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Net neutrality regulation: the economic evidence

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Net neutrality regulation: the economic evidence

Abstract

In the authors' shared opinion, the economic evidence does not support the regulations proposed in the Commission's Notice of Proposed Rulemaking Regarding Preserving the Open Internet and Broadband Industry Practices (the "NPRM"). To the contrary, the economic evidence provides no support for the existence of market failure sufficient to warrant *ex ante* regulation of the type proposed by the Commission, and strongly suggests that the regulations, if adopted, would reduce consumer welfare in both the short and long run. To the extent the types of conduct addressed in the NPRM may, in isolated circumstances, have the potential to harm competition or consumers, the Commission and other regulatory bodies have the ability to deter or prohibit such conduct on a case-by-case basis, through the application of existing doctrines and procedures. Hence, the approach advocated in the NPRM is not necessary to achieve whatever economic benefits may be associated with prohibiting harmful discrimination on the Internet.

Keywords

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**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Preserving the Open Internet)	GN Docket No. 09-191
)	
Broadband Industry Practices)	WC Docket No. 07-52

NET NEUTRALITY REGULATION: THE ECONOMIC EVIDENCE

APRIL 12, 2010

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I. INTRODUCTION

1. As economic scholars, professors and practitioners who have studied, taught, and written about regulation of telecommunications, the Internet, and broadband networks in general, and about net neutrality regulation in particular, we are submitting this declaration to provide the Commission with our shared assessment of the economic evidence as it relates to the “net neutrality” regulations proposed in Commission’s *Notice of Proposed Rulemaking Regarding Preserving the Open Internet and Broadband Industry Practices* (the “NPRM”).¹

2. In our shared opinion, the economic evidence does not support the proposed regulations; to the contrary, it strongly suggests that the regulations, if adopted, would reduce consumer welfare in both the short and long run. We base this opinion on three overarching conclusions.

First, as a general matter, regulation can improve economic welfare only in the face of market imperfections, such as market power, externalities, or information asymmetries. While the markets at issue in this proceeding are characterized by product differentiation, high fixed costs and other deviations from the textbook model of “perfect competition,” the evidence provides no support for the existence of market failure sufficient to warrant *ex ante* regulation of the type proposed by the Commission.

Second, the practices that would be banned under the NPRM are likely, in most circumstances, to be welfare-enhancing. While it is possible to construct theoretical models in which economic welfare *might* be harmed, there is virtually no empirical evidence that such harm has occurred or is likely to occur in the future. Thus, it is extremely likely that the regulations proposed in the NRPM would harm consumers and competition and reduce economic welfare.

¹ Federal Communications Commission, *In the Matter of Preserving the Open Internet and Broadband Industry Practices, Notice of Proposed Rulemaking* (GN Docket No. 09-191; WC Docket No. 07-52, October 2009) (hereafter “NPRM”). Each of us shares the overall views and primary conclusions expressed herein even though as individuals we might characterize particular points somewhat differently. Dr. Eisenach, whose effort in coordinating its preparation was supported by Verizon Communications, is the only signatory who was compensated for participating in this declaration.

Third, to the extent potentially welfare-reducing conduct does emerge, such practices are amenable to a variety of case-by-case remedies under existing law and regulation. There is no need, in other words, for the Commission to throw the welfare-enhancing baby out with the anticompetitive bathwater.

3. The remainder of this declaration is organized as follows. In Section II we summarize the economic evidence as it relates to market failure in the markets at issue, and explain why none of the theories advanced in the NPRM (or any other theories of which we are aware) constitute a valid basis for the proposed rules. In Section III, we summarize the primary ways in which the proposed rules would reduce economic welfare by banning beneficial practices. In Section IV, we briefly explain the basis for our opinion that a case-by-case approach, based on empirical economic analysis of the consumer welfare consequences of specific practices in particular circumstances, is superior to the *ex ante* regulation proposed in the NPRM. Section V presents a brief summary of our conclusions.

II. THE ECONOMIC EVIDENCE DOES NOT SUPPORT A FINDING OF SYSTEMATIC MARKET FAILURE

4. The NPRM proposes that broadband Internet access service providers (“broadband ISPs”) be prohibited from preventing users from (i) “sending or receiving the lawful content of the user’s choice,” (ii) “running the lawful applications or using the lawful services of the user’s choice,” (iii) “connecting to and using on its network the user’s choice of lawful devices;” or, (iv) “depriv[ing] any of its users of the user’s entitlement to competition among network providers, application providers, service providers, and content providers;”² and, further, that they be required to (v) “treat lawful content, applications, and services in a

² NPRM at ¶92. As we discuss further below, each of these requirements would be is “subject to reasonable network management;” “subject to exceptions for the needs of law enforcement, public safety, national and homeland security authorities;” and, subject to an exemption for “managed services.”

nondiscriminatory manner.”³ By “nondiscriminatory,” the Commission means “that a broadband Internet access service provider may not charge a content, application, or service provider for enhanced or prioritized access to the subscribers of the broadband Internet access service provider [but] this rule would not prevent a broadband Internet access service provider from charging subscribers different prices for different services.”⁴

5. In support of these restrictions, the NPRM advances two primary theories of market failure. First, it implies (but does not conclude) that broadband ISPs may have market power, which could cause them to discriminate in their pricing among or between providers of content and applications, or simply to restrict output or charge supra-competitive prices. Second, it posits that network externalities or “spillover effects” might distort ISPs’ incentives, causing them to charge higher-than-optimal fees to content or applications providers.⁵

6. The economic evidence demonstrates that the proposed regulations are not justified under either set of theories. With respect to market power, the evidence demonstrates that broadband markets are highly competitive and rivalrous, and hence not generally susceptible to the types of anticompetitive conduct discussed in the NPRM.⁶ As for theories associated with network externalities and spillover effects, the underlying literature is, at best, highly stylized, speculative, and heavily dependent on assumptions for which there is no empirical basis.

³ NPRM at ¶105.

⁴ NPRM at ¶106. The NPRM also proposes a sixth “transparency” principle (see NPRM at ¶¶118-132). Our comments focus on the first five principles and, in particular, the non-discrimination principle. This should not be taken as an indication, however, that we believe the economic evidence necessarily supports “transparency” regulation.

⁵ See generally NPRM at ¶¶7-8.

⁶ The relevant geographic market for broadband markets depends on the issue being addressed. For purposes of foreclosure analysis, for example, the appropriate market definition may be either national or international, while in other contexts the relevant geographic market is likely local (see, e.g., Federal Trade Commission, *Broadband Connectivity and Competition Policy, FTC Staff Report* (June 2007) at 156 (hereafter *FTC Report*)).

A. Regulation Is Not Justified on the Basis of Market Power

7. The NPRM describes three discrete theories of harm based on market power: (i) broadband ISPs with market power “may have an incentive to raise prices charged to content, application, and service providers and end users;”⁷ (ii) broadband ISPs, “particularly [those] with market power, may have the incentive and ability to reduce or fail to increase transmission capacity ... in order to increase the revenues obtained from content application, and service providers or individual users who desire a higher quality of service;”⁸ and, (iii) broadband ISPs with market power which are vertically integrated might “make it more difficult or expensive for end users to access services competing with those offered by the network operator or its affiliates.”⁹

8. As a preliminary matter, it is noteworthy that the NPRM’s first two theories of harm (i.e., that broadband ISPs with market power might harm economic welfare by raising prices and/or restricting output) do not appear to distinguish between upstream and downstream market power – that is, they postulate that broadband ISPs might raise prices or restrict output with respect to either consumers, on the one hand, or content, applications and service providers, on the other. Yet, the proposed regulations would do nothing to restrain downstream pricing since, under the proposed non-discrimination rule, both differential and discriminatory pricing to “subscribers” apparently is permitted.¹⁰

⁷ NPRM at ¶70 (emphasis added).

⁸ NPRM at ¶71 (emphasis added).

⁹ NPRM at ¶63 (emphasis added); see also n. 146.

¹⁰ We define differential pricing as charging different prices for different services, e.g., charging one price for “Internet access service” and a different price for “Premium Internet access service.” We define “price discrimination” as charging different prices to different consumers for the same service. See e.g., Dennis Weisman and Robert Kulick, “Price Discrimination, Two-Sided Markets and Net Neutrality Regulation,” (March 2010) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1582972).

9. It is also striking that the NPRM *never concludes* that broadband ISPs have market power, and, indeed, only once strongly implies it: At paragraph 7, the Commission finds that “In many parts of the United States, customers have limited options for high-speed broadband Internet access service;”¹¹ and, at paragraph 73, it implies there is a terminating access monopoly issue, such that “even if there is competition among broadband Internet access service providers, once an end-user customer has chosen to subscribe to a particular broadband Internet access service provider, this may give that broadband Internet access service provider the ability, at least in theory, to favor or disfavor any traffic destined for that subscriber.”¹² In all other cases, the Commission’s references to ISP market power are purely hypothetical.

10. The NPRM’s failure to examine empirically whether broadband ISPs have market power is difficult to understand, since the issue of market power is central to any meaningful assessment of the impact of the proposed rules.¹³ For example, if broadband ISPs do not possess significant power over prices, they cannot set prices above cost or constrain output to either upstream or downstream consumers. If they do not possess the ability to exclude rivals, they cannot plausibly protect or extend their “monopolies” in neighboring markets by raising their rivals’ costs through discrimination. Moreover, as we discuss below, many of the stylized empirical models cited by the Commission for the existence of network externalities or spillover effects assume the existence of monopoly (or, at least, Cournot-behaving duopoly) in the broadband market. Thus, the existence of market power is, in our

¹¹ NPRM at ¶7 (emphasis added).

¹² NPRM at ¶73. The NPRM does not use the words “terminating monopoly.” Indeed, the word “monopoly” appears only once, at ¶25, in a reference to “the era of monopoly-provided telephone service.”

¹³ See e.g., Robert Hahn, Robert Litan and Hal Singer, “Addressing the Next Wave of Internet Regulation: The Case For Equal Opportunity,” Georgetown Center for Business and Public Policy (January 2010) at 19 (“Perhaps the most jarring comment in the NPRM is the notion that market power and vertical integration (that is, affiliation with content providers) would merely exacerbate the alleged anticompetitive effects of allowing such contracting; these factors are not considered by the Commission to be necessary conditions for the challenged conduct (charging a positive price for QoS) to generate anticompetitive effects.”)

opinion, a necessary (but not sufficient) condition for concluding that the proposed regulations would benefit consumers or contribute to economic efficiency.¹⁴

11. The evidence before the Commission, however, demonstrates that broadband ISPs, in general, do not possess significant market power vis-à-vis pricing or exclusion, nor do they behave like Cournot duopolists.

12. First, as a preliminary matter, the modern market for broadband services is a far cry from the statutory monopoly that formed the basis for the *Carterphone* regulations, which some net neutrality supporters see as a precedent for the regulations proposed in the NPRM.¹⁵ Indeed, there is a widespread consensus today that broadband service in most areas of the United States is not a natural monopoly. As the Justice Department concluded in an *ex parte* filing in this matter:

Between the ongoing deployment of wireline broadband networks, the geographic expansion of wireless broadband services (hopefully spurred by the availability of additional spectrum to broadband wireless services), and increased transparency, the Department is hopeful that the vast majority of American households will benefit from significant competition in their local broadband markets. Put differently, *most regions of the United States do not appear to be natural monopolies for broadband service.*¹⁶

¹⁴ See, e.g., Jon M. Peha, “The Benefits and Risks of Mandating Network Neutrality, and the Quest for a Balanced Policy,” *International Journal of Communication* 1 (2007), 644-668, at 652 (“The previous section showed that the technologies for discrimination ... can be beneficial to users. In this section, we show how a network operator has incentive to use the same technologies to the detriment of users, *if and only if it has sufficient market power.*”) (emphasis added).

¹⁵ See NPRM at ¶25.

¹⁶ U.S. Department of Justice, Ex Parte Submission, *In the Matter of Economic Issues in Broadband Competition and A National Broadband Plan for Our Future*, GN 09-51 (January 5, 2010) at 28 (emphasis added) (hereafter *DOJ Ex Parte*). See also Declaration of Marius Schwartz, Exhibit 3 to *Comments of AT&T*, GN Docket 09-191 and WC Docket 07-52 (January 14, 2010) (hereafter Schwartz Declaration) at 28 (“First, economic logic implies that a broadband provider’s incentive to engage in anticompetitive discrimination is much weaker than was true for the monopoly Bell system. It is well known that the type of price regulation applied to the Bell system will bias a monopolist to integrate into adjacent services that require access to the core monopoly service and stifle competition in those services. The vertically integrated AT&T was very tightly regulated in its prices for the monopoly local phone service (which reportedly were close to marginal cost or lower), but less so for its long-distance and other services. That created strong incentives to restrict competitors’ access to the monopoly service in

13. Further, the fact that the number of broadband ISPs in each market falls short of the textbook idea of atomistic competition is not an indication of market failure, and certainly does not constitute a basis for regulation. As the Department of Justice's *ex parte* filing explains,

In markets such as this, with differentiated products subject to large economies of scale (relative to the size of the market), the Department does not expect to see a large number of suppliers. Nor do we expect prices to be equated with incremental costs. If they were, suppliers could not earn a normal, risk-adjusted rate of return on their investments in R&D and infrastructure.¹⁷

Thus, there is no basis for concluding, simply based on industry structure, that the broadband ISP market is in any way deficient or amenable to improvement by regulation.

14. In fact, the evidence demonstrates that the vast majority of consumers have two or more choices of broadband ISPs,¹⁸ that broadband ISPs engage in intense rivalry to capture and retain consumers,¹⁹ that levels of innovation and technological innovation are high, and that new entry is occurring in the form of both fixed and mobile wireless services.²⁰ Similarly,

order to boost its own sales of those adjacent services. Such strong foreclosure incentives cannot be extrapolated to today's broadband carriers.”)

¹⁷ *DOJ Ex Parte* at 7.

¹⁸ See, e.g., Declaration of Michael D. Topper, Attachment C to *Comments of Verizon Communications and Verizon Wireless*, GN Docket 09-191 and WC Docket 07-52 (January 14, 2010), at Attachment B (hereafter Topper Declaration) (showing that 97 percent of households in Verizon's service territory have both Verizon broadband and cable modem service available).

¹⁹ See, e.g., Schwartz Declaration at 32 (providing examples of comparative advertising claims by broadband ISPs); at 33 (providing examples of technology upgrades in response to competitors); at 34 (providing examples of price competition and customer switching behavior). See also Jeffrey A. Eisenach, “Broadband in the U.S. – Myths and Facts,” in *Australia's Broadband Future: Four Doors to Greater Competition* (Melbourne: Committee for Economic Development of Australia, 2008) 48-59 at 53-54 (providing examples of competition-induced innovation).

²⁰ See, e.g., Robert C. Atkinson and Ivy E. Schultz, *Broadband in America*, Columbia Institute for Tele-Information (November 2009) (hereafter *CITI Report*) at 7 (Finding that, by 2013-14, “In addition to several wireless broadband choices, the majority of American homes will have the choice of two wired broadband services.”); see also *FTC Report* at 9 (“There is evidence that the broadband Internet access industry is moving in the direction of more, not less, competition, including fast growth, declining prices for higher-quality service, and the current market-leading technology (i.e., cable modem) losing share to the more recently deregulated major alternative (i.e., DSL).”); see also Declaration of Gary S. Becker and Dennis W. Carlton, Attachment A to

recent research has failed to find the existence of supra-competitive profits by broadband ISPs;²¹ to the contrary, by standard measures of profitability, applications, content and service providers are far more profitable than cable and telephone companies.²²

15. Most recently, based on an analysis of Form 477 data, the Commission found in its National Broadband Plan that facilities-based broadband ISPs compete on the basis of investment and service quality,²³ and that while data limitations prevent a robust conclusion, there is some evidence that “monthly prices are lower when more wireline providers are in a census tract.”²⁴

16. Thus, virtually all of the available evidence suggests that broadband ISPs do not have significant market power in most markets.²⁵ Moreover, the evidence demonstrates that

Comments of Verizon Communications and Verizon Wireless Comments of Verizon Communications and Verizon Wireless, GN Docket 09-191 and WC Docket 07-52 (January 14, 2010) at 5 (“[A]vailable evidence suggests that there is substantial and growing competition in the provision of broadband access services. As discussed below, data indicate that (i) multiple broadband Internet access providers are available in nearly all geographic areas; and (ii) a variety of firms are in the process of deploying new broadband access services.”)

²¹ Thomas W. Hazlett and Dennis L. Weisman, “Market Power in U.S. Broadband Services,” George Mason University Law and Economics Research Paper Series 09-69 (November 2009) at 31 (“We find no credible basis to believe that broadband providers, despite their relatively few numbers, are currently exercising market power.”)

²² See Larry F. Darby, “Facts About Market Power and Profits in the Internet Space,” American Consumer Institute (October 8, 2009) (“Readers will be interested in different comparisons, but the data make clear that, according to each of these measures, operators of broadband networks (Comcast, Time Warner, AT&T and Verizon) earn relatively modest returns compared to other major companies both inside and outside the Internet sector. Indeed, in each case, returns are below the average for firms in the S&P 500 index and substantially below those posted by other firms in the Internet Value Cluster. For example, Google’s profit margin is 2-3 times greater than earned by network providers and twice the average rate for S&P 500 firms.”) (available at <http://www.theamericanconsumer.org/2009/10/08/facts-about-market-power-and-profits-in-the-internet-space/>).

²³ Federal Communications Commission, *Connecting America: The National Broadband Plan* (March 2010) at 38 (“The presence of a facilities-based competitor impacts investment. Indeed, broadband providers appear to invest more heavily in network upgrades in areas where they face competition.... So, for example, available cable speeds are higher in areas in which cable competes with DSL or fiber than in areas where cable is the only option. DSL and fiber show similar results. Available speeds are even higher where three wireline providers compete (e.g., where a cable over-builder is also present).”). Hereafter, *National Broadband Plan*.

²⁴ *National Broadband Plan* at 39.

²⁵ We do not exclude the possibility that broadband ISPs could possess market power in certain geographic markets, and recommend that the Commission (or other enforcement authority) include a finding of market power as a key element in a case-by-case approach to policing anticompetitive behavior in Internet-related markets. However, as we discuss below, localized market power would not in general create the potential for exclusionary behavior by broadband ISPs relative to content and applications providers.

broadband markets are becoming more, not less competitive, suggesting that any residual market power which may exist in the market for broadband ISP services is transitory.²⁶

17. The NPRM also suggests that broadband ISPs may have the ability to raise rivals' costs or otherwise deter entry and, in cases where they are vertically integrated into content, applications and/or services, might have incentives to discriminate against competing content, applications or service providers. Again, however, there is virtually no empirical evidence that broadband ISPs possess such market power, or that they would have an incentive to use it. Indeed, market power in the access market is a necessary (but not sufficient) condition for the ability to engage successfully in such anticompetitive practices.²⁷

18. Similarly, the NPRM's concern about a terminating access monopoly problem is entirely hypothetical. While it is conceivable that a broadband ISP could seek to raise prices to content, applications and service providers above the competitive level, a competing broadband ISP would have incentives to undercut those prices, and as a result, offer a broader array of content which would allow them to attract more customers.²⁸ Moreover, at least some of the

²⁶ See, e.g., *National Broadband Plan* at 41 ("The ongoing upgrade of the wireless infrastructure is promising because of its potential to be a closer competitor to wireline broadband, especially at lower speeds. For example, if wireless providers begin to advertise, say, 4 Mbps home broadband service, wireline providers may be forced to respond by lowering prices of their broadband offerings. This could be true even if wireless services are more expensive, especially if the service is also mobile.")

²⁷ See e.g., Hahn, Litan and Singer at 11-12 ("In the absence of significant market power in the access market, it is unlikely that a BSP would have the ability to engage in anticompetitive discrimination. Indeed, a necessary condition for adverse welfare effects in nearly every economic model of vertical foreclosure is that the firm in question has market power—that is, the ability to raise price above competitive levels or exclude rivals. When a firm lacks market power, vertical restraints cannot in theory be motivated by anticompetitive reasons, and are therefore more likely motivated for efficiency reasons.") See also Schwartz Declaration at n. 51 ("[I]t is far from evident that any individual broadband provider could, even if it tried, have any realistic chance of monopolizing a market for content or applications."); see also C. Scott Hemphill, "Network Neutrality and the False Promise of Zero-Price Regulation," *Yale Journal on Regulation* (2008) 135-179, at 156-7 ("As a general matter, then, a content provider is not very vulnerable to exclusion by an access provider that controls only a small part of the content provider's audience. That strategy can no more succeed than if a single computer manufacturer, such as Dell, had tried to shut down Netscape by refusing to carry the Netscape browser.")

²⁸ See Topper Declaration at 62 ("As evidenced by the high churn rates of wireline and wireless broadband providers, consumers can and do switch providers when faced with more attractive options, and this competitive discipline deters providers from charging 'inefficiently high' prices.")

institutional characteristics of the market for traditional telephone services (including retail price regulation) that resulted in concerns about the terminating access monopoly are not present in the market for broadband.²⁹ As of now, broadband ISPs do not charge terminating access charges, and there is no basis for believing, in the absence of any empirical data whatsoever, that the terminating monopoly problem would lead to access charges above the efficient level.

19. In summary, the proposed regulations cannot be justified on the basis of market power in the market for broadband ISP services. As we explain further below, even if market power exists in some geographic markets, or if there is a potential for exclusionary conduct in some particular instances of vertical integration, these situations would best be addressed through a case-by-case approach, rather than through sweeping *ex ante* bans on conduct that is likely, in most cases, to be welfare enhancing.³⁰

B. Regulation Is Not Justified on the Basis of Network Externalities or “Spillover Effects” in the Markets for Content, Applications or Services

20. The second set of market failure theories advanced by the NPRM relates to network externalities and spillover effects, i.e., to the proposition that Internet technologies generate economic benefits which are not fully internalized by the price system, and that charges on providers of content, applications and/or services would lead to under-production of these products and services.³¹ In general, these theories rely on a two-sided markets analysis, and suggest that broadband ISPs might have incentives to set fees on content, applications, or

²⁹ See Jerry Brito and Jerry Ellig, “A Tale of Two Commissions: Net Neutrality and Regulatory Analysis,” *CommLaw Conspectus* 16;2 (2007) at 26-31.

³⁰ See, e.g., *FTC Report* at 7 (“The balance between competing incentives on the part of broadband providers to engage in, and the potential benefits and harms from, discrimination and differentiation in the broadband area raise complex empirical questions and may call for substantial additional study of the market generally, of local markets, or of particular transactions. Again, further evidence of particular conduct would be useful for assessing both the likelihood and severity of any potential harm from such conduct.”)

³¹ A related thesis is that the Internet is a “general purpose technology,” which produces external benefits which are not captured by private market actors. See NPRM at ¶64.

service providers “too high” relative to the socially optimally level, while setting prices to downstream consumers “too low.” In support of these theories, the NPRM cites articles by Nicholas Economides,³² Robin S. Lee and Tim Wu,³³ and Barbara van Schewick.³⁴ In addition, as part of its comments in this proceeding, Google submitted two declarations, one by Professor Economides³⁵ expanding on his prior work, and citing a co-authored paper with Joacim Tåg,³⁶ and a second by Christiaan Hogendorn.³⁷

21. The existing literature on network externalities, spillovers and two-sided markets does not provide support for the proposed rules, for two primary reasons. First, the economic literature on these topics is in a very early stage of development,³⁸ and is therefore speculative, highly abstract and theoretical, and lacking in empirical support.³⁹ Second, the limited empirical research that is available suggests there is a stronger basis for believing the proposed regulations would harm consumer welfare than for believing they would improve it.

³² Nicholas Economides, “‘Net Neutrality,’ Non-discrimination and Digital Distribution of Content Through the Internet,” *I/S: A Journal of Law and Policy for the Information Society* 4;2 (2008) 209-233.

³³ Robin S. Lee and Tim Wu, “Subsidizing Creativity Through Network Design: Zero-Pricing and Net Neutrality,” *Journal of Economic Perspectives* 23;3 (Summer 2009) 61–76.

³⁴ Barbara van Schewick, “Towards an Economic Framework for Network Neutrality Regulation,” *Journal on Telecommunications and High Technology Law* 5 (2007) at 385-86 (discussing the Internet as a “general purpose technology” and concluding that “measures that reduce the amount of application-level innovation have the potential to significantly harm social welfare by significantly limiting economic growth.”)

³⁵ Nicholas Economides, “Why Imposing New Tolls on Third-Party Content and Applications Threatens Innovation and Will Not Improve Broadband Providers’ Investment,” Appendix A to *Comments of Google Inc.* GN Docket 09-191 and WC Docket 07-52 (January 14, 2010).

³⁶ Nicholas Economides and Joacim Tåg, “Net Neutrality on the Internet: A Two-Sided Market Analysis” (Rev. May 2009) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1019121).

³⁷ See Christiaan Hogendorn, “Spillovers and Network Neutrality,” Appendix B to *Comments of Google Inc.* GN Docket 09-191 and WC Docket 07-52 (January 14, 2010).

³⁸ This point is conceded even by net neutrality supporters. See, e.g., Economides and Tåg at 6 (“Despite a considerable literature discussing the rights and legal issues of net neutrality and its abolition, the literature on economic analysis of this issue is thin.”) and at 32 (“[T]he economics literature on net neutrality regulation is still in its early stages.”).

³⁹ See, e.g., Christopher S. Yoo, “Network Neutrality, Consumers, and Innovation,” *The University of Chicago Legal Forum* (2008) at 184-5 (“[T]he stylized nature of the assumptions on which exemplifying theories tend to be based limit them to identifying what can happen and prevent them from providing any insight into the likelihood that the effects they identify will actually come to pass. Absent empirical support, exemplifying theory cannot provide the broad policy inferences needed to support ex ante categorical prohibitions. In other words, the mere fact that a particular practice may be harmful under certain circumstances does not justify banning that practice categorically.”)

22. The existing literature consists primarily of two types of research: (i) stylized, abstract theoretical models that do not closely resemble real-world markets; and (ii) speculative “discussion papers” that proffer hypotheses and suggestions for potential research, but do not contain rigorous analysis. Neither of these types of studies provides a basis for concluding that the proposed rules, or any similar rules, would have a net positive effect on consumer welfare, either in the short run or the long run.

23. The existing theoretical literature on network and spillover effects in two-sided markets represents a preliminary effort to isolate and understand the effects of particular market characteristics or policy parameters, holding other factors constant, as a *first step* towards a more complete understanding of real world markets that exhibit these characteristics.

24. Because of their highly stylized nature, the predictions of such theoretical models are extremely sensitive to underlying assumptions, in two senses. First, such models are, by nature, based on simplifying assumptions that abstract from the institutional complexities of the actual marketplace. Indeed, one purpose of theoretical modeling is to explore the robustness of various models to underlying assumptions (i.e., to assess the extent to which a model’s predictions are sensitive to the application of alternative, “more realistic,” assumptions), so as eventually to develop models that capture as many of the salient characteristics of the real world as mathematical technique and human comprehension will permit, and which, ideally, are amenable to meaningful empirical assessment.

25. The theoretical literature on network and spillover effects in two-sided markets has not reached this stage. For example, the leading theoretical paper cited by Professor Economides in his declaration is Economides and Tåg, which presents a model of network effects in two-sided markets based on a large number of simplifying assumptions, including (for

example) (i) that content providers' revenues are strictly proportional to their number of visitors, (ii) that there is neither innovation nor competition in the market for content provision, and (iii) that the value of the network to consumers is a strict multiple of the number of content providers from which they can choose. None of these assumptions is realistic: Content providers' revenues are a function of many factors other than the number of visitors, the Internet content market is nothing if not competitive and innovative, and the value of an additional content web site to consumers is almost surely decreasing in the number of web sites.⁴⁰

26. Moreover, the Economides and Tåg model depends on the imposition of arbitrary constraints on the model's structure. For example, in order to be able to achieve a unique mathematical solution, the authors impose conditions which (as Caves demonstrates) imply that the profits of platform providers (i.e., phone and cable companies) significantly exceed the profits of content and applications providers (i.e., search engines, online merchants, etc.), an assumption for which there is no apparent empirical basis.⁴¹

27. Moreover, the model does not appear to have been tested for its robustness to these assumptions. Hence, even if the model showed an unambiguous gain from the imposition of net neutrality regulation (and, as discussed below, it does not), the only thing the Commission could reasonably infer from that finding is that net neutrality regulation would

⁴⁰ This list is by no means exhaustive; as in any theoretical model, the model is designed to capture only a few aspects of "the real world," with the rest being captured by "simplifying assumptions." Two other noteworthy aspects in which the Economides and Tåg model differs from reality are (a) it assumes that broadband ISPs are either monopolists or Cournot duopolists and (b) it assumes that regulation takes the form of prohibiting ISPs from charging content providers *any* access fees, whereas the proposed rules appear to ban only fees on "enhanced or prioritized" access. See NPRM at ¶106. Arguably, however, the distinction is one of degree: The effect of the proposed non-discrimination rule would be to impose a zero-price rule (for upstream prices) on all ISP services except "basic Internet access."

⁴¹ Specifically, under conditions that Economides and Tåg impose on their model, it can be shown that the ratio of content provider profits under net neutrality to platform operator profits under net neutrality must be strictly less than 0.4. See Kevin W. Caves, "Modeling the Welfare Effects of Net Neutrality Regulation: A Comment on Economides and Tåg" (March 2010) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1585254).

increase economic welfare in the imaginary world of the Economides and Tåg model – not in the real world.

28. A second way in which such models rely on assumptions is in their choice of parameter values. In general, economic models involving price discrimination (including models of two-sided markets) do not generate unambiguous results: Discrimination is not, in general, “always harmful” or “always beneficial.”⁴² The same holds for models of two-sided markets, where the welfare effects of different outcomes typically depend on the values assumed for various parameters, such as the magnitudes of upstream and downstream demand elasticities, and the size and nature of network effects.⁴³

29. Again, the Economides and Tåg paper provides an instructive example. As the authors forthrightly admit, the paper’s key results – that net neutrality regulation might improve social welfare – hold only “for some parameter values.”⁴⁴ Specifically, for net neutrality regulation to be welfare enhancing, it must be true that “a content provider values an additional consumer more than a consumer values an additional content provider”⁴⁵ – but, as Caves points out, not more than five times as much.⁴⁶ In addition, it must be true that consumers and content providers are “jointly...sufficiently differentiated,” meaning that the product of a variable describing the degree of the differentiation in consumers’ valuation of Internet access, and another variable describing the degree of differentiation in content providers’ fixed start up

⁴² See, e.g., Hal R. Varian, “Price Discrimination and Social Welfare,” *American Economic Review* 75:4 (September 1985) 870-875 (demonstrating, in general, that price discrimination increases economic welfare when it results in increased output).

⁴³ See e.g., Weisman and Kulick.

⁴⁴ See Economides and Tåg at 1 (“When access is monopolized, for reasonable parameter ranges, net neutrality regulation (requiring zero fees to content providers) increases the total industry surplus as compared to the fully private optimum at which the monopoly platform imposes positive fees on content providers. However, *there are also parameter ranges for which total industry surplus is reduced.*”) (emphasis added).

⁴⁵ See Economides and Tåg at 14.

⁴⁶ See Caves at 6.

costs, must fall within a certain range, which in turn depends on other parameters of the model.⁴⁷ The problem with such assumptions is not just that there is no empirical basis for choosing particular numerical values, but that the variables themselves lack any clear empirical analog in the real world.⁴⁸

30. Indeed, as even strong proponents of net neutrality regulation acknowledge,⁴⁹ the results of virtually all of the various theoretical models of net neutrality are dependent on assumptions about parameter values for which there is little or no empirical basis. The lack of an empirical foundation is nowhere more clear than with respect to the argument that imposing fees on content providers should be prohibited since the result might be to reduce investment and innovation in content – irrespective of the acknowledged fact that doing so could both reduce investment in networks and result in higher prices to downstream consumers (and hence lower broadband adoption). Lee and Wu, for example, who make the case for net neutrality regulation based on the benefits of “subsidizing content,” concede that

Of course, for a given price level, subsidizing content comes at the expense of not subsidizing users, and subsidizing users could also lead to greater consumer adoption of broadband. *It is an open question whether, in subsidizing content, the welfare gains from the invention of the next killer app or the addition of new content offset the price reductions consumers might otherwise enjoy or the benefit of expanding service to new users.*⁵⁰

31. Just as striking (and admirable) is the candor of Harvard economist Glen Weyl, whose authoritative paper on two-sided markets has won plaudits even prior to formal publication. In response to an email query from Commission staff, Weyl responded:

⁴⁷ See Caves at 6; see also Economides and Tåg at 15 (Assumption 2).

⁴⁸ See Caves at 6 (“[I]t is quite difficult to imagine how one might quantify this differentiation empirically, let alone establish that it is sufficiently large, either in absolute or relative terms.”)

⁴⁹ See Economides and Tåg at 6-8, summarizing the results of several models yielding “ambiguous” results.

⁵⁰ See Lee and Wu at 67 (emphasis added).

I don't know how much of a help I can be in answering your query [whether content providers paying for access will maintain their current quality of content] *as I really have no empirical data to support any assertion I make*, but perhaps I can provide a little bit of conceptual clarity about what elasticities are likely to matter, *even if I don't know their magnitudes*.⁵¹

Having “no empirical data” to support “any assertion I make” is fine for an academic, especially when he or she is forthright in identifying what follows as academic theorizing rather than demonstrated results. For the Commission to impose regulations on the basis of such theorizing, of course, is a different matter.⁵²

32. This brings us to the second primary class of existing research on net neutrality, network externalities and spillover effects, which consists of “discussion papers” (published or otherwise) that raise various issues and pose various hypotheses for further research, but do not apply rigorous methods (theoretical or otherwise) to achieve conclusive results. One example is the paper is by Lee and Wu, which is cited by the Commission for the proposition that broadband ISPs might be better off collectively if they did not charge content providers for access to subscribers, but that each broadband ISP acting individually might nevertheless have an incentive to levy fees, thus making things worse for all ISPs (and reducing economic

⁵¹ Memorandum from Chuck Needy to Marlene Dortch, February 12, 2010, *Ex Parte Submission in Docket 09-191* (Email from Glen Weyl to Chuck Needy, January 29, 2010) (emphasis added). Weyl's email goes on to identify some key empirical estimates and suggests that “it would be feasible with a little hard work to get a sense of them.” See also E. Glen Weyl, “A Price Theory of Multi-Sided Platforms” (October 2009; forthcoming, *American Economic Review*) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1324415) at 35 (“On the theoretical side, much remains to be done to understand pricing in networks more generally. For example my approach so far allow only extremely stylized models of competition of limited direct empirical relevance.”)

⁵² See Weisman and Kulick at 26-28 (reviewing the literature on two-sided market structures and concluding that “There is no basis for presuming that regulatory intervention to alter the price structure in such markets would prove to be welfare-enhancing. Put differently, regulatory intervention that alters the relative prices paid by the upstream and downstream sides of the market cannot be justified on grounds that it enhances economic welfare.”); see also Schwartz Declaration at 21-23 (providing further examples of the stylized assumptions typical of the two-sided markets literature and concluding, “In sum, the theoretical analysis of two-sided markets — while offering insights — is not yet settled, is quite complex, and the results are highly sensitive to conditions about which regulators are likely to have highly imperfect information.”)

welfare).⁵³ This is an intriguing notion, which may well be worthy of both more rigorous theoretical modeling and, if testable hypotheses, an appropriate methodology, and the necessary data can be identified, empirical investigation. As researchers, we appreciate the value of intriguing theories, and hope that this one (and many others associated with this topic) will be fully pursued in the academic arena. Again, however, from the perspective of public policy, we do not believe that the Commission should make public policy decisions on the basis of imaginative theories that have not yet been formally modeled, let alone empirically demonstrated.⁵⁴

33. Similarly, the Economides and Hogendorn declarations, and the Van Schewick article (as it relates to the spillover effect of “general purpose technologies”),⁵⁵ as well as the bulk of the advocacy literature on these topics, are lacking in both theoretical rigor and

⁵³ NPRM at ¶¶68-9 (citing Lee and Wu, and stating “This dynamic raises a collective action problem: Although it might be in the collective interest of competing broadband Internet access service providers to refrain from charging access or prioritization fees to content, application, and service providers, it is in the interest of each individual access provider to charge a fee, and given multiple providers, it is unlikely that access providers could tacitly agree not to charge such fees.”)

⁵⁴ See Lee and Wu at 70-71. The authors state that “it *seems implausible* that Internet service providers have appropriate incentives to price according to the social optimum,” and describe several reasons why they believe this to be the case, including that “it *might* be individually optimal for one provider to defect and charge positive fees to content providers, although if all content providers charged such fees, the outcome would be worse than had all providers refrained from doing so.” (Emphasis added.) On the implications of this thesis, see also Hahn, Litan and Singer at 17 (suggesting that “[t]he Commission appears to be proposing a regulatory ‘work-around’ for BSPs to escape antitrust scrutiny. According to its logic, if BSPs could somehow coordinate in the setting of prices for QoS, they would choose a zero price according to the NPRM; yet competition among BSPs drives them to set an inefficiently positive price. (Of course, if the jointly profit - maximizing price for QoS were zero, and if net neutrality allowed BSPs to achieve that allegedly optimal solution, then BSPs would favor net neutrality regulation! Alas, they do not.) Again, this basis for intervention is purely theoretical and is not recognized in regulatory economics as a solid basis for intervention.”) See also See Schwartz Declaration at 25 (“But no evidence has been offered that the supply of Internet content is deficient relative to that of broadband infrastructure, nor are there strong reasons to believe that this pattern would hold if charges to content providers were implemented.”)

⁵⁵ See also Frischmann and Van Schewick at 423-6, and n. 168 for a discussion of general purpose technologies (“GPTs”). GPTs are technologies which generate externalities associated with their ability to increase productivity across industries. There is a theoretical argument for subsidizing research in and/or deployment of such technologies (though the practical obstacles to doing so effectively are formidable). Further, it is plausible that the Internet is a GPT. (See, e.g., *National Broadband Plan* at 29.) However, *even if* the Internet is a GPT, and *even if* the practical obstacles to creating efficient subsidy programs could be overcome, what would still not be clear is why it would make sense to subsidize some aspects of the Internet value chain (content, applications, etc.) at the expense of others (e.g., infrastructure).

empirical support.⁵⁶ For the most part, these contributions contain the appropriate caveats, arguing that net neutrality regulation “might” improve social welfare “if” certain criteria are satisfied, or (alternatively) that unregulated markets “may” experience various forms of market failure.⁵⁷ Again, as researchers we value these and similar contributions, as the proffering of hypotheses and expression of informed opinion is an important part of the process of gaining a better understanding of these complex markets – even if we disagree with most or all of their hypothesized conclusions. The important point, however, is that the Commission should not mistake speculation, conjecture, hypothesis and argument for rigorous analysis, empirical evidence, or proof.

34. Finally, and perhaps most important, for all of the hypothesizing and discussion of how models based on network externalities and spillover effects provide support for net neutrality regulation, there is *at least* as much support for the opposite proposition.⁵⁸ It is

⁵⁶ For another example, see Inimai M. Chettiar and J. Scott Holladay, *Free to Invest: The Economic Benefits of Preserving Net Neutrality*, New York University Institute for Policy Integrity, Report No. 4 (2010), at 9-10. As Weisman and Kulick point out (at 19), “The authors of this study fail to account for the fact that in two-sided markets with network externalities, price discrimination actually would serve to mitigate the market failure that creates this positive network externality.”

⁵⁷ See, e.g., Hogendorn Declaration at 12 (“ISPs were to prioritize or degrade service for certain applications, certain websites, etc., there could be a reduction in both types of network effects. The question is whether an individual ISP would have incentives that do not align with social incentives. There are two reasons this *might* happen.”) (emphasis added); see also Van Schewick at 329 (“This paper also highlights important limitations of the ‘one monopoly rent’ argument, demonstrating previously unidentified exceptions that *may* be quite common in the Internet context, showing how exclusion *may* be a profitable strategy even if the excluding actor does not manage to drive its competitors from the complementary market, and proving that competition in the primary market *may* be insufficient to remove the ability and incentive to engage in exclusionary conduct.”) (emphasis added); see also Economides Declaration at 1 (“Broadband providers insist that imposing these new charges will greatly improve network investment, and thus these charges are beneficial. I argue that this is not the case. Possible higher revenues from discrimination *may* simply be returned to shareholders and not invested.”) (emphasis added).

⁵⁸ For example, Economides and Tåg (at 7) acknowledge that models that use different assumptions yield different results. For example, they note that a paper by Cheng, Bandyopadhyay and Guo finds that consumer surplus may increase when content providers pay access fees, and explain that “The reason why the consumer surplus may increase is that it is always the more profitable content provider that pays for access and hence, gets preferential treatment. This benefits consumers of the more profitable content provider because congestion is reduced. However, it means a loss for consumers of the less profitable content provider that does not pay for preferential access, since there is an increase in the congestion costs.”); see also Mark A. Jamison and Janice A. Hauge, “Getting What You Pay For: Analyzing the Net Neutrality Debate,” (April 2008) (available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1081690) at 2 (“When only a single transmission speed is

remarkable, for example, that the only robust result of the Economides and Tåg model – the only result that applies under all parameter values – is that consumers are *always* made worse off by net neutrality regulation.⁵⁹

35. To summarize, the evidence before the Commission demonstrates that broadband ISPs do not have generalized market power, and thus provides no support for the proposed regulations based on any traditional theory of market failure. Moreover, the speculative theories and stylized models put forth as potential justifications for regulation in the absence of market power provide no empirical – that is, no *real world* – foundation for concluding that the proposed regulations would increase rather than harm consumer welfare.

36. In 2007, the FTC declared that, “to date we are unaware of any significant market failure or demonstrated consumer harm from conduct by broadband providers.”⁶⁰ In our opinion, it remains the case there is no evidence, empirical, theoretical, or otherwise, to contradict this finding. If anything, the market for broadband services has continued to exhibit rapid innovation and increasing competition. Accordingly, there is no economic basis for a finding of market failure in the markets at issue.

offered by the network provider, some low-value content providers choose to not produce because their potential advertising revenue would not cover their content production costs and their fixed costs. However, when a premium transmission speed is offered, some low-value sites that did not produce under the single speed scenario find it profitable to purchase the premium speed and so choose to enter the market. This results in an increase in the amount and diversity of content available for consumers. We consider this increase in the variety of content on the network to constitute innovation on the edges, which raises the value of the network.”).

⁵⁹ See Economides and Tåg at 31 (“Comparisons between outcomes under the private equilibrium with two-sided pricing and the private equilibrium under net neutrality regulation indicated that a removal of net neutrality regulation would lead to a lower subscription price for consumers, but less content available due to an increase in fees to content providers. Content providers are worse off in the aggregate, while consumers are better off.”).

⁶⁰ See *FTC Report* at 11. See also e.g., Gerald R. Faulhaber and David J. Farber, “The Open Internet: A Customer-Centric Framework,” Exhibit 1 to *Comments of AT&T, Inc.* in GN Docket Nos. 09-157, 09-51 (September 2009) at 1 (“Despite many colorful predictions about what evil doings ISPs might do in the future, we find that during ten years of experience without network neutrality regulations, there are just two incidents (the tiresomely familiar Madison River and Comcast cases) of any *actual* misbehavior by broadband ISPs. Two incidents – both remedied without the prescriptive rules proposed here - is not empirical evidence, nor are the many lurid but unrealized nightmare scenarios.”); see also Schwartz Declaration at 4 (“Beyond these *a priori* objections, and perhaps most important, is the striking lack of evidence for the postulated harms.”)

III. THE PROPOSED REGULATIONS WOULD BAN BENEFICIAL PRACTICES AND OTHERWISE HARM ECONOMIC WELFARE

37. While there is no evidence of systematic market failures that might be remedied or ameliorated by the proposed rules, there is substantial basis for believing that the proposed regulations would harm competition, slow innovation, and reduce consumer welfare.⁶¹ These likely harms are a function of the facts that (i) many of the practices that would be banned by the proposed regulations are presumptively welfare enhancing, (ii) the proposed “carve outs” for reasonable network management and “managed services” do not provide a basis for distinguishing between beneficial practices and harmful ones; and (iii) the litigation and regulatory uncertainty created by the regulations would slow innovation and have other unintended consequences.

A. Most of the Conduct that Would Be Prohibited Is Presumptively Welfare Enhancing

38. Given the vagueness of the proposed “reasonable network management” and “managed services” exceptions, it is somewhat difficult to predict precisely which forms of conduct would be prohibited under the proposed regulations. However, one effect of the proposed non-discrimination rule is predictable and clear: To the extent the rule prohibits broadband ISPs from levying positive fees on upstream customers such as content providers, the

⁶¹ See, e.g., *FTC Report* at 11 (“Policy makers also should carefully consider the potentially adverse and unintended effects of regulation in the area of broadband Internet access before enacting any such regulation. Industry-wide regulatory schemes – particularly those imposing general, one-size-fits-all restraints on business conduct – may well have adverse effects on consumer welfare, despite the good intentions of their proponents. Even if regulation does not have adverse effects on consumer welfare in the short term, it may nonetheless be welfare-reducing in the long term, particularly in terms of product and service innovation. Further, such regulatory schemes inevitably will have unintended consequences, some of which may not be known until far into the future. Once a regulatory regime is in place, moreover, it may be difficult or impossible to undo its effects.”); see also Michael L. Katz, “Maximizing Consumer Benefits from Broadband,” Attachment B to *Comments of Verizon Communications and Verizon Wireless Comments of Verizon Communications and Verizon Wireless*, GN Docket 09-191 and WC Docket 07-52 (January 14, 2010) (hereafter Katz Declaration) at 15 (providing examples of the unintended negative consequences of regulation and concluding “It is well documented that even well-intentioned regulations can impose significant costs and often have harmful unintended consequences.”)

upshot would be to raise prices to downstream subscribers and ultimately reduce broadband adoption – precisely the opposite of what the Commission is seeking to accomplish through its National Broadband Plan.⁶² Unlike the conjectural benefits of “subsidizing content,” the substantial economic benefits of increased broadband adoption have been demonstrated in numerous empirical studies.⁶³

39. In addition to the direct effect of raising prices for broadband access above competitive levels, the proposed regulations would limit or proscribe (to a somewhat unpredictable degree) a variety of business practices that presumptively contribute to economic efficiency,⁶⁴ promote competition,⁶⁵ foster innovation,⁶⁶ increase investment,⁶⁷ promote product

⁶² See, e.g., Hemphill at 171-173 (discussing consumer benefits of positive pricing by network providers; see also Schwartz Declaration at 3 (“[P]ositive fees to content providers would result in lower prices to broadband consumers, advancing the Commission’s goal of expanding broadband penetration and use especially among economically disadvantaged groups.”))

⁶³ See e.g., Robert W. Crandall and Hal J. Singer, “The Economic Impact of Broadband Investment,” (February 2010); see also Mark Dutz, Jonathan Orszag, and Robert Willig, *The Substantial Consumer Benefits of Broadband Connectivity For U.S. Households*, Internet Innovation Alliance, (July 2009); Robert Crandall, William Lehr, and Robert Litan, “The Effects of Broadband Deployment on Output and Employment: A Cross-sectional Analysis of U.S. Data,” *The Brookings Institution: Issues in Economic Policy No. 6* (2007); Robert E. Litan, *Great Expectations: Potential Economic Benefits to the Nation From Accelerated Broadband Deployment to Older Americans and Americans with Disabilities*, New Millennium Research Council (2005); and, Austan Goolsbee, “The Value of Broadband and the Deadweight Loss of Taxing New Technology,” *Contributions to Economic Analysis & Policy* 5;1 (2006). By contrast, we are not aware of any rigorous empirical analyses of the benefits of “subsidizing content.”

⁶⁴ See, e.g., Schwartz Declaration at 12-13 (noting that upstream pricing of QoS may be efficient because “[a] content provider is likely to be in a much better position than end users to know what performance requirements are needed for its service to work well [and] the transactions costs of contracting for such arrangements are likely to be much lower when dealing with a content provider than with a host of end users.”)

⁶⁵ See e.g. Jamison and Hauge at 2.

⁶⁶ See e.g., Crandall and Singer (2010) at 51-53 (discussing negative impact of net neutrality regulation on innovation and investment in both networks and Internet content); see also Schwartz Declaration at 2 (“Such payments can enable valuable and mutually beneficial arrangements, for example, by allocating scarce network capacity efficiently and avoiding the need for costly overbuilding, and by funding network enhancements desired by particular content providers.”); see also Katz Declaration at 13-15 (noting that the rules would, by design, freeze the current structure of the Internet in place and concluding that “it would not be in consumers’ interest to ossify the Internet.”) and at 30 (“[A] policy that triggered capacity investment in lieu of capacity management would be inefficient. Because a managed network can provide greater levels of service for a given amount of investment in physical infrastructure than can an unmanaged network, a managed network provides services at a lower unit cost. A second fundamental flaw with the argument that a policy that blocks network management can promote investment is that such a policy might actually reduce the overall amount of capacity investment. Restrictions on an operator’s management of its network will prevent the operator from producing as much output as possible from any given amount of physical plant and equipment. Because the physical plant cannot be used efficiently, the cost

differentiation and consumer choice,⁶⁸ and enhance consumer welfare.⁶⁹ Yet, depending on how they are enforced, the proposed rules could, for example, inhibit content providers' ability to enter into mutually beneficial (and economically efficient) exchanges with broadband ISPs; and, more broadly, limit the ability of all firms in the Internet value chain to engage in unilateral conduct, or to enter into contracts that would contribute to economic efficiency by reducing risk, lowering transactions costs, creating disincentives to opportunistic behavior, ensuring product quality, or creating consumer choice through product differentiation.⁷⁰

B. The Reasonable Network Management and “Managed Services” Criteria Would Not Protect Consumer Welfare

40. The proposed rules would allow broadband ISPs to engage in “reasonable network management,”⁷¹ and create an exception for “managed services.”⁷² While any relief

of capacity per unit of output is higher. These higher costs reduce the operator's net return on investment and, consequently, the operator may invest less in physical capacity.”)

⁶⁷ See Larry F. Darby, “The Informed Policy Maker's Guide to Regulatory Impacts on Broadband Network Investment,” American Consumer Institute (2009) at 2 (“There is no reasoned, factual and analytical basis for concluding that network neutrality rules will not impact the rate of investment in existing broadband networks. Some rules will have more impact than others, but any rule that constrains the ability of firms to pursue business activities that may increase shareholder value will almost certainly affect their allocation of cash to different uses, including domestic network investment.”); see also Schwartz Declaration at 20 (“Claims that charges to content providers should be opposed because they would reduce incentives to invest in the edge either expressly or implicitly minimize the importance of incentives for investment in network infrastructure with no justification.”); see also Katz Declaration at 59 (“Free Press recently released a report in which the author claims to demonstrate that network neutrality regulations do not meaningfully harm investment incentives. Scrutiny of the study, however, reveals that it is fatally flawed and offers no such demonstration.”).

⁶⁸ See e.g., Benjamin E. Hermalin and Michael L. Katz, “The Economics of Product-Line Restrictions with an Application to the Network Neutrality Debate,” *Information Economics and Policy* 19;2 (2007) 215-248, at 236 (“[C]onsumers have fewer applications available to them as a consequence [of net neutrality regulation.]”); see also Everett M. Ehrlich, Jeffrey A. Eisenach, and Wayne A. Leighton, “The Impact of Regulation on Innovation and Choice in Wireless Communications,” *Review of Network Economics* 9;1 (2010).

⁶⁹ See e.g., Katz Declaration at 11, describing the direct consumer benefits of traffic prioritization (“The fact that customers pay for the ability to differentiate between traffic in managing their own internal networks demonstrates that users want and value such differentiation.”)

⁷⁰ See generally Christopher S. Yoo, “Beyond Network Neutrality,” *Harvard Journal of Law and Technology* 19;1 (Fall 2005) 1-77; see also Ehrlich, Eisenach and Leighton at 48 (“By making it more difficult to manage the risk of innovation and entry, prohibitions on network management would ... slow innovation and reduce consumer choice, the opposite of what proponents of such regulation say they desire.”).

⁷¹ NPRM at ¶135 ff.

⁷² NPRM at ¶148 ff.

from otherwise harmful regulations is better than none, these criteria are not founded in sound economic analysis and would not ensure that consumer welfare is protected.

41. Network management – i.e., traffic prioritization – benefits consumers and enhances economic efficiency by allowing ISPs to ensure the quality of Internet applications that require faster and more reliable delivery, such as video conferencing, interactive online gaming, and remote health care. Regulations that limit the ability of broadband providers to engage in such network management, without producing compensating benefits, would reduce economic efficiency and consumer welfare.

42. The regulations as proposed do not contain a consumer welfare standard, but instead offer a vague and ultimately circular definition, in which “reasonable network management” is defined as “reasonable steps to maintain the proper functioning of their networks.”⁷³ Such ambiguity is neither necessary nor constructive: Broadband ISPs should be permitted to engage in business practices generally, and network management practices in particular, that do not harm consumer welfare. Further, the burden of proof, in competitive markets such as the ones at issue here, should be on the Commission to demonstrate that a particular network management practice would harm economic welfare, not on broadband ISPs to prove it is beneficial.

⁷³ See NPRM at ¶140 (“Finally, we propose that broadband Internet access service providers may take other reasonable steps to maintain the proper functioning of their networks. We include this catch-all for two reasons. First, we do not presume to know now everything that providers may need to do to provide robust, safe, and secure Internet access to their subscribers, much less everything they may need to do as technologies and usage patterns change in the future. Second, we believe that additional flexibility to engage in reasonable network management provides network operators with an important tool to experiment and innovate as user needs change.”); see also Katz Declaration at 4 (“Network management can facilitate more efficient use of capacity and can protect consumers from harmful traffic and applications. However, the proposed rules would create an uncertain regulatory environment that would discourage efficient network management. For example, the proposed rules allow for ‘reasonable’ practices without defining reasonable. Moreover, any definition of reasonable would almost certainly either be vague or would draw bright lines that in important instances lead to outcomes that harmed consumer welfare....”).

43. Similarly, the NPRM’s discussion of managed services contains no suggestion that any exceptions to the proposed regulations for such services (however they ultimately are defined) would be tied to a substantive economic welfare standard. Indeed, there is no basis for believing that the exceptions suggested in the NPRM – for telemedicine, smart grid applications and eLearning – are based on any type of either technical or economic analysis.⁷⁴ Thus, the managed-services exemption, as proposed in the NPRM, is completely untethered from any concept of consumer welfare or economic efficiency. Indeed, to the extent the managed-services exemption served as a regulatory safe harbor for “nascent” services, it risks actually discouraging the widespread adoption and commercialization of new and innovative services – which, by the very virtue of their success, would grow out of the regulatory safe harbor that made them possible in the first place, and hence find themselves subjected to costly or even prohibitive regulation.⁷⁵

C. Enacting the Proposed Regulations Would Raise Regulatory Risk and Harm Investment and Innovation

44. The proposed regulations are ambiguous and poorly drafted. As noted above, the NPRM provides no practical guidance as to what the Commission would consider to be “reasonable” network management, or what services would be deemed to fall within the “managed services” exception,⁷⁶ but these are only two of many uncertainties companies would face if the rules were adopted. For example, the proposed regulations fail to provide a practical

⁷⁴ See NPRM at ¶150. It is not at all clear why eLearning applications, for example, would be more likely to “require or benefit from enhanced quality of service rather than traditional best-effort Internet delivery” than, say, online gaming or corporate video conferencing.

⁷⁵ See Katz Declaration at 44 (“Even if the Commission does create a managed services exception, there is a very real danger that this policy will impose service qualifications that result in the rules’ becoming a form of success tax.”)

⁷⁶ See Katz Declaration at 4 (“Although it is vital to the promotion of consumer welfare that network providers continue to be permitted to develop and offer their own services that may be thought of as managed or specialized, the NRPM’s managed services exception is vague and unworkable. Moreover, it cannot reasonably be expected to substitute for the sound analysis that is missing from the NPRM.”)

means of distinguishing between content, applications and service providers, on the one hand, and “subscribers” (many of whom also generate content), on the other.⁷⁷ To the extent regulatory uncertainty prevents parties from engaging in efficiency-enhancing conduct, or entering into efficiency-enhancing contracts, or increases the risks that such conduct or contracts will be voided (or even penalized) by subsequent Commission decisions, firms are less likely to engage in the investment or innovation that such conduct and contracts would otherwise have enabled.⁷⁸

IV. CASE-BY-CASE APPLICATION OF EXISTING STANDARDS IS THE BEST APPROACH

45. In paragraph 103 of the NPRM, the Commission identifies the challenge before it with respect to banning discrimination as follows: “The key issue we face is distinguishing socially beneficial discrimination from socially harmful discrimination in a workable manner.”⁷⁹ In the accompanying footnote 226, the Commission suggests that, by “workable,” it means a rule that would “limit how network operators can discriminate in a manner that [1] prevents them from fully exploiting market power in ways that seriously harm users, and [2] does not prevent them from using discrimination in ways that greatly benefit users.”⁸⁰ Based on these passages, the Commission appears to recognize the tension between what economists refer to as “Type I” and “Type II” error (i.e., between a rule that deters too little

⁷⁷ See Katz Declaration at 41 (“What if a broadband Internet access service provider required content, application, or service providers to become subscribers in order to receive enhanced or prioritized access? Would the broadband Internet access service provider then be allowed to charge them different prices for different services? If not, whom could it charge?”)

⁷⁸ See, e.g., *FTC Report* at 11 (“Industry-wide regulatory schemes – particularly those imposing general, one-size-fits-all restraints on business conduct – may well have adverse effects on consumer welfare, despite the good intentions of their proponents. Even if regulation does not have adverse effects on consumer welfare in the short term, it may nonetheless be welfare-reducing in the long term, particularly in terms of product and service innovation.”)

⁷⁹ See NPRM at ¶103.

⁸⁰ See NPRM at n. 226 (citing Peha at 645). Note the reference in this quotation to market power, the existence of which, as noted above, the Commission neither asserts nor demonstrates, and which, as we explained above, does not generally exist in the markets at issue.

harmful behavior, and one that deters too much beneficial behavior); and, further, to acknowledge (correctly) that the ultimate objective is to minimize the combined welfare losses associated with both types of errors.

46. The Commission proposes further to adjudicate the key question of which practices constitute “reasonable network management” (and are hence permitted) through a “case-by-case” approach, stating that “the novelty of Internet access and traffic management questions, the complex nature of the Internet, and a general policy of restraint in setting policy for Internet access service providers weigh in favor of a case-by-case approach.”⁸¹ This approach, too, is sensible, as it suggests that the Commission recognizes that distinguishing between beneficial behaviors and harmful ones is likely to be both analytically difficult and factually complex.

47. However, the Commission proposes to apply its case-by-case approach in a prohibitive rather than permissive fashion: That is, all “discriminatory” behavior that is not found to be permitted (on a case-by-case basis) would be banned. As we have explained above, the conduct potentially covered by the proposed regulations is far more likely to be beneficial than harmful. Accordingly, the Commission’s proposed approach is precisely the reverse of what the economic evidence supports, and virtually guarantees far more Type II error than is consistent with economic efficiency and consumer welfare.⁸²

⁸¹ See NPRM at ¶134.

⁸² See, e.g., Weisman and Kulick at 22 (“There are two strong reasons to believe that, at this point in time, specific regulation of vertical integration by ISPs into the Internet content space will be subject to substantial Type I error. First, monopoly power in one market is a necessary condition for anticompetitive effects in almost all models of anticompetitive vertical integration. As discussed above, competition is becoming increasingly intense in the ISP market and there is scant evidence that, as a general matter, broadband providers possess true monopoly power. Second, ISPs generally serve regional markets whereas content markets are often national or international.... On the other hand, at this point in time, there is little risk of Type II error.”)

48. While we agree that a case-by-case approach to enforcement is appropriate for the conduct and issues addressed in the NPRM,⁸³ the Commission should adopt a permissive rather than a prohibitive approach: Conduct should be considered permitted unless, after a case-specific adjudication of the facts, it can be shown to be harmful, on net, to economic efficiency and consumer welfare.⁸⁴ That is, rather than being presumptively unlawful, network management practices and other “discriminatory” behavior should be presumptively lawful.

49. In assessing the lawfulness of specific conduct, the Commission should apply existing, generally agreed-upon standards for the evaluation of market power, market failure, and consumer welfare – standards such as those implicit in the FTC-Department of Justice *Merger Guidelines*,⁸⁵ the Office of Management and Budget’s Circular A-4,⁸⁶ the FTC’s Policy Statements on and Deception⁸⁷ and Unfairness,⁸⁸ and, more broadly, the pro-competition, pro-consumer doctrines that have developed under the Sherman Act and other antitrust statutes.⁸⁹

⁸³ See Katz Declaration at 36 (“Case-by-case application of antitrust laws is the best way to deal with concerns that, in some circumstances, network management can be used to harm competition. Such an approach is the only way to block the use of these practices when they harm competition and consumers while at the same time ensuring that service providers can engage in these practices in the many instances where they benefit consumers and promote competition and the achievement of other public-interest goals.”)

⁸⁴ See Ehrlich, Eisenach and Leighton at 48 (“On their face, the existing proposals would presumptively prohibit a wide range of business practices. Indeed, taken at face value, they would appear to prohibit a wide variety of practices about which even regulation advocates have expressed no concerns. Moreover, the only limiting principle regulation advocates concede is technical feasibility, a standard which effectively precludes a weighing of benefits against costs to maximize consumer welfare.”)

⁸⁵ See U.S. Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines* (rev. April 8, 1997) (available at http://www.justice.gov/atr/public/guidelines/horiz_book/hmg1.html).

⁸⁶ See Office of Management and Budget, Circular A-4, *Regulatory Analysis* (September 17, 2003) (available at <http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf>).

⁸⁷ See Federal Trade Commission, *FTC Policy Statement On Deception, Appended to Cliffdale Associates, Inc.*, 103 F.T.C. 110, 174 (1984) (available at <http://www.ftc.gov/bcp/policystmt/ad-decept.htm>).

⁸⁸ Federal Trade Commission, *FTC Policy Statement On Unfairness, Appended to International Harvester Co.*, 104 F.T.C. 949, 1070 (1984) (available at <http://www.ftc.gov/bcp/policystmt/ad-unfair.htm>) see also 15 U.S.C. § 45(n).

⁸⁹ See generally Brito and Ellig at 7-37; see also Joseph Farrell and Philip J. Weiser, “Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age,” *Harvard Journal of Law and Technology* 17;1 (Fall 2003) at 134 (“In developing its regulatory strategy for new environments such as broadband where price regulation is absent, the FCC should define more clearly when to restrict a firm’s conduct — for instance, only after exclusionary conduct is demonstrated, where it seems probable, or where it would do the most harm. Antitrust enforcers normally address exclusionary conduct by a single firm

50. Beyond recommending that the Commission give weight to these general substantive standards, we do not make specific recommendations for how the Commission should go about implementing a case-by-case approach.⁹⁰ We do note, however, that a number of parties have recommended various aspects of such approaches. For example, Professor Neuchterlein (among many others) recommends application of antitrust law by the traditional antitrust enforcement agencies;⁹¹ Drs. Hahn, Litan and Singer suggest applying “existing FCC procedures for resolving discrimination in other contexts”;⁹² and, Google and Verizon jointly recommend creation of technical advisory committees to ensure the Commission’s assessments of individual business practices are grounded in a sound technical understanding.⁹³ Others have pointed out that any concerns about the adequacy of competition can best be addressed by taking steps to promote competition (e.g., by increasing the amount of spectrum available for licensed use).⁹⁴ We offer these examples not because we have concluded any of them represent the best or only approach supported by the economic evidence, but rather as a demonstration that there are viable alternatives to the prohibitive *ex ante* regulations proposed in the NPRM.

only *ex post*, once such conduct has been proven. Regulators, by contrast, often act to avoid vertical competitive harms before they occur, but do not always explain how their actions fit with ICE or antitrust policy more generally. The FCC must provide such an explanation if it decides to impose an open access requirement on broadband platforms.”) (emphasis added).

⁹⁰ Professor Kahn qualifies his approval of the case we make here for non- or de-regulation of Internet access by emphasizing the principle that forbearance from direct economic regulation transfers responsibility for the public interest to competition protected by the antitrust laws. In particular, in the present context, he would emphasize the prohibition of unfair methods of competition (or unfairly exclusionary practices) as defined in Section 5 of the Federal Trade Commission Act, preferably exercised in cooperation with the antitrust agencies.

⁹¹ See Jonathan E. Nuechterlein, “Antitrust Oversight of an Antitrust Dispute: An Institutional Perspective on the Net Neutrality Debate,” *Journal on Telecommunications and High Technology Law* 7 (2009) 20-65.

⁹² See Hahn, Litan and Singer at 20.

⁹³ *Google and Verizon Joint Submission on the Open Internet*, GN Docket No. 09-191; WC Docket No. 07-52 (January 14, 2010). As the Commission notes in the National Broadband Plan, evaluating competition in application and content markets is particularly challenging. See *National Broadband Plan* at 52 (“Applications, content and the services they enable are bundled, sold, priced and monetized in many different ways. The nature and intensity of competition in applications and content varies tremendously and must be evaluated on a case-by-case basis.”)

⁹⁴ See, e.g., Faulhaber and Farber at 33.

V. CONCLUSION

51. The regulations proposed in the NRPM are unsupported by the economic evidence. There is no economic evidence, even in the abstract, of generalized market power or systematic market failure in the markets at issue. There is no economic basis for believing the practices at issue are reducing economic efficiency or consumer welfare. There is no empirical evidence whatsoever that consumers have been harmed in the past.

52. There is strong economic evidence that the regulations would inhibit, or prohibit, efficiency enhancing conduct, thereby reducing competition, slowing innovation, deterring investment and ultimately reducing consumer welfare.

53. To the extent the types of conduct addressed in the NPRM may, in isolated circumstances, have the potential to harm competition or consumers, the Commission and other regulatory bodies, including the Federal Trade Commission, have the ability to deter or prohibit such conduct on a case-by-case basis, through the application of existing doctrines and procedures. Hence, the approach advocated in the NPRM is not necessary to achieve whatever economic benefits may be associated with prohibiting harmful discrimination on the Internet.

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