post-Internet Order Broadband Sector: Lessons from the Pre-Open Internet Order Experience,” *Review of Industrial Organization*, 50(4):469-486 at 471-472.

<sup>58</sup> Thomas W. Hazlett and Joshua D. Wright (2017), “The Effect of Regulation on Broadband Markets: Evaluating the Empirical Evidence in the FCC’s 2015 ‘Open Internet’ Order,” *Review of Industrial Organization*, 50(4): 487-507 at 491.

and Fiber-to-the-Premises networks encouraged broadband deployment.”<sup>59</sup> They find each of these claims to be “dubious.”<sup>60</sup> Specifically, the authors find that:<sup>61</sup>

Adjustments for inflation or general economic trends eliminate the effects cited by the FCC. Moreover, contrary to the Commission’s assessment, mobile services and broadband markets have shown notable growth in response to deregulatory events that *reduce* Title II requirements.

Given the costs associated with utility-style regulation that we discuss above, the lack of empirical evidence supporting such regulation in the Internet industry indicates that the imposition of such regulation should proceed with caution.

Evidence in related industries supports such a conclusion. Most directly relevant is the fact that, until 2005, telephone companies’ digital subscriber line (DSL) Internet access services were subject to Title II regulation while cable modem Internet access services offered by cable companies were not. Hazlett and Wright (2017) summarize the empirical literature examining the effect of Title II regulation on Internet access service deployment. They find that “Title II requirements were negatively associated with broadband subscriber growth.”<sup>62</sup> Specifically, they found that “[post-deregulation] 2006 DSL subscribership was 65% higher than would be predicted by the pre-deregulation trend (through 2002).”<sup>63</sup> The same study points to evidence that deregulation (specifically the removal of Title II unbundling requirements in 2004) coincided with a dramatic increase of fiber to the premises (FTTP) in the mid-to-late 2000s.”<sup>64</sup>

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<sup>59</sup> Hazlett and Wright (2017), p. 491.

<sup>60</sup> Hazlett and Wright (2017), p. 491.

<sup>61</sup> Hazlett and Wright (2017), p. 487 [emphasis in original].

<sup>62</sup> Hazlett and Wright (2017), p. 499.

<sup>63</sup> Hazlett and Wright (2017), p. 499.

<sup>64</sup> Hazlett and Wright (2017), pp. 500-501.

Similarly, Crawford (2014) studies the effect of regulation on cable television.<sup>65</sup> Crawford finds:<sup>66</sup>

The evidence for regulation is discouraging: unregulated periods exhibit rapid increases in quality and penetration (and prices), while regulated periods exhibit slight decreases in prices and possibly lower quality. Consumer welfare estimates, while few, suggest consumers prefer *unregulated* cable services. This highlights the difficulty regulating prices in an industry, like cable, where service quality cannot be regulated and is easily changed.

In contrast to the effects of regulation, Crawford (2014) finds that even limited competition can have substantially beneficial effects. For example, examining overbuilt cable television markets where there are two wireline providers, he surveys the literature and finds the addition of a second competitor lowers prices by eight to 34 percent.<sup>67</sup>

More generally, academic studies demonstrate that attempts to regulate new or rapidly changing technologies can result in significant harm to consumer welfare. For example, Crandall, Hahn, and Tardiff (2002) review the impact of regulation on new technologies involving telephone service, television programming, cable television, wireless services, information services, and converged telephone/video services. They find that:<sup>68</sup>

These six cases illustrate four important points. First, regulation has often served to suppress innovation. Second, the delay in the introduction of new services can be quite costly to consumers. Third, deregulation can result in significant benefits when markets are workably competitive or even when there is arguably market power, as there was in the cable industry. Fourth, vertical integration by even large, dominant firms is often essential to the efficient development of new goods and services.

As one specific example, Hausman (1997) estimates the welfare effects on consumers resulting from regulation-induced delays in the introduction of new telecommunications technologies. He analyzes the

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<sup>65</sup> Gregory S. Crawford (2014), "Cable Regulation in the Internet Era," in *Economic Regulation and Its Reform: What Have We Learned?*, Nancy L. Rose, Ed., University of Chicago Press, Chapter 3, pp. 137-193.

<sup>66</sup> Crawford (2014), p. 138.

<sup>67</sup> Crawford (2014), p. 138.

<sup>68</sup> Robert Crandall, Robert Hahn and Timothy Tardiff (2002), "The Benefits of Broadband and the Effect of Regulation," in *Broadband: Should We Regulate High-Speed Internet Access*, Robert Crandall and James Alleman eds., AEI-Brookings Joint Center for Regulatory Studies, 324.

costs associated with regulation-induced delays in the introduction of voice messaging services and the introduction of cellular telephone service and concludes that delays in these new telecommunications services caused by regulation imposed multibillion dollar losses on consumers:<sup>69</sup>

If, as I estimate, the consumer value from [voice messaging] services was \$1.27 billion in 1994, then the approximate ten-year regulatory delay cost consumers billions of dollars. Applying the methodology to the cost of regulatory delay in the introduction of cellular telephone service, I estimate the cost to consumers to be closer to \$100 billion in total, with more than \$25 billion lost in a single year.

The empirical evidence thus supports the conclusion that (i) the benefits of investment and innovation are real and substantial; and (ii) regulation has the potential to retard such investment and innovation.

## 5 Conclusion

Although actual (as opposed to textbook) markets are rarely perfectly competitive, they often are sufficiently competitive to render unnecessary extensive regulation. Even in imperfectly competitive markets, utility-style regulation under a framework that provides for broad regulatory discretion can create consumer harm not consumer benefit. The administrative costs on public and private entities that such regulation imposes along with the inevitability of unintended adverse consequences weigh against its use absent clear evidence of significant market failure. The fact that competition in actual markets is generally not perfect does not mean consumers would be better served by subjecting suppliers to extensive regulation. Like competition, regulation is never perfect in practice.

Experience has shown that regulation is difficult to implement well. Given the lack of strong empirical evidence of market failure in the Internet industry, combined with substantial empirical evidence of the harmful effects of regulation in related industries, one should be extremely cautious before imposing utility-style regulation in this industry.

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<sup>69</sup> Jerry A. Hausman (1997), "Valuing the Effect of Regulation on New Services in Telecommunications," *Brookings Papers on Economic Activity: Microeconomics*, 1-54 at 3, 17.