



Statement before the Federal Trade Commission  
On Competition and Consumer Protection in the 21st Century Hearings, Project Number  
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August 20, 2018

The Honorable Joseph Simons  
Chairman  
Federal Trade Commission  
600 Pennsylvania Avenue, NW  
Washington, DC 20580

Dear Mr. Simons:

Thank you for your leadership to hold these hearing on competition and consumer protection in the 21st century. It is entirely appropriate that as a new chairman in a new administration that you conduct this inquiry to determine whether and how “broad-based changes in the economy, evolving business practices, new technologies, or international developments might require adjustments to competition and consumer protection enforcement law, enforcement priorities, and policy.”

My comments reflect my empirical research in international internet policy conducted at the American Enterprise Institute in Washington, DC, and the Center for Communication, Media and Information Technologies at Aalborg University in Copenhagen, Denmark. The findings are my own and should not be construed as the views of my affiliate institutions.

The key themes discussed are as follows:

1. [The transformative power of the information technology sector](#)
2. [The need for US leadership in the global information technology sector](#)
3. [The value of the Federal Trade Commission.](#)

The key policy recommendations are as follows:

1. [Reducing industrial arbitrage](#)
2. [Strengthening the role of economics and empirical inquiry](#)
3. [Considering soft, bottom-up solutions.](#)

Thank you for the opportunity to participate in these hearings. A discussion of market solutions for online privacy follows under separate cover.

Sincerely,



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## The Transformative Power of the Information Technology Sector

*The information technology sector has expanded significantly, transforming the American economy.*

The year 1995 marked the emergence of the commercial internet, and the laissez-faire, bipartisan policy approach to the internet enshrined in the 1996 Telecommunications Act remains one of the Clinton administration's most important achievements. It is staggering to consider the growth of the internet during the period.<sup>1</sup> Today the US tech economy amounts to \$1.6 trillion, or 9.2 percent of gross domestic product (GDP).<sup>2</sup> The numbers are even more staggering from an equities perspective; the American tech industry accounts for a quarter of the value of the US stock market, some \$34 trillion.<sup>3</sup> There are half a million tech companies in the US, with 34,000 new startups in 2017 alone.<sup>4</sup> Globally, the tech industry topped \$4.5 trillion in revenue in 2017 and is expected to reach \$4.8 trillion in 2018.<sup>5</sup> The US is the single-largest tech market in the world and accounts for 31 percent of the global tech market.<sup>6</sup>

The economics of the internet allow for the participation of many players. With the evolution to 5G, the next generation mobile standard, and the Internet of Things, this will only increase. Existing businesses will converge, and new ones will emerge. Consider how quickly the US reaped the gains from 4G mobile wireless networks and its associated technologies, apps, and services. Some \$100 billion was added annually to the nation's GDP.<sup>7</sup> The windfall from 5G is projected to be even greater: The rollout of a 5G network is expected to deliver three million new jobs and contribute \$1.2 trillion to the US economy.<sup>8</sup>

As we enter the 5G era and think about digital communications today as search engines, social networks, e-commerce, and digital content, our digital economy will be broadened with smart applications and platforms for health, homes, cities, grids, cars, and infrastructure. We should expect to export these 5G platforms and services.

According to the Computing Technology Industry Association's annual workforce survey, 6.1 million workers were employed in the tech industry in the US in 2017.<sup>9</sup> An additional 5.4 million worked as technology professionals across the rest of the economy. While the last generation of the internet may have been centered on Silicon Valley, the distribution of the internet economy and its workforce is changing. The top 10 states for tech sector employment are California, Florida, Illinois, Massachusetts, Michigan, New York, Pennsylvania, Texas, Virginia, and Washington.<sup>10</sup> The "Best Places to Work in Technology 2018" report finds that half are not in Silicon Valley.<sup>11</sup> While Google, Facebook, and Twitter account for a large share of the media coverage of the tech industry, they have but 100,000 employees combined. This suggests that tech policy discussions may broaden to reflect more nuanced views of a diverse American electorate. This also underscores the importance of these hearings to ensure competition and consumer protection. It also demonstrates that every American can benefit and participate in the internet economy and that all Americans have a stake in these policies.

As such, it is in the national interest to shape the international environment by projecting power and securing economic, political, and strategic goods. But the US will not have any

credibility if its internet policy is just about companies making money. The US must both demonstrate and export a value system that legitimately empowers and rewards participation in a free-market internet economy, respects the rule of law and individual rights, limits regulatory distortion and abuse, protects property, and delivers measurable improvements in quality of life. This is how we ensure that our regime is most fair, rational, and humane.

It is laudable and appropriate that the Federal Trade Commission (FTC) conducts these hearings on competition and consumer protection in the 21st century<sup>12</sup> some 20 years after the 1995 “Global Competition and Innovation Hearings” under the leadership of then-Chairman Robert Pitofsky.<sup>13</sup> Like Chairman Joseph Simons, Chairman Robert Pitofsky had also served as head of the FTC’s Bureau of Competition in addition to being a commissioner. Reviewing some of the documents from the 1995 hearings is enlightening to our inquiry today.

In 1995 the FTC was concerned whether antitrust or consumer protection enforcement impeded the ability of American firms to compete vigorously in global competition or to achieve success in innovation markets. It was also concerned with how to measure market power when competition is worldwide; the focus on innovation versus price; whether competition enforcement has or would impede firms’ abilities to compete abroad or to conduct research and development innovation; whether different types or levels of government enforcement against fraud and deception were necessary with internet marketing; and a range of questions related to the need of firms to merge achieve efficiencies so that they could compete globally. Pitofsky also made an important observation:

One of the principal responsibilities of government regulators is to ensure that the laws they enforce are regularly reviewed, and occasionally adjusted, to take account of changing conditions in the world. Many recent challenges to the “overly intrusive” or “overly burdensome” regulatory state often should be addressed to obsolete regulation rather than regulation itself. The responsibility to stay up to date is especially important in an area like antitrust and consumer protection enforcement.<sup>14</sup>

Importantly the chairman did not question the “fundamental validity of antitrust and consumer protection efforts, but rather whether there are adjustments that need to be made, in substantive law enforcement and in procedure.” In other words, it is not the “what” of the FTC that matters, but the “how.” Pitofsky was concerned that the statutes that government regulators enforce were broad and sweeping, leaving much to prosecutorial discretion. Indeed, that very criticism has been made in recent years as the FTC has received deserved judicial rebuke for overstepping its statutory authority on data regulation<sup>15</sup> and data security.<sup>16</sup> He concluded, “Our premise is that the best way for American firms to succeed in global markets is to be required by law to compete vigorously and fairly in domestic markets.”

Although US policy has successfully created the world’s leading internet economy, questions remain about the competitive nature of the large internet companies such as Alphabet,

Facebook, and Amazon that dominate their respective markets and have more revenue and users than most of the world's countries' level of GDP and inhabitants. This is not to say that their size inherently makes them problematic; indeed, it is a reflection that users value their products and services.<sup>17</sup> However, these comments show that these firms and their affiliates have used "collective action" to secure asymmetrical regulation on their industrial competitors (notably telecom and cable communications providers), and in so doing have unwittingly harmed competition and consumers by retarding the development of alternative advertising platforms, prohibited inventors from launching competitive technologies, and deprived the economy of revenue for infrastructure investment.

The FTC has an important role to play to help educate policymakers and the public about the nature of competition. Indeed, the FTC Act mandates that the FTC gathers for Congress accurate and complete information about industry sectors and the nature of competition. However, as Pitofsky noted, "In recent decades, the FTC's investigative and reporting function has not been as vigorously pursued. These hearings are designed to restore the tradition of linking law enforcement with a continuing review of economic conditions to ensure that the laws make sense in light of contemporary competitive conditions."

In looking at the FTC today, it has but 80 economists but some 700 lawyers. While the number of economists has stayed constant from the 1980s, the number of lawyers has ballooned. This mismatch of skills and professionals suggests that the FTC is not fully realizing its analytic capabilities and requirements and that a rebalancing is needed.

### **The Need for US Leadership in the Global Information Technology Sector**

*Collective political action to win asymmetrical internet regulation has unwittingly deterred competition and distracted policymakers from the salient international, economic, and technological threats.*

The US had a leadership role in internet governance but then lost it. When the US fails to uphold the rule of law in its own country, it gives license to other nations to do the same. Moreover, the US failed to challenge those countries that violate digital trade agreements. This has created a shift over the past 20 years of the international view of America from one of respect and reverence to one of resentment. The Pew Research Center's Global Attitudes and Trends reports that other nations' opinions of the US have diminished from preeminence to a tie with China for the world's most popular nation.<sup>18</sup>

To a number of foreign nations, the explosion of free speech restrictions on American college campuses legitimizes the efforts to clamp down on journalists, dissidents, and other critics of government. In the internet space, a recent and egregious example was in 2014–15. The Federal Communications Commission (FCC) pronounced that one of its greatest inventions—the internet—is a mere extension of the telephone network and thus a utility to be regulated by the government. It was a slap in the face to engineers and inventors whose life's work was creating an alternative to the telephone. It disrespected their inventions and the technologies

of freedom. In addition, it trampled the rule of law, in which the people certified through Congress that the internet is to be free and unfettered from state and federal regulation. The move to declare the internet a utility was welcomed by many unsavory nations as perfect justification to apply their favorite form of government control on the internet. It is no surprise that dozens of nations have engaged in harmful regulation toward the US, a country they once respected. Moreover, internet freedom has been declining for the past seven years despite increasing regulation around the world purported to protect consumers and “openness.”<sup>19</sup>

This abuse is not limited to government. Leading Silicon Valley firms have waged a campaign to impose internet regulation on the telecom industry to avoid interconnection fees and preclude the development of competitive business models for content and advertising.<sup>20</sup> While it may be a rational strategy for Silicon Valley, it is wrong and unfair to employ political means to secure price controls that undermine the efficient functioning of internet markets. As I have demonstrated with more than five years of doctoral and postdoctoral research, these regulatory policies have been harmful in the US and abroad, concentrating internet traffic to fewer players and enshrining a monoculture of platform paradigms and business models.<sup>21</sup>

The imposition of price controls denies infrastructure providers revenue to build networks (and tax revenue for governments), undermines the emergence of business models that could support local content development for socially beneficial goods (particularly in developing countries), and unduly burdens consumers with the full cost of networks, a cost that falls disproportionately on the poor. Moreover, the politicized regulatory exercise distracts scarce policymaking resources away from real problems, which are empirically demonstrated to be the malign acts of foreign governments to censor people, services, and data.<sup>22</sup> Indeed, many internet-related firms and industries have taken advantage of the regulatory process to win favorable treatment for themselves at the expense of their competitors and consumers. Foreign counterparts have learned from the rent-seeking behavior of American firms, and it has boomeranged. Now foreign governments find ways to regulate American firms to reward their domestic players.<sup>23</sup>

Moreover, the US has distracted itself with phantom fears instead of focusing on real threats. The US may have been the leader in 4G, but leadership is not assured in future generations. The Chinese government wants its country’s device, app, and service developers to win the race for the 5G ecosystem. China has already replaced the US as the world’s largest mobile app market,<sup>24</sup> unseating the US in downloads and revenue in 2016. The US, caught up in crony squabbles and rent-seeking regulation over the past decade, took its eye off the ball. The real threat to Silicon Valley is not the nation’s 4,551 internet service providers, but rather Chinese mercantilism including its internet giants Baidu, Alibaba, and Tencent, which make the US players look tame by comparison.<sup>25</sup>

## The Value of the Federal Trade Commission

*The FTC provides value to the American taxpayer.*

To put the value of the FTC into perspective, half of its budget is focused on consumer protection. Consider that it processes about 10 times as many robocall complaints as the FCC, the leading consumer complaint in the digital communications domain.<sup>26</sup> The FTC is clearly a workhorse of consumer protection and complaint adjudication, which is how most consumers know the agency.

Over the years the FTC's accomplishments have been considerable, but the agency showed particular leadership in the year and half before Simons' appointment, an impressive record with just two commissioners in most of 2017.<sup>27</sup> Some of the continuity can be attributed to commissioners' seven-year terms, which allow stability, but also the enlightened chairmen from both parties, have created a constructive work culture, a fact demonstrated by the consistently improving score of the agency since 2011 in the "Best Places to Work in the Federal Government"<sup>28</sup> survey. The agency ranks fourth among 25 in midsize federal agencies and No. 1 in "Employee Engagement and the New Employee Inclusion Quotient in 2017."<sup>29</sup> This is additionally notable as high scores have been achieved during a period of political turmoil and government shutdown.<sup>30</sup>

In 2017 alone the FTC brought 10 competition cases to court and took action on 25 others, brought or settled 109 consumer protection matters, brought 14 data privacy and security cases, and launched a national campaign to identify occupational licensing restrictions that threaten economic liberty. The FTC's many actions and enforcements are proof that the FTC is fully capable to regulate the broadband ecosystem with regard to net neutrality,<sup>31</sup> as an interagency memorandum of understanding attests.<sup>32</sup> Importantly, the FTC can secure financial redress for consumers, unlike the FCC, and the FTC issued its first Office of Claims and Refunds Annual report,<sup>33</sup> detailing how the FTC's Bureau of Consumer Protection obtained 168 court orders for more than \$12.72 billion between July 1, 2016, and June 30, 2017, including the landmark settlement with Volkswagen.<sup>34</sup>

The FTC has challenged a merger of firms providing microprocessors in the prosthetic knee industry.<sup>35</sup> The courts validated the challenge to the merger of physician services Sanford Health and Mid Dakota Clinic, claiming it would result in 75 percent market share for the region.<sup>36</sup> The FTC opposed the now abandoned merger of Advocate and NorthShore hospitals, fearing reduced quality and increased cost for residents of Chicago's North Shore area.<sup>37</sup>

The FTC, along with 11 states and the District of Columbia, launched "Operation Game of Loans" to target deceptive student loan debt relief scams.<sup>38</sup> Following FTC action, a federal court ordered Dish Network to pay \$280 million for alleged violations of telemarketing rules.<sup>39</sup> The FTC and 32 state attorneys general settled with Lenovo over charges that the company harmed consumers by preloading software on some laptops that compromised security protections to deliver ads to consumers.<sup>40</sup> A settlement with Uber Technologies Inc. requires

the company to implement a comprehensive privacy and auditing program.<sup>41</sup> The FTC also obtained a \$650,000 settlement with the electronic toy manufacturer VTech over allegations of violations of children’s online privacy laws.<sup>42</sup> Online tax preparation service TaxSlayer<sup>43</sup> and “revenge porn” website MyEx<sup>44</sup> were also charged. Additional information available appears in the FTC’s 2017 Privacy Report.<sup>45</sup>

The FTC launched a study on the impact of certificates of public advantage<sup>46</sup> on prices, quality, access, and innovation for health care services and workshops on prescription drug markets<sup>47</sup> and health care innovation and consumer protection.<sup>48</sup> The FTC’s Small Business and Data Security Roundtables and business guidance programs help enterprises understand and comply with the law.<sup>49</sup> Internal process reforms in the agency’s Bureau of Consumer Protection<sup>50</sup> are underway, as is a long overdue streamlining of the requirements under the Fur, Textile, and Wool Labeling Rules.<sup>51</sup> Then–Acting Chairman Ohlhausen launched the Economic Liberty Task Force with national and state partners to reduce onerous occupational licensing requirements, which have deterred many Americans from earning income as hair braiders, flower arrangers, and so on.<sup>52</sup>

The tech press largely ignored this impressive list of accomplishments. One article<sup>53</sup> that did review it casted down that the agency was not up to task and suggested that it was not doing enough on tech policy, in spite of the roundtables held on artificial intelligence and blockchain, identity theft, connected cars, and data privacy.<sup>54</sup> This journalistic view may reflect an ideological preference for regulatory agencies to deliver predetermined outcomes even though it falls outside the statutory mandate of the organization. However FTC leaders are required to deliver the mission of the organization without overstepping the rule of law. As such, the FTC’s current effort to solicit state-of-the-art information on competition and consumer protection can inform the agency and ensure that it provides the appropriate solutions per its mandate.

For an agency with a budget of some \$300 million and 1,100 employees, taxpayers get value for money. It is likely that even greater efficiency and results can be achieved by strengthening the role of economics and empirical analysis in the FTC’s work. That is discussed in a forthcoming section.

### **Reducing Industrial Arbitrage**

*The FTC should support efforts that reduce industrial arbitrage between segments of the internet economy.*

Regulatory arbitrage in internet regulation has cost the US economy some \$30–\$40 billion annually,<sup>55</sup> an amount equal to four times the outlay of the Universal Service Fund annually. This amount could have closed the digital divide years ago had regulatory policy not prioritized the profits of Silicon Valley over the welfare of the poor. As it did before 2015, the FTC will play a vital role to protect internet freedom by policing unfair and deceptive practices on the internet.<sup>56</sup> The FTC is eminently capable to police this issue and has the added advantage of an

agency design, which better insulates it from industry capture than the FCC.<sup>57</sup> This also suggests that the FTC's investigations will have greater focus on competition, consumer protection, and economics, whereas at the FCC, internet regulation was primarily an issue of legal enforcement.

The FCC's chief economist observed that the FCC's 2015 internet regulation was an "economics-free zone."<sup>58</sup> The 2015 order could also be termed an "engineering-free zone" as the FCC's engineers were not meaningfully consulted in the rulemaking process.

While the adjudication of complaints related to internet freedom will be important for the FTC, the agency should undertake competitive empirical analysis to better understand internet innovation, competition, and convergence. This can include but is not limited to how regulation can support or impede the development of two-sided markets. Consider how the competition authorities of the European Union issued the definitive report on "zero rating," some 200 pages.<sup>59</sup> This is a valuable analysis particularly for some California lawmakers who wish to prohibit pricing flexibility for internet access, a move that makes broadband more expensive for low-income people and that has been shown to reduce internet adoption.<sup>60</sup> Such analyses can promote competition, protect consumers, and fulfill the FTC mandate to inform Congress about the state of competition.

The US must model the behavior it wants to see in the world by upholding the rule of law and respect for individual rights. When American enterprises operate abroad—whether they are for-profit corporations or nonprofit entities—they want a rational, predictable, and consistent framework across the board. Such a framework allows the enterprise to minimize costs, maximize revenue, ensure efficiency, and allow improvement and innovation. To ensure the ideal framework *abroad*, enterprises should advocate for the ideal framework at *home*. Therefore, internet policy should be a consistent set of rules for all players, grounded in modern, evidenced-based standards of antitrust and delivered by the FTC.<sup>61</sup> This requires removing the asymmetric regulation and regulatory prejudice that have stymied innovation in business models and platforms.<sup>62</sup> Unless it wants to capitulate to China, American industry needs to set aside arbitrage and focus on market competition. The more robust our market and diversified our business models, the less likely China will be able to disrupt them.<sup>63</sup>

Antique notions of internet architecture and outdated regulations that prohibit innovation (e.g., this wooden notion of network core and edge) must be retired. It is precisely these regulatory prejudices that have precluded the network design advancements that can improve security.<sup>64</sup> It was reasonable to trust the digital community in the days of the Advanced Research Projects Agency Network when the users were a handful of scientists and engineers. With billions of internet users today, assumed trust is not an option. Cyberattacks and threats are commonplace and demand to be addressed within the framework of defense. Perpetrators of cyberattacks, notably rogue states, should be punished by ending visas, freezing assets, and implementing other punitive tools of international law. Modern cybersecurity requires advanced information sharing among global partners, a market for cyber insurance, freedom of parties to exercise self-defense, and the augmentation government's coordination with

military, business, and hacker communities.<sup>65</sup> Some suggest that the cybersecurity crisis is the outcome of obsolete networked computer architecture and demands a new paradigm of cryptography, the architecture of blockchain, and its derivatives. It is suggested that this emergent architecture will enable a new form of payments on the internet and topple reigning monopolies.<sup>66</sup>

### Strengthening the Role of Economics and Empirical Inquiry

*The FTC should strengthen the role of economics and empirical inquiry across the Bureau of Economics, Competition, and Consumer Protection.*

Strengthening the role of economics and empirical inquiry across the FTC will help the agency better fulfill its mission for competition, consumer protection, antitrust, and enforcement. The key finding of the second edition of *Antitrust Law in Perspective: Cases, Concepts and Problems in Competition Policy* is that the study of industrial organization rooted in the 1950s with a focus on industry structure has moved away from heuristics and bright-line rules (e.g., market consolidation is a priori bad) because of too many false positives.<sup>67</sup> Today, we put greater focus on the empirical evidence of competitive effects.<sup>68</sup>

The reason that we put more emphasis on evidence and the actual impact is that competition authorities have been spectacularly wrong in the past. Take the Blockbuster–Hollywood Video decision, the classic horizontal merger with two large competitors in the brick and mortar retail DVD business. In that 1950s industrial organizations mindset, the antitrust experts concluded that the deal would reduce the number of firms and hence harm consumers and competition.<sup>69</sup> But these experts failed to incorporate the role of technology. Netflix was transitioning its service from DVD by mail to online streaming. Hollywood and Blockbuster had a digital plan, and the merger was predicated on making that investment, but the merger was denied. Netflix could have had more competition had the Blockbuster–Hollywood Video merger been allowed. Today, Netflix has 125 million customers and almost \$12 billion in annual revenue.<sup>70</sup> Blockbuster and Hollywood Video have been eliminated.

There is no penalty for antitrust authorities when they get it wrong. They keep their jobs. But many jobs in forms are lost because of their decisions. Consumers and competition have suffered because of antitrust authorities and their outdated bright-line rules. That FTC authorities take economics and empirical analysis more seriously and incorporate it into their work is a matter of public accountability. That the number of key technical staff such as economists have become so few relative to lawyers borders on a betrayal of the progressive values promoted by President Woodrow Wilson who signed the Act which established the agency in 1914.<sup>71</sup>

Fulfilling this responsibility may well require modernization of the agency to prioritize the role of economics. This could include but is not limited a revised budget, staff hires, and the acquisition of advanced analytic tools. To strengthen the role of empirical inquiry, the FCC

created an Office of Economics and Data to ensure that prospective decisions are informed by the best available evidence.<sup>72</sup>

### **Considering Soft, Bottom-Up Solutions**

*The FTC should consider the evidence for “soft,” bottom-up solutions to many hard problems related to competition and consumer protection.*

My doctoral research on net neutrality investigated the policy regimes across 53 countries by comparing the level of mobile application innovation in the respective country five years before and five years after rules were implemented. The results were regressed based upon the type of policy regime the country selected. Those countries which use “soft” rules such as codes of conduct, self-regulation and multi-stakeholder governance produced more innovation to a statistically significant degree.<sup>73</sup>

Additional research has confirmed the value of the soft approach when looking at innovation technologies and multi-stakeholder governance models have been developed for a range of technologies including drones, sharing economy, Internet of Things, driverless cars, big data, artificial intelligence, cross-device tracking, native advertising, online data collection, mobile app transparency and security, mobile apps for kids, mobile medical apps, online health advertising, 3D printing, and facial recognition.<sup>74</sup> Entrepreneurs can vote with their feet by moving their startups to states and countries which provide more rational regulatory regimes that are hospitable to innovation. This is something state lawmakers should keep in mind in their attempts to create their own internet policy; not only will the undermine entrepreneurial incentives, the can unwittingly harm their residents and economy by deterring valuable technological development. Indeed, entrepreneurs and innovators may engage in technological civil disobedience in which they find legal and technological workarounds to burdensome regulation. The combination of these factors is creating spontaneous deregulation in that citizens themselves transition to other ways of doing things, rejecting the regulated domain.<sup>75</sup> Futurist Larry Downes describes that government authorities are not immune to change. His book *Laws of Disruption* describes how “technology changes exponentially, but social, economic, and legal systems change incrementally”, creating “conflicts between social, economic, political, and legal systems.”<sup>76</sup>

In my own research, I have observed how many enlightened regulators and authorities welcomed the soft, bottom-up solutions not only because they were the prudent and fiscal responsible responses to the situation (notably emergent technologies were at issue, but they were neither unfair nor deceptive), but also because the soft approach allowed the regulator to learn and maintain a constructive dialogue with market actors.

<sup>1</sup> Robert D. Atkinson et al., “The Internet Economy 25 Years After .Com,” Information Technology and Innovation Foundation, March 15, 2010, <https://itif.org/publications/2010/03/15/internet-economy-25-years-after-com>.

<sup>2</sup> Bureau of Economic Analysis, “Gross Domestic Product,” <https://www.bea.gov/data/gdp/gross-domestic-product>.

<sup>3</sup> Nasdaq, “Technology Companies,” [https://www.nasdaq.com/screening/companies-by-industry.aspx?industry=Technology\\_](https://www.nasdaq.com/screening/companies-by-industry.aspx?industry=Technology_)

<sup>4</sup> Cyberstates, “Data Appendix,” <https://www.cyberstates.org/>.

<sup>5</sup> CompTIA, “IT Industry Outlook 2018,” <https://www.comptia.org/resources/it-industry-trends-analysis>.

<sup>6</sup> CompTIA, “IT Industry Outlook 2018.”

<sup>7</sup> CTIA, “How America’s 4G Leadership Propelled the U.S. Economy,” April 16, 2018, <https://www.ctia.org/news/how-americas-4g-leadership-propelled-the-u-s-economy>.

<sup>8</sup> CTIA, “Global Race to 5G—Spectrum and Infrastructure Plans and Priorities,” April 2018, [https://api.ctia.org/wp-content/uploads/2018/04/Analysys-Mason-Global-Race-To-5G\\_2018.pdf](https://api.ctia.org/wp-content/uploads/2018/04/Analysys-Mason-Global-Race-To-5G_2018.pdf).

<sup>9</sup> CompTIA, *IT Industry Outlook 2018*, <https://www.comptia.org/resources/it-industry-trends-analysis#section5>.

<sup>10</sup> CompTIA, “2018 Tech Industry Job Market & Salary Trends Analysis | Cyberstates by CompTIA,” accessed May 29, 2018, <https://www.cyberstates.org/>.

<sup>11</sup> Great Place to Work, “Best Workplaces in Technology 2018,” accessed May 29, 2018, [https://www.greatplacetowork.com/best-workplaces/technology/2018?utm\\_source=online&utm\\_medium=press-release&utm\\_content=website&utm\\_campaign=2018-technology-list](https://www.greatplacetowork.com/best-workplaces/technology/2018?utm_source=online&utm_medium=press-release&utm_content=website&utm_campaign=2018-technology-list).

<sup>12</sup> Federal Trade Commission, “FTC Announces Hearings on Competition and Consumer Protection in the 21st Century,” June 20, 2018, <https://www.ftc.gov/news-events/press-releases/2018/06/ftc-announces-hearings-competition-consumer-protection-21st>.

<sup>13</sup> Federal Trade Commission, “FTC Announces Hearings on Antitrust and Consumer Protection Laws in Global, High-Tech Economy,” July 19, 1995, <https://www.ftc.gov/news-events/press-releases/1995/07/ftc-announces-hearings-antitrust-and-consumer-protection-laws>.

<sup>14</sup> Federal Trade Commission, “Federal Trade Commission Hearings on Global and Innovation-Based Competition,” October 6, 1995, <https://www.ftc.gov/news-events/press-releases/1995/10/federal-trade-commission-hearings-global-innovation-based>. See generally the final reports prepared at the conclusion of the inquiry. <https://www.ftc.gov/reports/anticipating-21st-century-competition-consumer-protection-policy-new-high-tech-global>

<sup>15</sup> Gus Hurwitz, “In Wyndham, the FTC Won a Battle but Perhaps Lost Its Data Security War,” AEIdeas, August 27, 2015, <http://www.aei.org/publication/wyndham-ftc-won-battle-perhaps-lost-data-security-war/>.

<sup>16</sup> Gus Hurwitz, “LabMD: Is the FTC’s Data Security Joy Ride Finally Coming to an End?,” AEIdeas, November 18, 2016, <http://www.aei.org/publication/labmd-ftcs-data-security-joy-ride-finally-coming-end/>.

<sup>17</sup> Mark Jamison, “When Did Making Customers Happy Become a Reason for Regulation or Breakup?,” AEIdeas, June 8, 2018, <http://www.aei.org/publication/when-did-making-customers-happy-become-a-reason-for-regulation-or-breakup/>.

<sup>18</sup> Global Indicators Database, “Do You Have a Favorable or Unfavorable View of the U.S.?” Pew Research Center, <http://www.pewglobal.org/database/indicator/1/>.

<sup>19</sup> Roslyn Layton, “The Link Between Net Neutrality and Declining Internet Freedom,” AEIdeas, December 15, 2015, <http://www.aei.org/publication/link-net-neutrality-declining-internet-freedom/>.

For an updated report, see Freedom House, “Manipulating Social Media to Undermine Democracy,” <https://freedomhouse.org/report/freedom-net/freedom-net-2017>.

<sup>20</sup> Internet Association, “Net Neutrality,” accessed July 19, 2018, <https://internetassociation.org/positions/net-neutrality/>.

<sup>21</sup> Roslyn Layton, *Which Open Internet Framework Is Best for Mobile App Innovation? An Empirical Inquiry of Net Neutrality Rules Around the World* (Aalborg University, 2017), [http://vbn.aau.dk/en/publications/which-open-internet-framework-is-best-for-mobile-app-innovation\(b1f05c8d-b31e-47cd-b19d-bcf6893e7e5b\).html](http://vbn.aau.dk/en/publications/which-open-internet-framework-is-best-for-mobile-app-innovation(b1f05c8d-b31e-47cd-b19d-bcf6893e7e5b).html).

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