Broadband Case Study:

United States and EU

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European telecommunications companies have argued that the United States fixed broadband market has more investment and better outcomes than the European market. They also claim that the reason for this supposed American superiority is the presence of monopoly, not competition, in the US market. While European telcos pay academics (such as Chris Yoo[2]) to produce extraordinarily flawed studies (such as Yoo's investment study[3]), the incumbents' story is actually wrong on both counts. The US does not have better outcomes and removing competition decreased rather than increased investment.

To the extent apples to apples comparisons are possible (and they may not be), the US has neither greater investment nor better outcomes in fixed broadband. Indeed, if the US were a European nation, it would be in the middle of the pack of nations, with some nations ahead and some behind the US in outcomes. The primary difference is price: Americans spend twice as much per capita on communications.[4] Nor do US outcomes lead the world, as they lag far behind the globe's top nations. Recent reports by Akamai and Ookla place the US market and US cities as middling performers on speed, with less than 1/3 the speeds

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[2] Chris Yoo's scholarship has been "made possible by" money from Time Warner Cable and the largest cable lobbying association has retained him at least beginning in 2005. *See* Chris Yoo, "The Changing Patterns of Internet Usage," footnote 1, http://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1356&context=faculty_scholarship; Chris Yoo, "Broadband Net Neutrality," footnote 1, http://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1781&context=faculty_scholarship.

[3] "Declaration of Lee L. Selwyn on behalf of NASUCA," GN Docket No. 14-28, Sep. 17, 2014, (explaining the "fatal" defects in a June 2014 paper authored by Yoo, "U.S. vs. European Broadband Development: What Do the Data Say?"), http://ora.ca.gov/WorkArea/DownloadAsset.aspx?id=2849.

[4] Derek Turner, "Ex Parte Letter," GN Docket No. 14-28, Feb. 19, 2015, http://www.freepress.net/sites/default/files/resources/free_press_feb_19_2015_final.pdf ("Turner Ex Parte").

of global leaders.[5] A recent report by New America's Open Technology Institute places US prices per megabit far behind world leaders, at many multiples their prices.[6]

Second, in the US deregulation resulted in less investment, not more. The cable and phone companies in the United States invested *less* in their networks after being deregulated than they did before.[7] With very minor but telling exceptions, the incumbents have not invested in fiber-to-the-home. Most incumbents are not announcing investments in next generation networks. The evidence from these investments suggests that deregulation alone did not spur investment in the networks. This lack of investment is accompanied by monopoly. The US telecom regulator, the Federal Communications Commission (or FCC), has determined that local cable monopolies own 90% of the market for broadband service, and that 75% of Americans have at best one provider at those speeds and no other options.[8] Those monopolies—generally cable companies—are the most unpopular companies in the United States in any industry. The FCC had deregulated, a decade ago, based on its prediction that incumbents would continue to offer open access to third-party ISPs on commercial terms and that facilities-based competition would emerge.[9] Nobody in the US ever believed that two competitors would be enough. Today, the White House is launching initiatives to encourage more competition and investment in next-generation networks.

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[5] "Akamai's State of the Internet: Q4 2014 Report," March 25, 2015, http://www.stateoftheinternet.com/resources-connectivity-2014-q4-state-of-the-internet-report.html; "Oookla's Speedtest March 2015 Survey," http://www.netindex.com/download/allcountries/.

[6] Danielle Kehl et al., "Cost of Connectivity," New America OTI, Oct. 30, 2014, http://www.newamerica.org/oti/the-cost-of-connectivity-2014/.

[7] Comments of Free Press, GN Docket Nos. 14-28, 10-127, 09-191, July 17, 2014, http://apps.fcc.gov/ecfs/document/view?id=7521701227 ("Free Press Comments"); IFBA Fact Sheet, "The Truth About Title II and Investment," http://www.netfreedom.us/wp-content/uploads/2014/10/IFBA_the_TruthAboutTitleIIandInvestment.pdf.

[8] Tom Wheeler (FCC Chairman), "More Competition Needed in High-Speed Broadband Marketplace," Sept. 4, 2014, https://apps.fcc.gov/edocs_public/attachmatch/DOC-329160A1.pdf. FCC, "FCC Finds U.S. Broadband Deployment Not Keeping Pace,"Jan. 29, 2015, http://www.fcc.gov/document/fcc-finds-us-broadband-deployment-not-keeping-pace.

[9] Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, 20 FCC Rcd 14853, ¶¶ 63-64 (2005) ("Wireline Broadband Order").

Far from being a miracle, the US market has both middling outcomes and limited competition. If we learn anything from the US experiment, it is that the "hands-off" or "hope" approach will not bring about significant competition or investment in next-generation networks. Because of the real natural monopoly economics in telecoms markets, regulators may need to tailor appropriate rules to their markets to encourage competition and investment in existing and next-generation networks.

This paper has three parts: (1) a general discussion of the American market; (2) a deeper look at investment in the US market, (3) a comparison of outcomes in the US and EU.

1. Overview of the American Broadband Market

In January, 2015, United States President Barack Obama gave a major address about broadband investment. In the speech, he summarized the US market:

> [T]ens of millions of Americans have only one choice for … next-generation broadband, so they're pretty much at the whim of whatever Internet provider is around. *And what happens when there's no competition?* You're stuck on hold. You're watching the loading icon spin. You're waiting, and waiting, and waiting. And meanwhile, you're wondering why your rates keep on getting jacked up when the service doesn't seem to improve.[10]

That's the American experience. Americans know they lack competition and that their providers can keep providing bad customer service, rapidly increasing prices, and slowly improving service. Indeed, cable companies are the most unpopular companies in the United States. A University of Michigan study in December, based on 7,000 interviews, determined that the two largest cable companies, Time Warner Cable and Comcast, are the

[10] Remarks by President Obama on Promoting Community Broadband, Jan. 14, 2015, https://www.whitehouse.gov/the-press-office/2015/01/14/remarks-president-promoting-community-broadband.

nation's two most hated brands—ahead of all oil companies, banks, defense contractors, and used car salesmen.[11]

The market in the US may be unfamiliar to Europeans. Most Americans get a double play of fixed television and Internet service from a local cable monopoly, or a triple play including landline voice service. (Most Americans get their mobile service from a national telecom player, Verizon and AT&T being the dominant ones.)[12] The largest cable companies are Comcast and Time Warner Cable.[13] Local cable companies dominate the market,[14] and do so largely because of the historical accident that cable lines for providing television service in the 1970s and 1980s ended up having more throughput for broadband decades later than did phone lines. The prevalence of cable is one difference between the US and Europe. In Europe, 43% of residents have access to cable modem services in addition to incumbent telecom services; figures in the US are around 87%.[15]

Cable companies started investing in broadband services in the mid 1990s largely as a way to differentiate themselves from pay TV competitors, primarily satellite television providers.[16] Satellite was never able to compete effectively in broadband. At the same time, phone companies in the US were earning high fees from so-called second phone lines at home, used for dial-up service. Partly as a result, they were slow to roll out DSL because

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[11] Zack Epstein, "Surprise: TWC and Comcast are the Two Most Hated Companies in America," BGR, Dec. 30, 2014, http://bgr.com/2014/12/30/twc-customer-satisfaction-comcast/.
[12] "AT&T vs. Verizon in 7 Charts," *Dividend.com*, Jan. 16, 2015, http://www.dividend.com/how-to-invest/7-charts-that-compare-att-and-verizon-t-vz/.
[13] "Proposed Comcast-Time Warner Cable Deal Raises Serious Concerns," *Consumer Reports*, April 2014, http://www.consumerreports.org/cro/2014/04/proposed-comcast-time-warner-cable-deal-raises-serious-concerns/index.htm.
[14] Tom Wheeler (FCC Chairman), "More Competition Needed in High-Speed Broadband Marketplace," Sept. 4, 2014, https://apps.fcc.gov/edocs_public/attachmatch/DOC-329160A1.pdf. FCC, "FCC Finds U.S. Broadband Deployment Not Keeping Pace,"Jan. 29, 2015, http://www.fcc.gov/document/fcc-finds-us-broadband-deployment-not-keeping-pace.
[15] Turner Ex Parte at 10.
[16] Testimony of Blair Levin, Stifel Nicolaus & Company Inc., Before the United States Senate Committee on the Judiciary, on the matter of Reconsidering Our Communications Laws: Ensuring Competition and Innovation, June 14, 2006.

they did not want to eat into their own second phone line revenues.[17] But in 1998 and 1999, the FCC determined that phone lines would be subject to certain line sharing obligations, and so competitors could begin offering DSL and the incumbents did too.[18] Cable companies were never clearly subject to line-sharing obligations in the US, but a court decision in 2000 decided that cable companies were subject largely to the same regime as DSL companies.[19] The FCC was able to override that court decision with a decision two years later.[20] Shortly after declaring that line-sharing obligations did not apply to cable companies, the FCC eliminated line-sharing for phone companies in decisions in 2003[21] and 2005.[22] Without regulated access, most third-party competitors were shut out of incumbent lines and have minimal market penetration.[23]

Both the cable companies and the phone companies made substantial investments in the late 1990s and early 2000s. By 2006, when line-sharing was removed, DSL was built to nearly 80% of the phone lines.[24] Cable companies made investments during those early years that have sustained them to today and in the near future.

Since then, neither cable companies nor phone companies have invested in fiber to the home except in certain exceptional circumstances. The cable companies tended to merge with one another and eventually upgraded their lines with DOCSIS 3.x technologies, and

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[17] S. Derek Turner, "Fighting the Zombie Lies: Sorry ISPs, Title II Is Good for the Economy," Free Press, May 14, 2014.
[18] *Id. Deployment of Wireline Services Offering Advanced Telecommunications Capability*, 13 FCC Rcd 24011 (1998).
[19] *See AT&T Corp. v. City of Portland*, 216 F.3d 871 (9th Cir. 2000).
[20] Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities, Internet Over Cable Declaratory Ruling, 17 FCC Rcd 4798 (2002) ("Cable Modem Declaratory Ruling").
[21] Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, 18 FCC Rcd 16,978 (2003) ("Triennial Review Order").
[22] Wireline Broadband Order, 20 FCC Rcd. 14,853 (2005).
[23] Robert McMillan, "The Case for Net Neutrality's Nuclear Option," *Wired*, Jun. 27, 2014, http://www.wired.com/2014/06/common-carrier/ (noting the change from "thousands" of ISPs to "limited competition").
[24] Free Press Comments at 14, n. 52, http://apps.fcc.gov/ecfs/document/view?id=7521701227.

could offer higher speeds with inexpensive upgrades.[25] They have not invested in fiber-to-the-home because they have an advantage over incumbent phone companies in most of their footprints.

Phone companies by and large did not invest in fiber-to-the-home, with one exception. The exception is Verizon. Verizon's copper plant, of all the incumbent phone companies, was in the worst shape, requiring expensive annual upkeep with no long-term benefit. Moreover, for Verizon, deploying fiber-to-the-home made more sense than fiber-to-the-node, again, because the copper was in such terrible condition, and because Verizon had the "sweetest spot" of geography and demographics in the US: the Northeast and Mid-Atlantic. Verizon benefited from density and spending power in much of its territory, where it chose to deploy fiber-to-the-home, and Verizon also sold off much of the less dense and less affluent areas to Frontier and Fairpoint. Nonetheless, Verizon's general counsel testified before Congress that Wall Street investors "punished" Verizon for investing in fiber to the home,[26] because Wall Street has a bias in favor of high, immediate quarterly returns over long-term investments. Verizon ceased expanding its fiber to the home five years ago. In an investment call last quarter, the Verizon Chief Financial Officer said, ""[W]e will spend more CapEx in the Wireless side and we will continue to curtail CapEx on the Wireline side."[27] Verizon doesn't offer affordable gigabit speeds—its strategy seems to be matching the speed and prices of its cable competitors rather than burying them with next-generation speeds. In an oligopoly, that may be the most expected strategy. While Verizon has overlapping fixed markets with Comcast, the two companies have joint marketing agreements to sell one another's services in particular markets where Verizon Wireless is available but Verizon's fixed lines are not.[28]

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[25] Karl Bode, "DOCSIS 3.0 Can Be Funded By 'Couch Change' Suggests Comcast exec, who brushes off FiOS," *DSL Reports*, May 9 2007, http://www.dslreports.com/shownews/DOCSIS-30-Can-Be-Funded-By-Couch-Change-83684.
[26] Karl Bode, "Verizon Again Confirms FiOS Expansion is Over," *DSL Reports*, Mar. 23, 2012, http://www.dslreports.com/shownews/Verizon-Again-Confirms-FiOS-Expansion-is-Over-118949.
[27] Jon Brodkin, "Verizon nears 'the end' of FiOS builds," Jan. 23, 2015, http://arstechnica.com/business/2015/01/verizon-nears-the-end-of-fios-builds/.
[28] Nathan Ingraham, "Verizon Pulls Plug on Joint Venture with Cable Companies, But Cross-Promotion Will Continue," *Ars Technica*, Oct. 17, 2013,

If deregulation led to fiber investment, one would expect all the other phone companies also to invest in fiber-to-the-home, but they did not. The incumbent phone companies who did not invest in next generation networks include AT&T, Qwest (now CenturyLink), Embarq (now CenturyLink), Frontier, Fairpoint, Cincinnati Bell, Windstream, and others. Not one of them invested in fiber-to-the-home following the 2003 and 2005 deregulatory decisions. For the most part, these companies simply just continued to offer plain old ADSL, which peaks at 7.1Mbps downstream. Long after the 2003 decisions, AT&T and later CenturyLink did eventually undertake fiber-to-the-node deployments due apparently to the emerging consumer demand for video-streaming. It was not until Google Fiber—a new entrant—came along that AT&T and CenturyLink made some very limited fiber-to-the-home deployments.

It is worth considering AT&T—the largest provider by lines[29]—in some more detail. AT&T, covers parts of Michigan, Texas, California, and the Southeast. As Verizon's stock had been hammered and cable companies have an inexpensive upgrade path to a gigabit of speed, Wall Street would probably not finance AT&T's fiber to the home build. So AT&T had to invest in fiber to the node or cabinet. Today, the company is trying to buy a satellite company, DirecTV, even though AT&T could triple its fiber footprint for the cost of this merger.[30] AT&T is also focusing on the wireless side of its business, and hoping to offer

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http://www.theverge.com/2013/10/17/4849254/verizon-pulls-plug-on-joint-venture-with-cable-companies.

[29] Om Malik, "US broadband growth slows to a trickle with only 260,000 new connections," *GigaOm*, Aug. 14, 2012, https://gigaom.com/2012/08/14/us-added-260000-broadband-subscribers/.

[30] S. Derek Turner, "Why the AT&T-DIRECTV Deal Is the Dumbest, Most Wasteful Deal Ever (at Least Since Comcast–Time Warner Cable)," Free Press Blog, May 19, 2014, http://www.freepress.net/blog/2014/05/19/why-the-att-directv-deal-dumbest-most-wasteful-deal-ever.

wireless to rural areas rather than maintain its wireline plant.[31] AT&T offers up to 18 megabits per second, and, for apparently a very few, 45 or 75 megabits per second.[32]

None of the incumbents built networks in other regions. Verizon and AT&T did not build outside their service areas to compete, nor did Comcast or Time Warner Cable. The head lobbyist for Comcast has said it is too expensive to build in non-service areas.[33] Also, the incumbents killed off most independent ISPs. And therefore, we have a looming cable monopoly in much of the US.[34]

So that's the reality of broadband investment in America. Investment is lumpy and mainly complete for now. Cable is done investing because it doesn't need to invest huge sums to offer gigabits of capacity to 90 percent of Americans. The phone companies won't invest in *new capacity* that could effectively compete with cable, since they fear the punishment from Wall Street.

But there are a very few places where we see investment in offering affordable, next-generation speeds: Google Fiber and municipal networks. Google announced a fiber-to-the-home gigabit speed projects, and invited cities to submit applications. Over 1100 cities did, and one town renamed itself Google, Kansas, and one mayor jumped in a freezing lake on video to show his dedication to his voters[35]. That's the kind of demand not being met.

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[31] Jon Brodkin, "How Verizon Lets Its Copper Network Decay to Force Phone Customers Onto Fiber," *Ars Technica*, Aug. 14, 2014, http://arstechnica.com/information-technology/2014/08/why-verizon-is-trying-very-hard-to-force-fiber-on-its-customers/ ("AT&T wants to substitute wireless for wired access in about 25 percent of its territory.").

[32] Dwight Silverman, "AT&T Launches 75-Megabit Internet Service, But Not Everyone Can Get It [Updated]," *Houston Chron. Blog*, Mar. 26, 2015, http://blog.chron.com/techblog/2015/03/att-launches-75-megabit-internet-service-but-not-everyone-can-get-it/; Whamel, "Examining AT&T's 45 Mbps U-Verse Tier (And If You Can Get It)," Oct. 15, 2013, *DSL Reports*, http://www.dslreports.com/shownews/Examining-ATTs-45-Mbps-UVerse-Tier-And-If-You-Can-Get-It-126226.

[33] Jon Brodkin, "Comcast Says It's Too Expensive to Compete Against Other Cable Companies," *Ars Technica*, Sep. 24, 2014, http://arstechnica.com/business/2014/09/comcast-says-its-too-expensive-to-compete-against-other-cable-companies/.

[34] Susan Crawford, Captive Audience (Yale University 2013)

[35] Jan Biles, "KCK, Not Topeka, Gets Google High-Speed," *Topeka Capital-Journal*, Mar. 30, 2011, http://m.cjonline.com/news/2011-03-30/kck-not-topeka-gets-google-high-speed?page=1.

Google Fiber has launched in Kansas City and in Austin, Texas, and the incumbents in those two cities have responded with higher speeds and lower prices.[36] The incumbents' response to Google Fiber support the notion that companies do not improve their service or lower their prices unless forced to do so by competition. Otherwise, they just increase dividends or use excess capital on mergers. But Google Fiber should not be the US national broadband plan—Google is going to only a handful of cities and likely will never cover a large percentage of the American population.[37] Some towns have taken matters into their own hands and built their own networks, and the FCC recently had to pass rules encouraging the legality of such projects, but those will also remain limited.[38]

As a result of this investment picture, the cable companies dominate the market for high-speed connections. The FCC has defined broadband to included connections that are at least 25 megabits per second.[39] At that speed, cable companies have a 90% market share; only 25% of Americans even have a choice of providers at that speed.[40]

This path was unintended. The FCC never said that it wanted a cable monopoly in high speeds nor that it believed only two competitors would be sufficient. Quite the opposite. The FCC predicted the existence of far more than two competitors. For decades, the FCC pointed to the potential of mobile and fixed wireless, satellite, and even broadband over electric power lines a potential entrants competing with cable and DSL, and predicted voluntary line-sharing. Consider this quote from the August 2005 Wireline Broadband Order that deregulated the DSL market: "We believe that the convergence of these two factors – increasing competition among facilities-based broadband providers and the

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[36] Martyn Williams, "Aha! Time Warner Cable Ups Austin Broadband Speeds as Google Fiber Looms," PC World, Feb. 20, 2014, http://www.pcworld.com/article/2099908/aha-time-warner-cable-ups-austin-broadband-speeds-as-google-fiber-looms.html.
[37] Google Fiber, Expansion Plans, https://fiber.google.com/newcities/.
[38] FCC, "FCC Releases Order Preempting TN & NC Municipal Broadband Restrictions," Feb. 26, 2015, http://www.fcc.gov/document/fcc-releases-order-preempting-tn-nc-municipal-broadband-restrictions.
[39] Tom Wheeler (FCC Chairman), "The Facts and Future of Broadband Competition" Sep. 4, 2014, https://apps.fcc.gov/edocs_public/attachmatch/DOC-329161A1.pdf.
[40] IFBA, "U.S. Broadband Markets Are Not Competitive," http://www.netfreedom.us/wp-content/uploads/2015/02/U.S.-Broadband-Market-Not-Competitive.pdf.

potential for competition in wholesale network access – will sustain and increase competitive choice among broadband providers and Internet access products."[41]

That belief and prediction was wrong. As a result, we are stuck with a looming cable monopoly.

2. The Investment Outcome of that Monopoly.

Investment went down, not up, after deregulation in the United States.

Average annual investment by telecom carriers was 55% higher under the period of competitive regulation than in the years since the FCC removed the regulation. Comparing the seven years before and after deregulation in 2006, AT&T and Verizon's combined annual capital expenditures went down 8 percent while their revenues are up.[42]

The same is true of cable. Indeed, the cable industry's average annual network investments were 250% higher in the two years before the FCC declared cable modem service not subject to competitive regulation than it was in the subsequent two years. Indeed, *the highest year in history for cable network investment* came following the 9th Circuit's ruling that cable modem service contained a regulated offering.[43]

This decline in network investment should come as no surprise, given that aside from deployments to new housing developments, cable companies have not expanded their national footprint since the 1990s. In addition, several factors influence investment in addition to competition, such as expectations about demand, supply costs, interest rates and corporate taxes and labor costs, and general economic confidence.[44]

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[41] Wireline Broadband Order, 20 FCC Rcd. 14853, 14879 (2005).
[42] Free Press Comments at 102, http://apps.fcc.gov/ecfs/document/view?id=7521701227.
[43] *Id.* at 6.
[44] *Id.* at 94 n. 200.

The cable companies, however, invest even less than some of their numbers suggest. Today, only about 1 percent of cable-company revenues are devoted to physical network investment. Nearly all of the capital investment by cable companies, or 90%, goes essentially to the pay-TV side of the business, particularly to upgrading outdated set-top boxes.[45]

While incumbents have announced vague plans to invest in gigabit networks, most experts doubt the announcements. AT&T has claimed it will invest in fiber-to-the-home in select communities beyond areas where they face competition from Google Fiber. But experts including Karl Bode of DSL Reports refer to their plans as a "big fat bluff" and "fiber to the press release"—merely public relations tactics rather than real plans backed with investment. As Bode concludes, incumbents merely "deploy actual fiber to a handful of businesses and a few high-end developments (if that), dress the effort up in a layer of public relations paint that makes it look like an aggressive, significant deployment."[46] Indeed, these deployments, which companies claim to be "eyeing" or merely considering,[47] are so limited that executives "tell investors the upgrades won't actually cost them much of anything."[48] Moreover, the releases are extremely thin on details such as timelines, coverage maps, or price. In April, 2015, Comcast made an announcement that it would offer "professional grade," symmetrical 2 gigabit connections "beginning" in early 2016, with no timeline for rollout to the rest of its footprint, and suggestion on price. Comcast's current top tier of 505 megabits per second is offered at $400 a month with a $1000 termination fee, among other fees.[49]

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[45] *Id.* at 107-08.
[46] Karl Bode, "We've Entered the Age of Fiber to the Press Release," *Techdirt*, May 18, 2014, https://www.techdirt.com/articles/20140307/04485626475/weve-entered-age-fiber-to-press-release.shtml.
[47] Karl Bode, "AT&T's Expansion of 1 Gbps to 100 Cities is a Big Fat Bluff," *DSL Reports*, http://www.dslreports.com/shownews/ATTs-Expansion-of-1-Gbps-to-100-Cities-is-a-Big-Fat-Bluff-128628
[48] Karl Bode, "1 Gbps Hype in the Era of 'Fiber to the Press Release,'" *DSL Reports*, Sep 3, 2014, http://www.dslreports.com/shownews/130301.
[49] Karl Bode, "Despite Claims Title II Will Kill Investment, Comcast Launches Major New 2 Gigabit Deployment," *Techdirt*, Apr. 2, 2015, https://www.techdirt.com/blog/netneutrality/articles/20150402/10131530523/despite-claims-title-ii-will-kill-investment-comcast-launches-major-new-2-gigabit-deployment.shtml

Moreover, in the US, carriers almost invariably claim that a proposed restriction on their business will decrease investment. The FCC is becoming wise to this false argument. Recently, the FCC rejected the carriers' arguments that net neutrality would decrease investment and concluded that it would, in fact, increase investment in networks by generating greater demand.[50]

So that's the story. Investment is lumpy and in the US much of it happened years ago under competitive regulation. Today, without competition, no companies are proposing next generation gigabit fiber offerings except Google, their local competition, and a few municipal projects.

3. Comparing US and European Investment

Comparisons on investment between the EU and US are difficult for a few reasons. Indeed, it may be impossible to make apples to apples comparisons for many reasons. The data is not uniform and sometimes ambiguous; if investment figures in a US study include the cost of consumer devices while the EU studies merely include network investments, then the comparison would be inapt. Beyond data discrepancies, the US and EU have as many differences as apples and oranges. Labor is a key input in investment costs, so countries with higher labor costs will appear to have more network investment. The US per capita GDP is 50% higher than the EU on average. There is far more variance in wealth among EU nations, as the largest wealth difference among American states is 4 to 1, while it is 18 to 1 in the EU. In addition, the greater availability of cable in the US likely results in higher general costs merely to maintain two networks with natural monopoly economics, also suggesting greater investment merely because of those economics.[51]

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[50] Protecting and Promoting the Open Internet, GN Docket No. 14-28, Feb. 26, 2015, http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0312/FCC-15-24A1.pdf.
[51] Turner Ex Parte at 3.

Because of these major discrepancies, careful studies tend to focus on "capital intensity"—essentially the proportion of revenues reinvested. Capital intensity is also a key figure for the industry; for example, AT&T executives claim to aim for a 15% capital intensity in its business, rather than a specific investment number.[52]

US capital intensity is not much different from the EU. In 2011 to 2012, capital intensity was 14.6 percent; in EU it was 15%. 13 of the 23 EU countries that reported sufficient data on the topic outrank the US in capital intensity. Capital intensity for mobile networks is not much different in the US or EU either, ranging from 12% to 24% among operators.[53]

Outcomes are also comparable.

Broadband availability is similar in the EU and US both for current speeds and next generation speeds. At end of 2013, we can compare the EU and US. In the US, 67.2 percent of fixed line subscriptions exceeded 10 megabits per second, in the EU it was 66.4 (less than one point different). Indeed, 12 of 28 EU nations surpassed the US on this metric. VDSL was available to 31% of EU households at end of 2013, and only to 11% in US. Fiber to the home or building comprised 8.1 percent of all US fixed broadband subscriptions in the US in December 2013, and 6.1 percent in the EU in January 2014, with some EU nations exceeding the US on that metric.[54]

Americans, however, pay much more for the same outcomes. The Open Technology Institute's Cost of Connectivity report shows that Americans pay more than Europeans for every speed tier.[55] Research by Free Press shows that average annual per capita revenues in US for 2011 to 2012 were $1710, almost exactly twice EU at $850. US consumers pay

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[52] "AT&T at Wells Fargo Technology Conference," Thompson Reuters Street Events, Nov. 12, 2014, at 6, https://www.dropbox.com/s/4g0w8q6cbefctoz/AT%26T%20Inc%20at%20Wells%20Fargo%20Technology%2C%20Media%20%26%20Telecom%20Conference.pdf?dl=0.
[53] Turner Ex Parte at 4.
[54] Turner Ex Parte at 7.
[55] Danielle Kehl et al., "Cost of Connectivity," New America OTI, Oct. 30, 2014, http://www.newamerica.org/oti/the-cost-of-connectivity-2014/.

twice as much for what amounts to same performance outcomes as EU.[56] That's what you would expect without competition—higher prices for consumers. And that's probably the natural result of supporting two networks with natural monopoly characteristics, and a host of other factors.

That's the case study.

Our President can personally explain the frustration of a broadband monopoly—and all of us understand the joke. Our networks were built years ago, and there is no substantial investment in next-generation networks by incumbents, but there are a few small deployments by Google Fiber and cities. We are not an investment nirvana, and both Americans and Europeans can learn from one another.

We have learned at least one thing from the American experience: deregulation and the elimination of line-sharing and unbundling will not invariably inspire incumbents to invest in and deploy next-generation networks, let alone at affordable prices.

[56] Turner Ex Parte at 4.