ITIF | INFORMATION TECHNOLOGY & INNOVATION FOUNDATION

Seventeen Flaws in the Cicilline Antitrust Report on Competition in Digital Markets

ROBERT D. ATKINSON | OCTOBER 2020

A recent majority staff report summarizing the findings of a yearlong House Antitrust Subcommittee investigation into competition in digital markets is filled with analytical errors that highlight larger problems with the report's basic framing and policy conclusions.

OVERVIEW

The U.S. House Judiciary Subcommittee on Antitrust, Commercial and Administrative Law recently released a staff report under the direction of Chairman David Cicilline (D-RI) to summarize the majority's conclusions after a yearlong subcommittee investigation into competition in digital markets. The majority report focused in particular on four leading Internet and technology firms: Google, Amazon, Facebook, and Apple (referred to here as "GAFA"). A detailed analysis of the all the legal claims in the more than 400-page report is beyond the scope of this briefing, but it is worth pointing out a raft of more fundamental analytical flaws in the report. These include the following:

1. It engages in speculation to paint the most alarming picture possible.
2. It presents only one side of the story.
3. It makes claims with little factual support.
4. It gets privacy issues wrong.
5. It views the free, advertising-based market as problematic.
6. It views companies that compete with rivals as inherently suspect.
7. It privileges competition as the main goal—and assumes more is always better.
8. It ignores its own conclusion that there are benefits from scale in technology industries.
9. It defines relevant markets too narrowly to blow concentration and market power out of proportion.
10. It objects to platforms improving their offerings to be more convenient to consumers.
11. It criticizes tech companies regardless of what they do.
12. It dismisses consumer welfare and elevates producer welfare.

13. It assumes there is no Schumpeterian creative destruction.
14. It treats corporate long-termism and investing as predatory.
15. It wants to hold back needed business model transformation.
16. It is biased in favor of small firms.
17. It serves as a Trojan horse to drive radical reform of U.S. antitrust law.

ENGAGING IN SPECULATION TO PAINT THE MOST ALARMING PICTURE

The Cicilline report views large firms generally, and large Internet firms in particular, as suspect. It goes out of its way to suggest that the four GAFA firms have too much power and that their power will only continue to grow unless antitrust enforcers whittle them down to size. But many of the claims of such dominance are exaggerations. For example, the report states: "Just a decade into the future, 30% of the world's gross economic output may lie with these [four] firms, and just a handful of companies."[1] For this assertion it references a McKinsey Global Institute study that makes a back-of-the-envelope guestimate about the projected size of the overall future digital economy, which is vastly larger than GAFA or any "handful of companies."

The report also implies sinister forces at work, with no real evidence, as when it states: "An attorney representing app developers said they 'fear retaliation by Apple' and are 'worried that their private communications are being monitored,' so they won't speak out against abusive and discriminatory behavior."[2] If the committee really believes that Apple is secretly and illegally spying on its customers—an outlandish claim—then it should state as much and ask the FTC for a formal investigation. Otherwise, paranoid delusions from an unnamed individual do not belong in a congressional report.

PRESENTING ONLY ONE SIDE

The report clearly is focused on making its case that big tech has too much market power, and it attempts to marshal all the evidence and claims it can to support its position. The problem is that for virtually every general claim of harm made by experts, there are equally valid claims asserting the opposite. But these are almost never included. For example, it states that Jamie Luguri and Lior Strahilevitz observe that dark patterns "are harming consumers by convincing them to surrender cash or personal data in deals that do not reflect consumers' actual preferences and may not serve interest their actual interests."[3] Yet some scholars have argued that dark patterns are not harmful, and their work is not cited.[4] Overall, such concerns about consumer manipulation echo social critic Vance Packard's warnings about supposedly manipulative television commercials in his 1957 book *The Hidden Persuaders*, which raised fears about the ways advertisers leveraged psychological techniques to be more persuasive. Yet we all live with TV commercials, and as TV watchers we are not passive sheep being manipulated into turning over our hard-earned cash.

Similarly, the report states that "Google's search algorithm in June 2019 decreased a major news publisher's online traffic 'by close to 50%' even as their referrals from other sources—such as their home page and apps—grew during the same period."[5] This sounds problematic and possibly even nefarious, until one realizes that perhaps the regular improvements in Google's algorithm (updated over 3,000 times in 2018 alone) is likely responsible for this.[6] Moreover, the report fails to ask the next logical question: Did other news sites see an increase in traffic over the same period of time? Likewise, the report references a Pinterest filing that stated, "Search engines, such as Google, may modify their search algorithms and policies or enforce those policies in ways that are detrimental to us."[7] If Google does this intentionally to harm Pinterest, then it would be an antitrust violation that the federal government could prosecute. Pinterest was likely referring to the regular, ongoing improvements to algorithms that can change page rankings in search results.

One can legitimately wonder: How can an efficient search engine be asked not to discriminate among its search results without returning to what would be tantamount to inefficient Yellow Pages listings? Constant discrimination among search results is the key to keeping up with consumer preferences and returning the most relevant results. Consequently, discrimination is the very essence of competition on the merits for search results. Restricting a search engine from changing results, even in ways that may negatively harm some businesses, would limit competition and run precisely counter to the essence of our antitrust laws.

Unless the report's authors believe no algorithmic changes that would lead some sites to get less traffic and others to get more should be allowed, then such changes in traffic patterns, as long as Google did not make them intentionally for anticompetitive reasons (and there is no evidence offered that it has done this), should be viewed as a natural result of algorithmic improvement.

MAKING CLAIMS WITH LITTLE FACTUAL SUPPORT

The report repeats many commonly asserted claims about the impact of large tech companies on the economy, without any attempt to ascertain their validity or offer an alternative view. For example, it asserts that the "online platform's dominance" has "eroded innovation and entrepreneurship."[8] It goes on to claim: "Unsurprisingly, there has also been a sharp reduction in early-stage funding for technology startups."[9] But report cited for this claim actually finds that the number of small venture deals critical to start-ups increased from 975 deals in 2008 to 2,768 in 2018 (with the value of investments increasing 180 percent), while medium-sized deals almost doubled.[10] Moreover, Pitchbook data shows that over approximately the last decade the amount of venture investing has grown significantly, with the value of deal investment growing 4.6 times percent from 2006 to 2019 and the number of deals growing 3.6 times. Meanwhile, angel and seed funding deals grew 11 times to 5,207.[11] When MIT professors Jorge Guzman and Scott Stern looked at trends in high-growth entrepreneurship for 15 large states from 1988 to 2014, they found that even after controlling for the size of the U.S. economy, the second-highest rate of high-growth entrepreneurship occurred in 2014.[12] They also found that even after controlling for the size of the U.S. economy, the second-highest rate of high-growth entrepreneurship occurred in 2014.

The report also blames the big four for harming job creation, stating that, "Job creation in the high-technology sector has likewise slowed considerably. In 2000, the job creation rate in the high-technology sector was approaching 20% year-over-year. Within a decade, the rate had halved to about 10%."[13] But the report picks as the base year the height of the Internet bubble when venture investment and high-tech job creation was at an all-time high. In fact, the study they cite shows that as late as 2008 (before the financial collapse), high-tech job creation was higher than in the first half of the 1990s.[14]

The report also states, without evidence, that: "In the absence of competition, Facebook's quality has deteriorated over time, resulting in worse privacy protections for its users and a dramatic rise in misinformation on its platform."[15] Given that Facebook invested 13.6 billion in R&D in 2019—two-thirds more than the National Science Foundation budget—it's hard to understand how the quality of its service offering has deteriorated.

The report states: "Although Amazon is frequently described as controlling about 40% of U.S. online retail sales, this market share is likely understated, and estimates of about 50% or higher are more credible."[16] Yet the report provides no data or citations for such a guestimate.

The report makes the claim that Google's "search page shows users less relevant results."[17] But there is no evidence offered for this charge. Perhaps the committee is referencing the fact that Google also places labeled ads on top of many searches. But these ads are critical to providing Google search as a free service, and they are intended to be relevant to the users. Moreover, Google is in competition with other search engines to provide the best and most relevant results, so why would it intentionally degrade the quality of its service? This claim is even more striking because the report consistently references how Google uses data to target ads so it can generate results that are more tailored to individuals. So, on one hand Google makes its results worse, but on the other it uses data to make them better? The report can't have it both ways.

The report states with respect to Amazon and its cloud computing division, Amazon Web Services, that there is "the potential for a conflict of interest where cloud customers are forced to consider patronizing a competitor, as opposed to selecting the best technology for their business."[18] But the report provides no evidence or logic for this. Given that there are multiple cloud providers, including major ones such as Google, Microsoft, and Oracle, it's not clear why anyone is forced to patronize AWS, especially if it is not the best technology for their business. Moreover, such "conflicts" are not new (for example, companies that competed with IBM for some business also might have bought its mainframes) and are easily worked out in commercial transactions.

GETTING PRIVACY ISSUES WRONG

The report asserts, again without evidence, that "in the absence of adequate privacy guardrails in the United States, the persistent collection and misuse of consumer data is an indicator of market power online."[19] The report goes on to state, the "evidence of platform market power therefore is not prices charged but rather the degree to which platforms have eroded consumer privacy without prompting a response from the market."[20] The report does this because it is otherwise hard to see consumer harm when consumers are getting all of these services for free.

But this notion implies that consumers are willing to pay for privacy, either directly through subscription payments or through free services that presumably receive less revenue per user and therefore would spend less on providing the service. But there is no evidence of this. In fact, some firms have tried to gain market share on the basis of more privacy-protective value propositions, but consumers generally have not embraced these models.[21] This is difficult for many privacy advocates to accept as they often believe they know what is in the best interests of consumers who are being duped by rapacious monopolists.

The report also claims that the big four have "undermined Americans' privacy."[22] But the report provides no evidence or logic as to why having multiple search engines, browsers, social media sites and the like would lead to any more privacy. If the subcommittee is worried about privacy, then its members should encourage their colleagues on the Commerce Committee to pass national privacy regulation, as ITIF has supported.

The Cicilline report claims that targeted advertising "represents an inherent violation of the receiver's privacy. Every ad targeted using personal information gathered without explicit, informed consent is at some level a violation of privacy."[23] But it never explains how a computer algorithm analyzing a customer's data and then matching an ad without ever giving the advertiser personally identifiable information on the consumer is a violation of privacy.

Channeling anti-tech pundits like Shoshana Zuboff, the report refers to the Internet of Things as "the next wave of surveillance technologies," intentionally ignoring the fact that all four companies have privacy policies that are enforceable by the FTC, and that IoT promises significant social and economic benefits.[24]

VIEWING THE FREE, ADVERTISING-BASED MARKET AS PROBLEMATIC

The report goes out of its way to reject the reality that on the consumer side of these sometimes two-sided markets the price is zero. For example, the report states, "products appear to be 'free' but are monetized through people's attention or with their data."[25] The report makes this distinction because if the price is zero (e.g., services are free) then it is hard to argue that purported monopolists are using their market power to hurt consumers.

Yet, the report goes on to acknowledge that "data is non-rivalrous—meaning that one party's use does not prevent or diminish use by another."[26] In other words, consumers are not really paying with their data since that implies giving away something they would no longer possess.

To bolster its claim that these services are not really free, the report states that, "Recent economic evidence indicates that economies of scale achieved through data collection allow platforms to get more out of consumers than consumers get out of platforms."[27] It goes on to state that, "notwithstanding claims that services such as Google's Search or Maps products or Facebook are 'free' or have immeasurable economic value to consumers, the social data gathered through these services may exceed their economic value to consumers."[28] First, it is not even clear what this means. One would hope that any company selling something earns more than its costs on each sale; otherwise, it would soon be out of business. Moreover, the report ignores the consumer surplus, the concept that consumers often obtain significantly more benefit than the cost they pay for a product. A number of studies suggest that the consumer surplus from Internet services is actually quite sizeable. A working paper by economists Erik Brynjolfsson, Felix Eggers, and Avinash Gannamaneni found that consumers surveyed said that they would have to be paid $17,500 to forgo their use of search engines for a year. This does not sound like consumers are being exploited.[29]

VIEWING COMPANIES THAT COMPETE WITH RIVALS AS INHERENTLY SUSPECT

The report suggests that if companies don't compete then they are lazy monopolists, but if they try to compete and gain market share from rivals, then they are rapacious monopolists. The report quotes tech critic Roger McNamee complaining that Google developed Gmail to get produce lock-in. But isn't that what companies are supposed to do—develop better products to create loyal consumers? The day American companies stop doing this is the day that innovation will grind to a halt and foreign companies will gain market share. Moreover, McNamee gets it wrong. Google didn't use its market power to produce lock-in. The main reason Gmail took off was that it provided massively more free data storage than the other principal email providers at the time, Yahoo and Hotmail, and innovated to provide new functionalities like labels, threads, and archiving.[30]

PRIVILEGING COMPETITION AS THE MAIN GOAL—AND ASSUMING MORE IS ALWAYS BETTER

A principal mistake antimonopolists make is to assume that competition is the goal, and therefore that the task of antitrust policy is to produce more of it. But even the original drafters of the major U.S. antitrust statutes never saw competition as the goal; rather, they saw fair competition as a means to an end. The goal was to increase economic welfare, and sometimes more competition serves that goal and sometimes it doesn't.

There are several examples in which the report quotes opponents of the large tech platforms and antimonopoly advocates to the effect that competition is the goal. It quotes Roger McNamee saying: "At a fundamental level, competition has been a key engine of economic activity in the United States, resulting in the 'pioneering of entire industries that, in time, come to employ millions and generate trillions."[31] Antimonopolist Tim Wu states: "Competition is a critical source of innovation, business dynamism, entrepreneurship, and the launching of new industries. Vigorously contested markets have been a critical competitive asset for the United States over the past century."[32]

But not all economists agree with these views. For example, in 1952 John Kenneth Galbraith wrote, "The modern industry of a few large firms is an excellent instrument for inducing technical change. It is admirably equipped for financing technical development and for putting it into use. The competition of the competitive world, by contrast, almost completely precludes technical development."[33] More recently, leading innovation economics scholar William J. Baumol emphasized the extent to which competition among oligopolistic firms based on innovation, not prices, is the major driver of technological progress. He compared this oligopolistic competition to an arms race "that participants cannot easily quit."[34]

Perhaps one of the oddest statements in the report was its claim that in the absence of competition, "incumbent firms lack the incentive to invest in research and development."[35] One can say a number of things about GAFA, but one cannot claim they don't invest in R&D. According to the 2019 EU Industrial R&D Scorecard, of the top eight companies globally with the largest increase in R&D expenditures, four were large U.S. tech companies (Apple, Facebook, Google, and Microsoft). And of the top 5,000 companies in the world ranked by R&D spending in 2019, Alphabet (Google's parent) ranked number 1, Microsoft 3, Apple 6, and Facebook 11. And according to the EU, Amazon would have ranked first overall if it had broken out its R&D and content development expenditures. These firms seem to have plenty of incentive to invest in R&D. Moreover, it is precisely their size and market power that gives them the ability to invest so heavily in R&D. For many years, experts and pundits have criticized American companies for being too focused on short-term returns and not investing enough in R&D. So it is striking that these four firms are now coming under attack for investing in exactly the way so many experts and pundits say American firms should.

IGNORING THE COMMITTEE'S OWN CONCLUSION THAT THERE ARE BENEFITS FROM SCALE IN TECHNOLOGY INDUSTRIES

The Cicilline report acknowledges that many benefits come from tech firms having scale and scope. The report rightly notes that, "In markets with increasing returns to scale, as sales increase, average unit cost decreases. Because entry into these markets requires significant up-front costs, the market favors firms that are already large, making it difficult for new firms to enter the market and challenge large incumbents."[36] Likewise, the report states:

> Businesses that specialize in providing information, such as Google, frequently benefit from increasing returns to scale. These businesses require high upfront fixed costs, but then may scale with relatively low increases in cost. For example, 'Google can update Google Calendar for 100 million users with similar fixed expenses as would be needed for only a fraction of such users.[37]

It also states, "Certain features of digital markets—such as network effects, switching costs, the self-reinforcing advantages of data, and increasing returns to scale—make them prone to winner-take-all economics."[38]

One would think the report would therefore at least discuss the potential problems of using antitrust to artificially add more competitors to these markets that naturally are concentrated, realizing that while there could be benefits from competition there would also likely be costs to innovation (and competitiveness) and consumer welfare from reduced scale. Moreover, if at least some of these markets are mostly winner-take-all (or most), then the results the report ascribes to anticompetitive behavior are much more likely to be result of the natural functioning of these kinds of markets.

DEFINING RELEVANT MARKETS TOO NARROWLY TO MAKE CONCENTRATION AND MARKET POWER LOOK BIGGER

One of the first tasks in any antitrust analysis is to define the relevant market. But in order to make it appear that there is more concentration than there really is, the Cicilline report defines digital markets in the narrowest possible way. For example, it defines social media narrowly to make it seem that the relevant market is posting information for friends to see. To be sure, that market is different than posting short statements (Twitter), interesting short videos (TikTok) and professional information (LinkedIn). But the market for all of these activities is not the narrow social media market, it's the broader market for online attention, and even beyond that, the total market for our attention (TV, radio, etc.). Companies in a wide array of industries compete for consumers time, whether it is television, magazines, radio, internet applications, or billboards or even skywriting. Moreover, because these Internet services are mostly free, the relevant market is the advertising market.

The report makes the same error when discussing Amazon. It states, "Several factors privilege Amazon as the dominant e-commerce marketplace, and also make entry or expansion by a challenger unlikely."[39] But here the relevant market is not online commerce, where Amazon does face competition; it is retail overall. Consumers face an intensively competitive market in retail from mail order, local shopping malls and merchants, and online commerce, where Amazon, albeit large, is one of many players.

OBJECTING TO PLATFORMS IMPROVING THEIR OFFERINGS TO BE MORE CONVENIENT TO CONSUMERS

The report states, "Since Google and Bing now incorporate information boxes and various specialized services directly onto their general search results page, a market entrant would similarly need to provide a broader set of search features and services."[40] In other words, they are saying that because companies improved their products, requiring competitors to also improve theirs, that this is unfair competition. Again, this makes competition the paramount goal rather than innovation and consumer welfare.

CRITICIZING TECH COMPANIES REGARDLESS OF WHAT THEY DO

In many cases, the report damns companies if they do and damns them if they don't. For example, the report criticizes Google for using information to target ads to consumers and criticizes the company for not protecting privacy. But it later criticizes Google for eliminating third-party cookies, which make data more private, because it hurts young companies.

The report criticizes Google for requiring mobile phone makers using Android to "give default status to Google's own apps."[41] But the alternative would be for Google to charge cell phone makers a fee for using Android, which would raise prices for consumers, in which case Google would likely be accused of being a price-gouging monopolist.

The report talks about the dominance of Amazon Web Services (AWS), but then says that Google is working to position Google Cloud to dominate the "Internet of Things." But if AWS is dominant, shouldn't antitrust authorities want Google to challenge it?

DISMISSING CONSUMER WELFARE AND ELEVATING PRODUCER WELFARE

The report seldom considers how the four companies' practices benefit consumers. For example, the report states "Google's preferential treatment of its own verticals, as well as its direct listing of information in the 'OneBox' that appears at the top of Google search results, has the net effect of diverting traffic from competing verticals and jeopardizing the health and viability of their business."[42] But it ignores the increased convenience this provides consumers. Rather than acknowledge there is often a tradeoff between consumer welfare and the welfare of competitors, the report focuses on improving the latter.

ASSUMING THERE IS NO SCHUMPETERIAN CREATIVE DESTRUCTION

The report states: "Strong network effects serve as a powerful barrier of entry for new firms to enter a market and displace the incumbent. When combined with other entry barriers such as restrictions on consumers or businesses easily switching services, network effects all but ensure not just market concentration but durable market power."[43] In other words, it assumes that there can never be robust atomistic competition and that the only way to get that is for antitrust officials to intervene. And while that may be true in the short- and even midterm, it's not clear that it is true in the longer term. Schumpeterian "creative destruction"—the entry of new players based on new innovations—describes the history of many industries. We have seen this history play out in retail, with a succession of seemingly unassailable monopolies that ultimately lose out: first A&P, then Sears, then Walmart, and now Amazon. We have seen this over the years in technology. As IT industry expert David Moschella, an analyst at the Leading Edge Forum, writes:

> Concerns about monopoly power are not new to the IT industry. In their day, IBM, AT&T, Microsoft and Intel were all seen as too big, and too powerful, capable of crushing competition before it really emerges. So it is today… Thus, while it is easy to imagine growing pressure to break up Google (search, YouTube, Android) or Amazon (retail, AWS), or make life more difficult for Facebook (limiting certain types of acquisitions), history says that market (China?) and technology shifts (peer-to-peer?) will eventually provide the stronger remedies."[44]

TREATING CORPORATE LONG-TERMISM AND INVESTING AS PREDATORY

Most innovation-based companies, including Internet and IT companies, must invest massive amounts of capital to create the next generation of innovation, and these are usually highly risky investments, where bets often fail. As such, these sunk costs have to be recouped through sales revenue. All four of the GAFA companies are led by visionaries who have focused on gaining market share in the long term, doing exactly what many pundits and thought leaders complain too many U.S. firms are not doing. Yet, the report treats these firms as predatory because they are investing for the long term.

WANTING TO HOLD BACK NEEDED BUSINESS MODEL TRANSFORMATION

Just as the Sherman Antitrust Act was an attempt to hold back the transformation of the U.S. economy to large, powerful, and efficient industrial corporations so well described by Harvard Business history professor Alfred Chandler, the committee report appears to be motivated by the same conservative impulse: holding back the transformation of the U.S. economy to a digital platform one.[45] As ITIF has written:

> Many industries that grew up in the pre-Internet era are still structurally inefficient. The simplest answer to both the inefficiencies of human intermediaries and the burnout of the professions is platforms. By "platform," we mean the establishment of online ecosystems wherein suppliers and consumers can easily come together at scale—with machine learning a natural byproduct. Amazon, Netflix, Uber, and Airbnb are, of course, among the iconic examples. But today, in most nations, such platforms don't exist (or are at a very small scale) in automobiles, insurance, health care, law, education, real estate, and other important sectors. Again, there are many reasons, including vested interests, antitrust, regulatory compliance, and overall inertia. In fact, the strength of these barriers is one reason many industry observers believe major changes will eventually need to be led by new, disruptive players. Consider Haven—the Amazon, J.P. Morgan, and Berkshire Hathaway entry into health care. But the bottom line is in order to bring scale, efficiency, and intelligence to these traditional sectors, the current barriers will eventually need to be overcome—and how this type of transformation will play out remains one of the biggest strategic unknowns in the market today."[46]

Likewise, the McKinsey Global Institute talks about the importance of the emergence of digital marketplaces and platforms. In other words, digital platforms in a host of industries—health care, education, transportation, financial services, and others—could become the new business model of the 21st century. Yet, with the report's focus on ensuring that no firms have anything more than a modest share of any market, the recommendations risk holding back one of the most important economic transformations in economic history.

BEING BIASED IN FAVOR OF SMALL FIRMS

The report wants a key goal of antitrust to be protecting small business. It states, "entrepreneurism among locally owned businesses has also suffered as a result of this power. As she noted, 'Local businesses are disappearing and, with them, a pathway to the middle class."[47] But as Michael Lind and I showed in our book *Big Is Beautiful: Debunking the Myth of Small Business,* on virtually every indicator of economic and social welfare, including wages and benefits, diversity, protecting the environment, and even job creation, large businesses on average outperform small. Small businesses already benefit from a significant array of regulatory, spending, and tax preferences on the part of government; they shouldn't also benefit from a new form of antitrust policy.

BEING A TROJAN HORSE TO DRIVE RADICAL REFORM OF U.S. ANTITRUST LAW

The Cicilline report presents itself as an analysis of and remedies to rein in four firms in the tech sector. But in fact, the goal of the report is to restructure U.S. antitrust policy broadly. For example, the narrative makes clear that high market share is inherently bad, regardless of the type of industry. And when it comes to recommendations, that is the direction, including strengthening merger and monopolization enforcement, likely with hard statutory ceilings and bright-line rules and limits on companies with significant market share to move into new markets.

More generally, the report portrays a shift in the approach to the market economy and to innovation: It embraces a precautionary approach toward novel business models, aims to preserve a market structure made of small businesses despite network externalities, and advocate for ex ante regulation over ex post antitrust analysis. This precautionary approach clashes with the innovation-based approach one could legitimately adopt when addressing highly competitive and dynamic markets such as the digital markets.

CONCLUSION

Given the importance and size of major technology companies, it is appropriate for Congress to focus on antitrust issues in the industry. But any such focus should at least attempt to be unbiased. Moreover, fundamentally changing U.S. antitrust law and doctrine in the direction the antimonopolists want, with their inherent antipathy toward large companies for the sin of being big (what Progressive Era Supreme Court Justice Louis Brandeis called "the mark of Cain"), would hurt U.S. innovation, competitiveness, and consumer welfare.

About the Author

Robert D. Atkinson (@RobAtkinsonITIF) is the founder and president of ITIF. Atkinson's books include: *Big Is Beautiful: Debunking the Myth of Small Business* (MIT, 2018), *Innovation Economics: The Race for Global Advantage* (Yale, 2012), and *The Past and Future of America's Economy: Long Waves of Innovation That Power Cycles of Growth* (Edward Elgar, 2005). Atkinson holds a Ph.D. in city and regional planning from the University of North Carolina, Chapel Hill, and a master's degree in urban and regional planning from the University of Oregon.

About ITIF

The Information Technology and Innovation Foundation (ITIF) is a nonprofit, nonpartisan research and educational institute focusing on the intersection of technological innovation and public policy. Recognized as the world's leading science and technology think tank, ITIF's mission is to formulate and promote policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress.

For more information, visit us at www.itif.org.

ENDNOTES

1. *Investigation of Competition in Digital Markets: Majority Staff Report and Recommendations, Subcommittee on Antitrust, Commercial and Administrative aw of the Committee on the Judiciary*, 116th Cong. (2020), 11.
2. Ibid, 74.
3. Ibid, 53.
4. Jeffery Carter, "Dark Patterns Are Insidious Or Are They Harmless?" *Points and Figures: Startups, Markets, Politics*, May 20, 2019, https://pointsandfigures.com/2019/05/20/dark-patterns-are-insidious-or-are-they-harmless.
5. *Investigation of Competition in Digital Markets*, 116th Cong. (2020), 63.
6. Peter Meyers, "How Often Does Google Update Its Algorithm?" *Moz*, May 14, 2019, https://moz.com/blog/how-often-does-google-update-its-algorithm.
7. *Investigation of Competition in Digital Markets*, 116th Cong. (2020), 39.
8. Ibid, 12.
9. Ibid, 47.
10. Gené Teare, "Decade in review: Trends in seed-and early-stage funding, *TechCunch,* March 16, 2019, https://techcrunch.com/2019/03/16/decade-in-review-trends-in-seed-and-early-stage-funding/
11. PitchBook and NVCA, *Venture Monitor*, (July 2020), https://pitchbook.com/news/reports/q2-2020-pitchbook-nvca-venture-monitor.
12. Jorge Guzman and Scott Stern, "The State of American Entrepreneurship: New Estimates on the Quantity and Quality of Entrepreneurship for 15 US States, 1988–2014," NBER Working Paper No. 22095 (Cambridge, MA: National Bureau of Economic Research, March 2016), http://www.nber.org/papers/w22095.
13. Ibid, 47.
14. John Haltiwanger, Ian Hathaway, and Javier Miranda, "Declining Business Dynamism in the U.S. High-Technology Sector" (Ewing Marion Kauffman Foundation, February 2014), https://www.kauffman.org/wp-content/uploads/2019/12/declining_business_dynamism_in_us_high_tech_sector.pdf.
15. *Investigation of Competition in Digital Markets*, 116th Cong. (2020), 14.
16. Ibid, 15.
17. Ibid, 14.
18. Ibid, 16.
19. Ibid, 18.
20. Ibid, 52.
21. Daniel Castro and Ashley Johnson, "Just Because DuckDuckGo Lost Doesn't Mean Google's Auctions Are Rigged," *Innovation Files,* October 1, 2020, https://itif.org/publications/2020/10/01/just-because-duckduckgo-lost-doesnt-mean-googles-auctions-are-rigged
22. *Investigation of Competition in Digital Markets*, 116th Cong. (2020), 12.
23. Ibid, 55.
24. John Naughton, "'The goal is to automate us': welcome to the age of surveillance capitalism," *The Guardian,* January 20, 2019, https://www.theguardian.com/technology/2019/jan/20/shoshana-zuboff-age-of-surveillance-capitalism-google-facebook.
25. Ibid, 18.

26. Ibid, 42.
27. Ibid, 45.
28. Ibid, 46.
29. Erik Brynjolfsson, Felix Eggers, and Avinash Gannamaneni, Measuring Welfare with Massive Online Choice Experiments: A Brief Introduction, *AEA Papers and Proceedings*, vol. 108*,* (May 2018): 473-76*,* https://www.aeaweb.org/articles?id=10.1257/pandp.20181035
30. Peter Cashmere, "Six Ways Google Revolutionized Email," https://www.cnn.com/2010/TECH/04/01/cashmore.gmail/index.html
31. *Investigation of Competition in Digital Markets*, 116th Cong. (2020), 36.
32. Ibid, 46.
33. John Kenneth Galbraith, *American Capitalism: The Concept of Countervailing Power* (New York: Houghton Mifflin, 1952), 91.
34. William J. Baumol, *The Free-Market Innovation Machine,* (Princeton: Princeton University Press, 2004), 287.
35. *Investigation of Competition in Digital Markets*, 116th Cong. (2020), 36.
36. Ibid, 45.
37. *Investigation of Competition in Digital Markets*, 116th Cong. (2020), 45.
38. Ibid, 37.
39. Ibid, 87.
40. *Investigation of Competition in Digital Markets*, 116th Cong. (2020), 83.
41. Ibid, 14.
42. Ibid, 84.
43. Ibid, 41.
44. David Moschella, "Defending Digital," (Leading Edge Forum, September 2018), https://leadingedgeforum.com/news/defending-digital/.
45. Alfred D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business*, (Cambridge, MA: Belknap Press, 1977).
46. Robert D. Atkinson and David Moschella, "The Enterprise Automation Imperative—Why Modern Societies Will Need All the Productivity They Can Get," (ITIF, November 2019), https://itif.org/publications/2019/11/12/enterprise-automation-imperative-why-modern-societies-will-need-all.
47. *Investigation of Competition in Digital Markets*, 116th Cong. (2020), 50.