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**Is the U.S. Government's Internet Policy Broken?:
A Review of *Captive Audience* by Susan Crawford**

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Is the U.S. Government's Internet Policy Broken?: A Review of *Captive Audience* by Susan Crawford

Professor Susan Crawford has just published an exciting new book on the future of high-speed Internet access in America. To hear Crawford tell it in 270 pages (excluding the copious footnotes), Americans should be worried because most of them will not have access to the fastest lane on the information superhighway. Indeed, only the rich will likely purchase high-speed Internet access because it will be too expensive for the rest of us.

At the risk of oversimplifying, Crawford's argument can be summarized in three sentences. Americans need really fast Internet. The market has failed to supply this Internet.¹ Government needs to introduce a "utility model," where high-speed fiber is made available to everyone at reasonable prices.²

Here's what we like about Crawford's book. She lets you know where she stands on an important policy issue. She highlights some problems with the current market structure for high-speed Internet services. She highlights some important problems with the merger approval process—in particular, the need for firms to curry political favor to increase the chances that a particular merger will be approved.

Here's where we part company with Crawford. She does not provide a fair and balanced view of Internet competition in the United States.³ Nor does her policy proposal represent the only reasonable response to the alleged problem.

Section 1 provides a brief summary of the book. Section 2 takes a deeper look at Internet competition. Section 3 presents some alternative approaches to the policy issues raised in the book. Section 4 briefly concludes.

1. BOOK SUMMARY

As the book's subtitle—*The Telecom Industry and Monopoly Power in the New Gilded Age*—suggests, Crawford believes there is significant monopoly power in the provision of high-speed Internet services. She uses the word monopoly somewhat loosely. The primary target of her

¹ SUSAN CRAWFORD, *CAPTIVE AUDIENCE: THE TELECOM INDUSTRY AND MONOPOLY POWER IN THE NEW GILDED AGE* 186 (3476) (Yale University Press 2013) (arguing that fewer Americans, as a percentage of the population, had high-speed Internet access than in South Korea and in Singapore).

² Crawford at 265 (4951).

³ In a blurb for the back cover of the book, Professor Yochai Benkler observes, "*Captive Audience* is an engaging cross-over piece, combining scholarship with advocacy journalism."

critique is Comcast, which faces little competition in her opinion, and enjoys a great degree of pricing power. She also argues that Time Warner enjoys a similar degree of pricing power. In the wireless space, she is highly critical of both AT&T and Verizon, which allegedly occupy analogous (dominant) positions to Comcast and Time Warner in the wireless space.

The book's introduction suggests that there is a "crisis in American communications."⁴ Crawford asserts the problem is exacerbated by politicians, who instead of keeping the "public interest" in mind, are primarily interested in keeping "Comcast and its fellow giants happy."⁵ Chapter 1 draws parallels between railroad regulation, which began more than a century ago, and Internet regulation. Despite the abundance of discriminatory pricing in our economy—from first-class seats to first-class mail—Crawford reviews the history of the telephone and telegraph, and rejects the idea that Internet providers should be allowed to charge different prices based on alleged differences in quality of service.⁶ She also believes that concentrated interests are able to take advantage of the Federal Communications Commission (FCC), in much the way that privately owned railroads were able to shape the policies at the Interstate Commerce Commission. Chapter 2 traces the history of cable regulation and cable's rise. She is highly critical of deregulation of cable prices.⁷ Toward the end of the chapter, she raises the contentious issue of net neutrality, which essentially would allow Internet access providers to charge websites more for a better quality of service. Her central theme is captured at the end of the chapter: "Where incumbents act as gatekeepers, new technology will not emerge without regulatory help that creates a level playing field for competition and the free flow of information."⁸ Chapter 3 is devoted to a largely unflattering history of Comcast, explaining how it developed its cable and Internet business. Vertical integration is the subject of Chapter 4, which reviews the AOL-Time Warner merger and sets the scene for the Comcast-NBC Universal (NBCU) merger. Chapter 5 concerns Comcast's alleged market power with respect to "over the top" content providers such as Netflix. She argues that Comcast and Time Warner have a great deal of pricing power because these firms could exclude the Netflix's of the world from a very large viewing audience.⁹ By mid-2011, Crawford asserts, the major cable providers had a monopoly in wired high-speed Internet access.¹⁰ Chapter 6 and 7 examine the economic and political power that Comcast can exert, and the Comcast-NBCU merger. In her world, control over the pipes plus control over content is a recipe for market abuse. In Chapter 8, Crawford examines the parallels between cable and wireless. Her central argument is that "the two

⁴ Crawford at 11.

⁵ *Id.* at 10.

⁶ *Id.* at 33.

⁷ For a contrary view, see THOMAS HAZLETT, PUBLIC POLICY TOWARD CABLE TELEVISION (AEI Press 1997).

⁸ Crawford at 62.

⁹ *Id.* at 113.

¹⁰ *Id.* at 122.

groups, wired and wireless, do not compete with each other.”¹¹ She asserts, largely without proof, that cable and wireless are complements, a subject that we will examine below. She also asserts that the major wireless companies and the major cable companies can “raise prices at will.”¹² She also speaks glowingly of the requirements of “common carriage” regulation, which gives everyone access to the “pipe” at a reasonable price. Crawford largely ignores the economic scholarship in this area that underscores the problems with such regulation.¹³ In Chapter 9, she continues her exploration of how Comcast and other giants can squeeze consumers and competitors. Her conclusion: Comcast and other major cable distributors “are segmenting the market for wired Internet access in America,” leaving many homes unserved, and the “state will have to fill in gaps at a higher cost for everyone.”¹⁴

Chapters 10 through 12 provide a blow-by-blow account of the NBCU merger—before, during and after. This material shows how Comcast covered its political bases, but is not absolutely essential reading for those interested in the broad policy arguments of the book. Crawford skillfully illustrates how a large corporation strategically donates to various organizations, offers to have an Hispanic board member, and gives to the pet organizations of various commission members. We think this description is relevant because it points out the extent to which the merger approval process can become politicized.¹⁵ At the same time, the FCC’s chief economist, Jonathan Baker, appears to have been satisfied with the merger outcome.¹⁶

Chapter 13 is a bit of a digression into the proposed merger of AT&T and T-Mobile, which was ultimately withdrawn in November 2011 after the FCC’s Wireless Telecommunications Bureau circulated a draft order for consideration by the Commission to refer the case to an administrative law judge. She asserts that this merger ran into resistance because it was horizontal, and AT&T would have enjoyed a large market share had it gone through. One interesting claim is that fast wireless is not a substitute for high-speed Internet. As we discuss below, we think the jury is still out on that. She also believes there is no competition in the wireless market,¹⁷ but we think the facts suggest the opposite.

¹¹ *Id.* at 156.

¹² *Id.* at 158.

¹³ For theoretical and empirical evidence regarding the economic impact of regulation, see DAVID L. KASERMAN & JOHN W. MAYO, *GOVERNMENT AND BUSINESS: THE ECONOMICS OF ANTITRUST AND REGULATION* (Dryden Press 1995). *See also* Paul L. Joskow & Roger G. Noll, *Regulation in Theory and Practice: An Overview*, in *STUDIES IN REGULATION* (MIT Press 1981, Gary Fromm ed.).

¹⁴ Crawford at 185.

¹⁵ *Id.* at 218. We offer some suggestions below on how one might address this issue.

¹⁶ Jonathan Baker, *Comcast/NBCU: The FCC Provides a Roadmap for Vertical Merger Analysis*, 25 (2) *ANTITRUST* (Spring 2011).

¹⁷ Crawford at 237 (arguing that the wireless companies have chosen to combine rather than compete).

The final chapter is about the future. Crawford speaks highly of politicians' efforts to bring fiber to the home in selected municipalities.¹⁸ Similarly, she lauds Google's effort to bring high-speed Internet to Kansas City. She argues that high-speed Internet is a public good, and that the old exclusive-cable-franchise model needs to be revisited. Her final diagnosis of what ails broadband service in the United States is worth quoting:

Because America has deregulated the entire high-speed Internet access sector, the result is expensive, second-rate carefully curated wired services for the rich, provided by Comcast and Time Warner; expensive, third-rate, carefully curated wireless services (or no service at all) for those who cannot afford a wire; close cooperation among the incumbent providers of wired and wireless services; and no public commitment to the advanced communications networks the rest of the developed world is adopting.¹⁹

This trend toward mediocrity will be bad for innovation and bad for America, to hear Crawford tell it. She believes "a new approach is needed."²⁰ Her preferred approach is to deliver most Americans reasonably priced 1 gigabyte service. How? Through a utility model that regulates rates?²¹ Well, that is certainly one way, but it is not the only way. We think there are better ways to address many of the issues that Crawford highlights.

2. SOME BASIC INTERNET ECONOMICS

To motivate her proposal that Internet access be provided via government-sanctioned (rate-regulated) monopolies,²² Crawford argues that high-speed Internet is a "public good" and that the provision of wireline broadband service is a "natural monopoly." Economists reserve the phrase "public good" to describe things such as fresh air, knowledge, and national defense. A "pure" public good has two key characteristics: (1) It is "non-excludable" in the sense that it is

¹⁸ *Id.* at 255 (describing the efforts of Terry Huval, director of utilities in Lafayette, Louisiana, to develop a municipal fiber-to-the-home network).

¹⁹ *Id.* at 260.

²⁰ *Id.* at 263.

²¹ *Id.* at 265.

²² See also Remarks of Susan Crawford, at Media Access Project's April 29 Event (May 14, 2009) (discussing the "massive social and economic benefits" of Australia's "national open-fiber-to-the-home network"), available at <http://www.mediaaccess.org/2009/05/remarks-of-susan-crawford-special-assistant-to-president-obama-at-media-access-projects-april-29-event>. Three years since its implementation, the "National Broadband Network" is reportedly short of the subscribership levels needed to break even. See *NBN hopelessly behind targets*, THE HERALD SUN, Aug. 9, 2012, available at <http://www.heraldsun.com.au/news/breaking-news/nbn-hopelessly-behind-targets-lib-mp/story-e6frf7kf-1226446654190>. For an alternative view, see Paul Budde, National Broadband Network: The FttH Roll out (Dec. 17, 2012), at 9 (suggesting that "based on the pricing that is available at the moment," adoption could reach 70 percent in the near future, and could reach 100 percent when the government shuts the copper network). It is no surprise that customers will embrace a fiber network whose price is subsidized by the government. Nor is it a surprise that customers will embrace a fiber network when the next-best alternative is removed. But these preferences do not prove that government provisioning of fiber networks is a desirable policy.

difficult or impossible to exclude an agent from consuming the good in question; and (2) consumption is “non-rivalrous” in the sense that one agent’s consumption of the good does not affect another’s.²³ Crawford incorrectly suggests that Internet access is a public good, but it is certainly not a pure public good using these criteria. Indeed, Internet access is arguably closer to a private good in the sense that the technology permits producers to exclude access if they choose to.²⁴ In addition, when there is congestion, the quality of one consumer’s access to the Internet is affected by others, suggesting consumption is rival. For example, a “bandwidth hog’s” excessive consumption can degrade his neighbors’ access on a shared-network architecture such as cable modem,²⁵ and even “dedicated” networks such as fiber are subject to congestion.²⁶

The classic concern with private provision of public goods is that if too many consumers decide to “free-ride” on its provision, private costs exceed private benefits and the market-based incentive to provide the good disappears. But there is no free-riding problem when it comes to providing Internet access. The private returns to cable modem providers were sufficient to induce them to wire 93 percent of U.S. households with high-speed Internet.²⁷ Assuming counterfactually that private providers lacked the incentive to provide Internet access, an adequate level of a genuine public good (unlike Internet access) can still occur under competitive conditions so long as consumers can find each other and pool their resources

²³ See, e.g., Paul Samuleson, *The Pure Theory of Public Expenditure*, 36(4) REVIEW OF ECONOMICS AND STATISTICS 387–389.

²⁴ It differs from a purely private good in the sense that the social benefits of supplying the good are likely to exceed the private benefits because of network externalities. See, e.g., Austan Goolsbee, *Subsidies, the Value of Broadband, and the Importance of Fixed Costs*, in BROADBAND: SHOULD WE REGULATE HIGH-SPEED INTERNET ACCESS? 278, 278–79 (Robert W. Crandall & James H. Alleman eds., 2002). In such cases, it may make sense to subsidize the provision of the service. But this does not imply that the service should be provided by a rate-regulated monopolist.

²⁵ See, e.g., Cisco, *Cable Modems: Troubleshooting Slow Performance in Cable Modem Networks*, Apr. 24, 2008 (explaining how cable DOCSIS 3.0 can suffer from “Upstream and downstream channel congestion” and “Backhaul network or Internet congestion”), available at http://www.cisco.com/en/US/tech/tk86/tk89/technologies_tech_note09186a00800b123c.shtml.

²⁶ See, e.g., Google Fiber, *Network Management Guide for Google Fiber Internet Services* (“In times of acute congestion, Google Fiber Internet service bandwidth will be fairly allocated among subscribers without regard to the subscribers’ online activities or the protocols or applications that the subscribers are using. While acute congestion is occurring, subscribers will still be able to use the lawful content, services, and applications of their choice, but this fair sharing of bandwidth may result in slower download and upload speeds and slower response times from websites and Internet-based applications and services.”), available at <https://fiber.google.com/legal/network.html>; EHow Tech, *What Controls Bandwidth From Verizon FiOS?* (“Unlike DSL Internet, Internet traffic and congestion may affect your FiOS connection. As with cable Internet connections, when there’s heavy Internet traffic in your area, you may notice slower speeds. These peak hours usually coincide with evenings.”), available at http://www.ehow.com/info_8749068_controls-bandwidth-verizon-fios.html#ixzz2HgaHWXrE.

²⁷ See NCTA, *Availability as of March 2012*, available at <http://www.ncta.com/StatsGroup/Availability.aspx>.

based on the public good's value to themselves.²⁸ Although Coase's no-transaction-cost condition may not be satisfied with millions of broadband subscribers, the point is that public goods may not necessitate government intervention to achieve a high level of economic efficiency.

Even when government intervention is required to overcome free-rider problems associated with public goods, the best intervention will only rarely involve setting up a government-regulated utility that provides broadband access, as Crawford suggests. There are many other interventions that will typically yield higher levels of economic efficiency,²⁹ including directly subsidizing the production of the public good by the lowest cost producers. This could be accomplished through a reverse auction, in which firms competitively bid on providing services to those who might otherwise not purchase them in the marketplace.³⁰

Economists studying the Internet have generally concluded that broadband access is not a public good. At a 1995 seminar during the early days of the Internet, Jeff Mackie-Mason of Michigan explained why Internet access cannot be provided as a public good: "In the information world, one person can put lots of traffic on the network. This is precisely the place where public good provisioning fails. There will be costs if we want to preserve [Internet access] as a private good."³¹ Hal Varian of Michigan, who is now Google's chief economist, explained that "If there is a monopolistic supplier [of Internet access], then he can abuse the system. Therefore, we need to encourage methods to provide for a competitive market. Sensible pricing is necessary to support a competitive market for network provision."³² If Varian believed that network provision were a public good, then he would not embrace market forces for its provision. David Loomis of Illinois State explains that "If there is no congestion, then the Internet possesses the characteristics of a public good (it is both nondepletable and nonexcludable). . . . If congestion is present, then the Internet is a public good only in the casual

²⁸ See Ronald Coase, *The Lighthouse in Economics*, 17 (2) JOURNAL OF LAW AND ECONOMICS 357–376 (1974).

²⁹ Most economists, including ourselves, tend to support economic "efficiency", which may not incorporate other values such as social equity. To the extent one places a high value on social equity, however, there are other policies that could achieve that objective, including subsidizing broadband access for low-income households.

³⁰ See, e.g., Anthony C. Paul, Karen L. Palmer & Matt Woerman, Resources for the Future Discussion Paper No. 11-11 (April 2011) (showing the results of a reverse auction for electricity savings from different levels of public investment).

³¹ Internet Economics Workshop Notes, Jan. 1995, available at <http://quod.lib.umich.edu/j/jep/3336451.0001.138?rgn=main;view=fulltext>.

³² *Id.* A full treatment of Internet economics is beyond the scope of this paper. For a good overview, see HAL VARIAN & CARL SHAPIRO, INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY (Harvard Business School Press 1999).

sense. Much like the park, it is nonexcludable but depletable. Access is not restricted, but the quality of service is depleted when congestion begins to occur.”³³

Another possible motivation for regulation is the cost structure of the industry supplying the good. Crawford asserts that the provision of wireline Internet is a “natural monopoly,” safely secured by cable operators for the foreseeable future.³⁴ Natural monopoly is a condition about the cost-technology of an industry whereby it may be most efficient for production to be concentrated in a single firm.³⁵ One implication of a natural monopoly is that the largest provider in the industry has an overwhelming cost advantage over its rivals, who may be discouraged from entering due to this cost advantage.

As recognized by regulators of many network industries, supply by competing firms can benefit consumers even in a world where the main supplier may enjoy significant scale economies in production. The benefits can arise in both the short and the long term. In the short term, competition can result in lower prices and better quality of service.³⁶ In the long-term, competition can spur innovations that otherwise would not have taken place.

While Crawford’s concerns about economic barriers to industry are plausible, the fact that we observe entry into this industry by fiber-based telephone providers (“telcos”) and wireless providers suggests that competition that benefits consumers is possible, particularly if one gets rid of regulations that discourage entry. Yet, Crawford does not take this possibility seriously because she believes that cable modem providers have a lock on the high-speed broadband market.

To be sure, cable modem providers are the largest providers of wireline broadband in the country by number of broadband subscriptions. But does cable have such an overwhelming cost advantage over its rivals that entry by rivals can be discounted? Verizon, AT&T, and even rural telcos have been laying fiber furiously over the past decade: In the span of just five years after the open-access litigation ended and the FCC adopted a policy of regulatory forbearance

³³ David Loomis, Chapter 1: Internet Basics, *available at* <http://economics.illinoisstate.edu/dloomis/eco235/downloads/internet.PDF>

³⁴ Crawford at 17 (318).

³⁵ See William Baumol, *On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry*, 67 AMERICAN ECONOMIC REVIEW 809-22 (1977).

³⁶ According to Justice Stephen Breyer, who assisted in deregulating the airline industry in the 1970s, competition has caused revenue per passenger mile to decline from an inflation-adjusted 33 cents in 1974 to 13 cents in the first half of 2010. See Stephen Breyer, *Airline Deregulation, Revisited*, BUSINESS WEEK, Jan. 20, 2011. Before it was deregulated, the airline industry was mistakenly believed to be a natural monopoly, incapable of benefiting from competitive forces.

for fiber and IP networks in 2003, the miles of optical fiber doubled from five to ten million,³⁷ and regional Bell operating companies collectively spent \$15 billion annually on broadband investments.³⁸

While it is true that cable plant currently covers more homes than telco-provided fiber,³⁹ that “coverage gap” is manageable and, as demonstrated below, is shrinking. Whether or not the broadband market appears to be structurally competitive depends in part on how one defines fast broadband. Although the FCC has redrawn the line of what constitutes fast broadband at 4 megabits per second (Mbps) down,⁴⁰ the agency provides competitive breakdowns at different speed thresholds. As of June 2011 (the latest available data), 55 percent of U.S. households were beholden to a single provider of wireline broadband at 6 Mbps down, but only 14 percent of U.S. households were beholden to a single provider of wireline broadband at 3 Mbps down.⁴¹ If one accepts that there is no meaningful difference to consumers between download speeds of 3 and 4 Mbps, then the notion of natural monopoly of wireline broadband evaporates, as a full 84 percent of U.S. households (equal to 100 percent less 14 percent with one option less 2 percent with no options) had a choice of two or more wireline broadband providers as of June 2011. Crawford can ignore such evidence because her idealized speed standard of 1000 Mbps

³⁷ The causal link between forbearance and investment has been recognized by several economists, including a former FCC chief economist, Dr. Leslie Marx. See Commissioner Pai’s Principles, *available at* <http://sites.duke.edu/marx/2012/07/31/pai-principles/>.

³⁸ See Robert C. Atkinson & Ivy E. Schultz, Columbia Institute for Tele-Information (CITI), *Broadband in America: Where It Is and Where It Is Going (According to Broadband Service Providers)*, Preliminary Report Prepared for the Staff of the FCC’s Omnibus Broadband Initiative, Nov. 11, 2009, at 66 (Table 15), *available at* http://www.broadband.gov/docs/Broadband_in_America.pdf. Crawford makes much of the Verizon-SpectrumCo deal, in which Verizon’s agreed to cross-market cable video service, suggesting that such an arrangement is evidence that wireless and wireline access do not compete. But the Department of Justice imposed several limitations on the joint-marketing deal, including capping its duration and forbidding cross-marketing pacts in markets where Verizon offers its FiOS service. See Justice Department Requires Changes To Verizon-Cable Company Transactions To Protect Consumers, Allows Procompetitive Spectrum Acquisitions to Go Forward, Aug. 16, 2012, *available at* http://www.justice.gov/atr/public/press_releases/2012/286098.htm. That Comcast sought to market Verizon’s wireless service in a bundle that includes Comcast’s cable modem service is also consistent with the notion that Comcast perceives wireless to be a threat to its wireline Internet offering. In particular, by requiring its customers to take 4G LTE *and* cable modem service as part of a bundle, a cable operator might be able to slow wireless substitution. This is similar to a strategy called “authentication,” which requires online video services to be purchased alongside cable video services, which could slow cord-cutting.

³⁹ According to Leichtman Research Group, cable appears to be adding a disproportionate share of new wireline broadband subscribers of late. But this does not prove that cable has secured the wireline segment forever, as the competition for broadband is dynamic. In the near future, cable must contend with faster wireless connections, more ubiquitous U-Verse connections, and new satellite broadband offerings.

⁴⁰ Sixth Broadband Progress Report and Order on Reconsideration, para. 4; Seventh Broadband Progress Report and Order on Reconsideration, at 2 n.2, *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-11-78A1.pdf.

⁴¹ FCC Wireline Competition Bureau, Internet Access Services: Status as of June 30, 2011 (released June 2012), at 8, *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0614/DOC-314630A1.pdf.

vastly exceeds that of the 4 Mbps definition of the FCC. With a few notable exceptions, such as Google's fiber network Kansas City, those speeds do not exist in the United States.

The June 2011 data from the Wireline Competition Bureau do not reflect broadband deployment between June 2011 and December 2012, nor do they reflect the additional 32 million customer locations that will be covered by some variant of AT&T's U-Verse over the next three years, which will further shrink the coverage gap.⁴² Contrary to Crawford's assertions,⁴³ the FCC's National Broadband Plan of March 2010 states that the potential "tipping" to a cable monopoly may occur if "expected returns to telephone companies do not justify" such upgrades.⁴⁴ The plan never said that such tipping *would* occur; it merely laid out the (rather obvious) condition under which such tipping could occur. Clearly, telcos would not have continued to invest since March 2010 if they believed the net expected returns were negative.

A corollary of an industry characterized by natural monopoly is that the incumbent firm possesses a significant cost advantage over its rivals. But there is no credible evidence that cable possesses a significant cost advantage vis-à-vis its wireline rivals. Unlike many fiber-based broadband solutions, cable companies typically run fiber to neighborhood "nodes," which forces subscribers to share bandwidth. To offer faster speeds, cable operators would have to spend billions more on their networks, an investment that cable operators cannot currently justify.⁴⁵ Thus, cable modem providers do not appear to possess any *going-forward* cost advantage. With respect to historical advantages, cable's control over municipalities (and the franchising process in particular) seems to have run its course, and cable's control of affiliated programming is subject to program-access protections. Crawford notes that it cost more for telcos historically to dig up copper and replace it with fiber than to upgrade cable plant, but any prior sunk cost advantage would not likely affect the telcos' pricing of fiber-based offerings and thus would not likely affect competition.

Crawford takes the natural monopoly argument a step farther by declaring the provision of wireline broadband to be a distinct market from wireless broadband.⁴⁶ Crawford acknowledges that both the National Broadband Plan and the Department of Justice consider wireless technologies to be the "best way of solving the country's high-speed Internet access deficit."⁴⁷

⁴² AT&T to Invest \$14 Billion to Significantly Expand Wireless and Wireline Broadband Networks, Support Future IP Data Growth and New Services, Nov. 7, 2012, available at <http://www.att.com/gen/press-room?pid=23506&cdvn=news&newsarticleid=35661>.

⁴³ Crawford at 60 (1121) (claiming that the National Broadband Plan concluded that "phone companies were reluctant to make the necessary investments to lay fiber").

⁴⁴ Federal Communications Commission, Connecting American: The National Broadband Plan (2010) at 44.

⁴⁵ Shalini Ramachandran, *Speedier Internet Rivals Push Past Cable*, WALL STREET JOURNAL, Jan. 1, 2013.

⁴⁶ Crawford at 10 (190).

⁴⁷ *Id.* at 242.

To sweep wireless broadband connections under the rug, Crawford claims that wireless broadband is a complement (rather than a substitute) to wireline connections,⁴⁸ and thus cannot be counted on to constrain the price of wireline connections (the role of economic substitutes). Wireless connections might be complements for high-earning professionals, but getting two doses of high-speed Internet would be a luxury for many Americans.⁴⁹ Moreover, wireless speeds are approaching cable modem speeds, which suggests that 4G wireless connections could be a reasonable substitute for cable modem connections in the near future.⁵⁰ A June 2012 speed test by *PC Magazine* registered average 4G LTE download speeds of 15 Mbps;⁵¹ by comparison, average cable modem download speeds range from 14.2 Mbps (Insight) to 17.2 Mbps (Comcast and Charter).⁵² Crawford often cites the maximum speeds made possible by cable modems, which does not inform the issue of whether cable modem and wireless are likely to be economic substitutes in practice.

Other data suggests that wireless substitution will increase over the short term. Cisco recently estimated that up to 15 percent of U.S. consumers could cut their broadband wireline cord in favor of a mobile data connection by 2016.⁵³ According to a June 2012 Pew Internet survey, 17

⁴⁸ *Id.* at 64 (1196).

⁴⁹ That 83 percent of smartphone subscribers also have a wireline connection at home today does not tell us much about whether wireless 4G service constrains the price of cable on a going-forward basis. See John Horrigan, *Recent Tech Adoption Trends and Implications for the Digital Divide* (August 2012) at 6. Horrigan notes that only seven percent of survey respondents are smartphone-only users. *Id.* at 10. But there are other ways to connect wirelessly to the Internet besides a smartphone, including through a wireless card connected to a tablet or laptop. In any event, we expect the share of wireless-only data households to follow the same trajectory as wireless-only voice households. Importantly, Horrigan never goes so far as to describe wireless as a complement to wireline connections.

⁵⁰ Although wireless connections are shared and therefore subject to degradation from overcrowding, so too are certain wireline networks (for example, cable modem), albeit to a lesser extent. As wireless technologies improve, we expect these differences to lessen.

⁵¹ *Fastest Mobile Networks*, PC MAGAZINE, June 18, 2012, available at <http://www.pcmag.com/article2/0,2817,2405597,00.asp>.

⁵² Todd Spangler, *Cable Had Fastest Broadband Downloads In 2011: Net Index MSOs Hold Top Six Spots Based on Average Downstream Speeds*, Multichannel News, Jan. 13, 2012, available at http://www.multichannel.com/article/479061-Cable_Had_Fastest_Broadband_Downloads_In_2011_Net_Index.php.

⁵³ Cisco, *To Prevent 15% of Customers from Cord-Cutting, Fixed Broadband SPs Consider WiFi Solutions to Deliver the Mobility Customers Seek*, Oct. 2011, available at http://www.cisco.com/web/about/ac79/docs/FastFacts/FastFacts_WiFi_Defense_against_BB_Cord_Cutting_Oct2011.pdf (“Mobile data connectivity is becoming increasingly faster, reliable and affordable. Expanding further into time- and location-sensitive activities makes mobile data a competitive substitution candidate for fixed broadband. As the services become more similar in terms of the value that they provide, the more incentive a consumer has to select mobile data as the exclusive service.”). See also Chris Nuttall, *Qualcomm Takes Center Stage at Las Vegas*, FINANCIAL TIMES, Jan. 9, 2013 (noting that platform for mobile devices “has processing power that nearly rivals that of PC chips.”); *Wireless Carriers Move Beyond Smartphones*, WALL STREET JOURNAL, Jan. 11, 2013 (“As next-generation high-speed wireless networks using LTE technology become more pervasive—blurring the lines between wired and wireless broadband, and allowing for greater network capacity—more products can be easily connected.”).

percent of cell phone owners do most of their online browsing on their phone, rather than on a computer or other device.⁵⁴ Consumers would not behave this way if the two connection methods were complements. For the same reason that satellite-delivered television is in the same product market as cable television—consumers are indifferent as to how the video signal appears on the screen—wireless and wireline broadband connections should be considered part of the same product market for determining cable’s market power.

The most direct way to assess a cable company’s alleged monopoly power is to examine whether it is behaving like a monopolist. Certain cable providers such as Comcast have sought to exclude Netflix and other “over-the-top” rivals by counting their rivals’ packets (but not Comcast’s) against a data cap. The classic exercise of monopoly power, however, is to raise prices above competitive rates. In Washington, D.C., RCN, a competitive cable overbuilder, charges \$40 per month for up to 25 Mbps service;⁵⁵ by comparison, Comcast charged \$49 per month for download speeds up to 20 Mbps,⁵⁶ suggesting a premium over competitive levels. Wallsten and Mallahan demonstrate that prices for cable modem service are up to \$4.84 per month lower where cable faces an overbuilder.⁵⁷ These findings suggest that Comcast might enjoy some pricing power. But that alone does not imply we should give up on competition, especially given the inroads of fiber-based solutions and wireless 4G LTE connections at the gate. Indeed, in industries such as broadband access with significant fixed costs and negligible marginal costs, providers cannot be expected to price at marginal costs; else they would never recoup their investments.

⁵⁴ Aaron Smith, Pew Internet & American Life Project, Cell Internet Use 2012, June 26, 2012, *available at* <http://www.pewinternet.org/Reports/2012/Cell-Internet-Use-2012.aspx>. Another survey suggests that 40 percent of smartphone-only users cited “cost” as the main reason for not subscribing to a wireline connection, indicating that they might subscribe to both without any constraints. Horrigan, *supra*, at 16. But this evidence also implies that a *majority* of smartphone-only users did not consider cost to be the main reason to forgo a wireline connection, suggesting their preferences are pushing them toward an all-wireless solution.

⁵⁵ RCN Plans and Pricing, *available at* <http://www.rcn.com/dc-metro/high-speed-internet/services-and-pricing>.

⁵⁶ Comcast Pricing, *available at* <https://www.comcast.com/shop/buyflow2/productsexisting.csp?SourcePage=Internet&offerid=210183&&Inflow=1>. Comcast also offered a special offer for the same package (“Performance”) that was \$20 per month for the first six months, \$35 per month of the next six months, and between \$43 and \$63 thereafter depending on location.

⁵⁷ Scott Wallsten & Colleen Mallahan, Residential Broadband Competition in the United States, BE Press Working Paper, March 2010, at 32, Table 7 (finding that cable modem prices decline between \$1.25 (cable speed tier 6) and \$4.84 (cable speed tier 5) per month when facing an overbuilder), *available at* http://works.bepress.com/cgi/viewcontent.cgi?article=1105&context=scott_wallsten. These coefficients are estimated at the 1 percent significance level. In contrast, the authors find that cable modem prices do not decline significantly when facing DSL or fiber to the home (their “two-provider” results), suggesting that either (1) DSL does not constrain the price of cable modem service, thereby neutralizing the impact of fiber competition or (2) neither DSL nor fiber constrain the price of cable modem service. Unfortunately, the authors do not estimate the incremental price-constraining effect of fiber only.

A simple point about economics that Crawford gets wrong is that even a monopolist will not raise prices forever. The answer to Crawford’s rhetorical question about “what will constrain the market-powerful distributor from raising prices every six months”⁵⁸ is straightforward: The monopolist’s own self-interest will prevent it from raising prices—the solution to its optimization problem is the same—unless the demand for its services or its marginal costs changes.

Crawford provides an analysis of competition in the wireless market that has similar flaws to her analysis of competition in the cable market. Even though wireless is allegedly too impotent to constrain cable modem prices, Crawford considers the wireless market to be its own separate duopoly, where the market power of AT&T and Verizon could be dissipated only if government “could require existing carriers to share their towers, thus lowering the costs of doing business for new competitors,” and “could oblige wireless providers to act as common carriers when it comes to the Internet data passing over their airwaves.”⁵⁹ Like her use of “natural monopoly,” Crawford’s characterization of a wireless duopoly is not consistent with direct evidence of the carriers’ pricing power, which indicates that prices for wireless voice services have declined every year since 2002 except for 2008 (when prices were the same as 2007).⁶⁰ The same phenomenon of falling prices is occurring for wireless data: According to Nielsen, the cost of data services has declined nearly 90 percent since 2008, from \$0.47 per MB down to only \$0.05 per MB. If AT&T and Verizon possessed market power, as Crawford asserts, then wireless prices would not likely be falling as rapidly as we observe. Crawford cites difference in prices charged by U.S. and European carriers for wireless data as evidence of market power, but such comparisons fail to control for potential differences in quality of service.⁶¹ She argues that T-Mobile “did not even enter the [700 MHz] auction” in 2008 because AT&T and Verizon were “allowed to bid even though they already had enormous holdings.”⁶² Yet she neglects to mention that T-Mobile was the *largest* auction winner in the FCC’s 2006

⁵⁸ Crawford at 154.

⁵⁹ *Id.* at 251 (4694).

⁶⁰ For greater detail, see Robert Hahn, Gerald Faulhaber, & Hal Singer, *Assessing Competition in U.S. Wireless Markets: Review of the FCC’s Competition Reports*, 64 FEDERAL COMMUNICATIONS LAW JOURNAL (2011). See also Robert Hahn & Hal Singer, *Wireless Competition: An Update*, Georgetown Economic Policy Vignette, May 2, 2011, available at http://www.gcbpp.org/files/EPV/EPV_WirelessCompetition_AnUpdate.pdf.

⁶¹ For example, Verizon’s LTE network covered two-thirds of the U.S. population in April 2012. See Mike Dano, AT&T, *T-Mobile wrangling over who has the largest 4G network*, FIERCE WIRELESS, April 18, 2012, <http://www.fiercewireless.com/story/att-t-mobile-wrangling-over-who-has-largest-4g-network/2012-04-18#ixzz2Hh8gBMs2>. In contrast, the geographic coverage of European carriers’ LTE networks is spotty, prompting the European Commissioner Neelie Kroes to proclaim in October 2012 that the absence of LTE across the continent was proving to be a major problem in Europe. EU pushing for faster rollout of 4G LTE networks, Neowin.net, Oct. 2, 2012, available at <http://www.neowin.net/news/eu-pushing-for-faster-rollout-of-4g-lte-networks>.

⁶² Crawford at 241 (4498)

Advanced Wireless Services auction.⁶³ She asserts that AT&T and Verizon have an unfair cost advantage due to their low-frequency spectrum holdings,⁶⁴ but neglects to mention that high-frequency spectrum (owned by their wireless rivals) sells at a discount (relative to low-frequency spectrum) to accommodate the added expense of additional cell sites (a substitute for spectrum in the production process).

One frequently needs a crisis to motivate a book, but we don't see one. In fact, we see just the opposite—an explosion in technology in American communications and communications worldwide. It is not clear that the “federal government’s problem”⁶⁵ is so large that it requires a major policy response. As we explain in the next section, the appropriate solution to the “vertical integration problem” is more modest.

3. AN ALTERNATE APPROACH TO POLICY

Crawford correctly documents the potential abuses that may occur from “vertical integration”—for example, allowing a large cable company that offers fast broadband to acquire a major content provider. A vertically integrated operator’s exclusion of both distribution and content rivals is a key theme of her book.⁶⁶ Past offenses of vertically integrated cable operators highlighted in the book include denying access to must-have programming,⁶⁷ seeking supra-competitive rates for affiliated programming,⁶⁸ boxing Google and Apple out of the set-top box marketplace,⁶⁹ tying online content such as sports and video-on-demand to the purchase of a cable video subscription,⁷⁰ and counting Netflix-generated downloads against a user’s data cap but not its own.⁷¹ She suggests that these same kinds of abuses will continue in the Internet space—for example, a cable operator could degrade the quality of a stream that competes with an affiliated website or cable video program.⁷²

⁶³ *AWS, It's Done*, DAILY WIRELESS, Sept. 18, 2006 (showing that T-Mobile outbid Verizon \$4.2 billion to \$2.8 billion), available at <http://www.dailywireless.org/2006/09/18/aws-its-done/>.

⁶⁴ Crawford at 247 (4619)

⁶⁵ *Id.* at 241.

⁶⁶ *Id.* at 15 (292).

⁶⁷ *Id.* at 139 (explaining that denial of access to affiliated programming is “one of the most powerful ways an incumbent operator can kill off competition.”); 144-45 (denying satellite companies access to CSN Philadelphia); 149 (citing Verizon’s complaint about Comcast’s “long history” of withholding access to regional sports networks).

⁶⁸ *Id.* at 148 (explaining that denial of access to affiliated programming is “one of the most powerful ways an incumbent operator can kill off competition.”); 144-45 (denying satellite companies access to CSN Philadelphia).

⁶⁹ *Id.* at 224.

⁷⁰ *Id.* at 224.

⁷¹ *Id.* at 231.

⁷² *Id.* at 153 (explaining that a cable operator could degrade the quality of service for ESPN’s website).

According to Crawford, the best solution to this discrimination problem is to bar vertical relationships,⁷³ even when a broadband operator merely contracts with a website for priority delivery.⁷⁴ She would restrict high-speed broadband access providers to the role of providing fast pipes. Although we are sympathetic to the objective of limiting such abuses, we think the “utility model” of regulation she recommends has serious limitations, particularly for encouraging cost-effective innovation. Furthermore, we believe that conduct-based remedies that preserve potential efficiencies from vertical integration are likely to be superior. In particular, we, and other researchers,⁷⁵ advocate a case-by-case review of discrimination complaints in the Internet space as means of discouraging abusive practices.

The template for adjudicating discrimination complaints on the Internet already exists in the cable video space.⁷⁶ There, independent networks can seek protection from discriminatory carriage by filing complaints under Section 616(a)(3) of the Cable Act, which prevents a vertically integrated cable operator “from engaging in conduct the effect of which is to unreasonably restrain the ability of an unaffiliated video programming vendor to compete fairly by discriminating in video programming distribution on the basis of affiliation or nonaffiliation of vendors in the selection, terms, or conditions for carriage of video programming provided by such vendors.” Although the FCC may not currently have jurisdiction to regulate broadband access providers,⁷⁷ Congress could extend these non-discrimination protections into the Internet, protecting independent content providers from potential abuses by vertically integrated access providers (and even search engines). With the proper authority, the FCC could serve as a gatekeeper for discrimination complaints (as it current does in the video space), sending only meritorious cases to an administrative law judge, whose decision would be subject to a vote of the Commissioners.⁷⁸

There are several benefits of this case-by-case approach. *First*, the complainants would bear the litigation costs, which should discourage frivolous cases. In the absence of a dispute-resolution

⁷³ In this sense, Crawford’s prescription is no different from that of Tim Wu. See TIM WU, *MASTER SWITCH: THE RISE AND FALL OF INFORMATION EMPIRES* (Vintage Books 2011).

⁷⁴ Crawford at 230 (4298) (criticizing the FCC’s “weak net neutrality rules”).

⁷⁵ See, e.g., CHRISTOPHER YOO, *DYNAMIC INTERNET: HOW TECHNOLOGY, USERS, AND BUSINESSES ARE TRANSFORMING THE NETWORK* 139 (AEI Press 2012) (“Perhaps the best means for creating such an environment is to create a regulatory-enforcement regime that evaluates any charges of improper behavior on a case-by-case basis after the fact.”).

⁷⁶ For a more complete treatment of this matter, see Robert Hahn, Robert Litan & Hal Singer, *Addressing the Next Wave of Internet Regulation: Toward a Workable Principle for Nondiscrimination*, 4 *REGULATION & GOVERNANCE* (2010).

⁷⁷ At the time of this writing, the FCC’s Open Internet Order, which seeks to regulate broadband access providers in a more draconian way, is under appeal at the D.C. Circuit. Moreover, in April 2010, the D.C. Circuit ruled in the BitTorrent case that the FCC did not have the power to make Comcast ensure that its network management was reasonable.

⁷⁸ The question of whether the FCC is the proper gatekeeper for case-by-case enforcement of discrimination complaints on the Internet is beyond the scope of this paper. An alternative is to use administrative law judges working under the auspices of the FTC, who specialize in a range of vertical integration issues.

mechanism for discrimination claims on the Internet, complainants are invited to engage in “rent-seeking” activity, by asking antitrust agencies such as the FTC (as in the recent Google case) to bring cases against their rivals, which shifts the investigative burden to taxpayers. *Second*, by treating vertical arrangements as presumptively legal—the opposite tact from that taken in the FCC’s Open Internet Order, which treated contracts for priority delivery as presumptively illegal—we should observe more economically efficient innovation in the Internet space. For example, if a broadband provider could contract with a website for real-time delivery, more resources would flow to the development of websites that take advantage of such services. Complaining websites would bear the burden of proving that an arrangement with an affiliated site harmed its ability to compete effectively. (Under the Open Internet Order, broadband access providers bear the burden of proving that such arrangements are pro-competitive.) *Third*, the case-by-case approach appears to be effective at limiting abuses in the cable video space. That only a few complainants have come forward—MASN, Tennis Channel, NFL Network, WealthTV, and GSN—suggests that discrimination in favor of affiliated programming is not rampant.⁷⁹ We would expect the same deterrent effect in the Internet space. *Fourth*, the agency resources needed to adjudicate these disputes are small compared to those needed to write 300-page orders that proscribe certain behaviors. Indeed, aside from the initial screening and the post-decision review, the adjudication costs largely fall on the parties to the dispute and on the administrative law judge. *Fifth*, barring a reversal by the Second Circuit in *Tennis Channel v. Comcast* that constrains the FCC’s ability to enforce its non-discrimination remedy (equal carriage with Comcast’s similarly situated, affiliated content), the case-by-case approach appears to be enforceable. Although there are downsides to case-by-case adjudication, including unpredictability of outcomes and potential effects on speech, we believe the benefits greatly outweigh the costs.

Assuming there is not enough competition in broadband access, the best policy is to promote competition. In particular, policymakers should look for ways to reduce barriers to entry.⁸⁰ Telcos would be better able to compete against cable providers—an objective that Crawford incorrectly has abandoned—if they were freed from their obligations to maintain legacy (copper) networks or if they were permitted to contract with websites for priority delivery (in a non-discriminatory way). Yet Ms. Crawford opposes both of these ideas.⁸¹ She does not seem to appreciate how the Open Internet Order’s restriction on raising revenue from websites requires that all revenues be raised on the backs of consumers, which necessarily reduces broadband

⁷⁹ This modest level of litigation activity could also be consistent with the claim that the process is inefficiently stacked against independent programmers, or with the claim that the litigation costs are excessively high. But we tend to discount these possibilities, which would imply close to zero activity.

⁸⁰ For a full treatment, ROBERT LITAN & HAL SINGER, *THE NEED FOR SPEED: A NEW FRAMEWORK FOR TELECOMMUNICATIONS POLICY FOR THE 21ST CENTURY* (Brookings Press 2013).

⁸¹ Crawford at 230 (4298) (criticizing the FCC’s “weak” net neutrality rules); 260 (4850) (noting the end of the legacy copper network).

subscriptions.⁸² Nor does she appreciate how much of the telcos' resources are consumed in maintaining the copper network.⁸³ Although we cannot be sure that telcos would use the freed-up resources to invest in fiber, we can be sure that removing regulatory restrictions on the telcos would tend to lower their overall costs of investing. This is because the removal of regulatory restrictions would give the firms access to a larger pool of capital at the same cost.

To further invigorate competition in this space from incumbent wireless providers, the FCC should adopt a more light-handed approach to regulation. In particular, the Commission should: (1) not impose a global spectrum cap on individual firms (so that spectrum-constrained Verizon and AT&T could better compete against cable providers); (2) not impose business strategies on auction winners (so that market forces rather than captured regulators could dictate strategies); and (3) allow secondary spectrum market transactions to proceed without interference (so that rents would not be steered to merger opponents). Crawford appears to oppose these ideas under the improper objective of increasing the number of wireless competitors.⁸⁴ But increasing the number of competitors will not necessarily increase consumer welfare; given increasingly important economies of scale with the provision of bandwidth-intensive applications, the socially optimal number of wireless providers might be fewer than five per market. As an alternative to a global spectrum cap, the FCC could impose an auction-specific spectrum cap. For example, it could bar a single firm from acquiring more than some specified percentage of spectrum in a given market in that auction, which would ameliorate Crawford's concern that "AT&T and Verizon would again spend whatever they needed [at auction] to keep competitors at bay."⁸⁵ Regulators should keep in mind that the benefits of injecting even more competition at the margin (by changing the auction rules) could be small, whereas the costs of failing to satisfy the spectrum demands of incumbent carriers and of inducing uneconomic entry (think NextWave) may be significant. As explained by Ofcom, the FCC's counterpart in Europe, a combination of above-1 GHz spectrum and a small injection of below-1 GHz spectrum is sufficient for entrants to compete effectively.⁸⁶

⁸² See, e.g., Kevin Caves, *Modeling the Welfare Effects of Net Neutrality Regulation: A Comment on Economides and Tåg*, INFORMATION ECONOMICS AND POLICY (2012) (showing that net neutrality may function as a vehicle for transferring surplus from consumers and platform operators to content providers, rather than creating surplus).

⁸³ See, e.g., Robert C. Atkinson and Ivy E. Schultz, *Broadband in America: Where It Is and Where It Is Going (According to Broadband Service Providers)*, preliminary report prepared for the staff of the FCC's Omnibus Broadband Initiative, Columbia Institute for Tele-Information (CITI), November 11, 2009 (estimating that up to half of RBOCs' capital expenditures were not devoted to broadband activities).

⁸⁴ Crawford at 240 (4482) (complaining that "Americans were left with just three large wireless providers" by 2003); at 269 (seeking to limit Verizon's and AT&T's access to additional spectrum).

⁸⁵ Crawford at 243 (4532).

⁸⁶ Ofcom, Consultation On Assessment Of Future Mobile Competition and Proposals for the Award for 800Mhz and 2.6 GHz Spectrum and Related Issues, Annexes 7-13, 29 (2011).

Partly as a result of the allegedly monopolistic practices in the high-speed broadband market, Crawford argues that there is a growing “digital divide” that separates wealthy from low-income Americans in terms of their access to the Internet. Citing Hong Kong and South Korea, Crawford argues that “other developed countries have a watchdog to ensure that all their citizens are connected at cheap rates to the fastest possible open-access ramps (that is, fiber-optic access) to the Internet,”⁸⁷ intimating that a similar policy is needed here. She notes that “Hispanics, rural Americans, African Americans, and low-income users disproportionately rely on wireless connections for access to the Internet.”⁸⁸

It is not surprising that wealthier people have greater access to the internet; they likely have greater access to most goods in the U.S. economy. Unlike Crawford, we see positive signs in the mass adoption of wireless access technologies. For example, a 2012 Pew survey shows that the same percentage of white, black, and Hispanic adults (roughly 62 percent) go online wirelessly with a laptop or a cellphone; that slightly more blacks and Hispanics own a smartphone than do whites (49 versus 45 percent); and that twice as many blacks and Hispanics go online mostly using their cell phone compared to whites (38 versus 17 percent).⁸⁹ The third statistic may indicate that blacks and Hispanics lack wireline access relative to whites *or* that blacks and Hispanics simply have stronger preferences for wireless connections relative to whites; if the latter, there is no problem to be solved. Even if incomes differences explain the differences in broadband choices,⁹⁰ a more modest solution is income-based subsidies. Of course, if blacks and Hispanics used their subsidies to acquire mostly wireless broadband, then Crawford’s ideal of 100 percent fiber connections would be dashed.

Given the advancing speeds of wireless broadband (noted above), we are not convinced that wireless access is an inferior pathway to the Internet for these racial groups. For example, it is not clear how these groups would benefit much at the margin by increasing their download speeds from 15 Mbps (current 4G LTE download speeds) to 1000 Mbps (the download speed Crawford demands for all Americans). Furthermore, even if the benefits were significant, they could fall short of the costs.⁹¹

It is not clear the extent to which the purported digital divide is a problem requiring intervention. The positive externalities of broadband—the basis for any subsidy—may not be sufficiently large to justify taxpayer-funded subsidies. Assuming some intervention were

⁸⁷ Crawford at 10 (198).

⁸⁸ Crawford at 237 (4421).

⁸⁹ Pew Internet, *The Power of Mobile* (Apr. 13, 2012), *available at* <http://pewinternet.org/Reports/2012/Digital-differences/Main-Report/The-power-of-mobile.aspx>.

⁹⁰ See Horrigan, *supra*, at 7 (noting that “groups that have trailed in home broadband adoption—such as African Americans and Hispanics—have quickly taken to Smartphones.”)

⁹¹ Crawford at 263 (4916) (“What does America really need? For starters, most Americans should have access to reasonably priced 1-Gb symmetric fiber-to-the-home networks.”).

warranted, the nature of the intervention would vary depending on the objective. For example, if greater Internet access is the goal, then a subsidy (perhaps in the form of a tax credit) might be warranted. According to a 2011 NTIA survey of U.S. broadband adoptions, income was a significant determinant of broadband access,⁹² and households without computers comprised the vast majority of non-adopters of home broadband Internet access services.⁹³ The second finding suggests that subsidized computers (for example, free Kindle Fires or iPad Minis) might be an effective way to stimulate broadband adoption. Alternatively, if greater equity among race or income groups is the objective, then income redistribution might be the best policy.

One way of addressing the alleged digital divide that Crawford highlights is to impose “open access” obligations on broadband providers.⁹⁴ Unfortunately, we believe this policy prescription would do more harm than good in the U.S. In particular, it would further retard broadband deployment, by shifting profits from owners who build networks to resellers who lease them. Because the competition brought about by greater deployment reduces access prices, policies that reduce deployment perversely reduce broadband adoption. Citing the empirical findings of Professor Yochai Benkler, she claims that mandatory wholesale access at regulated rates in which a “predictable and fair structure under which competitors could share infrastructure has led to faster, competitive Internet access at lower costs around the world.”⁹⁵ These findings have not withstood empirical scrutiny. For example, Crandall, Eisenach and Ingraham showed, using regression analysis on a panel dataset that spanned nine years, that the long-run effect of copper unbundling on household broadband penetration rates is negative⁹⁶—the opposite of what Benkler claims. The authors explain that because “fiber-based broadband services face greater competition from both cable modem and wireless broadband alternatives than DSL-based services did at the time copper unbundling policies were adopted,” mandatory unbundling of fiber networks is not needed to reduce next-generation access prices, but could deter investment.⁹⁷

Throughout the book, Crawford raises a host of concerns about the allegedly monopolistic structure of the high-speed broadband industry. She is particularly critical of some mergers,

⁹² NTIA, DIGITAL NATION, Nov. 2011, at 12.

⁹³ *Id.* at 11.

⁹⁴ Crawford at 49 (923) (“Internet access, a service provided by both phone and cable companies, could have disrupted all these giant companies’ efforts to block competition, if only the open-access mandates of the act had held firm.”).

⁹⁵ *Id.* at 229.

⁹⁶ Robert W. Crandall, Jeffrey A. Eisenach, & Allan T. Ingraham, *The Long-Run Effects of Copper Unbundling and the Implications for Fiber*, 37 TELECOMMUNICATIONS POLICY (2013).

⁹⁷ *Id.* See also Robert W. Crandall, Allan T. Ingraham & Hal J. Singer, *Do Unbundling Policies Discourage CLEC Facilities-Based Investment?*, 4 TOPICS IN ECONOMIC ANALYSIS AND POLICY (2004).

such as the Comcast-NBCU transaction. Although her account of this merger is thorough,⁹⁸ she fails to advocate any meaningful reform of the FCC’s merger-review process. She laments that “voluntary agreements” the FCC typically extracts from merging parties “in the end are either unenforced or unenforceable.”⁹⁹ As explained above, to the extent the case-by-case approach to resolving disputes in the Internet space follows the practice observed in the video programming space, these protections are enforceable. Indeed, Comcast has already lost the first discrimination case litigated pursuant to the *NBCU Order*. Complaining parties should have sufficient incentives to note perceived abuses; and recognizing this threat, the vertically integrated distributor will likely temper its discriminatory intent. Moreover, the same forum that protects independent websites could be used by rival distributors seeking access to vertically integrated content.

Crawford makes a few critical mistakes in describing the FCC’s merger process. For example, she claims that regulators were persuaded by traditional efficiency defenses of vertical mergers related to “double marginalization”—that is, the avoidance of charging one markup at the wholesale level and a second markup at the retail level.¹⁰⁰ To the contrary, both the DOJ¹⁰¹ and the FCC¹⁰² largely rejected this defense, recognizing that Comcast would only have an incentive

⁹⁸ She misses a few details, which highlight the horse trading in the FCC’s merger review process. *See, e.g.,* Cecilia Kang, *David Cohen may be Comcast’s secret weapon, but in D.C. he’s a work rock star*, WASHINGTON POST, Oct. 29, 2012, available at http://articles.washingtonpost.com/2012-10-29/business/35499797_1_comcast-joel-kelsey-cable-television (explaining that David Cohen, Comcast’s head lobbyist, held back a plan to offer Internet service to the poor so that Comcast could use the “offer” as a bargaining chip in the merger-approval process, and that the FCC’s chairman seemingly claimed credit for the plan’s creation.) When discussing the plan aimed at low-income broadband customers, Crawford merely notes that “it would not be easy for customers to apply for it” and that it would not be available to existing subscribers. Crawford at 220 (4104).

⁹⁹ Crawford at 210 (3928).

¹⁰⁰ *Id.* at 216 (4035) (“The agency economists took the view that there would be positive gains from vertical integration between content and distribution; “double marginalization” (overhead overlaps triggered by the involvement of multiple companies could be reduced”). Of course, the concept of double marginalization does not concern overhead.

¹⁰¹ Department of Justice, Competitive Impact Statement, Case: 1:11-cv-00106 (Jan. 18, 2011), Sec. II.5 (“In particular, the JV is unlikely to achieve substantial savings from the elimination of double marginalization. . . . In certain industries, however, including the one at issue here, vertical mergers are far less likely to reduce or eliminate double marginalization. Documents, data, and testimony obtained from Defendants and third parties demonstrate that much, if not all, of any potential double marginalization is reduced, if not completely eliminated, through the course of contract negotiations between programmers and distributors over quantity and penetration discounts, tiering requirements, and other explicit and verifiable conditions.”), available at <http://www.justice.gov/atr/cases/f266100/266158.htm>.

¹⁰² Federal Communications Commission, Memorandum Opinion and Order, MB Docket No. 10-56 (Jan. 20, 2011) ¶ 237 (“But we conclude that the Applicants’ calculations likely overstate these benefits. We agree with ACA’s economist that the analysis of the benefits of double marginalization must account for revenues NBCU loses when subscribers who already receive NBCU programming from another MVPD switch to Comcast. As set forth in more detail in the Technical Appendix, we also question some of the key parameters that the Applicants’ economists assume, and conclude that the Applicants have failed to substantiate some of the likely benefits to consumers of eliminating double marginalization and have overstated others.”).

to reduce its retail price for NBCU programming to the extent that the subscribers it attracts from rival distributors did not previously have access to NBCU content;¹⁰³ because NBCU programming is so widely distributed, the traditional benefits of avoiding double marginalization would almost never apply, as Comcast would incur an “opportunity cost” of forgone NBCU license fees whenever Comcast induces a subscriber of a rival distributor to switch to Comcast. Crawford also claims that Comcast would be able to skirt the “completely ineffective” program-access protections that were extended to the Internet.¹⁰⁴ As it turns out, Comcast lost the first case brought by an OVD provider, Project Concord, pursuant to the NBUC Order.¹⁰⁵ She chides Comcast for failing to abide by its merger commitment to place similar channels in the same location on the dial.¹⁰⁶ Because Bloomberg TV competes directly with Comcast’s CNBC, Comcast cannot be expected to lay over and play dead; notwithstanding the merits of its defense, Comcast has a right to defend its position before the factfinder. Although Crawford is highly critical of the merger conditions, she never says what the FCC should have done or how the merger-review process could be improved. Although she implicitly opposes the merger, the closest she comes to offering a concrete remedy is her suggestion that Comcast be labeled a “public utility,”¹⁰⁷ presumably subject to price regulation and open access obligations.¹⁰⁸

When it comes to mergers, we and others¹⁰⁹ advocate that the FCC be stripped of its merger authority, not because we want more anticompetitive mergers to succeed, but because a second approval unnecessarily politicizes the process and imposes significant costs on the merging parties. Making the FCC an advisor to the DOJ on telecommunication mergers (while removing the FCC’s vote) would simplify and depoliticize the process. It would get rid of double jeopardy and it would reduce rent-seeking by competitors, who exploit the FCC’s nebulous “public interest” standard to extract “merger-related” concessions that benefit the competitor but not consumers. Although the FCC often rejects blatantly pro-competitor requests, such as

¹⁰³ *Id.* Economic Technical Appendix ¶ 58.

¹⁰⁴ Crawford at 220 (4104). She also claims that the OVD protections “left ample room for maneuvering and litigation.” *Id.*

¹⁰⁵ Department of Justice, First Annual Report, *U.S. v. Comcast Corp.*, No. 1:11-cv-00106-RJL (Sept. 4, 2012), at 2 (“On June 15, 2012, the arbitrator appointed by AAA determined that PCI’s final offer more closely approximated the fair market value of the video programming rights at issue than Comcast-NBCU’s offer. The arbitrator also ruled that Comcast-NBCU had failed to prove its claim that licensing certain content to PCI would cause Comcast-NBCU to be in breach of pre-existing contracts with third-parties.”), *available at* <http://www.justice.gov/atr/cases/f286600/286627.pdf>.

¹⁰⁶ Crawford at 221 (4136).

¹⁰⁷ *Id.* at 230 (4299).

¹⁰⁸ *Id.* at 217 (4049) (favorably citing Earthlink’s “merger-related” proposal to compel Comcast to wholesale its cable modem service).

¹⁰⁹ Philip J. Weiser, *Reexamining the Legacy of Dual Regulation: Reforming Dual Merger Review by the DOJ and the FCC*, 61 FEDERAL COMMUNICATION LAW JOURNAL 167 (2008–09); Robert Hahn, *Competition Policy and the New Economy*, 3(1) MILKEN REVIEW 33-41 (2001); NEED FOR SPEED, *supra*.

its denying Earthlink’s demand for mandatory wholesale access in the Comcast-NBCU proceeding, it too often succumbs to political pressure that harms consumer welfare, such as its accepting the Rural Cellular Association’s demand for mandatory roaming obligations in the Verizon-SpectrumCo proceeding.¹¹⁰

To summarize, we believe that Crawford’s analysis of both fixed and wireless broadband industries in the U.S. does not provide a balanced assessment of the underlying economics.¹¹¹ Furthermore, her analysis of policy options is very limited.

4. CONCLUSION

While we disagree with many of the arguments that are put forth in this book, we think it is important to note a number of key areas where we agree with Crawford. First, we agree that the social benefits of being connected to the Internet are higher than the private benefits.¹¹² Essentially, the argument is that there are network externalities that arise from having more people interacting, or potentially interacting, with each other. This can give rise to new, economically beneficial innovations. Furthermore, we agree that to the extent that social and private benefits for Internet connectivity diverge, there *may* be a justification for some kind of government intervention.

Second, we share a concern for market abuses that may arise through vertical integration. It is clear that some vertically integrated firms have sometimes abused their position in ways that have reduced programming alternatives. We believe that some form of government intervention is warranted where such abuses are likely to be significant. And we believe that the antitrust laws, which narrowly focus on price effects and require findings of monopoly power, are not a reliable method for achieving certain objectives, such as providing a hospitable climate for independent content providers. Although antitrust prevents agreements by monopolists aimed at sealing off suppliers or customers, there is generally no duty to deal with rivals.

¹¹⁰ Memorandum Opinion and Order And Declaratory Ruling, In the Matter of Applications of Cellco Partnership d/b/a Verizon Wireless and SpectrumCo LLC and Cox TMI, LLC For Consent To Assign AWS-1 Licenses Applications of Verizon Wireless and Leap for Consent To Exchange Lower 700 MHz, AWS-1, and PCS Licenses Applications of T-Mobile License LLC and Cellco Partnership d/b/a Verizon Wireless for Consent to Assign Licenses; WT Docket No. 12-4; WT Docket 12-175, (released August 23, 2012).

¹¹¹ As economists, we shy away from making engineering-based assessments about the comparability of wireline and wireless networks. See, e.g., Dale Hatfield, *The Future of Digital Communications: Technical Perspective*, Time Warner Cable Research Program on Digital Communications (Fall 2011), at 20 (“The overall digital bandwidth achievable in a mobile environment is significantly reduced compared to closed coaxial cable- and fiber optic, cable-based systems even when the available analog bandwidth is roughly the same.”). At the end of the day, to define relevant markets, engineering assessments are not as important as the revealed preferences of broadband consumers.

¹¹² Crawford at 231 (4318) (describing the potential for “positive spillovers” of broadband).

Third, we think we share a concern about the politicization of the merger process. We see some aspects of this process as examples of “crony capitalism.”¹¹³ We would prefer a merger process that is depoliticized to the extent possible. Our suggestion of limiting the FCC’s role in the merger review process represents a step in that direction.

Fourth, we share Crawford’s concerns about issues related to equity and the Internet. But we depart from Crawford on the extent to which that is a problem and how it should be addressed. As racial minorities avail themselves of mobile-access options, we do not see the growing digital divide that she sees. If anything, we see greater broadband adoption occurring in the United States, even when looking at just wireline access technologies.¹¹⁴

The major area in which we part company with Crawford is in the use of standard economic tools to analyze the nature of broadband problems and potential solutions. Crawford’s analysis of issues related to broadband pricing, market power, and Internet access largely glossed over a growing body of refereed economic literature in this area.

Perhaps more serious from the standpoint of policy, Crawford’s book does not present a very illuminating or balanced assessment of the policies that might be introduced to address the problems that she highlights. Her most important concern, based on the number of pages devoted to it, is the alleged cable “natural monopoly” of broadband. Yet she devotes relatively little space to how to address this alleged problem. Nor does she provide a balanced assessment of the pros and cons of a utility model. For example, she does not even scratch the surface on how to design a good utility model (assuming one were needed).¹¹⁵

We believe strongly that there are more economically efficient and effective ways of dealing with many of the problems that Crawford highlights in her book. These include reducing barriers to entry in the broadband market by getting rid of needless regulation and creating a judicial process for dealing with discriminatory conduct by vertically integrated Internet firms, including access providers and search engines.

¹¹³ For example, at an April 2012 speech to the Federal Communications Bar Association on the FCC’s merger review process, Georgetown’s Steven Salop explained that merging communications firms could bring blatantly anticompetitive transactions to the Commission, thereby wasting taxpayer and investor resources, in the hopes that the agency won’t be able to resist the temptation to hand out goodies in the form of merger-related conditions. *See also* RAGHURAM G. RAJAN & LUIGI ZINGALES, *SAVING CAPITALISM FROM THE CAPITALISTS* (Princeton University Press, 2004).

¹¹⁴ FCC Internet Access Services, *supra*, at 10 (“Between June 2001 and June 2011, household adoption – which we track in Figure 4 by comparing the number of residential fixed-location connections to the number of households – increased from 7 connections per 100 households to 65 connections per 100 households.”).

¹¹⁵ She ignores the large literature in this area. *See, e.g.*, Paul Joskow, *Regulation and Deregulation after 25 Years: Lessons Learned for Research in Industrial Organization*, 26 *REVIEW OF INDUSTRIAL ORGANIZATION* 169-93 (2005), available at <http://www.globalsepri.org/UploadPhotos/200891219316344.pdf>.

Our bottom line is that Crawford has written an important book about the future of broadband and Internet in the United States. There is much useful information in this book about the political economy of telecommunications and Internet policy, and for that reason alone, the book is worth reading for those interested in this area. At the same time, there is much left out about the underlying economics that will drive these policies, perhaps leaving some enterprising scholar an opportunity to write a sequel.