

ADDICTIVE TECHNOLOGY AND ITS IMPLICATIONS FOR ANTITRUST ENFORCEMENT

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Abstract

The advent of mobile devices and digital media platforms in the past decade represents the biggest shock to cognition in human history. Robust medical evidence is emerging that digital media platforms are addictive and, when used in excess, harmful to users' mental health. Other types of addictive products, like tobacco and prescription drugs, are heavily regulated to protect consumers. Currently, there is no regulatory structure protecting digital media users from these harms. Antitrust enforcement and regulation that lowers entry barriers could help consumers of social media by increasing competition. Economic theory tells us that increased choice in digital media will increase the likelihood that some firms will vie to offer higher quality and safer platforms. For this reason, evaluating harm to innovation (especially safety innovation) and product variety may be particularly important in social media merger and conduct cases. A critical element to enforcement of the antitrust laws in this space is a correct accounting of social media's addictive qualities. Standard antitrust analysis seeks to prohibit conduct that harms consumer welfare. Economists have taught the antitrust bar that a reliable proxy for consumer welfare is the output of a product or service. However, output and welfare do not have this relationship when a product is addictive. In social media markets, increased output is often harmful, making this assumption incorrect. We argue that antitrust analysis must reject the output proxy and return to a focus on consumer welfare itself in cases involving addictive social media platforms. In particular, courts should reject defenses that rely only on gross output measures without evidence that any alleged increases in output actually benefit consumers.

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INTRODUCTION

In recent years many lawmakers, researchers, public health officials, and policy experts have expressed concern about the impact of digital interactive technology on individual and societal welfare.¹ This technology, which includes both hardware (fixed and mobile devices), and software (most notably social media platforms) has captured an ever-increasing level of human engagement in the United States, in part by leveraging human attentional and affective systems² in a manner designed to maximize profit. This precipitous rise in technological engagement in the United States and abroad has been hypothesized to broadly negatively impact human wellbeing in terms of mental health and impaired cognition.³ These harms occur through disruption of neural systems regulating, among other things, attention and affect.

While digital platforms such as social media websites are, on the surface, somewhat different from addictive products like tobacco and opiate-derived pain medications, they meet the core criteria needed to justify regulation. The stimuli digital platforms produce are not physical substances consumed by the body like recreational and prescription drugs, but their effects on the brain

¹ See e.g., SEBASTIAN BAY & ROLF FREDHEIM, NATO STRATEGIC COMM. CTR. OF EXCELLENCE, FALLING BEHIND: HOW SOCIAL MEDIA COMPANIES ARE FAILING TO COMBAT IN-AUTHENTIC BEHAVIOR ONLINE 5 (2019) (“Social media manipulation is the new frontier for antagonists seeking to influence elections, polarise public opinion, and side-track legitimate political discussions.”); Rohit Chopra, Fed. Trade Comm’r, Statement, *Regarding the Report to Congress on Social Media Bots and Deceptive Advertising* (July 16, 2020) (“The viral dissemination of disinformation on social media platforms poses serious harms to society. Social media platforms have become a vehicle to sow social divisions within our country through sophisticated disinformation campaigns.”); Lien Faelens, Kristof Hoorelbeke, Eiko Fried, Rudi de Raedt, Ernst H.W. Koster, *Negative Influences of Facebook Use through the Lens of Network Analysis*, 96 COMPUT. IN HUM. BEHAV. 13, 19 (2019) (confirming that “passive Facebook use (monitoring other users’ profiles without engaging in direct exchanges with them) and [the] intensity [of use] were linked to social comparison behavior... and [s]elf-esteem linked rumination, anxiety-, depressive-, and stress-related symptoms...”); Isobel Asher Hamilton, Katie Canales, & Paige Leskin, *Facebook Hit with Two Massive Antitrust Lawsuits from the FTC and 46 States Seeking to Spin off Instagram and WhatsApp*, BUS. INSIDER, (Dec. 9, 2020, 2:47 PM) (quoting Senator Amy Klobuchar (D-Mn): “[Facebook’s] acquisitions of Instagram and WhatsApp have made the social media landscape less competitive and worse for users. Big technology companies like Facebook should not have free reign to impose their will on the market, and they must be held accountable when they attempt to do so.”), <https://www.businessinsider.com/facebook-antitrust-suit-instagram-whatsapp-deal-ftc-states-2020-12>.

² Attentional and affective systems refer to structures within the central nervous system, particularly within the brain, that direct human attention and modulate emotional content and arousal, respectively.

³ See, e.g., Jonathan Haidt & Jean M. Twenge, *Is There an Increase in Adolescent Mood Disorders, Self-Harm, and Suicide Since 2010 in the USA and UK? A Review* (2021) (unpublished manuscript) (on file with authors).

follow the same common pathway of reward through the nucleus accumbens, which in turn regulates pathways of addiction. This commonality is evident in the way platforms seek to utilize principles of variable rewards schedules and content filtering to maximize the disutility of non-use (i.e., craving) that leads to further use. Furthermore, these platforms have been shown to be harmful when consumed in excess, particularly by vulnerable populations.⁴ Finally, while their negative effects currently are measured as smaller than those of cigarettes or opiates when consumed in excess, we do not yet have the benefit of decades of observation and research to fully understand social media platforms' long-term impact on users' mental health. This is concerning because these products are, in many instances, consumed at a rate of up to 20-30 percent of an adolescent's waking hours, a scale scarcely encountered in human history.⁵ Given the enormous quantity of social media humans currently consume, it would not take a very large 'per unit' effect to create substantial harm to users.

Because the evidence that these technologies are harmful is recent (the last 15 years), U.S. lawmakers and regulators have not yet limited the actions of digital providers.⁶ Many other products that can harm human health, such as prescription drugs and tobacco, have existed for so long that regulation has been in place for decades.⁷ Products that can damage consumers economically, like gambling and credit cards, have also been regulated, though more recently.⁸ We develop the analogy between current digital businesses and the way they exploit consumers' behavioral biases—in particular their addictive qualities—and the reasons why prescription drugs and credit cards were regulated in years past. In the absence of regulation, it is likely that OxyContin, tobacco,

⁴ See e.g., Elia Abi-Jaoude, Karline Treurnicht Naylor & Antonio Pignatiello, *Smartphones, Social Media Use and Youth Mental Health* 192 CANADIAN MED. ASSOC. J. 136, 137 (2020) (“[O]bservational studies have linked spending more than 2 hours a day on social networking sites and personal electronic devices with high rates of suicidality and depressive symptoms among adolescent girls, although youth who sustained high levels of face-to-face socializing were relatively protected against the negative consequences of too much time online.”).

⁵ Jean M. Twenge, Gabrielle N. Martin, & Brian H. Spitzberg, *Trends in U.S. Adolescents' Media Use, 1976–2016: The Rise of Digital Media, the Decline of TV, and the (Near) Demise of Print*, 8 PSYCHOLOGY OF POPULAR MEDIA CULTURE 329 (2019).

⁶ See Tim Wu, *Blind Spot: The Attention Economy and the Law*, 82 ANTITRUST L.J., 771, 778 (2019) (“Regulators...don't have a paradigm for thinking about consumer harms that are not deceptive or involve physical or financial harm, but rather arise from the seizure of attention and consequential cognitive impairments.”).

⁷ See e.g., Federal Food, Drug, and Cosmetic Act, 21 U.S.C. §§301-399i (1938) (regulating the sale and distribution of medical devices, drugs, food, and tobacco products).

⁸ See e.g., Credit Card Accountability Responsibility and Disclosure Act of 2009, Pub. L. No. 111-24, 123 Stat. 1734 (May 22, 2009) (regulating credit card issuers and requiring them to employ “fair and transparent practices.”); Unlawful Internet Gambling Enforcement Act of 2006, Pub. L. No. 109-347, tit. VIII, 120 Stat. 1952 (codified at 31 U.S.C. §§5361-5367 (2006) (regulating payments relating to online gambling).

and other similar substances would be abused and more generally overused by many consumers, as they are addictive and harmful to health. Likewise, in the absence of regulation, more consumers would enter bankruptcy due to accumulated credit card and gambling debt.⁹ In a world with no regulation of these addictive products, an action by a company that caused more consumption of OxyContin or credit card debt by addicted consumers would often harm, rather than benefit, those consumers.

Importantly, the products we consider can both increase and decrease consumer welfare. An OxyContin consumer can be an otherwise healthy 70-year-old who is post-operative and is using the medication briefly under the direction of a physician. Alternatively, a consumer could be addicted to OxyContin and consume it at harmful levels. Without regulation, consumers of OxyContin and other addictive drugs would not be protected from harm by the FDA or a physician, or by limited access to the product at retail. This, we argue, is precisely the situation with a number of popular digital media services in the United States today.

The lack of digital regulation in the U.S. has a profound consequence for antitrust enforcement against digital platforms. Antitrust case law requires courts to evaluate the impact of potentially anticompetitive conduct on consumer welfare.¹⁰ When products are addictive, platform strategies may be purposefully designed to take advantage of that weakness, and the behavioral biases of consumers more generally.¹¹ Addiction is a strong behavioral bias that has been studied in the economics literature for decades, as least since the pioneering work of Gary Becker.¹² We argue that antitrust analysis of consumer welfare when consumer actions are driven by behavioral biases cannot rely only on old neoclassical tools, but rather requires incorporating insights from

⁹ *See generally*, CONSUMER FIN. PROT. BUREAU, CARD ACT REPORT (2013) (finding that the CARD Act reduced penalty fees and made credit card costs clearer to consumers).

¹⁰ *See, e.g.*, *Brooke Group Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 221 (1993) (noting “the antitrust laws’ traditional concern for consumer welfare and price competition.”); *Jacobs v. Tempur-Pedic Intern., Inc.*, 626 F.3d 1327, 1339 (11th Cir. 2010) (“[C]onsumer welfare, understood in the sense of allocative efficiency, is the animating concern of the Sherman Act.”).

¹¹ The UK Competition and Markets Authority has found evidence that “platforms’ choice architecture, something designed by the company, may exacerbate natural consumer biases.” COMPETITION AND MARKETS AUTHORITY, ONLINE PLATFORMS AND DIGITAL ADVERTISING, MARKET STUDY FINAL REPORT 194-210 (2020), https://assets.publishing.service.gov.uk/media/5fa557668fa8f5788db46efc/Final_report_Digital_ALT_TEXT.pdf. *See also*, *id.* at Appendix Y (focusing on choice architecture (i.e., content presentation) and consumer behaviour).

¹² Gary S. Becker & Kevin Murphy, *A Theory of Rational Addiction*, 96 J. POL. ECON. 675-700 (1988).

behavioral economics.¹³ Accurately assessing consumer welfare is foundational for antitrust policy and enforcement. Many scholars believe that the goal of antitrust should be to protect consumers from higher prices, lower quality, and reduced innovation that results from anticompetitive conduct.¹⁴ And U.S. courts have generally adopted this perspective.¹⁵ While a standard concept in antitrust, consumer welfare becomes a much more complex and nuanced object when the market in question includes addictive products. The literature on addiction explains why a consumer may be able to forecast that she will receive net harm from a product, express a clear desire to stop using it going forward, and consume it nonetheless.¹⁶ In standard antitrust analysis, consumer welfare is tied to the “long-run self,” whereas in settings involving addiction, choices are often made by the “short-run self” that later the consumer regrets.

U.S. antitrust laws prohibit mergers that tend to lessen competition and “monopolization,” which is unilateral conduct that harms competition and does not represent competition on the merits.¹⁷ These types of conduct are illegal when and because they harm competition and consumers. At a technical level, courts and enforcers evaluate competitive harm by its impact on con-

¹³ Behavioral economics is the study of how limits on human cognition condition people's behavior. Proponents argue that the “rational consumer” of neo-classical economics—one who always “[1]maximize[s] their utility [2] from a stable set of preferences and [3] accumulates an optimal amount of information and other inputs in a variety of markets”—does not exist. Gary S. Becker, *THE ECONOMIC APPROACH TO HUMAN BEHAVIOR* 14 (1976). Christine Jolls, Cass R. Sunstein, and Richard Thaler argue that “[t]he task of behavioral law and economics . . . is to explore the implications of actual (not hypothesized) human behavior for the law. How do 'real people' differ from homo economicus?” Christine Jolls, Cass R. Sunstein & Richard Thaler, *A Behavioral Approach to Law & Economics*, 50 *STAN. L. REV.* 1471, 1476 (1998).

¹⁴ See, e.g., Rebecca Haw Allensworth, *The Commensurability Myth in Antitrust*, 69 *VAND. L. REV.* 1, 6 (2016) (noting “over three decades of consensus among courts—and most scholars—that antitrust ought to pursue only economic goals in the form of competition.”); Donald F. Turner, *The Durability, Relevance, and Future of American Antitrust Policy*, 75 *CALIF. L. REV.* 797, 798 (1987) (the goal of antitrust policy is “to promote consumer welfare through the efficient use and allocation of resources, the development of new and improved products, and the introduction of new production, distribution, and organizational techniques for putting economic resources to beneficial use.”). Though recently there is dispute about this point. See e.g., Lina Khan, *The New Brandeis Movement: America's Antimonopoly Debate*, 9 *J. EUR. COMPETITION L. & PRAC.* 131 (2018).

¹⁵ See, e.g., *Town of Concord Mass. v. Boston Edison Co.*, 915 F.2d. 17, 21-22 (1st Cir. 1990) (holding that “a practice is 'anticompetitive' only when it harms the competitive process,” which means that “it obstructs the achievement of competition's basic goals—lower prices, better products, and more efficient production methods”).

¹⁶ Becker & Murphy, *supra* note 12.

¹⁷ The Clayton Act governs U.S. merger enforcement, while the Sherman Act prohibits unlawful monopoly acquisition and maintenance, as well as unreasonable restraints of trade. See 15 U.S.C. § 18 (2018) (prohibiting anticompetitive mergers); *id.* § 1 (prohibiting agreements “in restraint of trade or commerce”); *id.* § 2 (prohibiting monopolization).

sumer welfare. This value is measured conceptually as the area under the demand curve (which incorporates quality and innovation) and above price. Because calculating consumer welfare can be difficult, a common shortcut, or summary statistic, that is often used in antitrust enforcement and litigation is the change in output.¹⁸ If output in a market rises because of the conduct at issue, then consumer welfare is considered to have risen also.¹⁹ This is because, if nothing else changed, then an increase in quantity consumed must have occurred either because the price of the good fell, so consumers wanted more, or the quality of the good increased, so consumers wanted more. Proxying for welfare with output is a commonly used shortcut in antitrust.²⁰ This assumption about the relationship between output and consumer welfare is very powerful, but it is based on premises that are not met in the context of addictive products.

This Article argues that any evidence of increases in quantity consumed (in the social media context this might be minutes of use) that digital media defendants might offer to establish an efficiency defense should not be credited given the strong possibility that more output causes consumer harm, not benefit. Indeed, arguing that more OxyContin consumption by addicted consumers demonstrates an increase in consumer welfare violates common sense; but it does not contradict a mechanical application of antitrust analysis. We argue here that standard antitrust arguments must be adjusted and updated to correctly handle addictive products, including social media platforms. A digital business asserting that its conduct is procompetitive would either need to have a business model that does not rely on addictive or exploitative content, or show that consumer welfare gains, rather than exploitation, are the consequence of its behavior.

¹⁸ See, e.g., *NCAA v. Board of Regents of the University of Oklahoma*, 468 U.S. 85, 107 (1984) (holding that “Congress designed the Sherman Act as a “consumer welfare” prescription” and that “[r]estrictions on price and output are the paradigmatic examples of restraints of trade that the Sherman Act was intended to prohibit.”); *U.S. v. Visa U.S.A. Inc.*, 163 F. Supp. 2d 322, 406 (S.D.N.Y. 2001) (concluding that “defendants’ exclusionary rules undeniably reduce output and harm consumer welfare.”).

¹⁹ See, e.g., *LucasArts Entertainment Co. v. Humongous Entertainment Co.*, 870 F. Supp. 285, 289 (1993) (“Limitations imposed by the antitrust laws are thought to improve consumer welfare because they force firms to *increase* output from monopolistic to competitive levels.”). Causation is critical, however: the allegedly anticompetitive conduct must *cause* output to increase. For example, in *Ohio v. American Express Co.*, the Supreme Court relied on the increasing usage of credit cards over time—a long standing trend away from cash—to claim an output increase without establishing any relationship to the challenged conduct. 138 S. Ct. 2274, 2289 (2018) (holding that the plaintiffs had “failed to prove that Amex’s anti-steering provisions ha[d] stifled competition among credit-card companies” because “while these agreements have been in place, the credit-card market experienced expanding output and improved quality.”).

²⁰ See *supra* note 18.

Another way to see how the harms created by unregulated digital content affect policy decisions is to think about them as an aspect of the quality of digital services. In the parlance of antitrust economics, the harms that digital businesses impose on unwitting consumers essentially lower the quality of the product. The consumer may not be able to see the lower quality due to obfuscation by the platform, lack of regulation in the marketplace, or asymmetric information, and is therefore exposed to addictive services. Of course, when a service declines in quality that is a harm to consumer welfare. When a zero-price service declines in quality due to anticompetitive conduct by a digital business, that is equivalent to an increase in quality-adjusted price, a traditional antitrust harm.²¹ Thus, increased “engagement” on a platform with addictive or exploitative content may result in lower quality (or higher quality-adjusted price) services for some consumers. This is obviously not an efficiency.

The paper proceeds as follows: Part I describes the setting we study and the adoption of digital technology. Part II details the current evidence on the psychological harms from digital businesses and social media platforms. Part III gives an economic background to regulation and considers broadly why we regulate certain products and markets. The focus of this section is advances in behavioral economics and how they have impacted regulatory design. We argue that credit cards and cigarettes are useful product parallels to social media platforms. In Part IV we explain how these two elements, harms and lack of regulation, interact with measurement of consumer welfare. Lastly, we explain how all these elements impact antitrust enforcement against digital businesses.

I. ADOPTION OF TECHNOLOGY

Grouped together, mobile devices and social media services have been the largest shock to cognition in human history. While print and television along telephones had significant impacts on human thought and communication respectively, the sheer scale and attention capture of the internet and mobile technologies and platforms dwarfs these previous inventions. For example, over a 20-year period, American teens went from spending essentially no time on their mobile devices and the internet in 1996, to 90 minutes a day in 2008, to well over 6 hours daily as of 2018.²² Furthermore, the increase in mobile device use was driven primarily by the exponential growth of engagement in social networking websites such as Facebook, Twitter, Instagram, and Weibo.²³

²¹ *See* *In re Qualcomm Antitrust Litig.*, 328 F.R.D. 280, 309 (N.D. Cal. 2018) (“The economic term ‘quality-adjusted prices’ captures both the nominal price and total quality of a particular product.” This court endorsed the theory that a plaintiff can show consumer harm by demonstrating that absent Qualcomm’s conduct, phone manufacturers would “develop higher-quality phones with improved features even though” the prices they charged “remain[ed] the same.” *Id.*

²² *See* Twenge, Martin & Spitzberg, *supra* note 5.

²³ *Id.*

As such, individual and collective cognition has, in under 20 years (or 25 if one wishes to include the rise of the internet through desktop computers) gone from a primarily cartesian form of engagement and connectedness where humans engaged with their immediate spatial environment or single individuals through telephones, to a Euclidean form of engagement, where instantaneous access to networks of usually like-minded individuals, friends, and family are ubiquitous not only in the United States but globally.

As with any shock, the welfare implications of such rapid change are not entirely clear, nor are they easily measured in terms of their long-term impact on human well-being. The impact of condensed calorie delivery in food products in the mid-20th century was first found to reduce certain measures of hunger prevalence in the United States.²⁴ Only later were some of those changes to human diets found to lead to increased rates of obesity and the various co-morbid health conditions closely linked to obesity.²⁵ Additionally, any estimation of impact on cognition from technology we may make today is further complicated by the fact that the biological and behavioral pathways impacted by the hardware and software of today's platforms and devices are usually more complex than those linked with medical conditions like obesity and cancer, since the substrates involved are words and symbols as opposed to physical molecules that can be observed in situ and in vivo impacting physical systems.

A further unique aspect of the policy debate around digital technology is the relatively short period of time between its emergence and the potential for significant regulatory frameworks being imposed on it. While the potential harms of cigarettes were known to many physicians as early as the 19th century, significant public attempts to regulate them on the basis of being harmful to health came close to half a century after mass consumption of cigarettes had started.²⁶ This delay was certainly caused, in part, by tobacco companies hiding their intentions of addicting customers to nicotine.²⁷ Because of that delay—and a hundred years of harm, deaths, and illness it caused—policy makers had decades of time-series epidemiological data to pair with basic science research

²⁴ Tomas J. Philipson & Richard A. Posner, *The Long-Run Growth in Obesity as a Function of Technological Change* (Nat'l Bureau of Econ. Research, Working Paper 7423, 1999).

²⁵ James Niels Rosenquist, Steven F. Lehrer, A. James O'Malley, Alan M. Zaslavsky, Jordan W. Smoller & Nicholas A. Christakis, *Cohort of Birth Modifies Association of FTO Genotype and BMI*, 112 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES 354 (2015).

²⁶ UNITED STATES PUBLIC HEALTH SERVICE, SMOKING AND HEALTH: REPORT OF THE ADVISORY COMMITTEE TO THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE (1964).

²⁷ DAVIDE KESSLER, A QUESTION OF INTENT: A GREAT AMERICAN BATTLE WITH A DEADLY INDUSTRY 310 (2011) (describing how the tobacco company Brown & Williamson misrepresented to FDA investigators that nicotine “certainly had no effect whatsoever on the smoker”).

that explained both the pathways of addiction and pathology that led to lung cancer and other ailments.²⁸ In the case of digital technology, the medical literature has grown exponentially over the last decade, with an emerging consensus that overuse of social media and other platforms can be dangerous to mental health, especially among at-risk groups.²⁹ There is already a political movement in the U.S. for significant limitations on technology usage in (for example) children.³⁰ This is so even though the medical model is very different than for tobacco or prescription drugs; the nature of usage cannot be classified as addictive on the molecular level, nor can the potential harms to cognition be easily modeled using current knowledge of human neurobiology.

Nevertheless, a combination of numerous factors, including concerns over anticompetitive corporate behavior, the breakdown of civil society through foreign interference and disinformation across many platforms, the way platforms can amplify particular speech, and the perceived concerns over algorithmic discrimination by these and other technologies, have led to a perfect storm where technology regulation is arguably a major policy issue that engenders (albeit for different reasons) broad bipartisan support in society.³¹

II. THE MEDICAL EVIDENCE ON CONSUMER COGNITIVE AND PSYCHIATRIC HARMS FROM DIGITAL BUSINESSES

A. Overview

This section focuses on the harmful impact of digital technology platforms, particularly those in the social media space, on the mental health of

²⁸ Ernest L. Wynder & Evarts A. Graham, *Tobacco Smoking as a Possible Etiologic Factor in Bronchiogenic Carcinoma; a Study of 684 Proved Cases*, 143 J. AM. MED. ASSOC. 329 (1950).

²⁹ See, e.g., Haidt & Twenge, *supra* note 3; Jonathan Haidt & Jean M. Twenge, *Social media use and mental health: A review* (2019) (unpublished manuscript) (on file with author).

³⁰ See, e.g., Press Release, Sen. Ed Markey (D-Mass.), Senators Markey and Blumenthal Introduce First-of-its-Kind Legislation to Protect Children Online from Harmful Design Features (Mar. 5, 2020), <https://www.markey.senate.gov/news/press-releases/senators-markey-and-blumenthal-introduce-first-of-its-kind-legislation-to-protect-children-online-from-harmful-content-design-features> (quoting Senator Richard Blumenthal (D-Conn.) as stating that “Big Tech has designed their platforms to ensnare and exploit children for more likes, more views, and more purchases . . . The KIDS Act puts guardrails in place to reign in recklessness of marketers and Big Tech—protecting children and giving parents some peace of mind”).

³¹ Senator Josh Hawley (R-Mo) has proposed several bills to regulate tech, including the Social Media Addiction Reduction Technology Act. On July 30, 2019, Sen. Hawley tweeted: “Big Tech has embraced addiction as a business model. Their ‘innovation’ isn’t designed to create better products, but to capture attention by using psychological tricks that make it impossible to look away. Time to expect more & better from Silicon Valley.” Sen. Josh Hawley (@HawleyMO) Twitter (July 30, 2019, 10:02 AM), <https://twitter.com/HawleyMO/status/1156203526688841728>. Senator Elizabeth Warren (D-Ma) announced a plan to “break up big tech” during her 2020 presidential campaign. See Elizabeth Warren, *Here’s how We Can Break up Big Tech*, MEDIUM (Mar. 8., 2020), <https://medium.com/@teamwarren/heres-how-we-can-break-up-big-tech-9ad9e0da324c>.

youth and adolescents. We argue that the weight of the evidence suggests that material consumed through digital platforms can be “harmfully addictive.”³² We further explain that the literature particularly indicates that these platforms are harmfully addictive in youth and adolescents, especially in girls. Finally, we argue that the negative mental health consequences currently observed in youth and adolescents likely underestimate the entirety of the harms to consumers for several reasons. First, there may be economic harms that flow from the mental health harms described here. Second, there could be mental health harms to adults that the literature has not yet addressed. Third, the time period under study is relatively short due to the recent adoption of the technology. Therefore, there is a long future in which further harmful consequences can occur, and these, of course, cannot be measured today. Lastly, and not the subject of this paper, a full accounting of the other potential dis-utilities of these technologies would be decidedly large and unwieldy, considering the sheer number of areas (democracy, privacy, etc.) that have been identified as areas of regulatory concern.³³

We frame the medical evidence on consumer harm using the following criteria.

- 1) The harm we are describing is defined as encountered in the context of harmful addiction. Harmful addiction is a concept from the economics literature. It is defined as compulsive use of a product where past usage is predictive of more compulsive use in the future, conditional upon such compulsive use being harmful in a measurable way.³⁴
- 2) Harms are limited to those experienced by individual consumers only and exclude externalities on other people and society more generally.
- 3) Harms are not considered for which there are already robust regulatory structures. There are a variety of bodily harms that have been linked with digital technologies, particularly related to the operation of mobile devices. In this paper we do not discuss physical harms that result from the usage/operation of the devices themselves, such as accidents caused by distracted driving or potential neoplasms induced by cell

³² Faruk Gul & Wolfgang Pesendorfer, *Harmful Addiction*, 74 REV. ECON. STUD. 147-72 (2007).

³³ Stigler Comm. on Dig. Platforms, Final Report, 9-14 (2019), <https://www.chicagobooth.edu/research/stigler/news-and-media/committee-on-digital-platforms-final-report>.

³⁴ Gul & Pesendorfer, *supra* note 32, at 147.

phone emissions. There are clear regulatory solutions to these problems that have either been implemented at the state level,³⁵ or are part of ongoing epidemiological studies that can lead to clear remedies.³⁶

- 4) In this Article, we focus specifically on harms caused by social media. Our reasoning for limiting our focus is manifold. First, social media consumption has driven much of the rise in digital technology usage, particularly in at-risk groups such as adolescents.³⁷ Second, the business model of social media—selling advertising—is directly linked to (over) usage by consumers.³⁸ Social media platforms have engaged in well-documented attempts to manipulate users to increase platform usage.³⁹ And lastly, social media is the source of much of the malicious content that is hypothesized to be a key cause of mental health harm.⁴⁰

³⁵ Michael R. Flaherty, Alexander M. Kim, Michael D. Salt, & Lois K. Lee, *Distracted Driving Laws and Motor Vehicle Crash Fatalities*, 145 PEDIATRICS 1, 7 (2020).

³⁶ NAT'L CANCER INST., CELL PHONES AND CANCER RISK, <https://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/cell-phones-fact-sheet> (last updated Jan. 9, 2019) (describing a European study, known as COSMOS, which tracks the potential health effects of approximately 290,000 cell phone users over the age of 18 for a period of 20 to 30 years).

³⁷ VICTORIA RIDEOUT & MICHAEL B. ROBB, COMMON SENSE MEDIA, THE COMMON SENSE CENSUS: MEDIA USE BY TWEENS AND TEENS 39 (2019) (“The average amount of time 13- to 18-year-olds spend using social media each day has remained nearly exactly the same: [an hour and 11 minutes] a day in 2015, and [an hour and 10 minutes] a day in 2019. On the other hand, the frequency of social media use has increased: The percent of teens who say they use it ‘every day’ has grown from 45 percent in 2015 to 63 percent in 2019.”).

³⁸ CHRISTINA NEMR & WILLIAM GANGWARE, PARK ADVISORS, WEAPONS OF MASS DISTRACTION: FOREIGN STATE-SPONSORED DISINFORMATION IN THE DIGITAL AGE 26, (2019).

³⁹ ADAM ALTER, IRRESISTIBLE: THE RISE OF ADDICTIVE TECHNOLOGY AND THE BUSINESS OF KEEPING US HOOKED 180-81 (2017) (E-BOOK) (“It’s hard to exaggerate how much the ‘like’ button changed the psychology of Facebook use. What had begun as a passive way to track your friends’ lives was now deeply interactive, and with exactly the sort of unpredictable feedback that motivated Zeiler’s pigeons. Users were gambling every time they shared a photo, web link, or status update... [Users are] more driven to seek feedback when it isn’t guaranteed. Facebook was the first major social networking force to introduce the like button, but others now have similar functions. You can like and repost tweets on Twitter, pictures on Instagram, posts on Google+, columns on LinkedIn, and videos on YouTube.”); *See also*, COMPETITION & MKT. AUT., ONLINE PLATFORMS AND DIGITAL ADVERTISING 143 (2020) (“[T]o maintain user attention, platforms determine the most relevant content for a given user and help users to locate this content quickly, using algorithms. Platforms may: select and rank the content shown in each user’s feed; make recommendations as to what content the user may wish to consume next; or suggest new connections they may wish to make. By providing better recommendation and personalisation functionalities, platforms may become more appealing to consumers and lead them to spend more time on the platform.”).

⁴⁰ Rikuya Hosokawa & Toshiki Katsura, *Association between Mobile Technology Use and Child Adjustment in Early Elementary School Age*, 13 PLOS ONE 1, 10 (2018) (finding that “repeated

- 5) The harms we consider are limited to those that negatively affect consumers' mood and/or thought processes. As many of the potential harms from social media are similar to other stressors that lead to cognitive and affective impairment over long periods of time, we also include findings that are sub-clinical.⁴¹ The long-term effects of digital technology are a particular concern, especially in young children and adolescents.⁴²

These constraints should not be interpreted as necessarily exculpatory to other business models, or other potential harms to consumers or society. Rather, we are concerned that this Article be a readable length.

B. Addiction and Digital Technologies

Empirical evidence from secular trends in social media uptake reveal consumption patterns that are consistent with addiction. There has been a large, non-linear, rate of growth in time spent on social media platforms since their introduction in the latter half of the 2000s.⁴³ Such an increase in usage does not, by itself, show that the technology is addictive. However, when paired with survey data that suggests a substantial portion of heavy social media users express a desire to decrease use due to the platforms' negative effects, a picture similar to those seen with other harmful addictions emerges.⁴⁴ Increases in time spent online are consistent with a market in which consumers are using technology at a greater and greater rate, one that is predicted in part by past usage.⁴⁵ We should not be surprised by this fact because platforms whose business model is selling advertising are financially incentivized to get users to spend more time on their platform. User environments that are addictive are profitable because more time on the platform allows the platform to display another ad to the user—which it sells. Put differently, because a typical social media site today does not collect revenue directly from users, and platform valuations

exposure to media violence is likely to lead to anxiety and fear, aggressive thoughts, and the acceptance of violence as a primary means for solving conflict.”).

⁴¹ Sub-clinical findings are those that are not indicative of concurrent illness but are associated with downstream negative health and other outcomes. For example, increased periods of depressed mood and distraction can lead to mood disorders and poor labor market outcomes, respectively.

⁴² Paul Lewis, *Our Minds Can Be Hijacked: The Tech Insiders who Fear a Smartphone Dystopia*, GUARDIAN, (Oct. 6, 2017), <https://www.theguardian.com/technology/2017/oct/05/smartphone-addiction-silicon-valley-dystopia>.

⁴³ RIDEOUT & ROBB, *supra* note 37, at 3.

⁴⁴ See Hunt Allcott, Luca Braghieri, Sara Eichmeyer & Matthew Gentzkow, *The Welfare Effects of Social Media*, 110 AM. ECON. REV. 629, 633 (2020).

⁴⁵ See Yolanda (Linda) Reid Chassiakos et al. *Children and Adolescents and Digital Media*, 138 PEDIATRICS 2593, 2594 (2016).

are based on user growth and engagement, profit maximizing firms with monopoly power would be expected to drive usage beyond the user's value of that time. There is also early evidence that users of social media platforms report positive net value to quitting or reducing usage,⁴⁶ a finding that again is consistent with users of other addictive substances who will pay to check themselves into rehab and for other costly interventions.⁴⁷

One common criticism of the idea of digital technologies as being addictive is that, as opposed to other products that are defined as addictive such as cigarettes and alcohol, digital platforms do not introduce a physical substrate to the human body. The latter examples, through modulation of neuro-chemistry and function, result in what is classically known as a physical addiction.⁴⁸ Compulsive behaviors that do not have such a substrate, such as gambling, are referred to as “behavioral addictions” and have traditionally, until the recent addition of gambling disorder to the DSM-V,⁴⁹ been excluded from formal psychiatric diagnoses. In reality, however, the neural pathways by which behavioral addictions are developed are quite similar to those of users with physical addictions.⁵⁰ This leads to an important point we want to make: *In a meaningful sense, visual and/or auditory stimuli, when optimized for human arousal, can be thought of as no different than a substance that is physically consumed.*

Further evidence of these technologies having properties that are equivalent to those of substances of abuse can be seen in the way psychological mechanisms of reward are manipulated by technology companies to maximize consumption. Platforms design variable-interval reward schedules to decrease the latency to (and magnitude of in that time frame) “negative” utility, or withdrawal.⁵¹ This means that non-use in period t+1 generates negative utility that requires use, swiping, or other stimulus for the user just to break even. Varying the reward interval (think about checking Instagram constantly to see if anyone liked the picture of your cat because you are not sure when someone will) magnifies the intensity of the cravings compared to knowing that you will not hear anything until some distinct, future point.⁵²

⁴⁶ See Allcott et al., *supra* note 44 at 633.

⁴⁷ See Becker & Murphy, *supra* note 12 at 692-93.

⁴⁸ See Yvonne H. C. Yau & Marc N. Potenza, *Gambling Disorder and Other Behavioral Addictions: Recognition and Treatment* 23 HARV. REV. PSYCHIATRIC ASSOC. 134, 134 (2015).

⁴⁹ AMERICAN PSYCHIATRIC ASSOCIATION, DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS: DSM-5 (5th Ed. 2013).

⁵⁰ See Yau & Potenza, *supra* note 48; Luke Clark, Isabelle Boileau, and Martin Zack, *Neuroimaging of Reward Mechanisms in Gambling Disorder: An Integrative Review*, 24 MOLECULAR PSYCHIATRY 674 (2019).

⁵¹ ROGER MCNAMEE, ZUCKED: WAKING UP TO THE FACEBOOK CATASTROPHE (2019).

⁵² SHOSHANA ZUBOFF, THE AGE OF SURVEILLANCE CAPITALISM (2019).

Another harm from social media relates to the impact of the distraction(s) it imposes upon users. These distractions have two distinct, yet overlapping, components. First, there is the distraction that comes from the withdrawal from use that makes consumers wish to access, or “swipe” their smartphone to consume content from these platforms. Platforms leverage the psychological response to variable reward schedules that comes from actions such as checking for “likes.” The design of platforms such as Facebook or Instagram exploit these innate psychological tendencies which distracts individuals from what they would otherwise be doing.⁵³ Second, the nature of the content of these platforms is optimized to increase “engagement” and addiction. While a cigarette provides a very specific biological reward, content on social media, which is highly interactive and often quite personal in nature, can distract the user from other tasks of the moment, with such distractions leading to decreased mood states across the board.⁵⁴

Tobacco companies were able to drive rapid growth in smoking behavior from concentration of nicotine and manipulation of the delivery device; these product choices increased usage enormously both in terms of number of smokers and amount consumed.⁵⁵ The tobacco companies' product design choice of the level of nicotine is analogous to social media design choices. By increasing nicotine content, the seller of cigarettes increases addiction and increases its sales. “Swiping” and analogous actions that provide small amounts of immediate gratification are pleasurable online activities for users for the reasons described above. Social media platforms such as YouTube and Facebook can optimize content presentation to maximize this stimulation, which increases overall time spent on these platforms.⁵⁶ Any given user almost surely experiences declining marginal utility from platform use and even reaches some point after which increasing time on the platform generates disutility (e.g. the user needs to go to school); the platform does not experience this decline since it is unlikely to run out of profitable ads to show the user.

Advertising revenue drives a platform's incentive to make sponsored content popular on websites and search results. Algorithms set to maximize ad

⁵³ David Golumbia, *Social Media Has Hijacked Our Brains and Threatens Global Democracy*, VICE (Jan. 8, 2018, 1:00 AM) <https://www.vice.com/en/article/xw44yj/social-media-has-hijacked-our-brains-and-threatens-global-democracy>.

⁵⁴ Lotte F. Van Dillen & Sander L. Koole, *Clearing the Mind: A Working Memory Model of Distraction from Negative Mood*, 7 EMOTION 715 (2007).

⁵⁵ KESSLER, *supra* note 27.

⁵⁶ At an interview with Axios, Sean Parker, the founding president of Facebook, said: “The thought process that went into building these applications, Facebook being the first of them, ...was all about: 'How do we consume as much of your time and conscious attention as possible?’” Erica Pandey, *Sean Parker: Facebook Was Designed to Exploit Human Vulnerability*, AXIOS (Nov. 9, 2017) <https://www.axios.com/sean-parker-facebook-was-designed-to-exploit-human-vulnerability-1513306782-6d18fa32-5438-4e60-af71-13d126b58e41.html>.

revenue will learn what users click on and how to frame and steer them to click on material that is profitable for the platform. YouTube’s algorithmic recommendations steer users towards extreme content; the study does not explain why steering occurs, but the extreme content may be entertaining and may cause a user to spend more time on the platform—where she can see another ad.⁵⁷ This selection mechanism represents an economic source of harm—low quality—that interacts with the psychiatric harm of distraction, because such content is more able to claim the user’s attention away from what her long-run self would prefer to be doing.

Eye-tracking studies that measure attention capture at speeds that are often non-volitional (i.e., the consumer is not making a conscious choice to attend to a specific item),⁵⁸ have shown the success of common methods of capturing web attention, such as clickbait and validation of views.⁵⁹ Studies like these have demonstrated that our selective attention is not only drawn to content that is more arousing, but also that such content can help drive viral usage to levels that have been linked with harmful mental health outcomes.⁶⁰ This kind of cue-conditioning to capture attention and drive consumption is similar to cue-conditioning for off-line addictive substances, where people become unable to stop consuming.⁶¹ Interestingly, in a well-powered study of Facebook users that measured eye movements in those who scored highly on an established internet addiction scale,⁶² users were found to have improved mood within the first few minutes of logging on to Facebook.com but showed increasingly negative mood over time.⁶³ This first increasing, then decreasing, picture matches the measured utility of addicted consumers of any number of

⁵⁷ Manoel Horta Ribeiro, Raphael Ottoni, Robert West, Virgilio A.F. Almeida & Wagner Meira, *Auditing Radicalization Pathways on YouTube*, in PROCEEDINGS OF THE 2020 CONFERENCE ON FAIRNESS, ACCOUNTABILITY, AND TRANSPARENCY (2020).

⁵⁸ Andy J. King, Nadie Bol, R. Glenn Cummins & Kevin K. John, *Improving Visual Behavior Research in Communication Science: An Overview, Review, and Reporting Recommendations for Using Eye-Tracking Methods*, 13 COMMUNICATION METHODS AND MEASURES 149.

⁵⁹ Supavich (Fone) Pengnate, *Shocking Secret You Won’t Believe! Emotional Arousal in Clickbait Headlines: An Eye-Tracking Analysis*, 43 ONLINE INFORMATION REVIEW 1136 (2019); Michael Sulflow, Svenja Schafer & Stephan Winter, *Selective Attention in the News Feed: An Eye-tracking Study on the Perception and Selection of Political News Posts on Facebook*, 21 NEW MEDIA & SOCIETY 168 (2019).

⁶⁰ William J. Brady, Julian A. Wills, John T. Jost, Joshua A. Tucker, Jay J. Van Bavel, *Moral Contagion in Social Networks*, 114 PROCEEDINGS OF THE NAT’L ACADEMY OF SCIENCES 7313 (2017).

⁶¹ B. Douglas Bernheim and Antonio Rangel, *Addiction and Cue-Triggered Decision Processes*, 94 AM. ECON. REV. 1558 (2004).

⁶² Cecilie Schou Andreassen, Torbjorn Torsheim, Geir Scott Brunborg & Stale Pallesen, *Development of a Facebook Addiction Scale*, 110 PSYCHOLOGICAL REPORTS 501 (2012).

⁶³ Zaheer Hussain, Boban Simonovic, Edward J.N. Stupple & Maggie Austin, *Using Eye Tracking to Explore Facebook Use and Associations with Facebook Addiction, Mental Well-being, and Personality*, 9 BEHAVIORAL SCIENCES 19 (2019).

psychoactive substances, including, but not limited to alcohol, opiates, nicotine, and stimulants, and it supports the idea that while modest social media usage could be beneficial, heavy usage may be harmful.

C. Evidence that Overuse of Digital Technology Causes Psychiatric Harms

The past decade has seen a rise in studies looking at the impact of digital social media on mental health, particularly in children and adolescents.⁶⁴ These studies have shown that children and adolescents are particularly vulnerable to the development of addiction and are more likely to have long-term negative consequences from usage at a young age due to the plasticity of their still-developing minds.⁶⁵ Further, there has been a well-documented rise in multiple symptoms of mood disorders in children, especially girls, with a general secular trend over the last decade and a particular jump from 2012-2013, which coincided with a commensurate rise in social media usage by that population.⁶⁶

A large body of evidence has further shown links between social media use and mental health symptoms and illness. Large cohort studies and large-scale reviews have found good evidence suggesting a link between heavy usage of social media platforms (usually defined as over 3 hours per day) and increased depressed mood and anxiety across multiple cohorts of children and adolescents.⁶⁷ More specifically, additional studies have linked social media with outcomes such as social isolation and sleep interruption.⁶⁸ Other studies have identified further negative effects from using multiple social media platforms and network-based negative effects on mood.⁶⁹ Finally, a consistent finding

⁶⁴ Abi-Jaoude et al., *supra* note 4.

⁶⁵ James Niels Rosenquist & Casey Rothschild, *Adolescent Addiction with Affinity Preferences* (Working Paper, 2010).

⁶⁶ Ramin Mojtabai, Mark Olfson & Beth Han, *National Trends in the Prevalence and Treatment of Depression in Adolescents and Young Adults*, 138 PEDIATRICS (2016); Haidt & Twenge, *supra* note 29.

⁶⁷ See, e.g., Abi-Jaoude et al., *supra* note 4; Elroy Boers, Mohammad H. Afzali & Patricia Conrod, *Association of Screen Time and Depression in Adolescence*, 173 JAMA PEDIATRICS 853 (2019); Chaelin K. Ra, Junhan Cho & Matthew D. Stone, *Association of Digital Media Use with Subsequent Symptoms of Attention-Deficit/Hyperactivity Disorder Among Adolescents*, 320 J. AM. MED. ASSOC. 255 (2018); Jean M. Twenge, *Why Increases in Adolescent Depression May Be Linked to the Technological Environment*, 32 CURRENT OPINION IN PSYCHOLOGY 89 (2020).

⁶⁸ Brian A. Primack, Ariel Shensa, Jamie E. Sidani, Erin O. Whaite, Liu yi Lin, Daniel Rosen, Jason B. Colditz, Ana Radovic & Elizabeth Miller *Social Media Use and Perceived Social Isolation Among Young Adults in the U.S.*, 53 AM. J. PREVENTATIVE MED. 1 (2017); Garrett Hisler, Jean M. Twenge & Zlatan Krizana, *Associations between Screen Time and Short Sleep Duration among Adolescents Varies by Media Type: Evidence from a Cohort Study*, 66 AM. J. PREVENTATIVE MED. 92 (2020).

⁶⁹ Faelens et al., *supra* note 1; Primack et al., *supra* note 68.

across numerous studies that were able to control for gender found a significant and strong gender effect showing girls being particularly negatively affected by heavy use of social media.⁷⁰

A number of studies have shown a strong correlation between ADHD symptoms and heavy digital social media platform use.⁷¹ While not a mood disorder, ADHD can lead to anxiety and depression later in life and it also has a major impact on school performance and human capital production in general.

D. Future Evidence

What is striking about these findings is that they have been detected in relatively small sample sizes within only the first few years of mass social media use among children and adolescents. While these findings are not universal across all studies, and some cannot cleanly separate correlation from causality, the sheer volume and effect sizes seen in myriad studies have generated a consensus that an effect exists for heavy users, particularly girls.⁷² Even studies that have not shown significant effects have been acknowledged by their authors to be potentially inconclusive due to current limitations in measurement variables and lack of enough longitudinal data to obtain statistical power.⁷³ As further time-series data is collected on cohorts and further analyses are performed on heavy users, using approaches like birth cohort models controlling for genetics and other risk factors,⁷⁴ main effects for at-risk groups are likely to be larger.

In conclusion, though it has been only 10 years since the introduction and rapid adoption of social media technologies on portable devices, there has already been substantial evidence of significant, negative, mental health consequences in traditionally higher risk groups such as young girls. These effects appear to be strongest in those who utilize these tech/social media platforms at levels much higher than average users, a usage level that is not only the

⁷⁰ Yvonne Kelly, Afshin Zilanawala, Cara Booker & Amanda Sacker, *Social Media Use and Adolescent Mental Health: Findings From the UK Millennium Cohort Study*, 6 *ECLINICALMEDICINE* 6 59 (2018); Jean M. Twenge & Gabrielle N. Martin, *Gender Differences in Associations between Digital Media Use and Psychological Well-Being: Evidence from Three Large Datasets*, 79 *J. ADOLESCENCE* 91 (2020).

⁷¹ See, e.g., Ra, et al. *supra* note 67.

⁷² See generally, Abi-Jaoude et al., *supra* note 4; See also Haidt & Twenge, *supra* note 3.

⁷³ Amy Orben & Andrew K. Przybylski, *The Association between Adolescent Well-Being and Digital Technology Use*, 3 *NATURE HUMAN BEHAVIOUR* 173 (2019); Jean M. Twenge, Jonathan Haidt, Thomas E. Joiner & W. Keith Campbell, *Underestimating Digital Media Harm*, 4 *NATURE HUMAN BEHAVIOUR* 346 (2020); Jean M. Twenge & W. Keith Campbell, *Media Use Is Linked to Lower Psychological Well-Being: Evidence from Three Datasets*, 90 *PSYCHIATRIC QUARTERLY* 311 (2019).

⁷⁴ Rosenquist, *supra* note 25.

expected result from product design, but is in fact the logical commercial goal of these platforms.

We consider these effects, even when they are modest in magnitude, to be especially concerning and worthy of significant further research in conjunction with near-term regulatory oversight. In terms of research, the sheer level of consumption, particularly among children and adolescents whose brains have not fully developed,⁷⁵ along with the current weight of evidence, makes a deeper understanding of these effects critical in the near term. In the long term, the need for inclusion of data on digital technology and social media use in cohort studies is important for getting a better picture of the effects of heavy technology use over a consumer's lifespan.

It is also the issue of long-term effects of digital technology use that makes governmental intervention an important, and possibly critical, option in the near term. The impact on lung cancer and cardiac disease of mass-produced (and enhanced) tobacco products in the early part of the 20th century was not fully recognized until decades after their introduction.⁷⁶ This delay was, in significant part, due to the relative lag between mass uptake by the population and the long term sequelae of heavy usage.⁷⁷ If there is anything that the COVID-19 pandemic has reminded public policy makers of, it is that policy based on modeling of future outcomes can be critical to maximizing public health, be it in the corporeal or mental health arena. Digital technology is one such place where analysis, and regulatory response to that analysis, is necessary.

III. ECONOMIC SETTING

A. Regulation

The field of regulation has been heavily influenced by principles pioneered by economists.⁷⁸ Most notably, the discipline teaches that social welfare is maximized when the individual makes her own choices and maximizes expected utility, a setting that does not need any regulation. But of course, the underlying assumptions of that setting are perfectly competitive markets and the absence of externalities. For standard goods in a standard neoclassical model, more choice is (weakly) better and more consumption is (weakly) better, reflecting the reality that many households would indeed consume more of many goods,

⁷⁵ B.J. Casey, Rebecca M. Jones & Todd A. Hare, *The Adolescent Brain*, 1124 ANNALS OF THE NEW YORK ACADEMY OF SCIENCES 111 (2008).

⁷⁶ Otis W. Brawley, Thomas J. Glynn, Fadio R. Khuri, Richard C. Wender & John R. Seffrin, *The First Surgeon General's Report on Smoking and Health: The 50th Anniversary*, 64 CA: CANCER J. FOR CLINICIANS 5, 5-6 (2014).

⁷⁷ *Id.*

⁷⁸ See, e.g., Jean-Jacques Laffont & Jean Tirole, *Using Cost Observation to Regulate Firms*, 94 J. Pol. Econ. 614 (1986).

e.g. shoes or ice cream, if their budgets increased, prices fell, or choices expanded.

Regulation can improve outcomes in a setting where a consumer creates what is known as an externality. An externality is a harm or benefit accruing to someone else who did not purchase or use the good.⁷⁹ For example, pollution from a car harms others in the neighborhood, region, and globe, while the benefit of transportation services is enjoyed by the car owner. One goal of optimal regulation is to create a market system such that the car owner internalizes the total cost of the pollution they generate.⁸⁰ Such regulation causes the car to be used in a way that accounts for everyone's utility, not just the owner's. For example, an optimal carbon tax would lead to a cost of gas that reflected all the harms from pollution.⁸¹ An optimal carbon tax would cause many car owners to drive less, thereby harming others less, but at the same time, would continue to create an incentive for driving when the value of the trip was above its total cost.

While we will focus in this Article on governments that attempt to regulate dangerous products for the benefit of society and consumers, we recognize that U.S. democracy is vulnerable to capture by profit-seeking corporations that work against this outcome.⁸² If companies can earn more profit without regulation, for example by advertising cigarettes on television to increase consumption by all ages, then they will use a portion of those incremental profits to pay politicians—whether directly or indirectly—to attempt to prevent that regulation. This interplay of politics, corporate interests, and harm to voters explains the long delay in regulating cigarettes and the current lack of regulation of pollutants that contribute to climate change, among other regulatory lapses.⁸³

⁷⁹ See STEPHEN G. BREYER ET AL., *ADMINISTRATIVE LAW AND REGULATORY POLICY* 5 (Rachel E. Barkow et al. eds., 8th ed. 2017).

⁸⁰ See, e.g., SANTOSH RAIKAR & SEABRON ADAMSON, *RENEWABLE ENERGY FINANCE: THEORY AND PRACTICE* 11 (2020) (“[A] tax to control carbon emissions optimally should set the tax equal to the marginal damages such emissions create....”).

⁸¹ *Id.*

⁸² See, e.g., Stacey L. Dogan & Mark A. Lemley, *Antitrust Law and Regulatory Gaming*, 87 *TEX. L. REV.* 685, 698 (2009) (asserting that regulatory “[a]gencies are famously subject to ‘capture’ by the industries they are supposed to regulate.”)

⁸³ See, e.g., CHRISTOPHER LEONARD, *KOCHLAND: THE SECRET HISTORY OF KOCH INDUSTRIES AND CORPORATE POWER IN AMERICA* 867 (2019) (ebook) (noting that between 1991 and 2009, Charles Koch and other executives in the fossil fuel industry “spent millions of dollars to support the idea that there was an ‘alternative’ view about climate change.”). Kochland describes how, in 2009, a senior manager at Koch’s lobbying office commissioned “a third-party economic report that would undermine support for the Senate’s [American Clean Energy and Security Act]” while “Koch Industries took pains to hide its involvement[.]”. *Id.* at 967-68.

Throughout our nation's history there have been cases where products or services were regulated because society did not view them as having the ordinary "more is better" characteristic. Regulation of alcohol and certain non-prescribed, pharmacologically active agents was regularly enacted throughout the 20th century, with notable movements including prohibition and the "war on drugs" imposing significant restrictions on use. These are products where the stylized choice and consumption assumptions above are generally viewed as incorrect. Consumption of alcohol in large amounts can be damaging, as those consumers often become violent or incapacitated and damage people and property, and alcohol can also be addictive. Illegal drugs like cocaine are addictive. Increasing consumption of addictive drugs brings with it the danger of serious health consequences, inability to work, lost relationships, overdoses, and so forth. These risks are qualitatively and quantitatively larger than the risks from increasing consumption of shoes or ice cream.

There are other products that are dangerous financially, such as mortgages, credit cards, and funeral services.⁸⁴ Along with prescription drugs, these products can be beneficial in small quantities; just as an appropriate dose of opioids reduces pain, a small mortgage (relative to the ability to repay) allows the purchase of a first house. But these products can also be harmful in quantities that are too large. Some financial products are also addictive, like gambling and credit cards.⁸⁵ Excessive credit card debt can destroy a person's credit rating or lead to bankruptcy.⁸⁶ Other financial products are simply dangerous if consumed in excess. Obtaining an excessively large mortgage risks foreclosure, homelessness, and other costly consequences if the borrower experiences an adverse shock.⁸⁷ Funeral services purchased when the consumer is distraught

⁸⁴ See Michelle J. White, *Bankruptcy Report and Credit Cards* 21 J. OF ECON. PERSP. 175, 175, 177, 180 (2007) (describing the increase in credit card debt and potentially mortgage debt as the "most convincing explanation" for the increase in personal bankruptcy filings in the United States, from 287,000 in 1980 to over 2 million by 2005).

⁸⁵ See, e.g., Howard Tokunaga, *The Use and Abuse of Consumer Credit: Application of Psychological Theory and Research*, 14 J. ECON. PSYCH. 285, 287 (1993); See generally, William O. Bearden & Kelly L. Haws, *How Low Spending Control Harms Consumers* 40 J. ACAD. MKTG. SCI. 181 (2012).

⁸⁶ See *Consumer Debt - Are Credit Cards Bankrupting Americans?: Hearing before the Subcomm. on Com. & Admin. L. of the H. Comm. on the Judiciary* 111th Cong. 1 (2009) (statement of Admin J. Levitin, Associate Professor of Law, Georgetown University Law Center) ("[A]n examination of credit card debt and bankruptcy filings shows that consumer bankruptcy filers are mired in credit card debt.").

⁸⁷ See CONSUMER FIN. PROT. BUREAU, PROTECTING CONSUMERS FROM IRRESPONSIBLE MORTGAGE LENDING 1 (2013) (noting that lenders' failure to take into consideration a consumer's ability to repay a mortgage loan and luring consumers to take on loans beyond their means contributed to the collapse of the housing market in 2008), https://files.consumerfinance.gov/f/201301_cfpb_ability-to-repay-factsheet.pdf.

can be more expensive than the consumer intended.⁸⁸ All of these products are regulated more strictly than “conventional” products such as shoes.

These products are regulated in several ways. One is by access through intermediaries who have certain responsibilities established by the state, e.g. physicians, banks, bars.⁸⁹ Another regulatory approach is to make the entire product illegal, such as the U.S. does with cocaine. This extreme approach is utilized when even a small amount of the product may create life-threatening addiction. A third regulatory option is to limit the ages and conditions under which the product can be sold: age limits for buying tobacco and alcohol and opening hours for liquor stores are examples.⁹⁰ Credit cards likewise are restricted to those over the age of 21 (if there is no co-signer or proof of financial independence). Another regulatory tool is a cooling-off period, during which consumers can cancel certain purchases. In the United States, the FTC Cooling Rule gives a consumer three days to “cool down” after agreeing to a contract or purchase from an in-person sale where she faced pressure to buy.⁹¹ The tool we focus on in this paper is regulatory design. This encompasses a regulator's choice of defaults, salience, choice framing, and incentives for intermediaries.

A reason for regulation of risky products could be that government judges that the preferences of some consumers are dangerous or unacceptable for society as a whole, either as a moral matter or because of externalities on others. In these cases, cultural norms, sometimes derived from religious move-

⁸⁸ See Fed. Trade Comm'n, Funeral Rule Statement of Basis and Purpose and Regulatory Analysis, 47 Fed. Reg. 42,260, 42,266 (finding that the combination of emotional stress, lack of experience, lack of information and tight time strictures results in funeral consumers being very susceptible to influence from funeral directors' advice and counsel); See also, Robert Benincasa, *You Could Pay Less For a Funeral just by Crossing the Street*, NPR (Feb. 7, 2017, 4:02 PM) (quoting SCI Funeral Services CEO telling investors, “Everybody is on the clock ... What we find is when we deliver these packages, people tend to spend more money because they're buying more products and services,” and notifying investors that “consumers spend an extra \$1,900, on average when they buy a package, versus an “a la carte” funeral.”), <https://www.npr.org/2017/02/07/504020003/a-funeral-may-cost-you-thousands-less-just-by-crossing-the-street>.

⁸⁹ See, e.g., N.Y. PUB. HEALTH L. § 230 (2015) (setting forth guidelines for professional medical conduct); N.Y. EDUC. L. §§ 6530-32 (2012) (defining medical misconduct); CAL. CIV. CODE § 1747-1748.95 (2009) (regulating the issuance of credit cards by banks); N.J. REV. STAT. § 33:1, *et seq.* (2013) (regulating liquor licenses and permits).

⁹⁰ See Federal, Drug, and Cosmetic Act § 906(d)(5), 21 U.S.C. § 387f(d) (amended 2019) (prohibiting the sale of tobacco products to anyone under the age of 21 years); See also, National Minimum Drinking Age Act, 21 U.S.C. § 158 (establishing 21 as the minimum legal purchase age for alcoholic beverages).

⁹¹ *Buyer's Remorse: When the FTC's Cooling-Off Rule May Help*, FED. TRADE. COMM'N (Aug. 2015), <https://www.consumer.ftc.gov/articles/0176-buyers-remorse-when-ftcs-cooling-rule-may-help>.

ments (such as with prohibition), may underlie policy formulation and implementation.⁹² Another argument is that regulations designed to limit consumption of certain products by children are justified because children have not yet been able to become fully informed about specific products and are unable to make decisions about their likely benefits and harms. Regulatory design, by contrast, is motivated by the behavioral economics insight that, left to their own devices and faced with an environment designed by sophisticated and profit-maximizing sellers, consumers will fare poorly. They may not want to become exploited or addicted to the product *ex ante*, but find it difficult to resist. Regulation that helps the consumer control the way and the extent to which she consumes the product improves her welfare.

B. Behavioral Economics

Recall that in a neoclassical model with adult consumers and no externalities, no regulation is necessary because, by assumption, the consumer is capable of doing the best for herself. The regulatory design approach rejects this assumption. And, under the assumption that consumers perfectly maximize, if they choose poorly it is a one-off mistake and there is no scope for regulation to improve their well-being. However, over the past 40 years, research in behavioral economics has shown that, in fact, poor choices by consumers are common and predictable.⁹³ Guided by theory, and using evidence from the lab and many field settings, research overwhelmingly shows that in many settings consumers do not follow the neoclassical model and harm themselves by their choices.⁹⁴ Consumer behavioral biases include present bias,⁹⁵ misjudgment of

⁹² See, e.g., Harry G. Levine & Craig Reinerman, *From Prohibition to Regulation: Lessons from Alcohol Policy for Drug Policy*, 69 MILBANK QUARTERLY 461, 462 (attributing the driving force behind National Prohibition to the temperance campaign, which “was devoted to convincing people that alcoholic drink in any form was evil, dangerous, and destructive”).

⁹³ Jonathan Baron & Tess Wilkinson-Ryan, *Conceptual Foundations: a Bird’s Eye View*, RESEARCH HANDBOOK ON BEHAVIORAL LAW & ECONOMICS 40 (Joshua C. Teitelbaum & Kathryn Zeiler eds., 2018) (asserting that the “list of [human] biases has increased several fold over the much smaller list available when legal scholars started taking this work seriously”).

⁹⁴ *Id.*

⁹⁵ See Ted O’Donoghue & Matthew Rabin, *Doing It Now or Later*, 89 AM. ECON. REV. 103, 103 (1999) (explaining present-bias as the “human tendency to grab immediate rewards and to avoid immediate costs in a way that our ‘long-run selves’ do not appreciate. For example, when presented a choice between doing seven hours of an unpleasant activity on April 1 versus eight hours on April 15, if asked on February 1 virtually everyone would prefer the seven hours on April 1. But come April 1, given the same choice, most of us are apt to put off the work until April 15.”).

quality and prices,⁹⁶ sensitivity to defaults,⁹⁷ loss aversion,⁹⁸ and subjectively high search costs.⁹⁹

Behavioral models reflect the underlying psychological (and beneath that, biological) factors that cause these departures. One particular emphasis is the existence of what are called “internalities.” Analogous to externalities, these are benefits that make a consumer happy in the short run and drive short-run decisions, while imposing harms to the long-term welfare of that same consumer.¹⁰⁰ These types of mistakes are extremely common among consumers in many markets that will be familiar to the reader, e.g. exercising, diet choices, savings, and more.¹⁰¹ Consumers may be sophisticated about their internality and correctly forecast their future short-term decision-making, which may enable them to design an environment that favors the long run. For example, they may join a nearby gym or sign up for their employer's matching savings plan. Or consumers may believe that they will act according to their long-run preferences—go running, save via their checking account—even when each day they consistently do not. This explicit framing is used to buttress policies that might otherwise be taken as paternalistic and argue instead that they are simply a redistribution from one of the multitudes Walt Whitman exhorted that we contain to another, distinct, self.¹⁰²

There is empirical evidence that firms exploit behavioral biases. For example Oster and Scott Morton show that magazines choose newsstand (impulse purchase) and subscription (commitment to read in the future) prices in a way

⁹⁶ See Kenan Kalayci & Jan Potters, *Buyer Confusion and Market Prices*, 29 INT'L J. INDUST. ORG. 14, 15 (2011) (“From several markets there is evidence that consumers are not always well informed about price and quality differences of products and do not always make optimal decisions.”).

⁹⁷ See Richard H. Thaler & Cass R. Sunstein, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS* 35 (2008) (explaining that the “yeah, whatever” heuristic that many people adopt make them unlikely to deviate from default options).

⁹⁸ *Id.* at 34 (“If you are reluctant to give up what you have because you do not want to incur losses, then you will turn down trades you might have otherwise made.”).

⁹⁹ See generally, Brett Matsumoto & Forrest Spence, *Price Beliefs and Experience: Do Consumers' Beliefs Converge to Empirical Distributions with Repeated Purchases?*, 126 J. ECON. BEHAV. & ORG. 243 (2016) (finding that consumers with more experience with a given marketplace generally have more accurate beliefs about the price distribution, while consumers with no prior experience with a given marketplace tend to expect prices to be higher). For an overview of how these consumer biases impact competition, see Steffen Huck, Jidong Zhou & Charlotte Duke, *Consumer Behavioural Biases in Competition: A Survey* (United Kingdom, 2011), <http://londoneconomics.co.uk/blog/publication/consumer-behavioural-biases-in-competition-2/>.

¹⁰⁰ See Hunt Allcott & Cass R. Sunstein, *Regulating Internalities*, 34 J. POL'Y ANALYSIS & MGMT. 698, 698 (2015).

¹⁰¹ See generally, Stefano DellaVigna & Ulrike Malmendier, *Paying Not to Go to the Gym*, 96 Am. Econ. Rev. 694 (2006).

¹⁰² Walt Whitman, *Song of Myself*, 51 (“I am large, I contain multitudes”).

that is consistent with taking advantage of the present bias of consumers.¹⁰³ There is also good evidence of behavioral biases in digital platform markets such as online ticketing. Blake et al. find that consumers' responsiveness to price is very sensitive to the way in which ticket prices and fees are presented on StubHub.¹⁰⁴ Users who do not see full ticket prices until reaching the check-out page—where the back-end fees are added on—are more likely to buy tickets compared to those who see full prices, with fees included, up front.¹⁰⁵ Though back-end fee users experience search frictions such as revisiting search pages after seeing the full price, they still buy seats located closer to the stage which are higher in quality and more expensive.¹⁰⁶ Even consumers who have used StubHub more than 10 times purchase more, and higher quality, tickets when the fees are added on at the end.¹⁰⁷ In turn, sellers offer more high quality tickets, which is an offsetting benefit to consumers.¹⁰⁸ Interestingly, this empirical study could be carried out because StubHub moved between the two methods of disclosing fees. The company tried the upfront approach because it is what consumers said they wanted in surveys.¹⁰⁹ Yet under the simpler and more transparent format, consumers bought fewer and lower quality tickets.¹¹⁰ The evidence shows that StubHub gained from increased revenue and increased transactions when it tacked on fees at the very end, an example of digital platforms benefiting from consumers' behavioral limitations.

The literature falling under the categories of behavioral and neuroeconomics is so vast it would be impossible to adequately summarize, much less cover, here. The point we wish to make in this article is different. In our view (discussed below), regulatory design based on behavioral economics will eventually be adopted for digital businesses because of the threat to users' mental health. Before that regulation arrives, many digital products have the characteristics of an unregulated credit card market with asymmetric information and behavioral consumers: they often do harm when consumers increase the quantity of services they consume.

¹⁰³ Sharon M. Oster & Fiona M. Scott Morton, *Behavioral Biases Meet the Market: The Case of Magazine Subscription Prices*, 5 B.E. J. ECON. ANALYSIS AND POL'Y 1 (2005).

¹⁰⁴ Tom Blake, Sarah Moshary, Kane Sweeney & Steve Tadelis, *Price Salience and Product Choice* (Nat'l Bureau of Econ. Rsch., Working Paper No. 25186, 2018).

¹⁰⁵ *Id.* at 2-3.

¹⁰⁶ *Id.* at 17-18.

¹⁰⁷ *Id.* at 33.

¹⁰⁸ *Id.*

¹⁰⁹ *Id.* at 2.

¹¹⁰ Hannah Karp, *StubHub Sings the Blues After Shifting Fees* WALL ST. J. (Mar. 26, 2014, 11:39 AM), <https://www.wsj.com/articles/stubhub-sings-the-blues-after-shifting-fees-1395783228>.

C. Specific Examples of Behavioral Regulation

One of the simplest examples of behavioral regulation applies to funeral homes. In addition to the unique economic components of funerals (they are in many cases among the largest one-time expenditures a family will ever face) they occur at a time of tremendous grief for the likely shopper.¹¹¹ The decision about how to send off a loved one can be amongst the most emotionally trying of an economic decision-maker's life. As such, a consumer may not be able to process information as well as they normally do and will potentially make decisions they might otherwise not.¹¹² These shoppers can be poor choosers. Additional risk comes from the possibility of an unscrupulous funeral director who purposefully exploits the emotional state of the shopper to sell more goods and services. To limit incentives for funeral homes to take advantage of customers, the FTC developed the Funeral Rule, which prohibits exploitative practices such as requiring families to purchase a casket if they request cremation.¹¹³ These rules should make no difference to a shopper who is behaving in a standard manner; the rules do not change the price or quality of any product, nor do they restrict who can purchase. Yet they are an explicit recognition that the shopper is not in a state to make good decisions. The rules provide protection for a consumer who is not performing as the neoclassical model would have her do.

A more complicated example is cigarettes. While regulations on tobacco sales have been in place since the early 20th century,¹¹⁴ regulation in the form of taxation and limits on sales to minors gained tremendous momentum starting with the release of the Reader's Digest and Surgeon General's reports on smoking in the 1950s and 1960s respectively.¹¹⁵ In response, the tobacco industry funded symposia and created organizations such as the "Council for

¹¹¹ See Fed. Trade Comm'n, Funeral Rule Statement of Basis and Purpose and Regulatory Analysis, 47 Fed. Reg. 42,260, 42,260 ("Purchase of a funeral is the third-largest single expenditure many consumers will ever have to make, after a home and a car."); See also Mercedes Bern-Klug, *What Families Know about Funeral-Related Costs: Implications for Social Work Practice*, 24 HEALTH & SOC. WORK 128, 129 (1999) ("[F]inal arrangements are typically the third most expensive consumer purchase of a lifetime, behind the cost of a house and the cost of a car.").

¹¹² Fed. Trade Comm'n, *supra* note 111 at 42,260. ("[F]uneral arrangement decisions must often be made while under the emotional strain of bereavement, and consumers often lack familiarity with the funeral transaction. Further, consumers are called upon to make several important and potentially costly decisions under tight time constraints.").

¹¹³ "Complying with the Funeral Rule," Fed. Trade Comm'n, 2012, <https://www.ftc.gov/tips-advice/business-center/guidance/complying-funeral-rule>.

¹¹⁴ See, e.g., Federal Food, Drug, and Cosmetic Act, 21 U.S.C. §§ 301-399i (regulating the sale and distribution of medical devices, drugs, food, and tobacco products).

¹¹⁵ Roy Norr, *Cancer by the Carton*, Condensed from CHRISTIAN HERALD, READER'S DIGEST (1952); UNITED STATES PUBLIC HEALTH SERVICE, SMOKING AND HEALTH: REPORT OF THE ADVISORY COMMITTEE TO THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE (1964).

Tobacco Research” to generate “evidence” that smoking was not dangerous, while suppressing research that exposed the harmful effects of tobacco.¹¹⁶ These efforts delayed the arrival of regulation.¹¹⁷ The reasons that regulation was eventually imposed include: the direct medical consequences of long-term tobacco use, the indirect consequences of long-term exposure on non-smokers, including infants and children, and efforts on the part of tobacco companies to optimize the addictive potential of cigarettes through manipulation of the tobacco product as well as the delivery device (filter, etc.) itself.

In 1996, the FDA released a set of regulations to ban the sale of tobacco to minors.¹¹⁸ However, soon after, major tobacco companies sued to challenge the FDA's regulations. In *Food and Drug Administration, et al. v. Brown & Williamson Tobacco Corp., et al.*, the Supreme Court ruled that the agency did not have authority to regulate tobacco.¹¹⁹ It was not until 2009, when President Obama signed the Family Smoking Prevention and Tobacco Control Act, that the FDA was granted authority to regulate a class of tobacco products, including cigarettes and cigarette tobacco.¹²⁰ In 2016, the Tobacco Control Act was amended to regulate all tobacco products, including e-cigarettes and future tobacco products.¹²¹ The regulations proposed in 1996 and adopted in 2010 included restrictions prohibiting the sale of tobacco to minors and requiring a photo ID for purchasing tobacco products; the restriction of tobacco vending or self-service machines to places where minors were not present; packaging and ingredient labeling restrictions; restrictions on the type of marketing targeted at minors (black and white, text only); and a ban on tobacco marketing using non-tobacco products (e.g. t-shirts, hats, sports team sponsorships).¹²²

¹¹⁶ Lisa A. Bero, *Tobacco Industry Manipulation of Research*, 120 PUB. HEALTH CHRON. 200, 202 (2005).

¹¹⁷ *Id.* at 205 (describing how criticism by the tobacco industry “considerably delayed” the EPA’s development of a risk assessment, which concluded that “passive smoking is associated with lung cancer in adults and respiratory disease in children”).

¹¹⁸ See Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco to Protect Children and Adolescents, 61 Fed. Reg. 44396 (Aug. 28, 1996).

¹¹⁹ 529 U.S. 120, 126 (2000) “[W]e believe that Congress has clearly precluded the FDA from asserting jurisdiction to regulate tobacco products.”)

¹²⁰ Pub. L. 111-31 123 Stat. 1776 (2009).

¹²¹ Victoria R. Green, *FDA Regulation of Tobacco Products* (2020), <https://crsreports.congress.gov/product/pdf/R/R45867>.

¹²² Food and Drug Administration, Department of Health and Human Services, Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco to Protect Children and Adolescents, FED. REG. 61, no. 168 (August 28, 1996): 44396–618, <https://www.govinfo.gov/content/pkg/FR-1996-08-28/pdf/X96-10828.pdf>; Food and Drug Administration, Department of Health and Human Services, Regulations Restricting the Sale and Distribution of Cigarettes and Smokeless Tobacco To Protect Children and Adolescents, FED. REG. 75, no. 53 (March 19, 2010): 13225–32, <https://www.govinfo.gov/content/pkg/FR-2010-03-19/pdf/2010-6087.pdf>.

These regulations are directly related to the harms caused by cigarettes. Notice that many of them rely on the behavioral consumer we have described above. For example, the rules are designed to reduce asymmetric information between the company and consumers. Perhaps because companies hid tobacco's health and addiction risks from consumers for many years, regulation requires the inclusion of warnings about health risks on package labels. Furthermore, the more persuasive kinds of advertising—e.g., TV ads showing cool smokers at a fun party—are banned. Children are not judged able to make the decision about the risk-reward tradeoff of cigarettes and are therefore barred from purchasing them. Cigarette companies are additionally barred from designing marketing campaigns that might be attractive to children, such as those using cartoon characters, and advertising through channels accessed by children. This set of regulations demonstrates an appreciation for behavioral features of consumers, such as asymmetric information and addiction, especially when facing profit-maximizing firms that understand how to exploit these features.

The case of credit cards is yet more interesting. It is easier than ever for consumers to obtain credit cards and use them, thereby accumulating debt if they do not have the funds to immediately pay the balance. While consumers gain from increased convenience, they also, on average, exhibit behavioral biases such as debt illiteracy and present-biased preferences for consumption.¹²³ Consider a present-biased consumer with a poor understanding of how debt accumulates. She has a credit card from a company that processes payments and issues credit. Swiping her card is effectively taking out a short-term loan with a pleasurable immediate payoff: she borrows money that she cannot afford to pay out today. As with other types of loans, the consumer faces penalties for late payments, and more severe consequences such as bankruptcy if, later, she cannot pay off her debt.

The profit-maximizing card company knows that the consumer will underestimate how much she will borrow in the future and overestimate her ability to pay in the future, and she may also become addicted to the pleasure of spending. It has an incentive to encourage her to use the card and to pay off just the minimum each month, allowing the card company to profit from late fees and interest payments on debt that carries over. The company has a financial incentive to design communications with the consumer to hide, or make less salient, the true cost of borrowing. For example, billing statements may not show what happens to the consumer's payoff period and interest costs if she only pays the minimum from month to month. Such a consumer is very profitable to the card company, and therefore it will advertise low introductory

¹²³ See David Laibson, *Golden Eggs and Hyperbolic Discounting*, 112 Q.J. Econ. 443, 465 (1997).

rates, cash-back perks, and other rewards to grow this segment of their customer base.¹²⁴

Consumers are capable of becoming more informed and aware of their own biases; in the terminology of this literature, they become ‘sophisticated consumers,’ rather than ‘naïve’ ones.¹²⁵ But even a sophisticated consumer has behavioral biases; she is simply aware of them and can attempt to combat them through techniques like committing her future self to a certain path of prices or actions. These commitments take the form of automatic paycheck deductions for contributions to a retirement account, regular exercise dates with friends, and the like. But this is only a partial solution even in the best case, and often requires financial literacy. Financial literacy takes effort to attain and is not universal. If consumers have a hard time learning, and even after taking the trouble to learn they still have behavioral biases, and there is no regulation of company conduct, then it is very likely that profit-maximizing companies will exploit consumers.

To help consumers, the U.S. government enacted the Credit Card Accountability Responsibility and Disclosure (CARD) Act of 2009.¹²⁶ The CARD Act is an example of regulatory design that attempts to improve the situation for consumers by restricting who can get a credit card and how the issuer can communicate with the consumer.¹²⁷ For example, the CARD provision for “plain language in plain sight” requires issuers to be transparent in agreement and disclosure statements.¹²⁸ After a card is activated, billing statements must periodically display what happens to payment period and interest costs when consumers pay only the minimum.¹²⁹ Billing statements also must disclose what happens if debt is paid off in 36 months versus paying the minimum indefinitely.¹³⁰ This “nudge” helps consumers adopt a payment plan that will save money on interest payments in the long-term.¹³¹

¹²⁴ See, e.g., Chris J. Hoofnagle, *Internalizing Identity Theft*, 13 UCLA J. L. & TECH. 2, 21 (2009) (“[T]he ‘best customer’ from the credit granting perspective could be the consumer who will charge so much that they cannot afford to pay off the balance in full in any given month. These so-called ‘credit revolvers’ are the most profitable consumers because they pay compounded interest rates on their purchases and fees.”).

¹²⁵ See O’Donoghue & Rabin, *supra* note 95, at 108.

¹²⁶ Pub. L. No. 111-24, 123 Stat. 1734 (to be codified in scattered sections of 15 U.S.C.).

¹²⁷ The White House, Press Release, Fact Sheet: Reforms to Protect American Credit Card Holders (May 22, 2009), <https://obamawhitehouse.archives.gov/the-press-office/fact-sheet-reforms-protect-american-credit-card-holders> [hereinafter *Fact Sheet*].

¹²⁸ *Id.*

¹²⁹ *Id.*

¹³⁰ *Id.*

¹³¹ Sumit Agarwal, Souphala Chomsisengphet, Neale Mahoney & Johannes Stroebel, *Regulating Consumer Financial Products: Evidence from Credit Cards*, 130 Q. J. ECON. 111 (2014).

Another element of the CARD Act requires consumers to affirmatively opt-in to transactions that exceed monthly spending limits.¹³² The behavioral economics literature tells us that consumers are more likely to accept the default than to opt-in, so this design option discourages them from making present-biased decisions that increase their debt.¹³³ Younger consumers with no experience managing finances are particularly vulnerable to exploitation.¹³⁴ Under the CARD Act, consumers under age 21 must have a co-signer or proof of independent income to be issued a credit card, issuers may not offer consumers tangible items (t-shirts, etc.), and universities must disclose any contracts with companies about the marketing of cards to students.¹³⁵ The evidence indicates that behavioral regulation is effective. In the case of credit cards, implementing the CARD Act reduced consumer borrowing costs, and even more so for consumers with poor credit scores.¹³⁶ This was achieved by requiring card companies to prominently display the payment needed to eliminate the debt in 36 months. There is lots of evidence that design choice “nudges” change real outcomes.¹³⁷

It is important for regulators to be cognizant when firms have financial incentives to avoid, or work around, regulation, which is often. Penalties for failure to comply with regulations will be critical in these settings, as without them, firms will gain financially from non-compliance. Transparency for issuers is another helpful element in a regulation when issuers profit from consumers' predictable behavioral biases. The Credit CARD Act provides some accountability by requiring issuers to publish agreements and disclosure statements online and increasing penalties for companies that do not comply.

In the examples of mortgages, cigarettes, and credit cards, regulations explicitly address consumers' cognitive limitations and their tendency to exhibit

¹³² *Fact Sheet*, *supra* note 127.

¹³³ See Madrian et al.

¹³⁴ See *The Importance of Financial Literacy Among College Students: Hearing Before the H. Comm. On Banking, Hous. & Urb. Affs.*, 107th Cong. 14-18 (2002) (statement of Robert D. Manning, Professor of Humanities, Rochester Institute of Technology) (testifying that the lack of financial literacy by college students makes them particularly vulnerable to exploitation on campus).

¹³⁵ *Fact Sheet*, *supra* note 127.

¹³⁶ Agarwal, *supra* note 131.

¹³⁷ See, e.g., RICHARD H. THALER & CASS R. SUNSTEIN, *NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS* 60, 68 (2008) (describing how Texas saw a 29 percent reduction in roadside litter within the first year of launching its “Don't Mess with Texas” slogan, while Montana also observed statistically significant decreases in smoking among teens through its educational campaign socializing non-drinking). Early results from the CARES (Committed Action to Reduce and End Smoking) savings program, which incentivizes would-be smokers to deposit money otherwise spent on cigarettes into an account, revealed that smokers who want to quit are 53 percent more likely to achieve their goal through the program. *Id.* at 232.

present bias and accept defaults, in addition to more standard reasons for regulation such as disallowing children from harming their future selves. These consumer mistakes are exacerbated when consumption can lead to costly addiction. The gains from regulations that help protect consumers from their own behavioral limitations are even higher in that case.

D. Digital Platform Regulation

In the United States, consumer-facing digital businesses are subject to no regulation specific to their industry.¹³⁸ Platforms can adopt exploitative and addictive business models with no legal restriction. For example, a platform that displays video can suggest a subsequent video to the viewer without any limit on what that suggestion can be, or whether the sequencing strategy can be designed to be addictive. Platforms have no restriction on the ad load they place on their viewers. A digital platform that serves up news articles to its users faces no restriction on whether the news it chooses to present (and which consumers will read because it is the default option) is entirely false or entirely true. The business might find that it can sell more ads to the consumer if it shows news items from paid operatives of a foreign state or a group that would gain financially from the adoption of a law or election of a candidate.

Without regulation, it is clear that a profit-maximizing ad-supported digital business earns the most by attempting to attract consumers with content that activates reward pathways that, much like those cigarettes and other addictive substances activate, are reflexive and drive usage based upon mid-brain induced reward and withdrawal effects. There are two core ways by which these effects are achieved. First, through easy access (via mobile devices amongst other mechanisms) and second, by promoting arousing and/or inflammatory content that provides the most reward. Through these mechanisms platforms generate repeat customers who can be shown ads throughout the day and (notably) often in mood states that can lead to spending behavior.¹³⁹ These consumers are unaware that they are being exploited. This prevents them from reducing their attention in a way they might if they understood the mental health harms, or transferring their attention to a source of safer content. Competition occurs on the basis of *perceived* content quality because the consumer cannot see or measure true quality and therefore cannot choose between digital businesses on the basis of true quality.

While some regulation has been proposed, no federal law has yet passed in the U.S. that would limit the ways digital businesses choose to attract, entrap,

¹³⁸ See *supra* note 6.

¹³⁹ Matthew A. Killingsworth and Daniel T. Gilbert, *A Wandering Mind Is an Unhappy Mind*, 330 SCIENCE 932 (2010); Dena Thometz Saliagas and James J. Kellaris, *The Influence of Mood on Willingness to Spend and Unplanned Purchasing*, PROCEEDINGS OF THE 1986 ACADEMY OF MARKET SCIENCE ANNUAL CONFERENCE (1986).

and addict consumers. Proposed legislation includes Senator Hawley's bill that bans infinite scrolling and autoplay of videos on social media platforms.¹⁴⁰ Regarding user-specific data, Senator Thune proposed a bill to ban large internet platforms from using search history for algorithms that procure content, unless the user allows access for this specific use.¹⁴¹ Several other bills aim to regulate privacy of user-specific data, such as Senator Klobuchar's bill to protect personal health data (e.g. data collected on wearable fitness trackers),¹⁴² and Senator Wicker's bill to protect the privacy of consumer health data for tracking COVID-19 cases.¹⁴³

A digital platform that collects data about its users may use that data in any way that is consistent with the user agreement it presented to the consumer and to which the consumer agreed (abstracting from whether the consumer either read or understood the user agreement). This is not true in the EU, for example, where GDPR came into effect in 2018 and strictly limits the use of consumer data.¹⁴⁴ However, it limits data use so strictly that consumers must give permission for many useful functionalities; consumers thus become inured to giving permission and this may erode the intended protection of the law to some degree.¹⁴⁵ Services and products that cause harm and are subject to no regulation at all are fairly rare in the modern U.S. economy. Over time political pressure tends to result in regulation to protect consumers from harmful or addictive products. Yet the delay can be long between the time that researchers identify and begin measuring harms and the enactment of regulation that protects consumers, as we saw in the case of cigarettes. In our view, the United States is currently in that delay region when it comes to online content.

IV. IMPLICATIONS FOR COMPETITION AND ANTITRUST ENFORCEMENT

¹⁴⁰ Social Media Addiction Reduction Technology Act, S.2314, 116th Cong., introduced in Senate July 30, 2019, <https://www.congress.gov/bill/116th-congress/senate-bill/2314>.

¹⁴¹ Filter Bubble Transparency Act, S.2763, 116th Cong., introduced in Senate October 31, 2019, <https://www.congress.gov/bill/116th-congress/senate-bill/2763>.

¹⁴² Protecting Personal Health Data Act, S.1842, 116th Cong., introduced in Senate June 13, 2019, <https://www.congress.gov/bill/116th-congress/senate-bill/1842>.

¹⁴³ COVID-19 Consumer Data Protection Act of 2020, S.3663, 116th Cong., introduced in Senate May 7, 2020, <https://www.congress.gov/bill/116th-congress/senate-bill/3663>.

¹⁴⁴ Commission Regulation 2016/679, art. 6, 2016 O.J. (L 119) 36 (limiting the legal processing of user data to: (1) consent; (2) performance of contract; (3) compliance with a legal obligation; (4) protection of vital interests; (5) tasks carried out in the public interest (e.g. by a government entity); and (6) the legitimate interests of the controller or a third party, unless the fundamental rights and freedom of the data subject override those interests).

¹⁴⁵ See *General Data Protection Regulation & California Consumer Privacy Act: Op-ins, Consumer Control, and the Impact on Competition and Innovation*, Before the S. Comm. on the Judiciary, 116th Cong. 17 n. 69 (2019) (statement of Roslyn Layton, Visiting Scholar, American Enterprise Institute) (noting that “GDPR pop-up disclosures have become so intrusive that Europeans download pop-up blockers on their phones”).

Under these conditions, a platform's strategy that best attracts consumers and is most profitable for the platform may well be bad for consumers themselves. But if that strategy is legal, management of digital businesses will feel pressure from their boards and shareholders to engage in it. A company that attempts to offer a higher quality product will sell fewer ads to those customers who are less “engaged” or, in other words, less addicted. A company that adopts a different business model—a subscription model for example—will appear to be charging a price for the “same” product that is available for “free” from competitors.¹⁴⁶ Without assistance, consumers may not be able to appreciate the design choices that make the subscription product safer for their mental health, while the barter transaction they engage in to receive “free” services is not salient to them. Consumers who do not understand their own behavioral biases cannot evaluate which model will be better for them. This situation does not represent a well-functioning market that delivers maximal surplus to consumers.

Not only are behavioral problems rife, digital businesses often operate in very concentrated market structures.¹⁴⁷ Concentrated markets in this industry are a concern because they leave few choices for consumers to switch to a competing provider in the event that they were to learn about the risk of addiction or a regulator were to make quality more salient. Those monopoly positions may have been attained and maintained on the merits or by anticompetitive conduct.¹⁴⁸ In the United States, the Federal Trade Commission and

¹⁴⁶ Zero-price digital media products are not “free”: consumers pay for them with their data and attention, rather than money. See John M. Newman, *Antitrust in Zero-Price Markets: Foundations*, 164 U. PA. L. REV. 149, 172 (2015) (“Though no price is attached to products distributed in zero-price markets, they are not ‘free’ to customers. There are always costs,” which include “attention and information costs.”).

¹⁴⁷ See Rory Van Loo, *Digital Market Perfection*, 117 U. MICH. L. REV. 815, 828 (2019) (describing “[D]igital media markets’ extremely high concentration, in which as few as two or three companies capture the bulk of the market. Google drives 89% of internet searches, Facebook reaches 95% of young internet users through its various products, Amazon has 75% of book sales, and Microsoft and Apple supply 95% of desktop operating systems.”).

¹⁴⁸ Since 2017, the European Commission has fined Google for violating Article 102 in three separate cases: harming competition in online search by promoting its own comparison shopping service; ensuring dominance of the Google search engine by requiring that Android manufacturers pre-install Google search apps; and preventing competition on the merits for online advertising intermediation through exclusive contracts and other anticompetitive tactics. See Press Release, Antitrust: Commission Fines Google €1.49 Billion for Abusive Practices in Online Advertising, European Commission (March 20, 2019), https://ec.europa.eu/commission/presscorner/detail/en/IP_19_1770.

forty-eight state Attorneys General have sued Facebook for violations of anti-trust law,¹⁴⁹ while the U.S. Department of Justice and several states have sued Google for unlawful monopoly maintenance.¹⁵⁰

A competitive market likely would make more choices available to consumers. Profit-maximization would incentivize each platform to attract consumers through quality and differentiation, which might include the addictiveness of a platform. Sophisticated consumers would understand the possibility of addiction in the future and therefore demand a safer product. While a naive consumer would not think she is susceptible to addiction, a safer service would have an incentive to explain its merits to attract demand. Perhaps the least addictive platform would develop metrics of quality, promote them, and compete for consumers on the basis of its relatively high quality. Perhaps it would market its platform to parents of young users; perhaps consumers would take fuller advantage of third-party rating systems to evaluate platforms' content in the way they use Consumer Reports when they buy washing machines.¹⁵¹ In general, one would expect to see more options for healthy choices when there are both more choices and more competition, and therefore less concentration and less market power. This is one of many beneficial outcomes to expect from antitrust enforcement in technology markets.

To achieve accurate measures of consumer welfare, standard antitrust procedures must be updated for dangerous and addictive products, including technology platforms. The Consumer Welfare Standard is well understood to include both current and future price, quality, and innovation effects, but is not well understood to require an adjustment for addictive goods.¹⁵² There is no

¹⁴⁹ Complaint for Injunctive and Other Equitable Relief, *Federal Trade Commission v. Facebook, Inc.*, No.: 1:20-cv-03590 (D.D.C. Dec. 9, 2020); Complaint, *State of New York, et al. v. Facebook, Inc.*, No.: 1:20-cv-03589 (D.D.C. Dec. 9, 2020).

¹⁵⁰ Complaint, *U.S., et al. v. Google LLC*, No. 1:20-cv-03010 (D.D.C. Oct. 20, 2020); *State of Colorado, et al. v. Google LLC*, No.: 1:20-cv-03715 (D.D.C. Dec. 17, 2020); *State of Texas, et al. v. Google LLC*, No.: 4:20-cv-00957 (E.D. Tex. Dec. 16, 2020).

¹⁵¹ A number of organizations dedicated to digital safety already exist. These include Common Sense Media, ConnectSafely, and the Family Online Safety Institute. Common Sense Media offers extensive age-based App reviews. Common Sense Media, App Reviews, <https://www.commonsensemedia.org/app-reviews>. Consumer Reports also offers a "Guide to Digital Security and Privacy." Consumer Reports, Guide to Digital Security and Privacy, <https://www.consumerreports.org/digital-security/online-security-and-privacy-guide/>.

¹⁵² See, e.g., Herbert Hovenkamp & Carl Shapiro, *Horizontal Mergers, Market Structure, and Burdens of Proof*, 127 *YALE L. J.* 1996, 2000 (2018) (noting that the "structural presumption" in merger analysis assumes "that the goal of merger policy is to promote 'consumer welfare' by protecting consumers against high prices or reduced output, product variety, product quality, or innovation"); Diana Moss, *Merger Policy and Rising Concentration: an Active Agenda for Antitrust Enforcement*, 33 *ANTITRUST* 68, 69 (2018) ("The progressive view is that a merger that reduces consumer welfare through adverse price or non-price (e.g., quality, variety, or innovation) effects should generally be considered potentially harmful.").

discussion in the Horizontal Merger Guidelines, for example, concerning addictive goods.

Why has the practice of antitrust enforcement been so slow to adapt the way we measure consumer welfare to addictive goods, especially given that many addictive products are old and have seen antitrust enforcement in past decades?

Part of the answer lies in the extent of regulation for many dangerous products. For example, if the merger of two automobile companies caused cars to become faster and more dangerous, governments could employ other tools, such as speed limits and air bags, to protect consumers and give them the benefit of the technology while mitigating its harms.¹⁵³ Regulation intercedes to preserve consumer safety so the antitrust analysis does not need to account for the merger resulting in more dangerous products. Likewise, governments established age limits, advertising restrictions, and taxes on cigarettes as the realization grew of the harm smoking caused. There is no regulator in the United States today that wields any such tool for social media.

A second reason why an addictive products analysis has not been used in the past in antitrust enforcement is that the behavioral economics and framing is only a few decades old. While many readers might consider forty years of learning to be both long-established and ample, antitrust is a field that distrusts anything ‘new.’¹⁵⁴ Our view is that behavioral economics, now with 40-plus years of research, three Nobel prizes, and many decades of empirical evidence, is firmly in a position to be cited and relied on by antitrust scholars, practitioners, and policy makers.¹⁵⁵

Behavioral economics and its supporting empirical evidence call into question antitrust precedent that relies on a flawed vision of the “rational” consumer. Consider, for example, Justice Scalia’s dissent in *Eastman Kodak v. Image Technical Services*.¹⁵⁶ One of plaintiffs’ claims in that case was that Kodak had illegally tied photocopier service, in which it faced competition from independ-

¹⁵³ See INSTITUTE OF TRANSPORTATION ENGINEERS, METHODS AND PRACTICES FOR SETTING SPEED LIMITS: AN INFORMATIONAL REPORT 1 (“One of the most frequently used methods of managing travel speeds is the posted speed limit.”), https://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa12004/.

¹⁵⁴ See e.g., Rebecca Haw Allensworth, *The Influence of the Arveda-Hovenkamp Treatise in the Lower Courts and What it Means for Institutional Reform in Antitrust*, 100 IOWA L. REV. 1919, 1938 (“The Supreme Court has been slow to adjust competition law in responses to advances in economic theory and empirical research, leaving out-of-date precedent on the books for longer than is optimal for antitrust regulation.”).

¹⁵⁵ Herbert A. Simon won the Nobel Memorial Prize in Economic Sciences in 1978, Daniel Kahneman won the prize in 2002, and Richard Thaler won in 2017.

¹⁵⁶ *Eastman Kodak Co. v. Image Technical Services, Inc., et al.*, 504 U.S. 451 (1992).

ent service organizations, to replacement parts, over which it had a monopoly.¹⁵⁷ Kodak argued that it could not exercise monopoly power over its parts because it faced competition in the market for original equipment.¹⁵⁸ It asserted that if it raised its prices for parts and service above the competitive level, it would lose consumers to competing equipment manufacturers whose total “lifecycle” price, including parts and service prices, were lower.¹⁵⁹ This argument depended on the assumption that consumers would know when initially purchasing a copier to factor in the “lifecycle” costs of owning the copier, including what it might cost to buy replacement parts and service.

Plaintiffs countered that Kodak’s theory failed to account for information costs that consumers faced when buying copiers that made it difficult and expensive to accurately determine lifecycle pricing.¹⁶⁰ The Court agreed that “[l]ifecycle pricing of complex, durable equipment is difficult and costly” and that “[m]uch of the information” consumers need to accurately lifecycle price “is difficult—some of it impossible—to acquire at the time of purchase.”¹⁶¹ Further, the Court reasoned that even if some consumers could acquire and process the “complex body of information” necessary to figure out lifecycle price, that process is time-consuming and expensive, and if service costs are small compared to the original equipment purchase, customers might decide to forego accurate lifecycle pricing.¹⁶² For these and other reasons, the Court concluded that Kodak had failed to show that the plaintiffs’ inference that Kodak had market power in the service and parts markets was unreasonable.¹⁶³

In dissent, Justice Scalia dismissed concerns about what he described as “irrational” consumers who did not take into account the cost of parts and service when buying copiers.¹⁶⁴ While conceding that such consumers exist, including, “regrettably,” the federal government, Justice Scalia asserted that “we have never before premised the application of antitrust doctrine on the lowest common denominator of consumer.”¹⁶⁵ Since *Kodak* was decided in 1992, a growing body of behavioral economic scholarship supports the idea that Scalia’s “irrational” consumer is the norm rather than the exception. Even under the *Kodak* facts, where the customer base included relatively sophisticated businesses with purchasing managers and access to price and cost data,

¹⁵⁷ *Id.* at 459, 464.

¹⁵⁸ *Id.* at 465.

¹⁵⁹ *Id.* at 465-66.

¹⁶⁰ *Id.* at 473.

¹⁶¹ *Id.*

¹⁶² *Id.* at 474-75.

¹⁶³ *Id.* at 477.

¹⁶⁴ *Eastman Kodak Co. v. Image Technical Services, Inc.*, 504 U.S. 451, 495-96 (1992) (Scalia, J. Dissenting).

¹⁶⁵ *Id.*

the Court correctly concluded that many consumers were not going to be able to accurately lifecycle price and that other consumers would find the costs to do so prohibitively high. Now consider the vast majority of social media consumers: individuals with neither the time, the ability, nor the inclination to gather and interpret the information necessary to accurately determine the costs social media imposes on them. Antitrust policy and enforcement should protect these consumers, who are not the “irrational” minority Justice Scalia imagined, but the overwhelming majority of perfectly normal social media users.

In this Article we primarily focus on antitrust enforcement involving addictive goods, as the medical science and regulatory landscape of addiction is well developed. We take the perspective of the long-run self that prefers not to become addicted, and, like the literature, discount the welfare of the short-run self that is attracted to the addictive substance or activity.¹⁶⁶ This idea of protecting the welfare of the consumer's long-run self is clearly valued by the government in the other settings described above, where some form of regulation—even if imperfect—is designed to protect it. These examples motivate us to argue that this same issue should not be overlooked in an antitrust context.

A. Measuring Consumer Welfare

Several antitrust cases against tech platforms soon will be litigated in US courts. Since so much of the conduct in question will have occurred in the environment described above—one with addiction-related harms and no regulation—an adjustment in the standard method of evaluating consumer welfare is required. The welfare of the addicted user—who consumes more of the addictive product due to the challenged conduct—has decreased, rather than increased, as in the usual case. Assessing the situation this way is different from past practice, and an improvement over it. Since the 1970s, if not before, antitrust enforcement has relied on economic analysis to understand harm to consumers. The boundaries of economic understanding continually expand and allow for concomitant improvements in enforcement. Further, antitrust bears a larger burden in getting the analysis of addictive products right in the context

¹⁶⁶ While addiction is a dramatic example of the difference between consumer welfare as calculated by behavioral economics versus neoclassical economics, future antitrust research might want to take on more complex arguments and consider reforming the consumer welfare calculations for non-addictive products with strong present bias such as mortgages, funeral services, sugary drinks, and so forth. These cases are beyond the scope of the current paper.

of digital harms given the lack of any other governmental body standing ready to mitigate those harms.¹⁶⁷

As discussed above, whether consumer welfare increased or decreased due to the challenged conduct is often an important element of antitrust analysis. Social media platforms operate in at least two markets: the market for end users and the market for advertising dollars.¹⁶⁸ Because our concern is addiction and mental health, our analysis focuses on the consumer welfare of end users.¹⁶⁹ A common shortcut, or summary statistic, that is often used in enforcement is to proxy for consumer welfare with the change in output.¹⁷⁰ *However, the foregoing analysis demonstrates that this shortcut cannot be applied in digital markets given the strong possibility that more output causes consumer harm, not benefit.* Rather, we argue that antitrust analysis in the context of addictive products must return to the root concept of interest: consumer welfare.

B. Net and Marginal Harm Products

Professor Daniel Crane has analyzed the challenges antitrust enforcement faces in markets for harmful products, a slightly broader category than addictive products.¹⁷¹ His work focused on the tobacco industry, where there is a long history of government regulation attempting to limit consumption. In this type of market, Crane asserted that the standard antitrust enforcement paradigm—which is geared toward removing barriers to competition to increase output and lower price—is likely inconsistent with the best interests of the

¹⁶⁷ See, e.g., *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 411 (2004) (“Antitrust analysis must always be attuned to the particular structure and circumstances of the industry at issue. Part of that attention to economic context is an awareness of the significance of regulation.”).

¹⁶⁸ See, Spencer Weber Waller, *Antitrust and Social Networking*, 90 N.C. L. Rev. 1771, 1772-73, 1785 (2012) (describing social networking sites as two-sided markets that do not charge consumers a monetary fee but do charge advertisers).

¹⁶⁹ In *Ohio v. American Express Co.*, the Supreme Court addressed antitrust analysis in the context of credit-card networks, which the Court described as “two-sided transaction platform[s].” 138 S. Ct. 2274, 2287 (2018). The Court stated that “[e]valuating both sides of a two-sided transaction platform is also necessary to accurately assess competition.” *Id.* While social media platforms involve at least two different markets, it is not clear that the *Amex* decision applies directly to our analysis. First, *Amex* involved a claim under section 1 of the Sherman Act, while this Article addresses merger analysis and section 2 claims. Second, it is not obvious that social media platforms are “transaction platforms” where every interaction between end users and the platform is also a transaction between end users and advertisers. *Id.* at 2280 (“The key feature of transaction platforms is that they cannot make a sale to one side of the platform without simultaneously making a sale to the other.”).

¹⁷⁰ See *supra* note 18.

¹⁷¹ Daniel A. Crane, *Harmful Output in the Antitrust Domain: Lessons from the Tobacco Industry*, 39 GA. L. REV. 321 (2005).

consumer.¹⁷² This conclusion requires several assumptions that we discuss below. To identify industries for which standard antitrust analysis might be counterproductive, Crane introduced the concept of “net-harm markets.”¹⁷³ These are markets where either “[t]he consumption of the good at any level of output produces greater total internal and external costs” than benefits or, “[a]t the output level determined by a competitive market, consumption of the good produces greater total costs than total benefits.”¹⁷⁴

Crane conceded that for most products, even tobacco, it would be difficult, if not impossible, to quantitatively demonstrate net harm.¹⁷⁵ With that in mind, Crane proposed relying on a proxy variable: political consensus that output of a particular product is harmful.¹⁷⁶ He found plentiful evidence that there is a political consensus at both the state and federal level in the United States that tobacco use “impose[s] far greater social costs . . . than social benefits.”¹⁷⁷ The markets for tobacco products, therefore, are net-harm markets in Crane’s paradigm. This conclusion led Crane to recommend that antitrust enforcers focus their efforts in these markets on harm-reduction rather than output maximization.¹⁷⁸ However, precisely because the government is active in these markets, his policy conclusion does not follow. If enforcement action prevented the increase of market power and thus lowered prices (relative to no enforcement) the price change could be counteracted by a tax. In this way the price increase that would have accrued to the manufacturer can be collected instead by the government. Alternatively, the government can reduce usage through tools such as advertising restrictions or restrictions on sales locations. Thus, no consumption increase need occur from antitrust enforcement in regulated net-harm markets if government responds appropriately.

Social media products are different than tobacco products in an important respect: the authors are happy to assume that there is no beneficial level of

¹⁷² *Id.* at 344 (“Output maximization remains the dominant goal of antitrust enforcement in the tobacco industry,” and “the antitrust establishment simply ignores the harmful nature of tobacco when an antitrust issue regarding the tobacco industry is presented . . .”).

¹⁷³ *Id.* at 346.

¹⁷⁴ *Id.*

¹⁷⁵ *Id.* at 355 (“The empirical model is too fraught with controverted methodologies, wide ranges of value estimates, and normative assumptions to form the basis of a compelling argument that a particular industry causes more harms than benefits . . .”).

¹⁷⁶ *Id.* at 357 (“[I]t may be possible to identify net-harm markets inductively based on expressed public policy rather than deductively based on economic principles.”).

¹⁷⁷ *Id.* at 358. This evidence includes “government expenditures on anti-tobacco advertising, frequent government warnings on the dangers of tobacco consumption, numerous federal and state statutory schemes, federal and state regulations, and federal and state anti-tobacco litigation.” *Id.* at 357-58.

¹⁷⁸ *Id.* at 367 (In net-harm markets, enforcers and courts “should apply the antitrust laws to pursue a goal of harm-reduction rather than one of output maximization”).

tobacco consumption (similar to illegal drugs).¹⁷⁹ By contrast, products such as social media, while addictive, likely have some consumption level for each user that results in net positive utility. This level will be lower than the addictive level of consumption. In this way, social media is more like OxyContin and credit cards than it is like tobacco. Under the supervision of a physician and in limited amounts, OxyContin can be very beneficial to a patient in pain, but its overuse will lead to addiction and severe harm. Credit cards too offer users significant utility initially, by granting consumers a convenient short-term loan and method of payment, but their use quickly becomes harmful if consumers charge more than they can afford to pay back on time. Likewise, limited exposure to social media may benefit users by connecting them to friends and family and informing them of events and content. But, as discussed above, those benefits begin to erode the longer the user engages with a social media platform.¹⁸⁰

The “conventional” paradox of antitrust enforcement for addictive products is that, because we expect a firm with market power to reduce output and raise price, acquisition of market power might lead to desirable public health outcomes (e.g., less smoking, reduced opiate abuse).¹⁸¹ In social media markets, however, the almost universal business model is a zero-price service paid for by advertising. The platform earns more revenue the longer its users stay engaged and the more ads it can show them. Therefore, dominant firms have an incentive to exercise any market power on the advertising side by increasing price, and on the user side by degrading quality and making the product more addictive. The social media business model we describe here features a monopoly that has the incentive and ability to exercise its market power by making design choices that are addictive, and these in turn shift out the willingness of consumers to supply attention. A more addictive design causes the consumer to stay and watch the ads without realizing what is happening. The platform aims to drive advertising revenues by collecting more data and showing more ads to both new users and current users who stay longer on the platform. Both the addictive content and the additional advertising lower the quality of the

¹⁷⁹ See *No Safe Level of Smoking: Even Low-Intensity Smokers are at Increased Risk of Earlier Death*, NAT'L CANCER INST. (Dec. 5, 2016) <https://www.cancer.gov/news-events/press-releases/2016/low-intensity-smoking-risk>.

¹⁸⁰ Another distinction between social media and tobacco products is that there is not yet in the United States a political consensus of the sort Crane describes that social media is harmful. There are no federal or state regulations, agency actions, or executive orders restricting social media output. On Crane's terms, social media would not qualify as a net-harm market.

¹⁸¹ Peter J. Hammer, *Antitrust Beyond Competition: Market Failures, Total Welfare, and the Challenge of Intramarket Second-Best Tradeoffs*, 98 MICH. L. REV. 849, 862-63 (2000) (arguing that a competitive market for cigarettes “would lead to the overproduction and overconsumption of cigarettes” whereas the “exercise of private market power (either through merger or cartelization) would lead to an increase in price and a reduction in consumption” that “might well increase social welfare”).

product. Consumers who would prefer a higher-quality, less harmful product have few other options because of the platform's market power. Thus, in the social media setting, the paradox of antitrust enforcement is that *lack* of enforcement can both increase minutes of use and decrease consumer welfare.

C. Output Measures are Insufficient

Because social media presents a complex mixture of harms and benefits, its antitrust treatment requires a more precise approach to evaluating consumer welfare than courts typically employ. Sufficient medical evidence exists that social media is addictive and harmful to conclude that simply measuring “output” will not be a reliable method of evaluating consumer welfare.¹⁸² An output-focused method is akin to allowing the manufacturer of OxyContin to identify the addicts it created and count the additional pills they consumed during an addicted spell as consumer surplus. Clearly this is not correct. Courts should eschew this (common) “output” analytical shortcut in favor of a more accurate approach to measuring consumer welfare, one that takes account of social media's addictive characteristics.¹⁸³

This analysis generates two conclusions about antitrust enforcement in social media markets. First, enforcers and courts evaluating anticompetitive conduct in the social media space must focus on the very real cost of reduced innovation, particularly safety innovation, and lessened product variety in determining whether to challenge or prohibit a transaction or course of conduct.¹⁸⁴ Innovation is key because the more innovative firms there are in a market, the more likely one or more will compete on safety, and create a less addictive and safer social media offering that increases consumer welfare. Courts therefore should prohibit mergers and conduct that would unreasonably decrease innovation and product variety in social media markets.

¹⁸² See Crane *supra* note 171 at 407 (“Even if the public policy of consumption reduction is less clear-cut as to other products, the harm-reduction approach may shed some light on optimal antitrust enforcement in close case industries. If an industry imposes considerable harms but also produces some positive utility, the case for an output-maximization antitrust paradigm may be weaker than the case for a harm-reduction paradigm . . .”).

¹⁸³ Addictive products likely are not the only setting in which output is a poor proxy for consumer welfare. Professor John Newman has argued that the conflation of output and consumer welfare is a fallacy that lies “[a]t the core of modern U.S. antitrust law.” John M. Newman, *The Output-Welfare Fallacy* at 1 (on file with the authors). Newman presented several examples of scenarios beyond addictive products where increased output leads to decreased consumer welfare, including markets featuring information asymmetries, deceptive and misleading conduct, and certain vertical restraints. *Id.* at 17-33.

¹⁸⁴ See Crane, *supra* note 171 at 388 (“[T]he failure to produce a less harmful form of tobacco consumption may be a failure of antitrust more than anything else. If antitrust enforcement had focused on competition for innovation instead of output maximization, then perhaps smokers would be less harmed by tobacco consumption today.”).

Second, defendants should not be able to overcome plaintiffs’ prima facie case merely by offering evidence that a merger or particular conduct will increase (or not decrease) a generalized usage output measure. As we have demonstrated, output changes—where output is measured by total user engagement or total advertising volume—are unlikely to provide a reliable measure of consumer welfare when the product is addictive. Courts (and enforcers considering bringing cases) must account for the disutility of additional time spent on addictive social media platforms when evaluating defenses based on claims of enhanced output. Because output is a “shortcut,” or proxy, for consumer welfare, it does not give an accurate answer when some consumption creates disutility. The burden should be on the defendant to show that any increased output will actually increase consumer welfare. For one, the defendant normally has the burden of showing efficiencies or procompetitive justifications in an antitrust case.¹⁸⁵ Furthermore, the defendant has the data and analytical tools to measure usage and determine the welfare of its consumers. For example, the challenged conduct may have engaged new users for short amounts of time, which a court might determine is unlikely to represent addictive behavior that harms users. Or, perhaps the conduct extended the amount of time teenagers spent on the social media platform late at night, behavior that the literature indicates is more likely to be addictive and result in user harm. Merely providing evidence of more output, in the form of total minutes consumers spend using an app, does not answer the question of whether consumer welfare has increased or decreased.

D. Specific Antitrust Settings

Technology giants, including social media platforms, have acquired and maintained their market power through a variety of means: acquisitions, exclusionary conduct, and, often, a combination of the two.¹⁸⁶ Our more precise approach to consumer welfare analysis in social media markets should alter

¹⁸⁵ See, e.g., *Ohio v. American Express Co.*, 138 S. Ct. 2274, 2284 (2018) (under the rule of reason, once plaintiff establishes its initial burden to show that a restraint has a substantial anticompetitive effect that harms consumers, “the burden shifts to the defendant to show a procompetitive rationale for the restraint.”); *F.T.C. v. Actavis, Inc.*, 570 U.S. 136, 156 (2013) (“An antitrust defendant may show in the antitrust proceeding that legitimate justifications are present” for a challenged restraint); *Saint Alphonsus Medical Center-Nampa v. St. Luke's Health System, Ltd.*, 778 F. 3d 775, 790 (9th Cir. 2015) (“Courts recognizing the [efficiencies] defense” in merger cases “have made clear that a Clayton Act defendant must ‘clearly demonstrate’ that ‘the proposed merger enhances rather than hinders competition because of the increased efficiencies.’”).

¹⁸⁶ See, e.g., Fiona M. Scott Morton & David C. Dinielli, *Roadmap for an Antitrust Case Against Facebook* (2020), <https://www.omidyar.com/wp-content/uploads/2020/06/Roadmap-for-an-Antitrust-Case-Against-Facebook.pdf> (arguing that Facebook has used a variety of means to maintain its monopoly, including acquiring a series of nascent or potential rivals and depriving certain rivals of access to its Application Programming Interfaces).

how courts evaluate such cases. We next discuss merger challenges, exclusionary conduct cases, and claims alleging a pattern of both anticompetitive acquisitions and exclusionary conduct.

We begin with mergers, which are common in the social media sector. Facebook's acquisitions of Instagram (2012) and WhatsApp (2014) are perhaps the best-known of these deals, but Facebook alone acquired 72 companies in the period 2005-2019.¹⁸⁷ The U.S. antitrust enforcement agencies did not challenge any of these transactions at the time, though the FTC and state enforcers have recently sued Facebook, seeking to unwind the Instagram and WhatsApp deals.¹⁸⁸ The FTC's initial decisions not to challenge the Instagram and WhatsApp acquisitions have been widely criticized.¹⁸⁹ Documents recently made public showing that Mark Zuckerberg's strategic reasoning for pursuing the former deal included preventing Instagram from posing a competitive threat to Facebook have sharpened that criticism.¹⁹⁰ As a result of its serial acquisitions, Facebook now owns three of the top four and four of the top six social networks, measured by worldwide users.¹⁹¹

The U.S. merger review regime is governed by section 7 of the Clayton Act, which bars transactions the effect of which "may be substantially to lessen competition, or to tend to create a monopoly."¹⁹² This incipiency standard grants the antitrust enforcement agencies authority to sue to block a merger before it is consummated, nipping in the bud any competitive problems a proposed transaction might cause.¹⁹³ It also allows agencies to challenge and seek to unwind consummated mergers.¹⁹⁴ To establish a prima facie case in a Clayton Act section 7 action to block a merger, the enforcement agencies must

¹⁸⁷ Ramzeen A V, *72 Facebook Acquisitions – The Complete List (2020)*, TECHWYSE (June 17, 2019), <https://www.techwyse.com/blog/infographics/facebook-acquisitions-the-complete-list-infographic/>.

¹⁸⁸ See *supra* note 150.

¹⁸⁹ Scott Morton & Dinielli, *supra* note 186.

¹⁹⁰ The House Committee on the Judiciary has published email threads between Mark Zuckerberg and employees as part of its antitrust probe into online platforms. The documents are available at <https://judiciary.house.gov/online-platforms-and-market-power/>.

¹⁹¹ Statista, *Most popular social networks worldwide as of July 2020, ranked by number of active users*, <https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/>. See also Lina M. Khan, *The Separation of Platforms and Commerce*, 119 COLUMBIA L. REV. 973, 1001 (2000) ("Through having purchased Instagram and WhatsApp, Facebook now owns the top three, and four of the top eight, social media apps.").

¹⁹² 15 U.S.C. § 18.

¹⁹³ See Herbert Hovenkamp, *Prophylactic Merger Policy*, 70 HASTINGS L.J. 45, 46 (2018) ("An important purpose of antitrust merger law is to arrest certain practices in their 'incipiency,' by preventing business firm acquisitions that are likely to facilitate them.").

¹⁹⁴ See 15 U.S.C. § 18a(i)(1) ("Any action taken by the Federal Trade Commission or the Assistant Attorney General or any failure of the Federal Trade Commission or the Assistant Attorney General to take any action under this section shall not bar any proceeding or any

define relevant product and geographic markets and demonstrate probable harm to competition in those markets based on market concentration and competitive overlap between the merging parties.¹⁹⁵ If the agencies establish their *prima facie* case, the defendants have an opportunity to rebut the presumption that the merger is likely to lessen competition by proving that the typical effects of market concentration are not applicable or that the merger's procompetitive benefits outweigh its anticompetitive effects.¹⁹⁶ Social media's addictive and harmful characteristics should affect courts' analysis of both plaintiffs' *prima facie* case and defendants' procompetitive justifications.

Mergers in the technology space, including those involving social media companies, often feature a platform purchasing an innovative, nascent competitor: Facebook's Instagram acquisition is a prime example.¹⁹⁷ These nascent competitors will have a strategy of differentiation from the incumbent that allows them to attract consumers away from the larger competitor. In a healthy social media market, we would expect to see firms competing on a variety of dimensions, including by creating safer, less addictive products. The Supreme Court long ago recognized that in addition to higher output and lower prices, competition provides incentives to produce safer and higher quality goods.¹⁹⁸ The Court has observed that "all elements of a bargain—quality, service,

action with respect to such acquisition at any time under any other section of this Act or any other provision of law."); Menesh S. Patel, *Merger Breakups*, 2020 WISC. L. REV. 975, 986 (2020) ("[T]he agencies also may challenge a reported merger after the merger has been reviewed and cleared.").

¹⁹⁵ *F.T.C. v. Swedish Match*, 131 F. Supp. 151, 166 (D.D.C. 2000) ("The Commission can generally establish a *prima facie* case by showing that the merged entity will have a significant percentage of the relevant market. . . . In addition to market share, courts examine market concentration and its increase as a result of the proposed acquisition.").

¹⁹⁶ *Id.* at 167 ("To rebut" the presumption that a transaction is likely to substantially lessen competition, "defendants must show that the market-share statistics 'give an inaccurate prediction of the proposed acquisition's probable effect on competition.'") (quoting *F.T.C. v. Staples*, 970 F. Supp. 1066, 1083 (D.D.C. 1997)); *F.T.C. v. CCC Holdings Inc.*, 605 F. Supp. 2d 26, 46 (D.D.C. 2009) ("Upon the showing of a *prima facie* case, the burden shifts to Defendants to show that traditional economic theories of the competitive effects of market concentration are not an accurate indicator of the merger's probable effect on competition in these markets or that the procompetitive effects of the merger are likely to outweigh any potential anticompetitive effects.").

¹⁹⁷ C. Scott Hemphill & Tim Wu, *Nascent Competitors*, 168 U. PENN. L. REV. 1879 (forthcoming), https://papers.ssrn.com/sol3/abstract_id=3624058 ("[E]nforcers face a dilemma" in "protecting nascent competition, particularly in the context of acquisitions made by leading online platforms.").

¹⁹⁸ *Nat'l Soc'y of Prof'l Eng'rs v. United States*, 435 U.S. 679, 695 (1978) ("The Sherman Act reflects a legislative judgment that ultimately competition will produce not only lower prices, but also better goods and services.").

safety, and durability—and not just the immediate cost, are favorably affected by the free opportunity to select among alternative offers.”¹⁹⁹

Indeed, competition based on safety innovation is a familiar aspect of many markets. For years, Volvo’s competitive advantage in the automobile industry was its reputation for safety.²⁰⁰ Apple trumpets its security and privacy protections, which it claims make its products safer to use than those of rivals.²⁰¹ The Disney Channel offers more wholesome child-friendly content than many competing services.²⁰² There is even a history of safety competition in the tobacco markets, with firms innovating to produce less harmful cigarettes and other, safer types of tobacco products.²⁰³ The U.S. Food and Drug Administration in 2019 for the first time categorized eight smokeless tobacco products as presenting “modified risk.”²⁰⁴ This order allowed Swedish Match to market its smokeless tobacco products with the claim that using them “instead of cigarettes puts you at lower risk” of cancer, heart disease, and other serious ailments.²⁰⁵ The popularity of Consumer Reports and other product review services is fueled in part by consumer demand for comparative safety ratings.²⁰⁶

The 2010 Horizontal Merger Guidelines recognize the importance of innovation and product variety. They explain that while enhanced market power often results in higher prices, it can also lead to non-price consumer harms, “including reduced product quality, reduced product variety, reduced service,

¹⁹⁹ *Id.*

²⁰⁰ Volvo, “Volvo Safety Vision – Zero Accidents,” <https://www.volvogroup.com/en-en/about-us/traffic-safety/safety-vision.html>.

²⁰¹ Apple, Privacy (“Privacy is a fundamental human right” and “one of [Apple’s] core values”), <https://www.apple.com/privacy/>. Apple states that it “designs its products to protect your privacy and give you control over your information. It’s not always easy. But that’s the kind of innovation we believe in.” *Id.*

²⁰² See, e.g., Sunny Chanel & Steven Cohen, *All the new kids shows you can watch on Disney Plus—from ‘Vampirina’ to the latest season of ‘Star Wars: the Clone Wars’*, BUS. INSIDER (July 10, 2020), <https://www.businessinsider.com/kids-shows-disney-plus> (noting that the Disney Plus streaming service offers a “huge amount of children-friendly programming”).

²⁰³ Crane, *supra* note 171 at 390 (“All of the major tobacco companies are reportedly working [on] or test marketing products that could reduce different harms of tobacco consumption.”).

²⁰⁴ Food and Drug Administration, FDA grants first-ever modified risk orders to eight smokeless tobacco products (October 22, 2019), <https://www.fda.gov/news-events/press-announcements/fda-grants-first-ever-modified-risk-orders-eight-smokeless-tobacco-products>.

²⁰⁵ *Id.*

²⁰⁶ See *What We Do*, CONSUMER REPORTS, <https://www.consumerreports.org/cro/about-us/what-we-do/index.html> (“[C]onsumers continue to rely on us to shine a trusted light on the shifting landscape of the marketplace—and ensure that rapid innovation and consumer safety go hand-in-hand.”).

or diminished innovation.”²⁰⁷ The Guidelines specifically state that the enforcement agencies “may consider” whether a proposed transaction will “diminish innovation competition.”²⁰⁸ Nonetheless, in many merger cases, the enforcement agencies rely primarily on claims that the transaction will result in higher prices and lower output, with reduced innovation mentioned only as a secondary effect or neglected altogether.²⁰⁹ In digital markets this approach would be a mistake given the extremely important role of innovation and quality in consumer welfare.²¹⁰ Anticompetitive innovation effects often will be critical and they should play a central role in merger litigation.

These points are particularly relevant in social media markets. With the knowledge that social media is addictive and can cause significant mental health harms, especially in children, consumers are likely to want offerings that are less addictive and less harmful than current social media platforms. In a competitive market, some firms likely would vie for that demand by offering safer social media experiences. This might mean innovating by engaging in research enabling the design of a user interface that promotes mental health. More simply, a platform could offer features that limit the amount of social media a user can consume in a given session or day. Alerts notifying users (or users’ parents) of the amount of time they have spent on a platform and interfaces that eliminate infinitely scrolling pages that continually direct the user to new content are examples of safety improvements that would increase users’ wellbeing. Firms also might compete to make their products less harmful by eliminating “likes” and content that tends to harm users’ mental health.²¹¹

One innovative social media company, TikTok, is already competing on consumer safety by taking steps to make its platform less addictive and less harmful. In February 2019, TikTok added a Screentime Management tool to

²⁰⁷ U.S. DEPT OF JUSTICE & THE FED. TRADE COMM’N, HORIZONTAL MERGER GUIDELINES at 2 (Aug. 19, 2010), <https://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf>.

²⁰⁸ *Id.* at 23.

²⁰⁹ Richard J. Gilbert & Steven C. Sunshine, *Incorporating Dynamic Efficiency Concerns in Merger Analysis: The Use of Innovation Markets*, 63 ANTITRUST L.J. 572 (1995) (“Antitrust analysis typically does not dwell on the nonprice aspects of competition.”).

²¹⁰ The prices paid by advertisers will often be another important focus. Quality-adjusted prices are a familiar lens through which to understand consumer harm when a product’s monetary price is zero.

²¹¹ See Jamie Leventhal, *How removing 'likes' from Instagram could affect our mental health*, PBS NEWS HOUR (Nov. 25, 2019) (noting that Instagram’s pilot program “to remove visible likes from the platform . . . might improve mental well-being”).

help users limit the amount of time they spend on the platform each day,²¹² and in 2020, it introduced additional safety measures: “Family Safety Mode” and “Screentime Management in Feed.”²¹³ Family Safety Mode allows parents to manage their children’s “Digital Wellbeing” by limiting the amount of time they can use TikTok each day and restricting inappropriate content.²¹⁴ With Screentime Management in Feed, TikTok partnered with popular “creators” to produce videos that appear in users’ feeds reminding them to “be aware of the time they spend on TikTok and encouraging them to consider taking some time out.”²¹⁵ In announcing these features, TikTok stated that “[a]s part of our commitment to safety, the wellbeing of our consumers is incredibly important to us.”²¹⁶ Industry analysts noted that these initiatives “could help set the company apart from the competition.”²¹⁷

In addition to adding in-app safety features, firms could employ business models that change incentives to protect users’ mental health. Employing a subscription model to generate revenue rather than relying on advertising would eliminate the financial incentive to keep users on the platform for more time while sharpening the incentive to provide a high-quality user experience. In general, in a market where consumers have choices, companies would expend resources to innovate in ways that attract them, one of which is likely to be platform safety.

In short, a more interventionist merger regime in the social media markets (combined with aggressive section 2 enforcement, discussed below) would give new competitors space to develop. Competition holds out the possibility that some firms will choose to differentiate by creating less addictive, safer offerings, as we have seen with Volvo, Apple, and the Disney Channel. We recognize that it is possible that increased competition could spark a “race to the bottom” instead. In this scenario, rivals would vie to keep users on their sites as long as possible to increase advertising revenue. Rather than competing on safety and quality, firms would compete on quantity and would lower quality (by offering a more addictive, more harmful product). Output of harmful

²¹² See, Cormac Keenan, *Introducing Family Safety Mode and Screentime Management in Feed*, TIK-TOK (Feb. 19, 2020), <https://newsroom.tiktok.com/en-gb/family-safety-mode-and-screentime-management-in-feed> (“In April 2019 we introduced Screen Time Management to help people set limits for how long they spend on TikTok each day. . . .”).

²¹³ *Id.*

²¹⁴ *Id.*

²¹⁵ *Id.*

²¹⁶ *Id.*

²¹⁷ Daniel Golightly, *Tiktok Family Safety, Digital Wellbeing Features Go Global* ANDROID HEADLINES (April 17, 2020), <https://www.androidheadlines.com/2020/04/tiktok-expands-family-safety-digital-wellbeing-features-global.html>.

social media would rise as the market became more competitive, while no competitor chose to differentiate into the safety segment. While this is certainly a risk of increased merger enforcement in markets for addictive products, a dominant firm also has an incentive to create addiction to drive advertising revenue.

The nuts and bolts of a section 7 case would change under our proposed approach, but not dramatically. Plaintiffs would still offer evidence of market shares and market concentration, and enforcement would be appropriate only if the relevant market is concentrated. But rather than focusing primarily on potential output effects, plaintiffs' theory of harm (and the court's attention) should be on innovation and product-variety effects as well as on consumer surplus taking into account the addictive nature of the product. Professors Scott Hemphill and Tim Wu contend that despite the uncertainty that often surrounds nascent, innovative competitors, the “risk of lost innovation strongly tips the balance in favor” of merger enforcement.²¹⁸ The potential public health consequences of social media mergers raise the stakes and strengthens the argument for intervening in transactions that might eliminate an innovative competitor. Therefore, if the enforcement agencies can demonstrate that the target is an innovator that competes on quality—one dimension of which may currently, or in the future, be protecting mental health—that should be sufficient to establish their theory of competitive harm. Defendants should be able to overcome this showing only if they can provide compelling evidence of an increase in consumer welfare. This could arise from specific beneficial changes in usage, merger-specific safety improvements, or other like benefits. Evidence that a merger will simply increase total user engagement does not show that consumer welfare will increase—indeed perhaps the opposite—and so it should not be sufficient to overcome the *prima facie* case in the social media space.

Should rivals emerge offering attractive (perhaps less addictive and safer) social media products, they would pose a serious threat to the dominant social media business model. If the incumbent is unable to acquire the nascent competitive threat, it may protect its market power by trying to exclude its smaller competitors. Or—in a familiar scenario—incumbent firms will engage in a combination of serial acquisitions and anticompetitive conduct designed to maintain their market power.²¹⁹ Enforcers can reach this pattern of conduct under section 2 of the Sherman Act.²²⁰

²¹⁸ Hemphill & Wu, *supra* note 197 at 1890.

²¹⁹ See Dinielli & Scott Morton, *supra* note 186 at 20-27 (describing Facebook's anticompetitive acquisitions and conduct).

²²⁰ See, e.g., *BRFHH Shreveport, LLC v. Willis Knighton Medical Center*, 176 F. Supp. 3d 606, 619 (W.D. La. 2016) (“Courts continue to hold that acquisitions can give rise to anticompetitive conduct for the purposes of a section 2 claim”); Complaint for Injunctive and Other

Section 2 prohibits the unlawful acquisition or maintenance of a monopoly.²²¹ While the typical section 2 case involves business conduct such as refusals to deal or exclusive dealing, section 2 also applies to individual acquisitions, serial acquisitions, and any combination of acquisitions and other conduct that leads to unlawful monopoly acquisition or maintenance.²²²

In the technology markets, dominant firms have used a variety of strategies to maintain their market power. The government's case against Microsoft in the 1990s provides a leading example of this mixture of conduct designed to protect Microsoft's operating system monopoly.²²³ Professor Lina Khan has argued that Amazon has engaged in a pattern of exclusionary conduct and strategic acquisitions to establish and then maintain its dominance in various e-commerce markets.²²⁴ Facebook also has employed a pattern of strategic acquisitions (Instagram, WhatsApp) and aggressive conduct (modifying its APIs to prevent Vine users from uploading videos onto Facebook).²²⁵

A section 2 plaintiff must prove that the defendant has monopoly power in a relevant market and has engaged in exclusionary conduct that harmed competition.²²⁶ By successfully carrying this burden, the plaintiff establishes a *prima facie* case, at which point the defendant will have the opportunity to offer procompetitive justifications for its conduct.²²⁷ If the defendant offers

Equitable Relief at 50-51, *Federal Trade Commission v. Facebook, Inc.*, No.: 1:20-cv-03590 (D.D.C. Dec. 9, 2020) (alleging that Facebook's "course of conduct," including its anticompetitive acquisitions and "anticompetitive conditioning of access to interconnections," violated section 2 of the Sherman Act).

²²¹ See *U.S. v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966) ("The offense of monopoly under s 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.").

²²² See *Grinnell Corp.*, 384 U.S. at 576 (describing "unlawful and exclusionary practices" with which defendant achieved its monopoly, including a series of acquisitions, restrictive agreements, and certain pricing practices); see also *Caribbean Broadcasting System, Ltd. v. Cable & Wireless P.L.C.*, 148 F. 3d 1080, 1087 ("'Anticompetitive conduct' can come in too many different forms, and is too dependent upon context, for any court or commentator ever to have enumerated all the varieties.").

²²³ See *U.S. v. Microsoft Corp.*, 253 F.3d 34, 58 (D.C. Cir. 2001) ("[T]he District Court held that Microsoft had violated § 2 by engaging in a variety of exclusionary acts . . . to maintain its monopoly.").

²²⁴ Lina M. Khan, *Amazon's Antitrust Paradox*, 126 *YALE L.J.* 710, 755-83 (2017).

²²⁵ Scott Morton & Dinielli, *supra* note 186.

²²⁶ *U.S. v. Grinnell Corp.*, 384 U.S. 563, 570-71 (1966); *U.S. v. Microsoft Corp.*, 253 F. 3d 34, 58 (D.C. Cir. 2001) ("[T]o be condemned as exclusionary, a monopolist's act must have an 'anticompetitive effect.' That is, it must harm the competitive process and thereby harm consumers. In contrast, harm to one or more competitors will not suffice.").

²²⁷ *Microsoft*, 253 F. 3d at 59.

such justifications, plaintiff either must rebut them or show that the anticompetitive harm stemming from the defendant's conduct outweighs any procompetitive effect.²²⁸

The two points we made above on the impact of social media's addictive qualities on merger analysis apply also in the context of monopolization. Because enhanced innovation and product variety increase the chances that consumers will be able to choose safer social media offerings, enforcers and courts should focus their attention on exclusionary conduct that would eliminate innovative firms, whether those innovators are current or potential future competitors of the dominant incumbent. A pattern of strategic acquisitions and exclusionary conduct against nascent, innovative rivals should be sufficient to establish a *prima facie* section 2 case.

Further, a section 2 defendant in the social media space should not be able to overcome a *prima facie* case of competitive harm by offering evidence of efficiencies that result only in higher output, without showing that the output change increases consumer welfare. As in the merger setting, evidence that some general measure of user engagement has increased does not prove that consumer welfare has gone up. Such increased user engagement might come from already addicted users spending even more time on a platform, rendering them worse off. So, when weighing harm to a nascent innovator against increased output from a social media monopolist, courts should find that the balance favors liability unless the defendant can show that its conduct actually increased consumer welfare.

CONCLUSION

Social media's addictive and harm-producing characteristics pose special analytical challenges for antitrust courts and enforcers. In both the merger and section 2 settings, antitrust enforcement must both move forward by utilizing modern behavioral economics, as well as return to its roots by weighing consumer welfare, not a proxy for it. Because increased consumption of social media may simply reflect low quality and addiction, it need not increase consumer welfare. Just as more OxyContin consumption by addicted users harms consumers, so too does addicts' increased social media consumption. We contend that this insight requires a sharpening of antitrust analysis for social media that focuses on innovation effects and more carefully defines consumer welfare to account for social media's addictive and harmful user impact.

The assumption that more consumption of addictive digital products leads to increased utility is not justifiable based on the medical and economics literature. Therefore, the common "short cut" of using a generalized measure of output as a proxy for consumer welfare fails as a matter of economics. It is not reliable for these goods. In an antitrust enforcement context, the impact of

²²⁸ *Id.*

specific conduct on consumer welfare is the ultimate measure of interest. If the government has carried its prima facie case, the social media defendant must demonstrate pro-competitive efficiencies, efficiencies that increase long-run consumer welfare. Such a defendant might attempt to show that its user interface is not designed to be addictive. Or, it might try to show that its business model does not create any incentive for addiction. A platform could use its own data to demonstrate its conduct's impact on users' behavior, showing changes by type of consumer in different kinds of usage, and in amounts of time spent on the platform. This type of analysis would help the court understand the impact of the conduct on consumer welfare.

For many consumers, digital engagement is addictive, and their long-run selves wish to do less of it. For many consumers, digital engagement causes them to purchase products or watch content that they later regret or causes harm. For many consumers, the online content digital businesses present to them causes them to experience negative emotions such as hate and anxiety that are harmful in and of themselves, but also may be carried into relationships with others. These are harms, not benefits, to increased consumption of social media. In the parlance of antitrust economics, the harms that digital businesses impose on unwitting consumers lower the quality of the product. When a service declines in quality, that is a harm to consumer welfare. When a "free" service declines in quality due to anticompetitive conduct by a digital business, that is equivalent to an increase in quality-adjusted price, a traditional antitrust harm. Therefore, increased engagement driven by addiction is equivalent to a higher quality-adjusted price for that consumer.

Because courts and enforcers have relatively little experience with enforcement in social media markets, more research and learning about the welfare impact of increased consumption of these kinds of addictive and exploitative products is needed. But we know enough already to conclude that social media's addictive and harmful characteristics should change the way courts and enforcers analyze antitrust claims in these markets.