

Response to Harold Furchtgott-Roth

Susan Crawford*

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* Susan Crawford is a professor at the Benjamin N. Cardozo School of Law, a fellow at the Roosevelt Institute, and a co-director of the Berkman Center. She is the author of *Captive Audience: The Telecom Industry and Monopoly Power in the New Gilded Age*, and a contributor to Bloomberg View and Wired. She served as Special Assistant to the President for Science, Technology, and Innovation Policy (2009) and co-led the FCC transition team between the Bush and Obama administrations. She is a member of Mayor Michael Bloomberg’s Advisory Council on Technology and Innovation.

Ms. Crawford was formerly a (Visiting) Stanton Professor of the First Amendment at Harvard’s Kennedy School, a Visiting Professor at Harvard Law School, and a Professor at the University of Michigan Law School (2008-2010). As an academic, she teaches Internet law and communications law. In December of 2012, Yale University Press published her book, *Captive Audience: Telecom Monopolies in the New Gilded Age*. She was a member of the board of directors of ICANN from 2005-2008 and is the founder of OneWebDay, a global Earth Day for the internet that takes place each Sept. 22. One of Fast Company’s Most Influential Women in Technology (2009); IP3 Awardee (2010); one of Prospect Magazine’s Top Ten Brains of the Digital Future (2011) and TIME Magazine’s Tech 40: The Most Influential Minds in Tech (2013).

Ms. Crawford received her B.A. and J.D. from Yale University. She served as a clerk for Judge Raymond J. Dearie of the U.S. District Court for the Eastern District of New York, and was a partner at Wilmer, Cutler & Pickering (now WilmerHale) (Washington, D.C.) until the end of 2002, when she left that firm to enter the legal academy.

I. INTRODUCTION

I have great respect and affection for Harold Furchtgott-Roth, and it seems from his review of *Captive Audience* that he has respect and affection for me. Luckily for the rest of you, my view of his personality—and his view of mine—is irrelevant. I wanted to begin, though, by acknowledging his personal graciousness towards me.

What is relevant is the striking number of issues in his review on which he and I completely agree. We agree that U.S. presidential administrations for a long time have not thought of the FCC as an important agency or its role in the U.S. economy as vital. We agree that communications policy in the U.S. is not necessarily being made based on the merits of particular situations. We agree that the federal government would probably be terrible at running a nationwide network itself.

Where we differ is in our prescriptions, given this agreed-on background. Mr. Furchtgott-Roth's conclusion from these premises is that the only answer is to give up.¹ And my conclusion is that we cannot give up.

My conclusion, unlike Mr. Furchtgott-Roth's, is based on the reality of consumers' experience in America when it comes to high-speed Internet access. Based on how people actually use these connections and how much they are required to pay, consumers are being gouged; the rich are paying too much for services that are both noncompetitive and second-class, and not enough Americans are being served adequately or at all.

Mr. Furchtgott-Roth would have to agree with me, because it is a central tenet of his worldview, that competition is central to any functioning free market. My contribution to this conversation is that we have neither competition nor adequate oversight when it comes to the actual lived experience of Americans as purchasers of high-speed Internet access. As a result, the country needs a wholesale revision of both the manner in which policy is made and the details of those policies so that retail-level competition can in fact be unleashed in the places where it is possible. We need new investments in modern, competitive, wholesale fiber networks in cities across the country so that new retail providers can begin selling services. (Fiber networks can last for decades if they are the right quality, and photonics are getting better all the time.) The entire

1. As far as I am aware, Mr. Furchtgott-Roth, as an FCC Commissioner, never voted in favor of any conditions suggested by the FCC in connection with telecommunications mergers. See, e.g., Heather Forsgren Weaver, *FCC Reacts as Merger Train Rolls In*, RCRWIRELESS (Oct. 11, 1999), <http://www.rcrwireless.com/article/19991011/sub/fcc-reacts-as-merger-train-rolls-in/>. His point of view has been consistent for decades: Conditions that might impose limits on the anticompetitive behavior of merged telecommunications giants are beyond the power of the FCC to impose. His review of *Captive Audience* should be understood in this light.

nation needs an upgrade, and new entrants into the marketplace—both public and private—are needed to change the status quo that is serving all of us so badly.

If we fail, and if the FCC cannot act because the agency fears that the incumbents will march on Capitol Hill and gut the agency's budget if they do, that will have major implications for our democracy. Nonetheless, we should certainly still try.

We will need leadership from every level of government; mayors, governors, and the President will need to take the current crisis in American communications networks seriously. I wrote *Captive Audience* to encourage these leaders to step up to this challenge and to encourage every American to make his or her voice heard on this fundamental issue when electing representatives to office.² World-class, high-speed Internet access should be available to each one of us at a reasonable price, and where it is possible to have retail choices, we should have competition. This issue isn't just about equality or dignity; it's also about economic growth.

II. MARKET DEFINITION

Mr. Furchtgott-Roth says that we have a competitive "broadband" marketplace.³ He gets there by saying that 4 Mbps down and 1 Mbps up is the right definition of that marketplace.⁴ But that market definition is entirely unrelated to reality. Let's step back and look at what people in America actually do using high-speed Internet access capacity. What are typical, mainstream applications that people are using, and what download speeds and bit capacity (or volume – number of bits per month) do they need for such use?

Here are the facts: Sandvine reports that Netflix is currently the largest source of online traffic in this country.⁵ Netflix itself recommends that people accessing its application have 3.0 Mbps download service in order to get "DVD-quality" resolution.⁶ And for a HD-quality (high-definition) picture, Netflix recommends at least a 5 Mbps download service.⁷

2. SUSAN CRAWFORD, *CAPTIVE AUDIENCE: THE TELECOM INDUSTRY AND MONOPOLY POWER IN THE NEW GILDED AGE* (2013).

3. Harold Furchtgott-Roth, *In Search of a Captive Audience: Susan Crawford's Captive Audience*, 65 FED. COMM. L.J. 312, 322-23 (2013).

4. *Id.* at 318-21.

5. SANDVINE INTELLIGENT BROADBAND NETWORKS, *GLOBAL INTERNET PHENOMENA REPORT: 2H 2012*, at 2 (2012), available at http://www.sandvine.com/downloads/documents/Phenomena_2H_2012/Sandvine_Global_Internet_Phenomena_Report_2H_2012.pdf.

6. *Internet Connection Speed Recommendations*, NETFLIX, <http://support.netflix.com/en/node/306#gsc.tab=0> (last visited Apr. 26, 2013).

7. *Id.*

Let's say a typical American wants to watch one hour of Netflix in HD in one day. That is a conservative, sensible assumption. According to the FCC's most recent numbers (for the first half of 2012), most current DSL connections cannot handle this usage. At least 76% of DSL connections are slower than 6 Mbps downstream.⁸ DSL fares reasonably well in slower-speed ranges. For download speeds of at least 768 Kbps and 1.5 Mbps, DSL has 33.7% and 31.0%, respectively, of total fixed connections.⁹ But when we consider the speeds required by even moderate users of high-bandwidth communications, like Netflix, the picture changes dramatically: DSL's share of fixed connections falls to just 19.7% for download speeds of at least 3 Mbps (the minimum recommended speed to stream just a single DVD-quality Netflix movie), and to just 8.3% of fixed connections at the 6 Mbps threshold (as noted above, 5 Mbps is the minimum recommended speed to stream a single HD-quality Netflix movie).¹⁰

Because American households often include more than one person, and people themselves often do more than one thing at a time, it is quite likely that more than one device is being used to access high-bandwidth communications at any given time in Americans' houses. In fact, a growing proportion of American households own multiple devices capable of supporting high-bandwidth communications, and the number of devices per household is increasing.¹¹ But DSL's shortcomings are even starker when it comes to connections capable of delivering at least 10 Mbps of downstream capacity. For connections of at least 10 Mbps, DSL's share as of mid-2012 was just 2.9% of fixed connections—less than one out of every thirty connections.¹²

Speeds of at least 10 Mbps are, therefore, the threshold at which an Internet connection can become a true replacement for a pay-TV service. At 10 Mbps, a connection can carry two Netflix HD streams, or three different streams of DVD-quality. Or, a household can support one Netflix HD stream while another screen is being used to surf the Web.

This explains why Americans signing up for new high-speed Internet access services are not choosing DSL.¹³ What Americans are signing up for

8. INDUS. ANALYSIS & TECH. DIV., WIRELINE COMPETITION BUREAU, FCC, INTERNET ACCESS SERVICES: STATUS AS OF JUNE 30, 2012, at 30 tbl. 10 (2013) [hereinafter *Internet Access Services Status*], available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0520/DOC-321076A1.pdf.

9. *Id.*

10. *Id.*

11. Heather Leonard, *Connected Devices Outnumber People in U.S. Homes*, BUSINESS INSIDER (Mar. 19, 2013, 2:24 PM), <http://www.businessinsider.com/us-homes-have-many-connected-devices-2013-33> (stating that the number of connected devices in U.S. homes increased from an average of 5.3 to 5.7 in three months).

12. *Internet Access Services Status*, *supra* note 8, at 30.

13. *See id.* at 23 tbl. 5, 24 tbl. 6. When cable operators, starting with Comcast, began rolling out DOCSIS 3.0 technology in 2008, DSL's ability to compete on speed went from limited to virtually non-existent. By the second quarter of 2008, both AT&T's and

is their local cable monopoly service.¹⁴ For high-capacity download speeds that are at least 6 Mbps and, more likely, above 10, 15, or even 25 Mbps, the vast majority of Americans have just one choice – their local cable incumbent.¹⁵ According to Leichtman Research Group, during the first nine months of 2012, 88% of new high-speed Internet access subscriptions went to cable, a figure that exceeded 99% during the third quarter of 2012.¹⁶ For 2012 as a whole, less than one out of every eight new high-speed Internet access subscriptions went to anyone other than the cable companies.¹⁷ Even these figures understate the steep decline in users choosing DSL connections because they include not only DSL but also phone companies' fiber services, including Verizon's FiOS Fiber to the Home ("FTTH") service and AT&T's Fiber to the Node ("FTTN") U-Verse service. Focusing only on the DSL customer base of the two big phone companies, AT&T and Verizon, we see it shrinking nearly 23% for AT&T during 2012 and 12.5% for Verizon.¹⁸ During that same period, the nation's top two cable distributors, Comcast and Time Warner Cable, increased their cable

Verizon's DSL services had begun losing subscribers, a trend that has continued since then. As a result, both AT&T's and Verizon's shares of new high-speed Internet access subscriptions have plummeted from a healthy 54% in 2005 and 2006 to less than 12% for the first nine months of 2012. AT&T INVESTOR BRIEFING, STRONG GROWTH IN WIRELESS & U-VERSE DRIVES REVENUE & ADJUSTED EARNINGS PER SHARE GROWTH IN AT&T'S FOURTH-QUARTER RESULTS 8-10 (Jan. 24, 2013) [hereinafter *AT&T's Fourth-Quarter Results*]; Verizon Reports Strong Revenue & Customer Growth for Verizon Wireless & FiOS Services in 4Q 2012, VERIZON (Jan. 22, 2013), http://www2.verizon.com/investor/news_verizon_reports_strong_revenue_and_customer_growth_for_verizon_wireless_and_fios_services_in_4q_2012.htm. This reflects the continued erosion of Verizon's and AT&T's DSL subscriber base, accompanied by a general slowing of broadband growth among Tier 2 telecommunications companies like CenturyLink, Frontier, and Windstream.

14. Although the FCC doesn't report this clearly, cable incumbents Comcast and Time Warner face very little "overbuilding" competition in metro areas. *Internet Access Services Status*, *supra* note 8, at 23 tbl. 5, 24 tbl. 6; Review of the Commission's Program Access Rules & Examination of Programming Tying Arrangements, *First Report and Order*, FCC 10-17, 25 FCC Rcd. 746, 763 n.97 (rel. Jan. 20, 2010), available at http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-10-17A1_Rcd.pdf.

15. CRAIG MOFFETT, NICHOLAS DEL DEO & AMELIA CHAN, BERNSTEINRESEARCH, WHY WE LIKE CABLE Exhibit 1 (Feb. 4, 2013) (noting that 51–57% of the country has only one provider that can provide speeds over 10 Mbps).

16. See *2.7 Million Added Broadband From Top Cable and Telephone Companies in 2012*, LEICHTMAN RESEARCH GRP., <http://www.leichtmanresearch.com/press/031913release.html> (last visited June 22, 2013).

17. *Id.*

18. For the figure for AT&T, see *Quarterly Earnings – 4Q 2012*, AT&T, <http://www.att.com/gen/investor-relations?pid=262> (last visited June 22, 2013), and *AT&T's Fourth-Quarter Results*, *supra* note 13. The figure for Verizon was derived from *Quarterly Earnings: 4Q 2012 Quarter Earnings*, VERIZON, http://www2.verizon.com/investor/qreport_4q_2012_quarter_earnings_01212013.htm (last visited June 22, 2013), and VERIZON COMM'NS, INVESTOR QUARERLY FOURTH QUARTER 14 (Jan. 22, 2013), available at http://www2.verizon.com/investor/DocServlet?doc=vz_4q_quart_bulletins_2012.pdf.

modem subscriber base by 6.7%¹⁹ and 9.9%,²⁰ respectively. Verizon's FiOS fiber-optic service will be available when fully rolled out to about 10–15% of Americans (18 million people),²¹ but Verizon's FiOS overlaps just 15% of Comcast's footprint and just 11% of Time Warner Cable's footprint.²² These two cable actors face almost no competition for the download speeds that Americans want. And, of course, they never compete with each other. When it comes to connections that allow 10 Mbps or more in downloads and 200 gigabytes of data—a measure of capacity, or volume—per month, we are heading with increasing speed toward a series of regional cable monopolies in wireline high-speed Internet access service provision.

Many ill-informed or possibly simply confused people are asserting that 4G wireless is a substitute method for access to the download speeds I have been writing about, but they are missing the reality of the situation.²³

Although it is true that both Verizon and AT&T claim that their 4G LTE services will have download speeds equal to a slow cable connection—say, 13–16 Mbps—these two companies also impose monthly data caps of 1–2 GB of data.²⁴ If you watch a movie in HD over a wireless connection, you're going to use about 3.5 GB of data, blowing through your monthly capacity allowance for a single-device plan costing \$85–\$100

19. The figure for Comcast is derived from *Comcast Reports 4th Quarter and Year End 2012 Results*, COMCAST, <http://cmcsk.com/earningdetails.cfm?QYear=2012&QQuarter=4> (last visited June 22, 2013); COMCAST, FINANCIAL STATEMENTS (2010-2012), <http://cmcsk.com/common/download/download.cfm?companyId=CMCSA&fileid=635080&filekey=f72c419e-2874-4fdb-a4bd-892e9d441572&filename=Comcast4Q12%20Trending%20Schedule.pdf> (last visited June 22, 2013); Press Release, Comcast, Comcast Reports 4th Quarter and Year End 2012 Results (Feb. 12, 2013), available at <http://cmcsk.com/common/download/download.cfm?companyId=CMCSA&fileid=635079&filekey=3aeffc1-45af-41ae-a704-6dbb50b55bd0&filename=Comcast4Q12%20Earnings%20Release%20with%20Tables.pdf>.

20. *Quarterly Earnings*, TIME WARNER CABLE, <http://ir.timewarnercable.com/investor-relations/quarterly-earnings/default.aspx> (last visited June 22, 2013); TIME WARNER CABLE, 2012 TRENDING SCHEDULES, RECONCILIATIONS AND OTHER FINANCIAL INFORMATION (2013), available at <http://ir.timewarnercable.com/files/TWC%20Trending%20Schedules%20Q4%202012%20FINAL.pdf>; Press Release, Time Warner Cable, Time Warner Cable Reports 2012 Fourth-Quarter and Full-Year Results (Jan. 31, 2013), available at <http://ir.timewarnercable.com/files/TWC%20Q4%202012%20Earnings%20Release%20FINAL.pdf>

21. See Victor Godinez, *If Verizon's FiOS Service Isn't Here, It's Not Coming*, DALLAS MORNING NEWS (Nov. 26, 2010, 2:09 PM), <http://www.dallasnews.com/business/headlines/20101008-If-Verizon-s-FiOS-service-isn-6196.ece>.

22. Susan Crawford, *How AT&T and Verizon Manipulate Your Smartphone*, BLOOMBERG (Dec. 26, 2012, 6:31 PM), <http://www.bloomberg.com/news/2012-12-26/how-at-t-and-verizon-manipulate-your-smartphone.html>.

23. See, e.g., Daniel Fisher, *Is 4G Wireless the Ultimate Cable TV Killer?*, FORBES (July 26, 2012, 1:56 PM), <http://www.forbes.com/sites/danielfisher/2012/07/26/is-4g-wireless-the-ultimate-cable-tv-killer/print/>.

24. See Tiffany Kaiser, *AT&T Throttling Unlimited Data Users After Only 1-2 GB*, DAILYTECH.COM (Feb. 15, 2012, 9:35 AM), <http://www.dailytech.com/ATT+Throttling+Unlimited+Data+Users+After+Only+1+2+GB/article24009.htm>.

per month in a single session.²⁵ These two dominant companies charge as much as \$15 per GB of data for those who exceed the allotted usage cap.²⁶ This means that watching one movie would cost an additional \$17.50–\$35 (or \$52.50 for those exceeding their monthly cap). And these amounts do not include the cost of the movie itself. In light of these usage caps, it does not seem realistic to claim that consumers see wireless connections as substitutes for a wire at home.²⁷ And, in fact, they do not: Mobile usage of Netflix is in the low single digits as a percentage of overall Netflix use.²⁸

Another inconvenient fact for people who claim that wireless high-speed Internet access is entirely substitutable for these wired cable connections is this: At least 83% of Americans with smartphones also have a home wired connection.²⁹ People within the smartphone population who are relying on a smartphone alone for access are likely to be low-income, members of minority groups, or both.³⁰

In light of all this, Mr. Furchtgott-Roth's purported market definition is entirely unrealistic. And I have not even started talking about new generations of high-bandwidth, high-capacity applications. Home security services, telemedicine, online education, gaming—all of these things will require great capacity—and Americans will be stuck with their local cable monopoly. I will say it clearly: A basic connection for 21st century high-bandwidth, low-latency applications will require not only fast downloads, but also high capacity.³¹ We will need symmetrical service, equal uploads and downloads, so that Americans can publish data as well as passively receive it. And for that connection, we're stuck. Verizon FiOS is not going to expand; municipally-overseen fiber rings are coming online too slowly;

25. Janko Roettgers, *AT&T's New Bandwidth Cap Is Bad News For Netflix*, GIGAOM (Mar. 14, 2011, 7:53 AM), <http://gigaom.com/2011/03/14/att-bandwidth-cap-netflix/>.

26. E.g., *Wireless Plans*, AT&T, <http://www.att.com/shop/wireless/plans-new.html#fbid=gQSfE4Zmq7L> (last visited Apr. 18, 2013).

27. Ryan Kim, *Verizon LTE Worth a Look as Possible DSL Replacement*, GIGAOM (Apr. 25, 2013), <http://gigaom.com/2011/04/04/verizon-lte-worth-a-look-as-possible-dsl-replacement/>.

28. *Netflix Statistics*, STATISTIC BRAIN (Apr. 25, 2013), <http://www.statisticbrain.com/netflix-statistics/> (showing that only 6% of Netflix subscribers are mobile users).

29. JOHN HARRIGAN, TECHNET, BROADBAND ADOPTION IN 2012: LITTLE MOVEMENT SINCE '09 & STAKEHOLDERS CAN DO MORE TO SPUR ADOPTION 4 (2013), available at <http://technet.org/wp-content/uploads/2012/03/TechNet-NBP-Broadband-Report-3-20-2012-FINAL1.pdf>.

30. JOHN HARRIGAN, FCC, BROADBAND ADOPTION & USE IN AMERICA 5, 6 (2010), available at <http://transition.fcc.gov/DiversityFAC/032410/consumer-survey-horrigan.pdf>.

31. See Jon Brodtkin, *Bandwidth Explosion: As Internet Use Soars, Can Bottlenecks be Averted?*, ARS TECHNICA (May 1, 2012, 12:40 PM), <http://arstechnica.com/business/2012/05/bandwidth-explosion-as-internet-use-soars-can-bottlenecks-be-averted/> (noting that by 2015, on-demand video traffic will be equivalent to 3 billion DVDs per month and that according to Cisco, global IP traffic will quadruple by 2015). This demonstrates why usage-capped mobile broadband is a non-starter for true broadband service.

and the cable incumbents have both cramped uploads and unconstrained pricing power within their footprints. That is a monopoly issue.

Captive Audience also explains that much of this story was foreordained by regulatory failures following the 1996 Telecommunications Act (“the 1996 Act”).³² The statute aimed at introducing competition for retail services, but not for the basic very-high-fixed-cost wireline communications facility to homes and businesses.³³ That facility tends towards monopoly—it always does—because of the high barriers to entry for any new market entrant.³⁴ A new player has to take on large amounts of fixed costs (including, these days, enormously high fixed costs for programming that are far lower per subscriber for the big distributors) just to get a foothold in the market. This facility is, in fact, a natural monopoly.

The answer to that monopoly should be fivefold: (1) unbundling, where it makes sense—making it possible for retail providers to sell differentiated, competing services riding on that platform; (2) interconnection mandates, so that gatekeepers don’t get a chokehold on the ability of others to reach their subscribers; (3) price regulation of the wholesale facility, so that retail providers can count on a particular communications input for their businesses; (4) the obligation to contribute to a common fund so that everyone in the country can get reasonably priced communications services; and (5) the encouragement of municipal networks. All of this should happen with the country’s fiber upgrade once we make that plan. Right now, though, we have no path to that upgrade. We are stuck with the local cable incumbents, who are subject to none of these requirements and whose ability to choose how to price and where to place their services is unconstrained.

Yes, there is marginal cable competition in cities in America. Standard Oil did the same thing—it permitted competitors to nibble away about 10% of its potential customers.³⁵ That is a smart move when you’re

32. CRAWFORD, *supra* note 2, at 49-55.

33. See Alan Pearce et al., *Telecom Act Rewrite Is Needed To Return Real Competition To Broadband Sector*, BLOOMBERG LAW (Nov. 7, 2012), <http://about.bloomberglaw.com/practitioner-contributions/telecom-act-rewrite-needed/> (noting that wireline providers were not sufficiently regulated by the Telecommunications Act of 1996).

34. See *Monopoly Power*, ECONOMICS ONLINE, http://www.economicsonline.co.uk/Market_failures/Monopoly_power.html (last visited June 30, 2013) (noting that “[m]onopoly power can be maintained by barriers to entry”).

35. RON CHERNOW, *TITAN: THE LIFE OF JOHN D. ROCKEFELLER, SR.* 205-06 (Vintage eBooks 2d ed. 2007) (1998) (“Rockefeller, with piratical flair and tactical brilliance, had come to control nearly 90 percent of the oil refined in the United States. Perhaps a hundred tiny refineries still eked out a meager living in the interstices of the industry, but they were mostly tolerated as minor nuisances and scarcely threatened Standard Oil. As Rockefeller himself acknowledged, these isolated cases served a useful political purpose, providing a mirage of competition when it had ceased to exist altogether. He liked to point to these

trying to avoid government oversight. But someone should be noticing that the marginal cable competitors we do have do not fight very hard. They have to stay within their boundaries or they will risk extinction. It would be simple for the local monopoly player to stamp them out. You should ask yourself: Why is a bundle of data and cable pay-TV service in Boston about the same price, whether offered by “overbuilder” RCN or by the incumbent Comcast?³⁶ Would you not think the upstart would underprice the incumbent player? Answer: That does not happen because the overbuilder has no incentive to rock the boat.

New entrants face many challenges in a high fixed-cost, declining cost-curves market, in which it is difficult for them to differentiate their services, end-user willingness to spend is stable,³⁷ and incumbents possess a large market share.³⁸ All of these factors are in place when it comes to the communications industry.³⁹ Because so much of an incumbent’s costs are either sunk capital or fixed operating costs, it would be relatively easy for an incumbent to cut prices in areas targeted by new competitors and, if needed, offset these cuts with price hikes levied in other geographic or service markets where it does not face comparable competition.⁴⁰ That Comcast and Time Warner Cable choose to let competition at the margins survive is a matter of their grace and self-restraint, and competitors know it.

The 1996 Act was intended to encourage competitive market entry by removing regulatory barriers.⁴¹ Because it failed to address consolidation, and because its attempt to ensure that wholesale telecommunications facilities would be unbundled to permit retail competition was gutted by litigation and regulatory weakness, the result is the aggravation of the fundamentally challenging economic hurdles just described.⁴² The painfully high percentage of bankruptcies in the CLEC (competitive local exchange carrier) and overbuild (competitive high-speed

doughty survivors as proof that all the stories about the strong-arm tactics of Standard Oil were grossly exaggerated and that the oil industry was a scene of vibrant competition.”).

36. It is very difficult to cross-compare bundles. *Compare Cable TV, Internet & Phone Bundles*, RCN, <http://www.rcn.com/boston/bundles> (last visited Apr. 25, 2013) (listing bundles for \$79.99/month for 25 Mbps/222 channels) with *Xfinity*, COMCAST, <http://www.comcast.com/internet-service-keystone-belt.html> (last visited Apr. 18, 2013) (listing bundles at \$49.99/month for 50 Mbps/many channels).

37. CRAWFORD, *supra* note 2, at 138.

38. *Id.* at 10-11, 16, 50, 67, 76, 77, 80, 86-109, 110, 122, 132, 151, 156-69, 217-18, 233-53, 259, 268.

39. *E.g., id.* at 50-51.

40. *See, e.g., id.* at 115, 116.

41. H.R. CONF. REP. NO. 104-458, at 113 (1996), *reprinted in* 1996 U.S.C.C.A.N. 124, 124 (stating that the Act was intended “to provide for a pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services”).

42. *Id.*

Internet access service provider) sectors over the past decade is a testament to this dynamic.⁴³

Thanks in large part to this combination of deregulation and inevitable market dynamics, the mass-market communications sector is seeing retail competition over basic wholesale lines crumble and the cable-telco duopoly structure migrate to a cable monopoly structure when it comes to 100 Mbps high-speed Internet access. Private capital is spooked; why invest here?⁴⁴ With no interconnection mandate, with the ability to use exclusive programming (often sports) as a sledgehammer,⁴⁵ and with relentless lobbying by incumbents at all levels of government, we have reached an impasse.⁴⁶

America has a problem. For the vast majority of our citizens, the local cable monopoly provides the only Internet access link capable of supporting existing and new bandwidth-intensive services, including online (sometimes called “over-the-top” or “OTT”) video.

III. MARKET POWER IN WIRELESS

Mr. Furchtgott-Roth says that Verizon Wireless and AT&T do not have “market power” because, if they did, “prices would always go up.”⁴⁷ However, again, he is missing how this market works. Prices can go up without the facial subscription price going up because subscribers are getting less value for the same amount of money. For example, both Verizon and AT&T eliminated their popular unlimited use data plans—within six months of each other—in favor of very restricted data offerings that come with staggering overage charges and per-device fees, and were still able to achieve very healthy subscriber and per-account revenue gains while their competitors suffered subscriber losses.

It is good to be Verizon Wireless and AT&T these days. In the fourth quarter of 2012, Verizon added a record number of subscribers—2.1 million new postpaid subscribers—and now has 92.5 million subscribers on

43. See Chris Nolter, *CLECs' Last Stand?*, DEAL MAG. (Dec. 9, 2011, 12:00 PM), <http://www.thedeal.com/magazine/ID/043309/features/clecs-last-stand.php> (describing CLEC bankruptcies, takeovers, and consolidation).

44. CRAWFORD, *supra* note 2, at 265. See also Karl Bode, *Verizon Again Confirms FiOS Expansion is Over—Sorry Buffalo, Alexandria, Baltimore and Boston*, DSLREPORTS.COM (Mar. 23, 2012), <http://www.dslreports.com/shownews/Verizon-Again-Confirms-FiOS-Expansion-is-Over-118949>. Verizon's General Counsel Randal Milch explained to Congress Verizon's reasons for discontinuing the expansion of its FiOS high-speed fiber network, saying “Wall Street punished us for investing in FIOS.” *Id.* For the video coverage of Randal Milch's congressional testimony, see HEARING ON VERIZON/CABLE DEALS: HARMLESS COLLABORATION A THREAT TO COMPETITION AND CONSUMERS? (U.S. SENATE COMM. CHANNEL 2012), <http://www.senate.gov/fplayers/jw57/commMP4Player.cfm?fn=judiciary032112p&st=900> (last visited June 30, 2013).

45. CRAWFORD, *supra* note 2, at 141-55.

46. *Id.* at 16, 22, 61-62, 191-97, 212, 221-22, 245, 256, 260.

47. Furchtgott-Roth, *supra* note 3, at 319.

its rolls.⁴⁸ The company now reports “average revenue per account” instead of “per user” because of its introduction of shared use plans, and it’s doing very well with those plans. As a snapshot at the end of the fourth quarter of 2012, Verizon’s retail postpaid ARPA (average revenue per account) grew 6.6% over the fourth quarter for the year before to \$146.80 per month, as customers continued to add multiple devices to their accounts and Verizon continued to charge per-device fees.⁴⁹ The company’s total wireless revenues were \$20 billion in the fourth quarter of 2012, which is up 9.5% over the year before.⁵⁰

AT&T, which with Verizon Wireless accounts for about two-thirds of wireless subscribers, is also doing well.⁵¹ That same fourth quarter of 2012 saw AT&T add 780,000 wireless postpaid subscriptions, which was the company’s largest increase in three years.⁵² Along with prepaid subscribers, AT&T added 1.1 million new customers and ended up with 107 million Americans on its service.⁵³ And revenues continue to climb, with AT&T seeing an increase of 5.7% over the same quarter the prior year.⁵⁴ The total wireless revenue for the fourth quarter of 2012 was \$17.6 billion.⁵⁵

At the same time, Sprint and T-Mobile both lost subscribers and their quarterly revenues are in the single billion digits.⁵⁶ If that is not market power, I am not sure what is.

48. *Verizon Reports String Revenue and Customer Growth for Verizon Wireless and FiOS Services in 4Q 2012*, VERIZON WIRELESS (Jan. 22, 2013), <http://news.verizonwireless.com/news/2013/01/fourth-quarter-2012-earnings.html> [hereinafter Verizon 4Q 2012 Report]; FRAN SHAMMO, VERIZON, 4TH QUARTER 2012 EARNINGS RESULTS 8 (2013), available at http://www2.verizon.com/investor/DocServlet?doc=vz_4q_presentation_2012.pdf. AT&T moved in lockstep to introduce the same kind of plan with success.

49. SHAMMO, *supra* note 48, at 8; Verizon 4Q 2012 Report, *supra* note 48.

50. Verizon 4Q 2012 Report, *supra* note 48.

51. Brian X. Chen, *Strong Quarter for Smartphones Bolsters AT&T*, N.Y. TIMES (Apr. 23, 2013), http://www.nytimes.com/2013/04/24/technology/att-profit-rises-on-smartphones-and-internet-service.html?_r=0.

52. *Strong Growth in Wireless and U-verse Drives Revenue and Adjusted Earnings Per Share Growth in AT&T's Fourth-Quarter Results*, AT&T (Jan. 24, 2013), <http://www.att.com/gen/press-room?pid=23672&cdvn=news&newsarticleid=35937>.

53. *Id.*

54. *Id.*

55. *Id.*

56. Sprint experienced a total quarterly loss for the fourth quarter of 2012 of 337,000 subscribers, including 243,000 retail postpaid, versus 1.62 million net adds (including 161,000 retail postpaid) in the fourth quarter of 2011. Press Release, Sprint, Sprint Nextel Reports Fourth Quarter and Full Year 2012 Results 2, 4 (Feb. 7, 2013), available at <http://investors.sprint.com/Cache/1001172361.PDF?Y=&O=PDF&D=&fid=1001172361&T=&iid=4057219>. Fourth quarter net operating revenue for Sprint was \$9 billion. *Id.*

T-Mobile reported net postpaid subscriber losses of 515,000 postpaid customers in the fourth quarter of 2012, which is higher than 492,000 contract customers it lost in the third quarter of 2012 but lower than the 706,000 it lost in the fourth quarter of 2011. Press

IV. CABLE'S PROFITS FOR ITS DATA SERVICE

Mr. Furchtgott-Roth does actually miss the boat, not just misconstrue the boat, when he talks about cable's profits from its wired high-speed Internet access product. He includes a footnote about Comcast's *overall* profit, but that is for all of its operations.⁵⁷ A 7.5% net income margin is quite healthy. I am not writing about everything the cable industry does. I am writing about Comcast's and Time Warner's data service. That service is "almost comically profitable." Here is the complete quote from Wall Street analyst firm Bernstein Research in 2012, laying out the analysis:

Time Warner Cable discloses the direct operating costs attributable to its broadband service. The numbers suggest that broadband is an almost comically profitable service, with direct gross margins of about 97%. But this is actually not as crazy as it first appears. Unlike video or voice, providers don't have to pay for content or interconnection fees. Running incremental bits over a wire should be almost costless. Most of the expenses are buried in shared network operating cost line items and cannot be broken out.

To assess the [return on investment capital] associated with an incremental broadband subscriber, we need to gauge the incremental [net operating profit less adjusted taxes] margin and incremental invested capital. The incremental margin will not be as high as the direct gross margin referenced above, but will be high nevertheless. It needs to take into account shared operating costs and depreciation on the associated [invested capital]. The incremental [investment capital] associated with a new customer is likely relatively small - a modem, capitalized installation costs, perhaps some increased network investment. Today, Time Warner Cable has about \$500 in [invested capital] per primary service unit (the sum of video, voice, and broadband customers), or about \$900 per customer relationship. Video customers require expensive set-top boxes, but broadband customers don't, so the number

Release, T-Mobile, T-Mobile USA Reports Fourth Quarter 2012 Financial Results 1 (Feb. 28, 2013), available at http://www.t-mobile.com/Cms/Files/Published/0000BDF20016F5DD010312E2BDE4AE9B/5657114502E70FF3013D3C9250D9FD76/file/Q4%202012%20Press%20Release_Financial%20Results_FINAL.pdf. The company also had 166,000 net prepaid customer additions in the fourth quarter, lower than the 365,000 from the third quarter and 220,000 from the year-ago period. *Id.* Total customers, then, were down 349,000 during the last quarter of 2012. *Id.* T-Mobile said total revenue for the quarter clocked in at \$4.9 billion, with service revenue making up \$4.1 billion of the total. *Id.* at 4. Both figures were down year-over-year, with total revenue off 5.2%, *id.*, and service revenue down 9.2%, *id.* at 3.

57. Furchtgott-Roth, *supra* note 3, at 320 n.34.

for an incremental broadband customer should be lower than these averages. Assuming a \$43 monthly ARPU, in line with Time Warner Cable's 2011 ARPU, and a 35% tax rate, it's not unreasonable to believe the incremental return on investment capital might be 100% or more. With these sorts of economics, garnering additional broadband subscribers is critical to the [return on invested capital] outlook of the providers.⁵⁸

I cannot be any clearer than that. All the costs are sunk, and it costs almost nothing to send an additional gigabyte of data across these lines.⁵⁹ I do not think it would be wise for readers of *Captive Audience* to skip the economics outlined in this book.

V. INTERNATIONAL COMPARISONS

International comparisons are a customary topic in this area, and I think the U.S. is not in the lead. Mr. Furchtgott-Roth agrees with me that the U.S. is not in the lead, but he may think that we are closer to the leaders than I do. And perhaps he does not mind our country not being in the lead. I do, and I question his reliance on Akamai's studies for several reasons.

First, different last-mile network providers (like Comcast and Time Warner Cable) have different relationships with Akamai; some may permit Akamai to connect its servers very close to users, which will be reflected in higher speeds for requests made to Akamai's servers, and some may keep Akamai's servers at a distance, at the edge of their networks, which will lower speed reports.⁶⁰ Akamai's numbers for speeds represent a composite or average of these widely-varying relationships. If just one large last-mile network provider treats Akamai "badly," that will have a major effect on the numbers Akamai reports. This fact makes Akamai's speed numbers

58. BERNSTEINRESEARCH, U.S. TELECOMMUNICATIONS AND U.S. CABLE & SATELLITE: NATURE VS. NURTURE 43-44 (2012).

59. The ISPs' costs, however, to deliver a marginal gigabyte from one of our regional interchange points over their last mile wired network to the consumer is less than a penny, and falling, so there is no reason that pay-per-gigabyte is economically necessary. Moreover, at \$1 per gigabyte over wired networks, it would be grossly overpriced.

Letter from Netflix to Hon. Fred Upton and Hon. Henry Waxman (Apr. 6, 2011).

60. See OECD, OECD COMMUNICATIONS OUTLOOK 2013, at 109 (2013) [hereinafter OECD COMMUNICATIONS OUTLOOK 2013], available at http://www.oecd-ilibrary.org/science-and-technology/oecd-communications-outlook-2013_comms_outlook-2013-en ("Akamai is a company offering global content distribution services, which gathers quarterly speed data through its server network located around the world. It does not, therefore, rely on speed tests initiated by consumers, but rather on recording the results of delivering content based on this requests. By way of contrast, M-Lab and Ookla compile results from speed tests conducted by users who actively measure their actual speed to access the Internet.")

unreliable.⁶¹ Second, Akamai is measuring only connections to servers run by Akamai that are focused on delivering high-data, rich multimedia content. People who know their connection will not support a great deal of capacity will not even try to view that material on a slow connection—they will self-constrain—so, naturally, the Akamai numbers will skew high. Finally, the Akamai numbers include 4G/LTE connections that, as discussed above, have pricing/capacity limitations that do not make them representative of or substitutable for the U.S. fixed infrastructure. Because the United States leads the world in mobile 4G/LTE deployment, our relatively faster mobile network will make the U.S. Akamai numbers skew high if we take them as representative of U.S. fixed infrastructure.⁶²

Even according to Akamai, we're 9th.⁶³ Here are some other numbers: Pando Networks, another content delivery network ("CDN"), puts U.S. high-speed Internet access at 26th worldwide, at about a quarter of the speed of world leader South Korea.⁶⁴ According to PandoNetworks, Eastern European nations dominate the top of the list (Romania, Bulgaria, and Ukraine), with speeds that are about double or triple those in the U.S.⁶⁵

Ookla, which pulls its figures from Speedtest.net, a popular self-indexing site, and reports them on NetIndex.com, puts the U.S. at 28th, behind the EU average, and well behind the UK, the Nordic countries, most of Eastern Europe, and Japan and South Korea.⁶⁶ M-Lab also puts the U.S. somewhere in the middle, slower than Belgium, Denmark, Finland,

61. See Chris Drake, *Akamai's New "Aura" Range of Products Will Intensify the Fight for Telco CDN Business*, INFORMA TELECOMS & MEDIA (Mar. 6, 2012), <http://blogs.informatandm.com/4295/akamai%E2%80%99s-new-%E2%80%9Caura%E2%80%9D-range-of-products-will-intensify-the-fight-for-telco-cdn-business/>.

Akamai's traditional strategy for partnering with network operators has mainly involved deploying servers in their data centres. By contrast, the provision of managed CDN services requires the deployment of CDN technology deep within an operator's network. Although Akamai has quietly provided managed services to telecoms operators for several years, the number of customers of such services has been small.

Id.

62. See *US Remains at Forefront of LTE Service Adoption*, TELEGEOGRAPHY (Mar. 15, 2012), <http://www.telegeography.com/products/commsupdate/articles/2012/03/15/us-remains-at-forefront-of-lte-service-adoption/>.)

63. Iain Thomson, *US Remains Global Sluggard in Broadband Speed Rankings*, REGISTER (July 24, 2013), http://www.theregister.co.uk/2013/07/24/us_still_lagging_in_global_broadband_connection_speed_rankings/.

64. *Pando Networks Releases Global Internet Speed Study*, PANDO NETWORKS (Sept. 22, 2012), <http://www.pandonetworks.com/company/news/pando-networks-releases-global-internet-speed-study>.

65. *Id.*

66. *Household Download Index*, NETINDEX.COM, <http://www.netindex.com/download/allcountries/> (last visited July 29, 2013).

Germany, Hungary, Japan, Luxembourg, Netherlands, Norway, Sweden, and Switzerland.⁶⁷ If we look at just Netflix subscribers, and focus only on streaming video speeds, the U.S. sits just ahead of the U.K. and Ireland, well ahead of Mexico, but behind all of the Nordic countries.⁶⁸

Another way to judge the state of Internet access in America is to look at “offered speeds” or “advertised speeds.” These numbers tell us what ISPs are offering to their customers. Even without focusing on fiber, we are behind many other OECD countries. When it comes to offerings, the average advertised download speed for OECD nations is 44.44 Mbps. The average advertised download speed for the U.S. is 44.69, behind Canada, Denmark, Finland, France, Japan, Korea, Netherlands, Norway, Portugal, Slovenia, Sweden, and the United Kingdom.⁶⁹

Yet another way to look at this issue is to focus on the speeds of actual subscriptions. These numbers tell us what people are actually paying for. When it comes to actual subscriptions, we are behind. We're behind for speeds 10 Mbps and higher. In the EU, 59% of all fixed connections now provide speeds of 10 Mbps and above.⁷⁰ In Bulgaria and France, already roughly 90% of lines are at least 10 Mbps.⁷¹ In the U.S., that number is only 48.3% as of 2012.⁷²

We're behind for speeds 25 Mbps and higher. At least 14.8% of European fixed connections provide speeds of at least 30 Mbps (up from 9% a year ago), mainly thanks to the expansion of cable DOCSIS 3.0 lines. The FCC sets a benchmark at 25 Mbps, and tells us that only 9–14% of fixed connections met it as of June 2012.⁷³ This is an interesting fact: DOCSIS 3.0 and fiber lines are certainly capable of providing 25 Mbps speeds, but the companies that operate these networks generally choose not to implement this capability. Only 14.2% of cable connections and 21% of fiber connections reach the FCC's 25 Mbps benchmark.⁷⁴

For the foregoing reasons, I prefer OECD numbers for both speed and price.⁷⁵ Those numbers show that we are falling far behind. Value matters. People in places like Seoul, Paris, and Amsterdam may not be using the full capacities of their connections, but the fact is they pay only \$35–\$45 for speeds that are much faster than those for which we pay \$100-

67. See OECD COMMUNICATIONS OUTLOOK 2013, *supra* note 60, at 110 fig. 4.15.

68. *The ISP Speed Index*, NETFLIX, <http://ispspeedindex.netflix.com/> (last visited July 31, 2013) (data for June 2013). Netflix reports on only these countries.

69. See OECD COMMUNICATIONS OUTLOOK 2013, *supra* note 60, at 106 fig. 4.11.

70. EUROPEAN COMM'N, COMM'N STAFF WORKING DOCUMENT: DIGITAL AGENDA SCOREBOARD 2013, SWD(2013)217 final, at 11 (June 12, 2013) <https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/DAE%20SCOREBOARD%202013%20-%20SWD%202013%20217%20FINAL.pdf>.

71. *Id.* at 54.

72. See *Internet Access Services Status*, *supra* note 8, at 30 tbl. 10.

73. *Id.*

74. *Id.*

75. See generally *OECD Broadband Portal*, OECD, <http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm> (last updated July 18, 2013).

\$150 per month.⁷⁶ The percentage of fiber connections in many countries is much higher than it is in the U.S.⁷⁷ And Sept. 2012 data from the OECD shows that people in the U.S. pay at least \$0.53 per Mbps, where people in Japan, the Netherlands, and Sweden can pay as little as \$0.04, \$0.08, or \$0.11 respectively.⁷⁸

Although comparing the prices of Internet access subscriptions across nations is a difficult endeavor due to the diversity of offerings in terms of speeds, datacaps, and bundled services, the OECD has developed a methodology for comparison that involves classifying ISP offers into ten “baskets” and then comparing the lowest available prices available for an offer in that basket in each nation. For the slowest two baskets, the United States ranks 20th and 18th out of 34 OECD nations in terms of affordability. For the remaining eight baskets, the United States ranks from 26th to 31st out of 34 nations.⁷⁹ We pay a lot for our fixed line internet connection subscriptions.

If we had a stagnant market in the U.S. we would be seeing high margins for leading companies that are not losing market share to competitors—and we are. We would be seeing that we are paying more for the same product than people in other countries are—and we are seeing that. This issue is not just about speed. It is also about cost and value, and we ignore what Americans pay for those services at our peril.

VI. CONCLUSION – THE ROLE OF GOVERNMENT

Mr. Furchtgott-Roth and I have much on which to agree. We agree that the lack of competition in the communications industry—and the lack of universal, reasonably-priced, world-class access for all Americans—may not be one of the federal government’s primary concerns. He is right: The FCC has been something of a backwater for decades. We also agree that, right now in this area, company influence may matter more than the public interest.

Mr. Furchtgott-Roth and I even agree that Comcast may not be all-important. Perhaps I should have spent more pages on Time Warner Cable, which charges even more and delivers even less than Comcast. He questions why I do not write about Facebook, but I am focused on pipes and wires and dirt, not applications. Comcast and Time Warner Cable dominate the wired high-speed Internet access capacity we will need in the

76. See HIBAH HUSSAIN ET AL., NEW AM. FOUND., THE COST OF CONNECTIVITY 4 (2012), available at http://newamerica.net/sites/newamerica.net/files/policydocs/The_Cost_of_Connectivity.pdf.

77. OECD Broadband Portal, *supra* note 75, at spreadsheet 11 (Percentage of Fibre Connections in Total Broadband (Dec. 2012)).

78. See OECD COMMUNICATIONS OUTLOOK 2013, *supra* note 60, at 218 fig. 7.17.

79. See OECD COMMUNICATIONS OUTLOOK 2013, *supra* note 60, at 212-16 figs. 7.6-7.15.

future, and the dominant wireless companies AT&T and Verizon Wireless are a duopoly with a fringe (Sprint and T-Mobile) in their mobile corner. Google, Facebook, and the other giant ecosystem players are powerful enough to make their own deals with these providers, but new upstarts and consumers are being squeezed.

I agree with Mr. Furchtgott-Roth that the federal government, as it stands today, may lack the ability to own and operate a federal telecommunications network—I have never argued for that. It is likely true that the government that has allowed the current communications crisis to arise will not be very effective at building a network that would solve it. We agree that the cult of personality is a problem; we both want an FCC that is not captured.

But here is the point on which I want to conclude my response to his review. Where we disagree is whether or not we can or should enable all levels of government—local, state, federal—to work together to remedy the problems *Captive Audience* identifies.

My view is that we need to ensure that all Americans have access to affordable, high-speed connectivity. Let's set a goal of 100 Mbps symmetrical, reasonably priced fiber to the home access, and then figure out how to get there. This will require an intentional, long-term, and clear communications policy. We have not had that for a while in America. No one denies that we have moved from a voice monopoly with cross-subsidies to a deregulated market, and that this is having dramatic impacts on the universal service to which Americans are entitled. No one denies that consolidation has proceeded at an epic pace in both the wireline and wireless marketplaces. It cannot be that we simply ignore the effects of these shifts on Americans.

Mr. Furchtgott-Roth seems inclined to deny both this history and the possibility that such a constructive government role is even possible. Instead, he insists, without much evidence, that only a free market can remedy the situation.

In contrast, I look to the early history of electrification as a model. This was a time when the federal government, led by a strong and motivated president, created a public standard for electrification and ensured that it happened. The result was universal electrification and the massive economic benefits it enabled, not just for affluent city-dwellers, but for all Americans.

We have to make it easier for many varieties of competitors to build wholesale fiber networks in America that are subject to clear, express public obligations. We need to have an intentional debate about all of the elements of those obligations, including unbundling, price regulation, and interconnection. We need to make many adjustments in policy as well as ensure that there is capital that can be loaned out to support the construction of these high fixed-cost networks. Where competition is possible, in dense areas, we must mandate it. Where competition is

impossible, we must ensure that Americans get reasonably priced service. We can do all of this, and we must.

And I would be happy to have a drink with Harold Furchtgott-Roth at any time to discuss the details.