Beyond Net Neutrality: Policies for Leadership in the Information, Computing, and Network Industries

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KEY POINTS

- *Net neutrality in the US is backfiring against some of the very people it is supposed to help, so we need a policy that gets beyond net neutrality to a framework that resolves disputes, enables leadership and innovation, and protects the poor.*
- *One crucial feature is a multistakeholder approach to resolving conflicts within the industry. This system, which is common in the Internet, is where concerns such as connectivity, openness, and discrimination can be worked out.*
- *The other crucial feature is limiting* ex ante *regulation to situations in which monopoly actually emerges. The framework provides a process and standards for introducing* ex ante *regulation.*

Net neutrality has been a contentious policy debate for more than a decade in the US and elsewhere. The basic policy goal, shared by proponents and opponents alike, is to maintain robust and open networks so that information technology entrepreneurs can thrive by continually innovating and serving consumers. Regrettably, net neutrality as practiced in the US is failing.

There are two basic reasons for the failure. One is that net neutrality policy has lost its focus and is now a growing miscellany of *ex ante* regulations that frequently work against the entrepreneurs and consumers the rules are intended to help. The second reason is that the net neutrality mindset is locked into a fading paradigm in which networks are distinct from computing and content. Facebook, Netflix, and Google are investing in customized networks and, in doing so, demonstrating that next-generation breakthroughs will leap beyond the old mindset.

If the US is to continue to be a place where consumers, entrepreneurs, and other enterprises can flourish in developing the next generation of information technologies, the country must move beyond net neutrality controversies to a policy framework that enables our industries to be world leaders.

In this paper we describe such an approach by offering a framework that addresses the public-interest concerns and controversies motivating today's net neutrality conflicts and that provides consumers and service providers a way forward with new possibilities. Our approach offers a process for allowing industry players to evolve, new entrepreneurs to disrupt the status quo, and monopoly power to be quickly addressed without counterproductive governmental constraints on innovation.

This bar against both abuse of monopoly power and unproductive government controls is important. If a monopoly were to exercise its monopoly power, it would drain economic value from the system and, to the extent that it could, allow only those innovations that served its monopoly power. Similarly, if the government

added controls beyond those restricting the actual abuse of monopoly power, it would empower rent seeking, curb valuable innovations, and drown incentives for creating the next killer apps.

Our framework is designed to achieve the following policy goals:

- Promote innovation in a robust and open system of networks, content, and computing;
- Control monopoly power and rent seeking; and
- Protect entrepreneurship and vulnerable populations, such as the poor and the elderly.[1]

As we explain in more detail later in this paper, our research has found that a policy framework that meets our objectives has three essential features. One is a multistakeholder approach to resolving conflicts regarding how providers of networks, content, and computing interact and evolve. Studies[2] show that this approach is correlated with greater edge-provider[3] innovation than a heavier-handed regulatory approach, such as what the Federal Communications Commission (FCC) adopted in its most recent net neutrality decision.[4]

The second essential feature is controlling monopoly power with *ex ante* regulations if such power emerges and is exploited to the harm of customers.[5] *Ex ante* regulation is appropriate when a firm is a natural monopoly and there is a need to address monopoly pricing, poor service quality, and an obligation to serve.[6] We limit the imposition of *ex ante* regulations accordingly. These limits are well-grounded in scholarly literature and experience but are different from what exists in US statute.

In 1934, when Congress formed the FCC and granted its regulatory powers, the telephone industry was comprised of monopolies, and the primary question before Congress was how the monopolies should be regulated for interstate purposes. In contrast, competition is the norm in today's communications markets, and so the primary questions are: (1) How can industry players coevolve?[7] (2) What processes should be in place to enable disrupters? and (3) When and how should *ex ante* regulation intervene in this otherwise competitive process?

The remaining essential feature is the use of ex post regulation when anticompetitive conduct emerges to the harm of customers. This is the form of regulation practiced by the US Department of Justice (DOJ) and Federal Trade Commission (FTC). Ex post regulation is preferred to *ex ante* regulation for businesses that are not monopolies. We suggest no changes to their statutory authority, so we do not address ex post regulation further in this paper, even though it plays a crucial role.

This paper proceeds as follows. We begin with an overview of the US experience with net neutrality. We then describe the multistakeholder framework that we believe is the most effective approach for addressing intra-industry conflicts while satisfying our three policy goals. Next we describe the proper way to address monopoly power if it emerges. The last section concludes.

The US Experience with Net Neutrality

The FCC has struggled to properly address net neutrality issues. Its first attempt was in 2005 when the commission adopted an Internet Policy Statement,[8] consisting of four consumer-centric guiding principles, also referred to as the "Four Freedoms,"[9] intended "to ensure that broadband networks are widely deployed, open, affordable, and accessible to all consumers"[10]:

- Consumers are entitled to access the lawful Internet content of their choice.
- Consumers are entitled to run applications and use services of their choice, subject to law enforcement's needs.
- Consumers are entitled to connect their choice of legal devices that do not harm the network.
- Consumers are entitled to competition among network providers, application and service providers, and content providers.

A guiding-principles approach might have worked if the FCC had had proper authority to

put them into action. When the commission attempted to apply these principles in 2008,[11] the DC Circuit Court rejected the FCC's decision on jurisdictional grounds.[12]

The FCC's second attempt was in 2010 when the agency tried to write net neutrality rules.[13] In 2014 the DC Circuit Court again reversed the FCC on jurisdictional grounds.[14] As part of this 2010 attempt, the FCC adopted a light-handed, multistakeholder approach for addressing net neutrality issues.[15] As we explain in our section on multistakeholder processes, this approach was short-lived, as the FCC has not engaged the multistakeholder group since the DC Circuit Court's 2014 reversal of the FCC's 2010 decision.

The FCC's latest attempt at net neutrality was its 2015 Open Internet Order, in which the agency took a more heavy-handed approach, applying to the Internet its 1930s-era rules for regulating monopoly telephone companies.[16] This decision has been appealed, and the appellate court just issued its opinion.

Congress and the FCC's former chief economist have criticized the agency's latest decision and the process used to reach it. Congress censured the FCC for what it describes as the agency's failure to follow the instructions from prior court decisions, lack of due process for rulemaking, and the inappropriate influence by the White House and other parties in the rule-making proceeding. The FCC's chief economist at the time of the decision called the rulemaking process and subsequent order an "economics free zone" because the agency excluded input from its own economists when developing the decision.[17]

Four serious problems have arisen with US net neutrality policy to date. One is a market muddle problem—namely that emerging net neutrality regulations have arbitrarily painted with a single brush numerous, distinct markets for Internet services, ignoring the effects of differences in competition, geography, customer type, services, and so forth. As a result, net neutrality is hindering the very innovations it is supposed to protect, creating undue scrutiny and threating bans of pro-consumer services.

For example, the FCC is considering restricting third parties from paying for their customers' data usage. Such bans could prohibit Internet service providers from facilitating free access to valuable services such as Wikipedia, weather, bus schedules, and e-government services.[18] The ban could also prohibit health care providers from offering free mobile video to people who need health information, for example, low-income women who could watch prenatal-care videos.[19] Such bans press against the public interest.[20] The effects would fall hardest on the poor, who benefit most from being able to manage their usage charges,[21] and on the elderly, for whom Internet adoption lags, but who benefit tremendously from mobile broadband services.[22]

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Another problem that has arisen is an overkill problem—namely that some net neutrality rules restrict Internet service providers from offering service features, such as paid prioritization, that could help fledgling entrepreneurs compete with Internet giants, such as Facebook and Google, whose scale economies allow them to develop their own customized network capabilities.[23] Such additional network services are important for communications for the deaf and blind, which need a guaranteed delivery and quality of communication, and for the development of telemedicine.[24] Indeed one entrepreneur sued the FCC for the ban because he claims that his startup, a site in which users communicate in real time about the news, requires paid prioritization to work.[25]

A third problem is an antiprogress problem—namely that some net neutrality rules restrict Internet service providers' abilities to take the Internet to higher levels of technological achievement by restricting what services they can provide to content providers. This imposes an aging business model on the industry and appears to have reduced Internet service provider investment in the US following the FCC's most recent net neutrality decision.[26]

Finally, *ex ante* regulations for net neutrality empowers some business interests to use regulation to disadvantage rivals. For example, some observers believe that the FCC is using its control of mergers to extract concessions from the merging entities, some of which are intended to benefit Netflix over its cable television rivals at the expense of consumers.[27]

The Multistakeholder Process

A multistakeholder process can resolve issues without creating the muddled market, overkill, and antiprogress problems described in the previous section. Multistakeholder is a governance model that seeks to bring affected parties together to participate in dialogue and decision making for solutions to common problems or goals. As Lawrence E. Strickling, US assistant secretary for communications and information and administrator of the National Telecommunications and Information Administration Administrator, explains, "The multistakeholder process . . . involves the full involvement of all stakeholders, consensus-based decision-making and operating in an open, transparent and accountable manner."[28]

The Internet is governed through a multistakeholder model in which shared principles, norms, and decision-making processes are developed. It incorporates a multitude of actors, and its success suggests that it is a proper format for addressing how network, computing, and content providers may coevolve. Luca Belli, founder of the Dynamic Coalition on Net Neutrality, a global multistakeholder group formed under guidance of the United Nations, praised the multistakeholder governance model as successful.[29]

As a process for resolving intra-industry conflicts, the multistakeholder approach is superior to using *ex ante* regulations in markets where competition is present.[30] As we indicated in the section on the US experience, the FCC applied this approach for a short period of time before its 2010 net neutrality decision was overturned. The agency established an Open Internet Advisory Committee to track and evaluate the effects of the FCC's 2010 rules and provider further recommendations to the FCC about how to preserve an open Internet.[31]

The FCC's multistakeholder approach contained the following elements, which are common in such processes:

- **Involved representatives from different sectors and interests.** The FCC gathered some 20 individuals, representing a broad array of enterprises, including small and large Internet service providers and edge providers.[32]
- **Engaged stakeholders in a learning process toward a common goal.** Representatives engaged in plenary sessions and four subcommittees that addressed mobile broadband, economic impact, transparency, and specialized services issues, respectively. While each stakeholder had its own vested interest, the process facilitated investigation and discussion on a range of contentious issues, building mutual understanding and respect.
- **Helped stakeholders to explicitly deal with power and conflict.** While the group was convening, two potential net neutrality cases emerged in the market, and the process allowed a multifaceted investigation to the issues, which were ultimately resolved.
- **Integrated bottom-up and top-down strategies.** The group used both bottom-up and top-down approaches. The bottom-up approach assigned stakeholders to working groups with deliverables for the plenary sessions. In the top-down approach, the FCC convened the session, provided the overall direction, and ensured that the process stayed on track.

Although the FCC's committee was short-lived, it engaged stakeholders meaningfully for more than a year, conducting five public meetings and numerous subcommittee meetings and producing numerous materials for further learning.

There are several reasons why a multistakeholder is superior to *ex ante* regulations in resolving intra-industry disputes when there is

competition. Compared with the *ex ante* approach, the multistakeholder process:

- **Encourages more edge-provider innovation**. A review of the mobile wireless ecosystems in the 50 countries with net neutrality policies shows that countries with multistakeholder models tend to have more edge-provider innovation than other nations, as measured by the number and diversity of startup firms.[33]
- **Has richer information.**[34] *Ex ante* rules are less effective because they impose rigid restrictions without sufficient information and because they are too inflexible to address stakeholders' divergent needs. The multistakeholder process provides a way for conflicting positions to be aired by experts, for information to be shared, and for solutions to be proposed to resolve the conflict. The meetings, being open to the public, provide credibility and transparency on a contentious issue.
- **Allows innovation in all parts of the Internet ecosystem.** The FCC's *ex ante* rules are asymmetric in that they limit activity on the ecosystem's network elements while other parts of the ecosystem—parts that may have equal or greater market power—are not affected. This asymmetry diminishes incentives for network investment and creates artificial power dynamics in the market.
- **Empowers permission-less innovation.**[35] *Ex ante* regulations require networks to seek regulatory permission before they can innovate. This reduces innovation because it raises the cost of innovation and diminishes the competitive advantage that networks can attain over one another from innovation.
- **Incorporates end users' concerns by letting competition guide incentives.** One critique of net neutrality rhetoric is that it forgets end users' needs. As Ellen Goodman, a leading scholar of free speech, observes, net neutrality rules and their advocates are preoccupied with "edge providers when it comes to equality and liberty" at the expense of consumers:

  > The theory of innovation and freedom that animates net neutrality revolves around the equality and liberty of edge providers. User interests are derivative of edge provider interests. Although net neutrality celebrates and seeks to preserve the Internet's historic end-to-end architecture, and though it recognizes the generativity of users as producers, the thrust of its campaign for equality and free expression lands heavily at only one end of the network.[36]

- **Has lower administrative costs.** Experts and stakeholders do the work directly, reducing the need for legal proceedings while keeping the focus on users and innovation.
- **Reduces the possibility of regulatory rent seeking and political opportunism.** Diminishing the government's hand in competitive market outcomes decreases businesses' opportunities to use the regulatory process to protect themselves from competition and to use their political connections to obtain favorable treatment.

We suggest that the FCC oversee the multistakeholder process for addressing intra-industry conflicts and that the process have the following features:

- **Membership open to salient industry participants.**[37] Because many potential stakeholders could claim an interest in industry rules, the multistakeholder process should be confined to the salient industry stakeholders—that is, those who are able to affect the industry, have a legitimate economic stakes, and are affected by the timeliness of decisions.[38] This protects the process from being dominated by political agendas and advocates whose interests are not tied to demonstrable customer benefits.
- **Governance structure of general body and subcommittees.** The general body should have no more than 20 members and include mostly the major economic interests, with some smaller industry participants. Subcommittees can

be formed as needed to represent particular interest areas, such as security concerns, or to address specific issues of interest to multiple participants.

- **Role restricted to issues of general interest.** It should not include issues concerning conflicts between a customer and supplier.
- **Role of resolving conflicts internally**. Recommendations for action to the FCC should be made only when the committee is unable to reach a decision.
- **Monitored by FCC and FTC staff.** Monitoring by both *ex ante* and ex post regulators is important to ensure that discussions do not violate antitrust laws, that regulators are fully informed of the work, and that regulators are abreast of emerging industry trends.

Our multistakeholder approach leaves open the possibility of *ex ante* rules if they are needed. We believe that the FCC should not adopt such rules absent a demonstrated need, as described in the next section.

Ex Ante Conduct Regulation: Only in Cases with Actual and Enduring Abuse of Monopoly Power

Situations may arise in which a firm obtains and exercises monopoly power. We address such situations in this section by describing proper standards for imposing *ex ante* regulations and how they should be applied.[39]

America has the longest and richest history of *ex ante* government regulation of privately owned infrastructure. This experience and associated research has provided lessons that inform when *ex ante* control of industry conduct is useful and what form that oversight should take.

When Is *Ex Ante* Regulation Appropriate? Scholars and practitioners in law, economics, and other disciplines who developed our modern regulatory framework settled on three necessary conditions for such regulation to be in the public interest.[40]

The first condition is that customers are effectively powerless in their relationship to the enterprise, except to not consume the service. This means that the enterprise has and is exploiting an enduring monopoly, and no meaningful substitutes exist.[41] If the firm simply has market power,[42] if the monopoly position is expected to be short-lived,[43] or if the firm does not exploit its monopoly position, then ex post regulation, such as that practiced by the FTC or DOJ, should be used to address conduct concerns.[44] Ex post regulation is preferred in these circumstances because it is more adaptable to changing circumstances than are *ex ante* controls and can be more narrowly targeted to address actual abuses.[45]

The second necessary condition is that the service is of peculiar importance—that is, it is essential for a customer to function effectively in the economy.[46] Examples of peculiar services qualifying for *ex ante* regulation are electricity, water, and wastewater-processing services. Other important services—such as those provided by gasoline stations, commercial buildings, and grocery stores—are not provided by enduring monopolies and thus are rarely regulated with *ex ante* controls, but they are regulated under more general commercial laws providing for consumer protection, health, and safety.

The third condition, which is often presumed rather than stated, is that the regulations actually improve outcomes.[47] Just as imperfect markets perform imperfectly, imperfect regulation also performs imperfectly. Indeed, regulation might lower industry performance even relative to an unregulated monopoly.

This might occur for several reasons. One is the principal-agent problem, when an agent, tasked with acting on the principal's behalf, has the incentive and ability to work in his or her own best interest rather than that of the principal. Principal-agent relationships exist between regulators and businesses and between regulators and citizens. These information asymmetries weaken regulatory performance. Regulators can also be captured by business or political interests and may have ideological beliefs and alliances that cause them to deviate from serving the

public interest.[48] As a result of this third condition, many countries require regulators to perform regulatory-impact analyses to justify regulations.

Constraints on Imposing *Ex Ante* Regulation. Instances have arisen in which *ex ante* regulation was imposed even though the industry did not meet these requirements.[49] This might occur because a government agency sincerely believes it can improve competitive markets by directing outcomes, because government officials simply want to expand their influence, because a business wants to gain advantage over customers or competitors and is able to convince government officials to favor it, or for some of the sources of imperfect regulation cited earlier.

To prevent such outcomes, we suggest that the FCC's authority to impose *ex ante* regulations be explicitly limited by imposing standards for how the FCC can find that enduring monopoly exists, that a service is of peculiar importance for customers, and that the benefits of regulation outweigh the costs. These limits should have two basic components.

The first component is a set of standards for finding that the enterprise has an enduring monopoly for the market the FCC is investigating and that the firm is exploiting that monopoly position to the detriment of customers. One such standard is that the FCC be required to use market definition guidelines as adopted by the DOJ and FTC in their merger guidelines.[50] These market definition rules are not perfect, as sometimes they overlook a market that is served by a monopoly,[51] but the deficiencies are known and the standards are considered world-class.[52]

Another standard is that it must be shown that customers within the relevant markets have no effective alternative to a single provider. This requires econometric studies showing that customers do not substitute other services for this provider's service.

A third standard is that the FCC demonstrates that the monopoly power results from a physical constraint limiting the market to a single service provider and that the physical barrier will not be overcome by foreseeable technology changes. Another standard is that the conduct making the regulation necessary be explicit. Table 1 shows

Table 1. Relevant Information to Justify Regulation

Regulation	Types of Evidence Likely to Be Relevant
Prohibition on Blocking	The Internet service provider is blocking customer access to sites or apps that provide services in competition with the Internet service provider's service.
Limits on Throttling	The Internet service provider slows customers' data regularly, either sending or receiving, without the customers agreeing to the throttling in advance as part of the conditions of service.
Limits on Paid Prioritization	The Internet service provider degrades service quality for nonprioritized traffic, relative to situations where paid prioritization is or was unavailable, or in effect cross-subsidizes its content services by charging its rivals higher prices for prioritization than it effectively charges its own content services. In addition, it needs to be proved that the proposed limits on paid prioritization will not unreasonably limit small content providers from obtaining a service that enhances their abilities to compete with larger content providers.
Requirements for Transparency on Network Management Practices	The Internet service provider engages in network-management practices—such as fault, configuration, performance, security, and accounting management—in ways that hinder rivals relative to the Internet service provider's own competitive services. In addition, evidence must show that the proposed transparency requirements will not unreasonably limit the Internet service provider's ability to innovate and obtain competitive advantage through such innovations.
Limits on Sponsored Data	The Internet service provider hinders rivals by in effect cross-subsidizing its own content services and providing itself favorable arrangements for sponsored data. The proposed limit on sponsored data does not unreasonably hinder low-income customers from obtaining services that they could not otherwise afford or providing online alternatives for distribution to advertisers.

Source: Authors.

some possible examples of the explicit evidence that needs to be presented to justify different types of regulation.

The second component of the limitation on the FCC is a requirement that the agency performs a rigorous regulatory-impact analysis that demonstrates that:

1. The service, such as electricity or water, is indeed essential for customers to effectively function in the economy and society.
2. The likely effects of imperfect regulation do not offset the presumed benefits of regulation.
3. Innovation is hindered by the absence of regulation. Such an analysis must include a comparison across markets demonstrating that markets with effective monopolies have less innovation than other markets, consider innovation in infrastructure and in downstream markets, and identify the extent to which vertically integrated providers with upstream monopolies are discriminating against rivals and to which infrastructure services are distorting downstream competition by favoring incumbent downstream service providers.
4. Adopted regulations would improve the climate for innovation and would not create opportunities for rent seeking by businesses or other institutions seeking favorable regulatory treatment or protection from competition.
5. The benefits of the adopted regulations outweigh their costs.

To ensure the integrity of the regulatory-impact analysis, process and analytical standards should be above the Office of Management and Budget's current requirements.[53] These should include:

1. An assessment by the FCC's chief economist and chief technologist that the analytical methods are of the highest standards and that the technology and economic assumptions are appropriate;
2. Public comment on the modeling approach before conducting an actual study; and
3. Demonstration that the results are robust under realistic scenarios.

When the FCC is studying whether a market should be regulated, the burden of proof should be on the proposition that *ex ante* regulation is needed. This is important because today's normal market is competitive, meaning that monopoly is the exception. Furthermore this limits businesses' abilities to lobby for regulations that protect them from competition.

Conclusion

Net neutrality as practiced in the US is failing. The policy has become a growing miscellany of *ex ante* regulations that frequently work against the entrepreneurs and consumers the rules are intended to help, and the net neutrality mindset is locked on a fading paradigm in which communications, content, and computing are distinct.

This paper proposes a way forward in US communications policy that addresses the current net neutrality debate and enables US customers and businesses to take information industries to the next level. Our framework is designed to promote innovation in a robust and open system of networking, content, and computing; control monopoly power and rent seeking; and protect entrepreneurs and vulnerable populations, such as the poor and the elderly.

Our approach has three essential features. First, we propose that regulators primarily rely on a multistakeholder approach to addressing conflicts regarding how networks, content, and computing can coevolve. This is preferable to *ex ante* regulations because it is more information rich, results in greater innovation, has lower administrative costs, and promotes competition for providing customer value over competing for political or regulatory attention.

Another essential feature is the control of monopoly power with *ex ante* regulations if and only if such power emerges and is exploited to the harm of customers. We place limits on the imposition of *ex ante* regulations by specifying standards for identifying monopoly power and for determining whether regulation is likely to improve outcomes.

Finally, we suggest that ex post regulation continues to serve its role of addressing

anticompetitive conduct when it occurs and harms customers. Although this is an important feature of regulating economic activity, we do not explore this in depth in this paper, as we are suggesting no changes from the status quo.

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Notes

1. Research on net neutrality has found that at least some policies disadvantage small content providers. See, for example, Mark Jamison and Janice Hauge, "Dumbing Down the Net: A Further Look at the Net Neutrality Debate," in *Internet Policy and Economics: Challenges and Perspectives*, ed. William Lehr and Lorenzo Maria Pupillo (New York: Springer, 2009), 57–72.

2. See Roslyn Layton, "Test of the FCC's Virtuous Circle: Preliminary Results for Edge Provider Innovation and BIAS Provider Investment by Country with Hard Versus Soft Rules," in *Net Neutrality Compendium,* ed. Luca Belli and Primavera De Filippi (Heidelberg: Springer, 2016), 157–82, http://www.springer.com/us/book/9783319264240; and Roslyn Layton, "Zero Rating: Do Hard Rules Protect or Harm Consumers and Competition? Evidence from Chile, Netherlands and Slovenia," *Social Science Research Network*, August 15, 2015, http://papers.ssrn.com/sol3/papers.cfm?abstract_id= 2587542.

3. In 2010 the Federal Communications Commission defined edge providers as providing content, application, and devices because they generally operate at the edge rather than in networks. See Preserving the Open Internet, GN Docket No. 09-191, WC Docket No. 07-52, Report and Order, 25 FCC Rcd 17905, at 17907, para. 4 n.2 (2010). The tautology demonstrates the artificial nature of circumscribing networks and edge.

4. Federal Communications Commission, *In the Matter of Protecting and Promoting the Open Internet, Report and Order*, FCC 15-24, March 12, 2015.

5. *Ex ante* regulations are government restrictions intended to control behavior. In our use of the term, we specifically mean FCC conduct restrictions, such as limits on prices and service offerings. In contrast, ex post regulation provides remedies when firms have engaged in anticompetitive conduct. Mark A. Jamison and Janice Hauge, "Do Common Carriage, Special Infrastructure, and General Purpose Technology Rationales Justify Regulating Communications Networks?" *Journal of Competition Law and Economics* 10, no. 2 (2014): 475–93; and Araceli Castaneda, Mark A. Jamison, and Michelle Phillips, "Considerations for the Design and Transformation of Regulatory Systems," University of Florida, Public Utility Research Center, November 20, 2014, http://warrington.ufl.edu/centers/purc/purcdocs/papers/1413_Jamison_Considerations%20for%20the%20Design%20and%20Transformation%20of%20Regulatory%20Systems.pdf.

6. W. Kip Viscusi, John M. Vernon, and Joseph E. Harrington Jr., *Economics of Regulation and Antitrust*, 3rd ed. (Cambridge, MA: MIT Press, 2000).

7. Adam Bradenburger and Barry Nalebuff, *Co-Opetition* (New York: Currency Doubleday, 1997); and Jonathan Sallet, "The Creation of Value: The Value Circle and Evolving Market Structures," Silicon Flatirons, June 15, 2012, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2149857.

8. Preserving the Open Internet, 20 FCC Rcd 14986.

9. Michael K. Powell, "Preserving Internet Freedom: Guiding Principles for the Industry," Silicon Flatirons Symposium, February 8, 2004, https://apps.fcc.gov/edocs_public/attachmatch/DOC-243556A1.pdf. In these remarks, Chairman Powell referred to four freedoms: (1) Freedom to Access Content; (2) Freedom to Use Applications; (3) Freedom to Attach Personal Devices; and (4) Freedom to Obtain Service Plan Information. These are nearly identical to the four principles adopted by the commission.

10. Preserving the Open Internet, 20 FCC Rcd 14986.

11. *In re Formal Compl. of Free Press & Public Knowledge Against Comcast Corp. for Secretly Degrading Peer-to-Peer Applications*, 23 F.C.C.R. 13,028 (2008).

12. Comcast Corp. v. FCC, 600 F.3d 642 (DC Cir. 2010)

13. 2010 Open Internet Order, 25 FCC Rcd 17905.

14. Verizon v. FCC, 740 F.3d 623 (DC Cir. 2014).

15. *Preserving the Open Internet, Report and Order*, 25 FCC Rcd 17905, 17962, 17965-66, 17989, paras. 104-105, 113–114, 162 (2010).

16. FCC, *In the Matter of Protecting and Promoting the Open Internet, Report and Order*.

17. L. Gordon Crovitz, "Economics-Free Obamanet," *Wall Street Journal*, January 31, 2016, http://www.wsj.com/articles/economics-free-obamanet-1454282427.

18. Facebook Free Basics launched a free mobile data platform in partnership with mobile operators to deliver essential services for messaging, news, health, and weather. In barely one year, the program has grown to 25 million users across 37 countries. It is difficult to find a regulator-produced basic services policy that delivers so much such adoption, so quickly, at no cost to public coffers. Internet.org, "Free Basics by Facebook," https://info.internet.org/en/story/free-basics-from-internet-org/.

19. The evidence of the role of free data to support low-income women's health suggests that when they access health information online, they tend to spend a long time on the site and engaging with health information. The use of free SMS reminders greatly increased the proportion of women receiving the recommended four prenatal-care visits during pregnancy and uncovered pregnancy-related complications in time for other treatment. See more generally Mobile Alliance for Maternal Action, "Data and Evidence," http://www.mobilemamaalliance.org/evidence; and Stine Lund et al., "Mobile Phones Improve Antenatal Care Attendance in Zanzibar: A Cluster Randomized Controlled Trial," *BMC Pregnancy and Childbirth* 14, no. 29 (January 17, 2014), http://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/1471-2393-14-29. Also, recent evidence shows that low income is a cause for higher infant mortality rates in the US, suggesting that low income is a barrier to health care solutions for mothers of infants. See Alice Chen, Emily Oster, and Heidi Williams, "Why Is Infant Mortality Higher in the United States Than in Europe?" *American Economic Journal: Economic Policy* 8, no. 2 (May 2016): 89–124.

20. Multicultural Media, Telecom and Internet Council, "Understanding and Appreciating Zero-Rating: The Use and Impact of Free Data in the Mobile Broadband Sector," 2016, http://mmtconline.org/WhitePapers/MMTC_Zero_Rating_Impact_on_Consumers_May2016.pdf.

21. Subhajyoti Bandyopadhyay and Hsing Kenneth Cheng, "Liquid Pricing for Digital Infrastructure Services," *International Journal of Electronic Commerce* 10, no. 4 (Summer 2006): 47–72.

22. For example, an edge provider could provide videos with health care information and make the information attractive to the elderly and low-income market segments by paying for the customers' data usage. We know that such pricing arrangements benefit the poor because they were instrumental in making mobile phones widespread in developing countries. There the poor were able to avoid call charges by arranging for others to call them—a strategy made possible to sender-pays arrangements—creating in effect a zero-rating voice service. We know that zero rating helps many services get their starts because this has happened already. For example, when WhatsApp was a startup, it would provide customers a free year of service before charging.

23. Mark Jamison and Janice Hauge, "Dumbing Down the Net: A Further Look at the Net Neutrality Debate," in *Internet Policy and Economics: Challenges and Perspectives*, ed. William Lehr and Lorenzo Maria Pupillo (New York: Springer, 2009), 57–72; Benjamin E. Hermalin and Michael L. Katz, 2007, "The Economics of Product-Line Restrictions with an Application to the Network Neutrality Debate," in *Information Economics and Policy: Challenges and Perspectives*, ed. William Lehr and Lorenzo Maria Pupillo (New York: Springer, 2009), 19, 215–48; and Roslyn Layton, "FCC Privacy Regulation Will Limit Competition in Market That Really Needs It: Online Advertising," TechPolicyDaily.com, March 11, 2016, http://www.techpolicydaily.com/internet/fcc-privacy-regulation-will-limit-competition-in-a-market-that-really-needs-it-online-advertising/.

24. Roslyn Layton, "How the FCC's Ban on Prioritization Puts Patients at Risk," TechPolicyDaily.com, July 17, 2015, http://www.

techpolicydaily.com/communications/telemedicine-fcc-open-internet/.

25. United States Court of Appeals for the District of Columbia Circuit, Petition for Review, Case No. 15-1128, May 7, 2015, http://vcxc.org/documents/berningerappeal.pdf.

26. Hal Singer, "Does the Tumble in Broadband Investment Spell Doom for the FCC's Open Internet Order?" Forbes, August 25, 2015, http://www.forbes.com/sites/halsinger/2015/08/25/does-the-tumble-in-broadband-investment-spell-doom-for-the-fccs-open-internet-order/#7d7ef42c2627.

27. Holman W. Jenkins Jr., "How Tom Wheeler Made Cable King," *Wall Street Journal*, April 29, 2016, http://www.wsj.com/articles/how-tom-wheeler-made-cable-king-1461966986; Gus Hurwitz, "The Price of Progress: Rent Seeking in the FCC's Approval of the AT&T/DirecTV Merger," TechPolicyDaily.com, July 23, 2015, http://www.techpolicydaily.com/internet/fcc-att-directv-merger/; and Gus Hurwitz, "Back to the Future by Blocking the Comcast/TWC Merger: How the Government Is Killing Competition," TechPolicyDaily.com, April 29, 2015, http://www.techpolicydaily.com/communications/comcast-twc-blocking-killing-competition/.

28. Lawrence E. Strickling, "Moving Together Beyond Dubai," National Telecommunications and Information Administration, April 2, 2015, https://www.ntia.doc.gov/blog/2013/moving-together-beyond-dubai.

29. Luca Belli and Mattijs van Bergen, "A Discourse-Principle Approach to Network Neutrality: A Model Framework and Its Application," Media Laws, October 9, 2013, http://www.medialaws.eu/model-framework-on-network-neutrality/.

30. See Layton, "Test of the FCC's Virtuous Circle"; and Layton, "Zero Rating."

31. Federal Communications Commission, "Open Internet Advisory Committee," December 7, 2015, http://www.fcc.gov/encyclopedia/open-internet-advisory-committee.

32. The FCC also included representatives of civil society, academia, investors, users, and government. We include the FCC and Federal Trade Commission in our proposal, but not these others as they do not have the same risk and reward incentives that actual service providers have. Also, if it is proper to include civil society, academicians, and so forth in the group, it is unclear which representatives should be excluded. For more background on stakeholder theory, see R. Edward Freeman, *Strategic Management: A Stakeholder Approach* (Boston: Pitman, 1984).

33. See Layton, "Test of the FCC's Virtuous Circle"; and Layton, "Zero Rating."

34. See the remarks of FCC Chairman Julius Genachowski at the start of the FCC's multistakeholder committee for net neutrality, in particular his comments about the group's superior ability to develop sound information for decision making. Federal Communications Commission, "Open Internet Advisory Committee Meeting," July 20, 2012, https://www.fcc.gov/news-events/events/2012/07/open-internet-advisory-committee-meeting.

35. Adam Thierer, *Permissionless Innovation: The Continuing Case for Comprehensive Technological Freedom* (Arlington, Virginia: Mercatus Center, 2016), http://mercatus.org/publication/permissionless-innovation-continuing-case-comprehensive-technological-freedom.

36. Ellen P. Goodman, "Zero Rating: Equality and Free Speech at the Other Edge," *Colorado Technology Law Journal*, 2017 (forthcoming), http://riipl.rutgers.edu/goodman-zero-rating-draft-1/.

37. Including only industry representatives could be criticized as excluding customers. However, our emphasis on competition ensures that businesses are successful only if they are satisfying customers. As a result, customer interests that can be addressed in a commercially viable manner are addressed. We address monopoly situations in our section on *ex ante* regulation.

38. Ronald K. Mitchell, Bradley R. Agle, and Donna J. Wood, "Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts," *Academy of Management Review* 22, no. 4 (October 1997): 853–86.

39. We describe our standards for *ex ante* regulation assuming that the regulations are not imposed unless it is demonstrated that they are needed. This is a first best solution. Situations may arise where the regulations are imposed without such as analysis. This might happen if, for example, regulations are assumed in statute. In these situations our approach should be considered a necessary justification for continuing regulation rather than imposing it.

40. While we believe that these necessary conditions are firmly established in the scholarly literature and

court decisions, we do not mean to imply that there is unanimity. Some people appear to dislike private-sector decision making and press for government regulation regardless of market structure, even pressing for government ownership of networks. Some court decisions have strayed from these principles and pursued regulation of competitive markets. Also, some writers advocate regulating any market whose outcomes appear to contradict these writers' preconceived notions of what customers should buy.

41. In some instances the customers' lack of power simply means that customers give over control of their property to a common carrier. In these cases, the extent of *ex ante* regulation is properly limited to carrier obligations to provide care for the customer's property while it is in the carrier's possession. As we explain later in this section, the FCC should be required to use the criteria outlined in the US Department of Justice's *Merger Guidelines* for defining markets and finding market power, except that the FCC's standard for when to regulate should be that the firm in the market has an effective monopoly, meaning that it is the single provider in the relevant market. Munn v. Illinois, 94 US 113, 130–132 (1876).

42. By "simply has market power," we mean that the firm is one of a small number of providers that can and do receive supernormal profits because of their small number, or that the firm may be a monopoly of a particular product, but that there are sufficiently close substitutes as to provide customers with effective alternatives.

43. It is difficult, and perhaps even impossible, to know *ex ante* how long a monopoly position may last. We suggest that a monopoly should be considered enduring when the market position derives from physical constraints, such as unique rights of way, that only this firm can use and that preclude competition. Monopoly positions resulting from unique software or network effects do not constitute enduring monopolies because experience has shown that new, better software is always possible (for example, Word Perfect's dominance in word processing was replaced by Microsoft Word, and its dominance has been broken by Google docs and other apps) and can replace former dominant networks (for example, Facebook replaced MySpace).

44. William J. Baumol et al., "Economists' Statement on Network Neutrality Policy," AEI-Brookings Joint Center for Regulatory Studies, March 2007.

45. There is one exception to the requirement that a service provider has an effective monopoly. This is when networks interconnect for exchanging traffic and at retail the networks compete using single-price tariffs rather than multipart tariffs. See Jean-Jacques Laffont, Patrick Rey, and Jean Tirole, "Network Competition: I. Overview and Nondiscriminatory Pricing," *RAND Journal of Economics* 29, no. 1 (Spring 1998): 1–37; and Jean-Jacques Laffont, Patrick Rey, and Jean Tirole, "Network Competition: II. Price Discrimination," *RAND Journal of Economics* 29, no. 1 (Spring 1998): 38–56. In the single-price situation, the strategic interactions of the network providers can raise retail prices even if the firms are not colluding or exercising market power. This is not the situation today in the Internet because some of the ISPs and mobile providers have data caps or charge for usage.

46. Martin G. Glaeser, *Outlines of Public Utility Economics* (New York: The Macmillan Company, 1927); and Harry M. Trebing, "On the Changing Nature of the Public Utility Concept: A Retrospective and Prospective Assessment," in *Economics Broadly Considered: Essays in Honor of Warren J. Samuels*, ed. Jeff E. Biddle, John B. Davis, and Steven G. Medema (London: Routledge, 2001), 259–78.

47. For a more exhaustive analysis of limits on the effectiveness of regulation, see Kevin Guerin, "Encouraging Quality Regulation: Theories and Tools," New Zealand Treasury, September 2003, http://www.treasury.govt.nz/publications/research-policy/wp/2003/03-24.

48. This is not meant to cast aspersions at any particular regulators, but to simply recognize that regulation works imperfectly and that imperfect regulation of an imperfect market may be worse than no regulation.

49. At various points in the early development of *ex ante* regulation in the US, courts allowed regulation of grain elevators that possessed no market power, news publishing, cotton presses, tobacco warehouses, insurance, resale of theater tickets, and the sale of ice. See Edwin C. Goddard, "The Evolution and Devolution of Public Utility Law," *Michigan Law Review* 32, no. 5 (1934): 577–623; and Trebing, "On the Changing Nature of the Public Utility Concept."

50. For the existing guidelines, see US Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines,* August 19, 2010, http://www.ftc.gov/os/2010/08/100819hmg.pdf.

51. This is known as the cellophane fallacy. See United States v. E.I. du Pont de Nemours & Co. 351 US 377 (1956).

52. Having standards for market definition are important to avoid situations such as the one that occurred recently in which the FCC decided customers should buy a particular type of broadband and, since only a few firms offered that service, the FCC concluded that they had market power.

53. See OMB Circular A-4, Regulatory Analysis, September 17, 2003, https://www.whitehouse.gov/sites/default/files/omb/assets/omb/circulars/a004/a-4.pdf; and Office of Informatory and Regulatory Affairs, "Regulatory Impact Analysis: A Primer," https://www.whitehouse.gov/sites/default/files/omb/inforeg/regpol/circular-a-4_regulatory-impact-analysis-a-primer.pdf.